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answer-supervision signals to the public switched network when:
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• Answered by the attendant
• Routed to a recorded announcement that can be administered
  by the CPE user
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• A call is unanswered
• A busy tone is received
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This document was prepared by the Product Documentation Develop-
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Contents

About This Document

- Purpose xxix
- Intended Audience xxix
- Reason for Reissue xxix
- Systems Supported xxix
- How Document Is Organized xxx
- Conventions Used in This Document xxxi
- Trademarks and Service Marks xxxi
- Related Documents xxxii
- How to Order Documentation xxxiii
- How to Comment on This Document xxxiii
- Standards Compliance xxxiii
- International Requirements xxxiv
  - Electromagnetic Compatibility Standards xxxv
  - Electromagnetic Immunity Standards xxxv
  - European Union Standards xxxvi

1 Overview of DEFINITY G3 1-1

- The DEFINITY System 1-2
- Time Division Multiplexing 1-3
  - Time Slot Interchanger 1-3
- System Components and Configurations 1-4
  - Processor Port Network (PPN) 1-4
  - Expansion Port Network (EPN) 1-4
  - Center Stage Switch 1-4
  - Main Components 1-4
  - System Configurations 1-6
- Architecture 1-11
- Cabinets 1-11
  - Multi-Carrier Cabinets 1-13
  - Single-Carrier Cabinets 1-14
  - Compact Single-Carrier Cabinet — G3vs 1-15
# Contents

- Connections to the External Environment 1-15
- Duplication 1-17
- Administration 1-17
- Comparing System Versions 1-18
- Upgrades and Additions 1-19

## 2 Cabinets, Carriers, and Circuit Packs 2-1

### Multi-Carrier Cabinets 2-1
- Power Distribution 2-3
- Cabinet Features 2-3
- AUX Connector Capacity 2-3
- Processor Port Network (PPN) Cabinet (J58890A) 2-4
- Expansion Port Network (EPN) Cabinet (J58890A) 2-5
- Auxiliary Cabinet (J58886N) 2-6

### Carriers in Multi-Carrier Cabinets 2-7
- Control Carrier (J58890AH) — G3i 2-7
- Duplicated Control Carrier (J58890AJ) — G3i 2-9
- Control Carrier (J58890AP) — G3r 2-11
- Port Carrier (J58890BB) 2-13
- Expansion Control Carrier (J58890AF) 2-14
- Switch Node (SN) Carrier (J58890SA) — G3r 2-17

### Single-Carrier Cabinets 2-18
- Dimensions and Weights 2-22
- Heat Dissipation 2-22

### Carriers in Single-Carrier Cabinets 2-22
- Basic Control Cabinet (J58890L) — G3s and G3i 2-22
- Duplicated Control Cabinet (J58890M) — G3i 2-24
- Expansion Control Cabinet (J58890N) 2-26
- Port Cabinet (J58890H) 2-28
- Compact Single-Carrier Cabinet (J58890S) — G3vs 2-29

### Circuit Packs and Related Hardware 2-31
- Types of Circuit Packs 2-31
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit Packs in DEFINITY</td>
<td>2-34</td>
</tr>
<tr>
<td>Analog Line (TN467) — U.K. and Australia</td>
<td>2-37</td>
</tr>
<tr>
<td>Analog Line (TN468B) — U.K. and Australia</td>
<td>2-37</td>
</tr>
<tr>
<td>Analog Line (TN479, TN742, TN746/B, and TN769)</td>
<td>2-37</td>
</tr>
<tr>
<td>Analog Line (TN2135) — Italy</td>
<td>2-40</td>
</tr>
<tr>
<td>Analog Line (TN2144) — Netherlands</td>
<td>2-40</td>
</tr>
<tr>
<td>Analog Line (TN2149) — Belgium</td>
<td>2-40</td>
</tr>
<tr>
<td>Analog Line (TN2180) — Spain and Germany</td>
<td>2-41</td>
</tr>
<tr>
<td>Analog Line (TN2183) — Multi-Country</td>
<td>2-41</td>
</tr>
<tr>
<td>Announcement (TN750 and TN750B)</td>
<td>2-41</td>
</tr>
<tr>
<td>Announcement (TN750C)</td>
<td>2-42</td>
</tr>
<tr>
<td>Auxiliary Trunk (TN417) — Non-US Installations</td>
<td>2-42</td>
</tr>
<tr>
<td>Auxiliary Trunk (TN763B/C/D)</td>
<td>2-42</td>
</tr>
<tr>
<td>Call Classifier (TN744/B)</td>
<td>2-43</td>
</tr>
<tr>
<td>Call Classifier — Detector (TN744C)</td>
<td>2-43</td>
</tr>
<tr>
<td>CO Trunk (TN438B)</td>
<td>2-43</td>
</tr>
<tr>
<td>CO Trunk (TN447) — United Kingdom</td>
<td>2-44</td>
</tr>
<tr>
<td>CO Trunk (TN465/B/C) — Multi-Country</td>
<td>2-44</td>
</tr>
<tr>
<td>CO Trunk (TN747B)</td>
<td>2-44</td>
</tr>
<tr>
<td>CO Trunk (TN2138) — Italy</td>
<td>2-44</td>
</tr>
<tr>
<td>CO Trunk (TN2147/C) — Multi-Country</td>
<td>2-44</td>
</tr>
<tr>
<td>CO Trunk (TN2199) — Russia</td>
<td>2-45</td>
</tr>
<tr>
<td>CSU Module (120A)</td>
<td>2-45</td>
</tr>
<tr>
<td>Current Limiter (982LS) — G3s and G3i</td>
<td>2-46</td>
</tr>
<tr>
<td>Current Limiter (CFY1B)</td>
<td>2-47</td>
</tr>
<tr>
<td>Data Line (TN726B)</td>
<td>2-47</td>
</tr>
<tr>
<td>DEFINITY AUDIX R3 System (TN566/B, TN567, and TN2169, TN2170, ED-1E546)</td>
<td>2-47</td>
</tr>
<tr>
<td>DEFINITY LAN Gateway (ED-1E546)</td>
<td>2-48</td>
</tr>
<tr>
<td>DID Trunk (TN436B) — Australia</td>
<td>2-48</td>
</tr>
<tr>
<td>DID Trunk (TN459B) — U.K.</td>
<td>2-48</td>
</tr>
<tr>
<td>DID Trunk (TN753)</td>
<td>2-48</td>
</tr>
<tr>
<td>DIOD Trunk (TN429) — Japan</td>
<td>2-49</td>
</tr>
<tr>
<td>DID Trunk (TN2139) — Italy</td>
<td>2-49</td>
</tr>
</tbody>
</table>
## Contents

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DID Trunk (TN2146)</td>
<td>Belgium</td>
<td>2-49</td>
</tr>
<tr>
<td>Digital Line (TN754 and TN754B)</td>
<td>4-Wire DCP</td>
<td>2-49</td>
</tr>
<tr>
<td>Digital Line (TN2181)</td>
<td>2-Wire DCP</td>
<td>2-49</td>
</tr>
<tr>
<td>Digital Line (TN2136)</td>
<td>2-Wire DCP</td>
<td>2-50</td>
</tr>
<tr>
<td>DIOD Trunk (TN2184)</td>
<td>Germany</td>
<td>2-50</td>
</tr>
<tr>
<td>Disk Drive (TN1657)</td>
<td>G3r</td>
<td>2-50</td>
</tr>
<tr>
<td>DS1 Converter (TN574)</td>
<td>G3r — T1, 24-Channel</td>
<td>2-50</td>
</tr>
<tr>
<td>DS1 Interface (TN767B/C/D/E)</td>
<td>T1, 24-Channel</td>
<td>2-51</td>
</tr>
<tr>
<td>DS1 Interface (TN464C/D/E/F)</td>
<td>T1, 24-Channel and E1, 32-Channel</td>
<td>2-52</td>
</tr>
<tr>
<td>DS1 Tie Trunk (TN722B)</td>
<td></td>
<td>2-53</td>
</tr>
<tr>
<td>Duplication Interface (TN772)</td>
<td>G3i</td>
<td>2-53</td>
</tr>
<tr>
<td>Duplication Interface (UN330B)</td>
<td>G3r</td>
<td>2-53</td>
</tr>
<tr>
<td>Expansion Interface (TN570/B)</td>
<td>G3i, G3r</td>
<td>2-54</td>
</tr>
<tr>
<td>Expansion Interface (TN776)</td>
<td>G3i</td>
<td>2-54</td>
</tr>
<tr>
<td>External Alarm</td>
<td></td>
<td>2-54</td>
</tr>
<tr>
<td>Hybrid Line (TN762B)</td>
<td></td>
<td>2-55</td>
</tr>
<tr>
<td>ISDN BRI Line (TN556/B)</td>
<td>All G3 Except G3vs — 4-Wire S/T-N/T Interface</td>
<td>2-55</td>
</tr>
<tr>
<td>ISDN BRI Line (TN2198)</td>
<td>All G3 Except G3vs — 2-Wire U Interface</td>
<td>2-55</td>
</tr>
<tr>
<td>Maintenance (TN775)</td>
<td>EPN G3i and G3r</td>
<td>2-56</td>
</tr>
<tr>
<td>Maintenance/Test (TN771D)</td>
<td>G3</td>
<td>2-56</td>
</tr>
<tr>
<td>Mass Storage/Network Control (UN332)</td>
<td>G3r</td>
<td>2-57</td>
</tr>
<tr>
<td>Memory Expansion (CPP1)</td>
<td>G3i</td>
<td>2-57</td>
</tr>
<tr>
<td>Memory (TN1650B)</td>
<td>G3r</td>
<td>2-57</td>
</tr>
<tr>
<td>MET Line (TN735)</td>
<td></td>
<td>2-57</td>
</tr>
<tr>
<td>Music-on-Hold Interface (122A)</td>
<td>France</td>
<td>2-57</td>
</tr>
<tr>
<td>Network Control (TN777B)</td>
<td>G3s, G3i, and G3vs</td>
<td>2-58</td>
</tr>
<tr>
<td>Packet Control (TN778)</td>
<td>G3s and G3i</td>
<td>2-58</td>
</tr>
<tr>
<td>Packet Data Line (TN553)</td>
<td>G3r</td>
<td>2-58</td>
</tr>
<tr>
<td>Packet Gateway (TN577)</td>
<td>G3r</td>
<td>2-59</td>
</tr>
<tr>
<td>Packet Interface (TN1655)</td>
<td>G3r</td>
<td>2-59</td>
</tr>
<tr>
<td>Pooled Modem (TN758)</td>
<td>Mu-Law Only</td>
<td>2-59</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Compact Single-Carrier Cabinet</td>
<td>2-59</td>
</tr>
<tr>
<td>Power Supply (AC)</td>
<td>Single-Carrier Cabinet</td>
<td>2-59</td>
</tr>
<tr>
<td>Power Supply (DC) — Single-Carrier Cabinet</td>
<td>2-60</td>
<td></td>
</tr>
<tr>
<td>Power Converter (AC), +5V (631DA1) — Multi-Carrier Cabinet</td>
<td>2-60</td>
<td></td>
</tr>
<tr>
<td>Power Converter (AC), -48V/-5V (631DB1) — Multi-Carrier Cabinet</td>
<td>2-60</td>
<td></td>
</tr>
<tr>
<td>Power Converter (DC), +5V (644A1) — Multi-Carrier Cabinet</td>
<td>2-60</td>
<td></td>
</tr>
<tr>
<td>Power Converter (DC), -48V/-5V (645B1) — Multi-Carrier Cabinet</td>
<td>2-60</td>
<td></td>
</tr>
<tr>
<td>Power Unit, Neon (TN755B)</td>
<td>2-61</td>
<td></td>
</tr>
<tr>
<td>Processor (TN786B) — G3vsV2, G3sV2, G3iV2</td>
<td>2-61</td>
<td></td>
</tr>
<tr>
<td>Processor (TN786B) — G3i, G3s, and G3vs</td>
<td>2-61</td>
<td></td>
</tr>
<tr>
<td>Processor (UN331B) — G3r</td>
<td>2-62</td>
<td></td>
</tr>
<tr>
<td>Processor Interface (TN765) — G3s, G3vs, G3i</td>
<td>2-62</td>
<td></td>
</tr>
<tr>
<td>Ring Generator (TN2202) — France</td>
<td>2-63</td>
<td></td>
</tr>
<tr>
<td>SN Clock (TN572) — G3r</td>
<td>2-63</td>
<td></td>
</tr>
<tr>
<td>SN Interface (TN573) — G3r</td>
<td>2-63</td>
<td></td>
</tr>
<tr>
<td>Speech Synthesizer (TN433) — Italy</td>
<td>2-63</td>
<td></td>
</tr>
<tr>
<td>Speech Synthesizer (TN457) — U.K. English</td>
<td>2-64</td>
<td></td>
</tr>
<tr>
<td>Speech Synthesizer (TN725B) — U.S. English</td>
<td>2-64</td>
<td></td>
</tr>
<tr>
<td>System Access and Maintenance (TN1648) — G3r</td>
<td>2-64</td>
<td></td>
</tr>
<tr>
<td>Tape Drive (TN1656) — G3rv2</td>
<td>2-65</td>
<td></td>
</tr>
<tr>
<td>Tie Trunk (TN437) — Australia</td>
<td>2-65</td>
<td></td>
</tr>
<tr>
<td>Tie Trunk (TN439) — Australia and Japan</td>
<td>2-65</td>
<td></td>
</tr>
<tr>
<td>Tie Trunk (TN458) — U.K.</td>
<td>2-65</td>
<td></td>
</tr>
<tr>
<td>Tie Trunk (TN497) — Italy</td>
<td>2-65</td>
<td></td>
</tr>
<tr>
<td>Tie Trunk (TN760D)</td>
<td>2-66</td>
<td></td>
</tr>
<tr>
<td>Tie Trunk (TN2140) — Italy and Hungary</td>
<td>2-66</td>
<td></td>
</tr>
<tr>
<td>Tone-Clock (TN419B) — Italy, Australia, U.K.</td>
<td>2-66</td>
<td></td>
</tr>
<tr>
<td>Tone-Clock (TN768)</td>
<td>2-66</td>
<td></td>
</tr>
<tr>
<td>Tone-Clock (TN780)</td>
<td>2-67</td>
<td></td>
</tr>
<tr>
<td>Tone-Clock (TN2182) — With A-Law and Mu-Law</td>
<td>2-67</td>
<td></td>
</tr>
<tr>
<td>Tone Detector and Call Classifier</td>
<td>2-67</td>
<td></td>
</tr>
<tr>
<td>Tone Detector (TN420C)</td>
<td>2-67</td>
<td></td>
</tr>
<tr>
<td>Tone Detector (TN748C/D)</td>
<td>2-68</td>
<td></td>
</tr>
<tr>
<td>TN756 Tone Detector</td>
<td>2-68</td>
<td></td>
</tr>
</tbody>
</table>
## Contents

### 3 Power and Fans
- Power Sources
  - AC Power
  - DC Power
- Fused Current Drains
- Multi-Carrier Cabinet Power System
  - Power Distribution
  - AC Power Distribution Unit (J58890CE)
  - Backup Power
  - Uninterruptible Power Supply (UPS)
  - DC Power Distribution Unit (J58890CF)
- AC Power and Ground Wiring
- DC Power and Ground Wiring
- AC- and DC-Powered Multi-Carrier Cabinets
  - Intracabinet Grounding
- Single-Carrier Cabinet Power System
  - AC Power Supply (WP-91153)
  - DC Power Supply (676B)
  - 116A Isolator
  - AC Power and Ground Wiring
  - DC Power and Ground Wiring
- AC Power Supply — Compact Single-Carrier Cabinet
- Lightning Protection
- Sneak Current Protection
- Cabinet Fan Units
  - Multi-Carrier Cabinet Fan Unit
  - Single-Carrier Cabinet Fan Unit
  - Compact Single-Carrier Cabinet Fan Unit

### 4 Cabinet and Carrier Configurations
- Sequence of Installing Carriers in Cabinets
- Minimum Cabinet Configurations
  - Standard Reliability Systems
## Contents

| High Reliability Systems — G3, G3i or G3r | 4-7 |
| Critical Reliability Systems — G3i | 4-9 |
| Critical Reliability Systems — G3r | 4-10 |
| Single Port Network EPN Cabinets in Critical Reliability Systems | 4-11 |
| Two Port Network EPN Cabinets in Critical Reliability Systems — G3r | 4-12 |
| **Cabinet Configurations in Directly — Connected Systems** | 4-13 |
| Standard Reliability | 4-13 |
| High Reliability | 4-15 |
| Critical Reliability | 4-16 |
| **Cabinet Configurations in a CSS-Connected G3r** | 4-17 |
| Standard Reliability | 4-17 |
| High Reliability | 4-20 |
| Critical Reliability | 4-23 |

## 5 Cabling

| Types of Cabling | 5-1 |
| Metallic Cabling | 5-2 |
| Fiber Optic Cabling | 5-2 |
| **Cabling Between Carriers in Multi-Carrier Cabinets** | 5-5 |
| TDM/LAN Bus Cabling (Except G3r) | 5-5 |
| TDM/LAN Bus Cabling (G3r) | 5-7 |
| Cabinet Harness | 5-11 |
| Control Carrier Cabling in G3i | 5-12 |
| Control Carrier Cabling in G3r | 5-13 |
| Switch Node Carrier Cabling in G3r | 5-14 |
| DS1 Remoting in G3r | 5-14 |
| Cabling on a Carrier for DS1C | 5-14 |
| Cabling Between Multi-Carrier Cabinets | 5-16 |
| **Cabling Between Single-Carrier Cabinets** | 5-37 |
| TDM/LAN Bus Cabling | 5-37 |
## Contents

<table>
<thead>
<tr>
<th>Basic Control Cabinet to Duplicated Control Cabinet Cabling in G3i</th>
<th>5-39</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabling Between Single-Carrier Cabinets in Standard Reliability and Critical Reliability</td>
<td>5-40</td>
</tr>
<tr>
<td>Cabling Between Single-Carrier Cabinets in Remote Applications</td>
<td>5-44</td>
</tr>
<tr>
<td>■ Cabling Between Single-Carrier and Multi-Carrier Cabinets</td>
<td>5-45</td>
</tr>
<tr>
<td>■ Cabling to On- and Off-Premises Systems</td>
<td>5-46</td>
</tr>
</tbody>
</table>

### 6 Architecture

| ■ Operating System Layer | 6-1 |
| ■ Applications Layer | 6-1 |
| Call Processing | 6-2 |
| Management | 6-6 |
| Maintenance | 6-8 |
| ■ Internal Connectivity | 6-9 |
| G3r Connectivity | 6-9 |
| Internal G3s, G3vs, and G3i Connectivity | 6-18 |
| ■ Protocols | 6-22 |
| Layers | 6-22 |
| Usage | 6-24 |
| States | 6-26 |
| Connectivity Rules | 6-27 |
| Disconnect Supervision | 6-28 |

### 7 Connections to Trunks, Lines, and Networks

| ■ Trunks | 7-1 |
| Local Exchange Trunks | 7-2 |
| DS1/E1 Facilities | 7-3 |
| Tie Trunks | 7-5 |
| Special-Access Trunks | 7-6 |
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Trunks</td>
<td>7-7</td>
</tr>
<tr>
<td>Miscellaneous Trunks</td>
<td>7-8</td>
</tr>
<tr>
<td>■ Data Lines</td>
<td>7-9</td>
</tr>
<tr>
<td>■ ACCUNET Packet Service</td>
<td>7-10</td>
</tr>
<tr>
<td>■ Private Networks</td>
<td>7-11</td>
</tr>
<tr>
<td>■ MS/T</td>
<td>7-11</td>
</tr>
<tr>
<td>■ ETN</td>
<td>7-12</td>
</tr>
<tr>
<td>■ Software Defined Network (SDN)</td>
<td>7-13</td>
</tr>
<tr>
<td>■ ETN/SDN Hybrid Network</td>
<td>7-14</td>
</tr>
<tr>
<td>■ DCS — G3V2 and Later</td>
<td>7-14</td>
</tr>
<tr>
<td>■ Information System Network (ISN)</td>
<td>7-16</td>
</tr>
<tr>
<td>■ STARLAN</td>
<td>7-17</td>
</tr>
</tbody>
</table>

## Connections to Peripherals

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Data Terminal Equipment (DTE)</td>
<td>8-2</td>
</tr>
<tr>
<td>■ Data Communication Equipment (DCE)</td>
<td>8-2</td>
</tr>
<tr>
<td>■ Data Modules</td>
<td>8-2</td>
</tr>
<tr>
<td>■ ADUs</td>
<td>8-3</td>
</tr>
<tr>
<td>■ Modems</td>
<td>8-4</td>
</tr>
<tr>
<td>■ Channel Service Unit (CSU)</td>
<td>8-4</td>
</tr>
<tr>
<td>■ Terminals</td>
<td>8-4</td>
</tr>
<tr>
<td>■ Voice and Data Terminals</td>
<td>8-5</td>
</tr>
<tr>
<td>■ Administration Terminals</td>
<td>8-6</td>
</tr>
<tr>
<td>■ Printers</td>
<td>8-7</td>
</tr>
<tr>
<td>■ Messaging Adjuncts</td>
<td>8-8</td>
</tr>
<tr>
<td>■ Telemarketing Adjuncts</td>
<td>8-25</td>
</tr>
<tr>
<td>■ Administration Adjuncts</td>
<td>8-27</td>
</tr>
<tr>
<td>■ Call Record Acquisition Adjuncts</td>
<td>8-30</td>
</tr>
<tr>
<td>■ Miscellaneous Adjuncts</td>
<td>8-31</td>
</tr>
<tr>
<td>■ DCS Links</td>
<td>8-45</td>
</tr>
<tr>
<td>■ DS1 Converter Connections</td>
<td>8-54</td>
</tr>
<tr>
<td>■ DS1 Connections</td>
<td>8-56</td>
</tr>
<tr>
<td>■ Connection from AUX Connector in PPN Cabinet</td>
<td>8-57</td>
</tr>
</tbody>
</table>
Contents

AUX Connector Capacity 8-57
Typical Connections to G3V3 and G3V4 8-58

9 Maintenance 9-1
- Hardware Used for Maintenance 9-2
- Maintenance Tests 9-3
- Procedures 9-3
- Error and Alarm Logs 9-4
- Terminal Alarm Notification Buttons 9-4
- Local and Remote Testing 9-5
- Port Circuit Packs 9-5
- Documents 9-5

10 Environmental Requirements 10-1
- Floor Area 10-1
  - Multi-Carrier Cabinets 10-1
  - Single-Carrier Cabinets 10-2
- Heat Dissipation 10-3
- Main Distribution Frame 10-3
- Floor Plans 10-3
- Earthquake Protection 10-7
- Table Area 10-8
  - G3-MT 10-9
  - Optional Printers 10-9
- Wall Area 10-9
- Floor Loading 10-10
  - Multi-Carrier Cabinets 10-10
  - Single-Carrier Cabinets 10-10
- Temperature and Humidity 10-10
- Altitude and Air Pressure 10-12
- Air Purity 10-12
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Lighting</td>
<td>10-12</td>
</tr>
<tr>
<td>■ RF Noise</td>
<td>10-13</td>
</tr>
<tr>
<td>■ Acoustic Noise Levels</td>
<td>10-13</td>
</tr>
<tr>
<td>Multi-Carrier Cabinets</td>
<td>10-13</td>
</tr>
<tr>
<td>Single-Carrier Cabinets</td>
<td>10-13</td>
</tr>
<tr>
<td>■ Overvoltage Protection</td>
<td>10-14</td>
</tr>
<tr>
<td>■ Approved Grounds</td>
<td>10-14</td>
</tr>
</tbody>
</table>

### Technical Specifications

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Representative Number of Lines</td>
<td>11-2</td>
</tr>
<tr>
<td>■ Performance</td>
<td>11-2</td>
</tr>
<tr>
<td>■ Additional Hardware to Use Features</td>
<td>11-3</td>
</tr>
<tr>
<td>■ Allocation of Buttons</td>
<td>11-15</td>
</tr>
<tr>
<td>■ Initialization and Recovery</td>
<td>11-18</td>
</tr>
<tr>
<td>■ Cabling Distances</td>
<td>11-19</td>
</tr>
<tr>
<td>ISDN-BRI Two-Wire Line Cabling Distances</td>
<td>11-22</td>
</tr>
<tr>
<td>Fiber Optic Cabling Distances</td>
<td>11-22</td>
</tr>
<tr>
<td>■ DS1 Remoting Transmission Distance</td>
<td>11-23</td>
</tr>
<tr>
<td>■ Call Progress Tones</td>
<td>11-23</td>
</tr>
<tr>
<td>Audible Ringing Patterns</td>
<td>11-27</td>
</tr>
<tr>
<td>MFC Tones in G3</td>
<td>11-28</td>
</tr>
<tr>
<td>■ Indicator Lamp Signals</td>
<td>11-29</td>
</tr>
<tr>
<td>■ Protocols</td>
<td>11-30</td>
</tr>
<tr>
<td>■ Transmission Characteristics</td>
<td>11-32</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>11-32</td>
</tr>
<tr>
<td>Insertion Loss for Port-to-Port; Analog or Digital Ports</td>
<td>11-33</td>
</tr>
<tr>
<td>Intermodulation Distortion</td>
<td>11-33</td>
</tr>
<tr>
<td>Quantization Distortion Loss</td>
<td>11-34</td>
</tr>
<tr>
<td>Impulse Noise</td>
<td>11-34</td>
</tr>
<tr>
<td>ERL and SFRL Talking State</td>
<td>11-35</td>
</tr>
<tr>
<td>Peak Noise Level</td>
<td>11-35</td>
</tr>
<tr>
<td>Echo Path Delay</td>
<td>11-35</td>
</tr>
</tbody>
</table>
## Contents

### A System Capacity Limits

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>A-1</td>
</tr>
<tr>
<td>System Hardware and Software Capacity Limits</td>
<td>A-1</td>
</tr>
</tbody>
</table>

### B References

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>B-1</td>
</tr>
<tr>
<td>Call Center</td>
<td>B-6</td>
</tr>
<tr>
<td>Networks</td>
<td>B-7</td>
</tr>
<tr>
<td>Application Specific</td>
<td>B-7</td>
</tr>
</tbody>
</table>

### ABB Abbreviations

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviations</td>
<td>ABB-1</td>
</tr>
</tbody>
</table>

### GL Glossary

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glossary</td>
<td>GL-1</td>
</tr>
</tbody>
</table>

### IN Index

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>IN-1</td>
</tr>
</tbody>
</table>
About This Document

Purpose

The purpose of this document is to briefly describe the DEFINITY® Generic 3 (G3) Version 4 system. Descriptions of V3 and earlier Generic 3 versions are also provided.

This document is not intended to replace or modify the instructions provided in other task-specific DEFINITY® documentation. Refer to "Related Documents" in this section and to Appendix B "References."

Intended Audience

The information in this document is intended for customers, AT&T marketing, sales, installation, and service personnel. This document is also intended for educators and trainers to understand and teach Generic 3 to AT&T and customer personnel.

Reason for Reissue

This document covers the system updates from G3V3 to G3V4 (including G3V4 Release 3).

Systems Supported

This document primarily supports DEFINITY® Generic 3 Version 4 Release 3 (G3V4R3).
How Document Is Organized

This document consists of the following chapters, glossary, and index as follows:

- **Chapter 1, “Overview of DEFINITY® G3”** — Introduces G3V4, presents an overview of hardware, architecture, administration and maintenance, and provides a brief functional description of the systems.
- **Chapter 2, “Cabinets, Carriers, and Circuit Packs”** — Describes the main system hardware components.
- **Chapter 3, “Power and Fans”** — Briefly describes AC and DC power systems, ground wiring, and cooling fan units.
- **Chapter 4, “Cabinet and Carrier Configurations”** — Describes the various configurations of cabinets and carriers composing different systems.
- **Chapter 5, “Cabling”** — Briefly describes cabling between carriers, between cabinets, and between the system and the external environment.
- **Chapter 6, “Architecture”** — Describes the operating system, applications software (call processing, maintenance, and administration), internal connectivity, and protocols handled by the system.
- **Chapter 7, “Connections to Trunks, Lines, and Networks”** — Briefly describes the types of trunks, data lines, and networks that can be connected to the system.
- **Chapter 8, “Connections to Peripherals”** — Describes optional external data terminal equipment (DTE) and data communications equipment (DCE) that can be connected to the system.
- **Chapter 9, “Maintenance”** — Briefly describes hardware, tests, procedures, error logs, alarm logs and the specific documentation used for maintaining and testing the system.
- **Chapter 10, “Environmental Requirements”** — Briefly describes typical floor plans. Temperature, humidity, lighting, air purity, and noise levels requirements are also discussed.
- **Chapter 11, “Technical Specifications”** — Lists the specifications for capabilities and performance.
- **Appendix A, “System Capacities”** — Provides the capacities of the system, from G3V1 through G3V4R3 for each model.
- **Appendix A, “References”** — Lists the available documentation related to the DEFINITY® Generic 3 (G3).
- **Abbreviations** — Alphabetic listing (in United States English) of the abbreviations found in this document.
- **Glossary** — Alphabetic listing (in United States English) and definition of terms used in this document.
- **Index** — Alphabetic listing (in United States English) of topics presented in this document.
Conventions Used in This Document

The following conventions are used in this document:

- The word, *system*, is a general term encompassing G3V4.
- DEFINITY® systems are called: G3V4; G3iV4; G3sV4; G3vsV4; G3rV4.
- It is assumed the information in this document is applicable for all versions of DEFINITY® G3, including V2 through V4, unless otherwise specified.
- All occurrences of G3 without an “i,” “s,” “r,” “i,” “s,” “r,” or “vs.” following the “3” mean G3i, G3s, G3vs, and G3r.
- A component of a system, such as a circuit pack, occurring without reference to any specific system, is assumed to be part of G3.

Trademarks and Service Marks

Trademarks and service marks used in this document are as follows:

- ACCUNET® – Registered trademark of AT&T
- AUDIX™ – Trademark of AT&T
- Callmaster™ – Trademark of AT&T
- CallVisor™ – Trademark of AT&T
- Common Control Unit® – Registered trademark of Harris Corporation
- CONVERSANT® – Registered trademark of AT&T
- DEFINITY® – Registered trademark of AT&T
- Intel® – Registered trademark of Intel Corporation
- MEGACOM® – Registered trademark of AT&T
- Music Mate® – Registered trademark of Harris Corporation
- Page Pac® – Registered trademark of Harris Corporation
- PORTA® – Registered trademark of Porta Systems Corporation
- Power Mate® – Registered trademark of Harris Corporation
- Talk Mate® – Registered trademark of Harris Corporation
- Telesee® – Registered trademark of AT&T
- Zone Mate® – Registered trademark of Harris Corporation
Related Documents

The following AT&T documents are useful for system-related information:

- An Introduction to DEFINITY® Communications System Generic 3, 555-230-023
- DEFINITY® Communications System Generic 3 Capabilities, 555-230-496
- DEFINITY® Communications System Generic 3 Feature Description, 555-230-204
- DEFINITY® Communications System Generic 3 Planning and Configuration, 555-230-601
- DEFINITY® Communications System Generic 2 and System 85 Equipment Room Floor Plans and Specifications, 555-104-603
- DEFINITY® Communications System Generic 1 and Generic 3 System Description and Specifications, 555-230-200
- DEFINITY® Communications System Generic 1 and Generic 3 Main Distribution Field Design, 555-230-630
- DEFINITY® Communications System Generic 1 and Generic 3 Installation and Test, 555-230-104
- DEFINITY® Communications System Generic 3 Version 4 Implementation, 555-230-655
- DEFINITY® Communications System Generic 1 and Generic 3i/s/vs Maintenance, 555-204-105
- DEFINITY® Communications System Generic 3r Maintenance, 555-230-105
- DEFINITY® AUDIX System Feature Descriptions, 585-300-205
- AT&T Network and Data Connectivity Reference, 555-025-201
- DEFINITY® Communications System Generic 3 Version 1.1 - Version 4 Upgrades and Additions, 555-230-107
- DEFINITY® Communications System Generic 3vs/s/i Version 1.1 - Version 4 Upgrades and Additions, 555-230-108
- DEFINITY® Communications System Generic 3r Version 1.1 - Version 4 Upgrades and Additions, 555-230-109
How to Order Documentation

In addition to this book, other description, installation and test, maintenance, and administration books are available. A complete list of the DEFINITY Generic 3 (G3) Version 4 books can be found in the Global Business Communications System Publications Catalog, 555-000-010.

Other DEFINITY® G3 documentation can be ordered directly from the AT&T Global Business Communications System Publications Fulfillment Center at 1-317-361-5353.

How to Comment on This Document

AT&T welcomes your feedback on this document. Please fill out the reader comment card found at the beginning of this manual and return it. Your comments are of great value and help us improve our documentation.

If the reader comment card is missing, fax your comments to 303-538-1741, and mention this document’s name and number, DEFINITY® Communications System Generic 3 System Description and Specifications 555-230-206.

Standards Compliance

The equipment presented in this document complies with the following standards (as appropriate):

- CCITT
- ECMA
- IPNS
- DPNS
- National ISDN-1
- National ISDN-2
- ISO-9000
- ANSI
- FCC Part 15 and Part 68
- IEC950
- EN55022
- EN50082

Contact your AT&T representative for more information.
International Requirements

For global use, the Generic 3 (G3) provides connectivity to lines and trunks and allows connection to analog Central Office (CO) trunks. The Generic 3 (G3) also provides connectivity to public network Central Office (CO) switches specific to the regulations of many countries. Other provisions include enhancements to the 24- and 32-channel Integrated Services Digital Network-Primary Rate Interface (ISDN-PRI) as well as polarity-reversal signaling on loop-start CO trunks. Refer to the document AT&T Network and Data Connectivity, 555-025-201. This document describes connectivity from G3 to trunks used in countries outside the United States.

Internal switch operations allow English, Spanish, French, Italian, and a user-defined-language for telephone displays. Visually impaired attendant service using English and Italian voice synthesis is also provided. Other enhancements include:

- Enhanced Distributed Communications System (EDCS) providing remote calling and called party restriction checking; administrable local and remote Direct Inward Dialing (DID) application of intercept treatment; display called-line status for an attendant; and intrusion from an attendant
- Multi-Frequency Compelled Release 2 (MFC-R2) Direct Inward Dialing (DID) and Direct Inward/Outward Dialing (DIOD) signaling
- Broadband dial tone detection and misoperation handling

Internal switch operations include administrable selection of terminal-display languages, country-specific tone plans and customizable tones within the selected tone plan. Other operations include country-specific transmission, conference-loss and tone-loss plans, country-specific ringing cadences, Periodic Pulse Metering (PPM) of 1 kHz or 16 kHz, and A-Law or Mu-Law companding.

Administrable selection of Integrated Services Digital Network (ISDN) and non-ISDN bit-oriented digital protocols, including analog line and trunk port impedances and gain and loss characteristics, is provided.

Protocol interfaces, such as Digital Signal Level 1 (DS1) (at 1.544 Mbps) and European Conference of Postal and Telecommunications rate 1 (CEPT1) (at 2.048 Mbps) are also provided. DS1/E1 ports can be administered to convert DS1 framing, signaling, line coding, and companding to that required on CEPT1 trunks, and vice-versa.
Electromagnetic Compatibility Standards

This product complies with and conforms to the following:

- EN50082-1, Normative Standard relating to Immunity
- FCC Parts 15 and 68
- Australia AS3548

NOTE:
The system conforms to Class A (industrial) equipment. Voice terminals meet Class B requirements.

Electromagnetic Immunity Standards

The system conforms to the following:

- Electromagnetic compatibility General Immunity Standard, part 1; residential, commercial, light industry, EN50082-1, CENELEC, 1991
- IEC 801-2 Issue 1 (1984) and Issue 2 (1992), Electrostatic discharge immunity requirements (EN55024, Part 2)
- IEC 801-3, Radiated radio frequency field immunity requirements (EN55024, Part 3)
- IEC 801-4, Electrical fast transient/burst immunity requirements (EN55024, Part 4)
European Union Standards

The “CE” (Conformite Europe’enne) mark affixed to the following DEFINITY® equipment indicates it conforms to the European Union Electromagnetic Compatibility Directive (89/336/EEC), the Low Voltage Directive (73/23/EEC), and the Telecommunication Terminal Equipment (TTE) Directive complying with I-CTR3 Basic Rate Interface (BRI) and I-CTR4 Primary Rate Interface (PRI).

AT&T Global Business Communications Systems declares that the DEFINITY® equipment specified in this document conforms to the European Union (EU) Directives per the following equipment:

- AC powered Multi-Carrier Cabinet (MCC) with 25 Hz ring generator
- AC powered Single-Carrier Cabinet (SCC) with 25 Hz ring generator
- AC powered Compact Single-Carrier Cabinet (CSCC) with 25 Hz ring generator
- Enhanced DC Power System
This document supports DEFINITY® Communications Systems Generic 3 Version 2 through Version 4 (G3V2 through G3V4 Release 3).

This chapter introduces the Generic 3 system at an overview level. Previous versions of the systems are described in DEFINITY® Communications System Generic 1 and Generic 3 System Description and Specifications, 555-230-200.

The four current models of G3 are: G3vs, G3s, G3i, and G3r. Any of these models (G3V2 and later versions) can be used in the United States or in other countries. G3r is distinguished from G3vs, G3s, and G3i by a different processor. G3r can be configured to handle more lines and trunks and have faster call throughput than G3i. G3i can handle more lines than G3s, and G3s can handle more lines than G3vs. Appendix A details the capacities of the different systems.

This chapter covers the following topics:

- "The DEFINITY System"
- "Time Division Multiplexing"
- "System Components and Configurations"
- "Architecture"
- "Cabinets"
- "Connections to the External Environment"
- "Duplication"
- "Administration"
- "Comparing System Versions"
- "Upgrades and Additions"
The DEFINITY System

The system is a digital switch that processes and routes voice communications (telephone calls) and data communications from one endpoint to another. See Figure 1-1. All endpoints are external to the system. The voice and data going to and from the endpoints enter and leave the system through “port circuits.” Because the switching is digital, the system makes high-speed connections between analog and digital trunks, data lines connected to host computers, data entry terminals and personal computers (PCs), and groups of terminals and/or computers.

The system converts all external analog signals to internal digital signals. Incoming digital signals are not converted. Inside the system, voice is always coded digitally. Outgoing digital signals from the system to analog trunks are converted to analog calls.

Figure 1-1. The System as a Digital Switch
Time Division Multiplexing

Multiplexing is used to interleave signals from multiple port circuits into one communication path. Time Division Multiplexing (TDM) is a switching technique that splits a large bandwidth (range of frequencies) in the frequency domain into many small time slots in the time domain. Each time slot carries a signal from one of the multiple port circuits. Two time slots are used in a two-party call. Each party transmits (talks) on one time slot and receives (listens) on another time slot.

Figure 1-2 shows the time slots generated in the system. Two system framing pulses frame 256 time slots on each of two TDM buses for a total of 512 time slots. 483 slots are used for calls. The other 29 slots carry tones, messages, and optional features such as Music-On-Hold.

---

**Time Slot Interchanger**

The time slot interchanger accepts input frames and produces output frames where the input time slots have been reordered. The time slot interchanger takes a slot from an input line and, according to an internal mapping table, switches that slot to an output line corresponding to the called number. The time slot interchanger also switches a slot from the called number to the line for the calling number, thus providing two-way communication.
System Components and Configurations

The basic component of the system is a Port Network (PN) consisting of port circuits connected to internal common buses to allow the circuits to communicate with each other.

Processor Port Network (PPN)

The required Processor Port Network (PPN) contains the Switch Processing Element (SPE). The SPE is a computer that operates the system, processes calls, and controls the Port Network. The PPN also contains the port circuits, as described above under “System Components.”

Expansion Port Network (EPN)

An Expansion Port Network (EPN) (optional) contains additional ports to increase the number of connections from the system to trunks and lines.

Center Stage Switch

A Center Stage Switch (CSS) (optional for three Port Networks or less in G3r) is the central interface between the PPN and the EPNs. A CSS consists of one or two Switch Nodes (SN). One SN can expand the system from one EPN to up to 15, and two SNs can expand the system to up to 21 EPNs in G3V2 and 43 EPNs in G3V3 and G3V4. A CSS can be used for one or two EPNs to plan for future expansion.

Main Components

[Figure 1-3] shows the components arranged in five main configurations of Port Networks (PNs) (the PPN and/or EPNs and CSSs):

1. Basic system consisting of a Processor Port Network (PPN) only
2. Directly connected systems consisting of two PNs (one PPN and one EPN) connected directly together
3. Directly connected systems consisting of three PNs (one PPN and two EPNs) connected directly together
4. CSS-connected systems in G3r consisting of up to 15 EPNs interconnected by one SN to the PPN
5. CSS-connected systems in G3r consisting of up to 21 EPNs interconnected by two SNs to the PPN, and up to 43 EPNs interconnected by three SNs to the PPN
Chapter 4, “Cabinet and Carrier Configurations”, describes different PPN, EPN, and CSS configurations.

Figure 1-3. Five Main Cabinet Configurations

1. Basic switch
2. Directly-connected system (PPN and 1 EPN)
3. Directly-connected system (PPN and 2 EPNS)
4. CSS-connected system (PPN, CSS, and up to 15 EPNs)
5. CSS-connected system (PPN, CSS, and up to 43 EPNs)
System Configurations

Figure 1-4 shows a directly connected system with an SPE in the PPN operating the system and processing voice calls and data calls.

The figure also shows the Port Network distributed throughout the PPN and two EPNs routing voice calls and data calls between external trunks and lines.
Figure 1-5 shows a CSS-connected system with the same functional components as a directly connected system except with the added CSS to route voice and data calls between external trunks and lines.

Figure 1-5. Functional Components — CSS-Connected System
Switch Processing Element (SPE)

The Switch Processing Element (SPE) processes calls as follows: when a device, such as a voice terminal, connected to the system goes off-hook or signals call initiation, the SPE receives an interrupt signal from the port circuit connected to the device. The SPE then collects the digits of the called number and sets up the switch to make a connection between the calling and called devices.

The SPE consists of the following control circuits connected by a processor bus:

- **Processor**: the G3i, G3s, and G3vs (V4) use an Intel 80386 processor operating at 16 MHz. The G3r (V4) is equipped with a reduced instruction set computer (RISC) operating at 33 MHz (UN331B processor described in chapter 2). The RISC allows greater call processing speed and capacity in G3r than in G3vs, G3s, and G3i.

- **Memory**: with one of the following capacities: in G3i, G3s, and G3vs, 7 Mbytes of flash read-only memory (ROM) and 4 Mbytes of Dynamic Random Access Memory (DRAM) in the processor, as described in TN786B Processor in Chapter 2). 4 Mbytes of DRAM on a card (CPP1 described in Chapter 2) attached to the processor. In G3r, 64 Mbytes of DRAM on two 32-Mbyte circuit packs.

In the G3r, the disk drive is a nonvolatile system bootstrap and translation storage device. The input/output (I/O) circuits act as interfaces between the SPE and the TDM and packet buses. The maintenance interface is used to connect the system to an administration terminal to monitor power failure, clock signals and temperature sensors.

Port Network (PN)

The Port Network (PN) consists of the following components:

- **TDM Bus**: runs internally throughout each PN and is terminated by resistors on each end. The TDM bus consists of two eight-bit parallel buses: TDM bus A and TDM bus B. These buses carry switched digitized voice and data signals and control signals between all port circuits and port circuits and the SPE. The port circuits place digitized voice and data signals on a TDM bus. TDM bus A and TDM bus B are normally active simultaneously. If one fails, the other takes over.

- **Packet Bus**: runs internally throughout each PN and is terminated by resistors on each end. The packet bus is an eight-bit parallel bus that carries two logical links that are the communications paths carrying control messages from the SPE, through port circuits, to endpoints such as terminals and adjuncts. The packet bus carries the following types of logical links between all port circuits:
  - Links connecting the SPE to the interface circuits (optional in G3i and G3s with packet control and required in G3r) and to the switch node interfaces (SNIs) in an SN when a CSS is present in G3r.

1-8  Issue 4  March 1996
— Integrated Services Digital Network-Basic Rate Interface (ISDN-BRI) and ISDN-Primary Rate Interface (ISDN-PRI) D-channel links
— X.25 links including Distributed Communications System (DCS) links; X.25 is only on the packet bus in G3r; while G3s and G3i can use the packet bus or TDM; while G3vs uses TDM only for X.25.

■ Port Circuits: form analog/digital interfaces between the PN and external trunks and devices providing links between these externals and the TDM bus and packet bus. Incoming analog signals are converted to Pulse-Code Modulated (PCM) digital signals and placed on the TDM bus by port circuits. Port circuits convert outgoing signals from PCM to analog for external analog devices. Because all port circuits are connected to the TDM bus and packet bus, any port can send a signal to any other port.

■ Interface Circuits: in the PPN and in each EPN are types of port circuits that terminate fiber optic cables connecting TDM buses and packet bus from the PPN cabinet to the TDM buses and packet bus of each EPN cabinet. The fiber optic cable also connects the CSS to the PPN and EPNs. These interface terminations and cabling connect all port circuits together in the system.

An Expansion Interface (EI) circuit pack terminates each end of a cable connecting the PPN to an EPN, each end of a cable connecting an EPN to another EPN, and the PN-end of a cable connected between a PN carrier and an SN carrier.

A Switch Node Interface (SNI) circuit pack terminates the SN carrier end of a cable connected between an SN carrier and a PN.

Chapter 5, “Cabling,” shows Expansion Interface (EI) and Switch Node Interface (SNI) circuit pack terminations of intercabinet cabling.

■ Service Circuits: provide connection to an external terminal to monitor, maintain, and troubleshoot the system. The service circuits also provide tone production and detection as well as call classification, modem pooling, recorded announcement, and speech synthesis.
Center Stage Switch — G3r Only

Figure 1-6 shows the Center Stage Switch (CSS) linking the PPN to EPNs via the Switch Node Interface circuit packs in a Switch Node (SN). SNs reduce the amount of interconnect cabling between the PPN and EPNs by acting as “hubs” to distribute the cabling to EPNs.

A CSS-connected system can be connected to one PN or up to 44 PNs. The system can consist of up to three SNs. The CSS can also consist of two SN carriers, four SN carriers, or six SN carriers in a critical reliability system. Refer to Chapter 4, “Cabinet and Carrier Configurations” for more information.

Each SN contains from one to 16 Switch Node Interface (SNI) circuit packs. Each SNI circuit pack can be connected by fiber optic cable to a PN or other SN. One SNI circuit pack is always connected to the PPN, and one is connected to each EPN. In a high reliability system (with duplicated processor), two SNI circuit packs are connected to the PPN, allowing up to 15 PNs to be connected to one SN and up to 22 PNs to be connected to two SNs, and up to 43 PNs to be connected to three SNs.
Architecture

The system architecture consists of two main parts:

- Operating system: the Oryx/Pecos real-time, multi-processing system. Oryx/Pecos supports the SPE.
- Applications layer consisting of three major subsystems:
  1. Call Processing: starts up and completes calls and manages voice and data in the system
  2. Maintenance: detects faults, recovers operations, and performs tests in the system
  3. System Management: controls the internal processes necessary to install, administer, and maintain the system

Logical interconnectivity between system components refers to the two kinds of logical links into the SPE:

1. System links for internal system control
2. Application links used by external applications such as adjuncts.

Chapter 6, "Architecture," describes the system architecture in more detail.

Cabinets

The system cabinets house all components (PPN, EPN, and CSS), including power supply equipment. A cabinet contains at least one carrier in an enclosed shelf with vertical slots to hold circuit packs. The circuit packs fit into connectors attached to the rear of the slots. Every connector is connected to signal buses and power supplies in a cabinet. Chapter 2, "Cabinets, Carriers, and Circuit Packs" describes the cabinets in more detail and Chapter 3, "Power and Fans" describes the power supplies in the cabinets.

There are three cabinet types:

1. Single-Carrier Cabinet consisting of one carrier.
2. Compact Single-Carrier Cabinet (G3vs only) consisting of a wall-mountable cabinet with one carrier.
3. Multi-Carrier Cabinet containing one to five carriers
Figure 1-7 shows the front of a single-carrier cabinet with the door closed.

Figure 1-7. Typical Single-Carrier Cabinet

Figure 1-8 shows a compact single-carrier cabinet with a hinge attaching it to a wall.

Figure 1-8. Typical Compact Single-Carrier Cabinet
Figure 1-9 shows the front of a Multi-Carrier Cabinet with the door closed.

Multi-Carrier Cabinets

There are three types of Multi-Carrier Cabinets:

1. **PPN Cabinet**: contains the SPE to perform call processing. The PPN also contains the ports, an interface to an EPN cabinet (optional), and an SN in a CSS-connected system (optional).

2. **EPN Cabinet**: contains additional ports, interfaces to the PPN cabinet and other EPN cabinets, the maintenance interface, and an SN in a CSS-connected system (optional).

3. **Auxiliary Cabinet**: contains equipment used for optional system-related hardware.
The following carriers can be installed in Multi-Carrier PPN and EPN cabinets:

- **Control carrier** (located only in the PPN cabinet) contains SPE circuit packs to perform call processing, maintenance, and administration. Unlike the G3r control carrier (also called “processor carrier”), the G3i control carriers also contain port circuit pack slots.

- **Duplicated control carrier** (optional and located only in the PPN cabinet) contains duplicated SPE circuit packs, maintenance, and administration identical to the control carrier. The G3r control carrier is used for duplication. Unlike the G3r control carrier, the G3i duplicated control carriers also contain port circuit pack slots. Only G3i and G3r support duplication.

- **Port carrier** (optional in G3 and located in the PPN cabinet and EPN cabinets) contains port, service, and tone/clock circuit packs.

- **Expansion control carrier** (located only in EPN cabinets) contains extra port circuit packs, tone-clock, maintenance interface, and expansion interface.

- **SN carrier** in G3r (optional and located in the PPN and/or EPN cabinets) contains switch node interface (SNI) circuit packs composing the CSS.

Chapter 2, "Cabinets, Carriers, and Circuit Packs," describes Multi-Carrier Cabinets, carriers, and circuit packs in the carriers.

### Single-Carrier Cabinets

Single-Carrier Cabinet stacks can be used as EPNs in G3. Chapter 2, "Cabinets, Carriers, and Circuit Packs," has descriptions of the cabinets and circuit packs. There are four types of Single-Carrier Cabinets:

1. **Basic Control Cabinet**: (located in the PPN only in G3s and G3i) contains a control complex that performs call processing, ports, and an interface to an optional duplicated control cabinet only in G3i. This cabinet is also called an “enhanced” control cabinet. Unlike the G3V1 basic control cabinet, it has a 386 processor instead of a 286 processor, flash-ROM instead of a tape drive, and 16 port circuit pack slots instead of 10.

2. **Duplicated Control Cabinet**: (optional and located only in the PPN in G3i) contains a duplicated control complex, ports, and an interface to an expansion control cabinet. This cabinet is also called an “enhanced” duplicated control cabinet. Unlike the G3V1 duplicated control cabinet, it has a 386 processor instead of a 286 processor, flash-ROM instead of a tape drive, and 16 port circuit pack slots instead of 10.

3. **Expansion Control Cabinet**: (optional and located only in an EPN in G3i and G3r) contains ports, tone-clock, interface to a port cabinet, and maintenance interface

4. **Port Cabinet**: (located in the PPN and in EPNs) contains ports and an interface to an Expansion Control Cabinet.
Compact Single-Carrier Cabinet — G3vs

The compact Single-Carrier Cabinet is available only as G3vs, can only be used as a PPN, and can be standard reliability only (no duplication). The carrier can be mounted on a tabletop or to a wall. The carrier contains dedicated and universal port slots with three dedicated control circuit packs and ten port slots. The carrier supports phantom power for a maximum of one attendant console and one emergency transfer panel.

This carrier does not support BRI, ASAI, packet bus, and Memory Expansion CPP1, and cannot be connected to other port carriers or cabinets because its TDM bus cannot be extended.


Connections to the External Environment

The system can be connected to trunks; communications paths that transmit voice and data signals between the system and a Central Office (CO) switch and/or other Private Branch Exchanges (PBXs). The system can also be connected to networks (public and private); a series of communications devices, such as terminals and computers interconnected to be shared.

Peripherals, such as digital data lines connected to data endpoints can also be connected to the system. This type of equipment is called Data Terminal Equipment (DTE). Data originates and/or terminates at DTE equipment. Other peripherals include terminals to administer and maintain the system and auxiliary equipment for features such as Loudspeaker Paging and Music-On-Hold. See Chapter 8, “Connections to Peripherals” and Chapter 7, “Connections to Trunks, Lines, and Networks,” for more information.
Figure 1-10 shows a typical G3 system consisting of the PPN cabinet and an EPN cabinet, connected to the external environment.

Figure 1-10. Typical Connections to External Environment
Duplication

Duplication is the extent a system’s hardware components are made redundant. Duplication minimizes single failure points that can interrupt call processing.

Three system duplication options are available:

1. Standard Reliability
2. High Reliability
3. Critical Reliability

As duplication increases, the maximum number of port carriers and consequent port circuit packs per cabinet decreases. Refer to Chapter 4, “Cabinet and Carrier Configurations” for more information.

Administration

A terminal connected to the control carrier in a Multi-Carrier Cabinet system or the control cabinet in a Single-Carrier Cabinet system is used to administer the system. Commands are entered at the terminal to access and display screens. The screens (forms) are used to list data and to add, change and remove system and voice terminal features. Screen 1-1 shows a typical administration form.

Screen 1-1. Typical Administration Form with Default Entries

System administration is detailed in the following documents:

# Comparing System Versions

Table 1-1 through Table 1-3 compare the system versions of G3.

## Table 1-1. Comparing System Versions

<table>
<thead>
<tr>
<th>System</th>
<th>Processor</th>
<th>PPN</th>
<th>Maximum EPNs</th>
<th>Can be Directly Connected</th>
<th>Can be CSS-Connected</th>
</tr>
</thead>
<tbody>
<tr>
<td>G3s/vs</td>
<td>80386</td>
<td>1</td>
<td>0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>G3i</td>
<td>80386</td>
<td>1</td>
<td>2</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>G3rV2</td>
<td>RISC</td>
<td>1</td>
<td>21</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>G3rV3,V4</td>
<td>RISC</td>
<td>1</td>
<td>43</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

## Table 1-2. Comparing Carriers in Multi-Carrier Cabinets

<table>
<thead>
<tr>
<th>Carrier</th>
<th>G3i</th>
<th>G3r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>PPN cabinet</td>
<td>PPN cabinet</td>
</tr>
<tr>
<td>Duplicated control</td>
<td>PPN cabinet</td>
<td>PPN cabinet</td>
</tr>
<tr>
<td>Port</td>
<td>PPN and EPN cabinets</td>
<td>PPN and EPN cabinets</td>
</tr>
<tr>
<td>Expansion</td>
<td>EPN</td>
<td>EPN</td>
</tr>
<tr>
<td>Switch Node</td>
<td>None</td>
<td>PPN and EPN cabinets</td>
</tr>
</tbody>
</table>

## Table 1-3. Comparing Single-Carrier Cabinets

<table>
<thead>
<tr>
<th>Cabinet</th>
<th>G3vs</th>
<th>G3s</th>
<th>G3i</th>
<th>G3r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic control</td>
<td>NA</td>
<td>PPN</td>
<td>PPN</td>
<td>NA</td>
</tr>
<tr>
<td>Duplicated control</td>
<td>NA</td>
<td>NA</td>
<td>PPN</td>
<td>NA</td>
</tr>
<tr>
<td>Compact control</td>
<td>PPN</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Port</td>
<td>NA</td>
<td>NA</td>
<td>PPN and EPN</td>
<td>EPN</td>
</tr>
<tr>
<td>Expansion control</td>
<td>NA</td>
<td>NA</td>
<td>EPN</td>
<td>EPN</td>
</tr>
</tbody>
</table>
Upgrades and Additions

An upgrade changes the hardware and software of a previously installed system to the hardware and software of a later system version. An upgrade is performed when call processing demands an increased system size, an enhanced feature set is needed, or other changes in customer requirements are needed.

An addition consists of adding voice terminals, circuit packs, cabinets, or software features to an existing system without upgrading the version of the system. The system design makes additions easy and aids a customer in planning and managing system growth.

Refer to DEFINITY® Communications System Generic 3 Version 1.1 - Version 4 Upgrades and Additions, 555-230-107, for more information on upgrades and additions.
This chapter describes the Generic 3 (G3) cabinets, carriers, and circuit packs, their functions, physical specifications, and interconnections in the following order:

- “Multi-Carrier Cabinets”
- “Carriers in Multi-Carrier Cabinets”
- “Single-Carrier Cabinets”
- “Carriers in Single-Carrier Cabinets”
- “Circuit Packs and Related Hardware”

To determine required types and numbers of cabinets, carriers, circuit packs, or adjuncts before installation, refer to DEFINITY® Communications System Generic 3 Planning and Configuration, 555-230-601, or contact your AT&T representative.

**Multi-Carrier Cabinets**

This section describes the Processor Port Network (PPN), Expansion Port Network (EPN), and Auxiliary cabinets.

 wages

**NOTE:**
The G3s and G3vs do not support Multi-Carrier Cabinet configurations or duplication. The G3s only supports a Single-Carrier Cabinet without duplication. The G3vs only supports a compact Single-Carrier Cabinet without duplication.
Figure 2-1 shows the front of a typical Multi-Carrier Cabinet. A Multi-Carrier Cabinet can be used as a PPN cabinet or an EPN cabinet. The cabinet positions are:

- Carriers — “A” through “E”
- Fan Unit — “F”
- Power Distribution Unit — “G”

Figure 2-1. Typical Multi-Carrier Cabinet
Power Distribution

An AC or DC power distribution unit in the bottom (G position) of the cabinet distributes the main power feed to the cabinet components.

An optional battery charger and batteries are available to back up the cabinet power if external AC power fails. The fan unit in the middle of the cabinet cools the carriers. [Chapter 3, “Power and Fans,” describes external power sources, power distribution units, and the fan unit in Multi-Carrier Cabinets.

For more information about the electrical requirements of the installation site, refer to DEFINITY® Communications System Generic 3 Planning and Configuration, 555-230-601.

Cabinet Features

Doors on the front and rear of the cabinet protect the internal equipment and allow easy access. The front cabinet door is secured by screw-type latches located on the left side. The two doors at the rear of the cabinet are secured by screw-type latches located in the middle of each door. Slots at the top and bottom of the cabinet front and rear are provided for air circulation.

Each cabinet is equipped with casters. When a cabinet is in place, leveling screws keep it from rolling. Each corner of a cabinet can be bolted to the floor, if required.

AUX Connector Capacity

The AUX (auxiliary) connector is located on the rear of the Control Carrier. See Figure 2-6 on page 2-8.

Up to three Attendant Consoles can be powered by the AUX connector in the “A” position in G3s, G3i, and G3r Control Carriers. Only one Attendant Console can be powered from the “A” position in G3vs Control Carriers.

Up to seven Emergency Transfer Panels can be powered by the AUX connector in the “A” position in G3s, G3i, and G3r Control Carriers. Only one Emergency Transfer Panel can be connected in G3vs Control Carriers.
Processor Port Network (PPN) Cabinet (J58890A)

Figure 2-2 shows the PPN cabinet containing the following carriers, including their J-identification numbers and quantities:

- Port Carrier (J58890BB) — One to four
- Control Carrier (J58890AH) in G3i — One in all systems
- Duplicated Control Carrier (J58890AJ) G3i — One in high or critical reliability system
- Control Carrier (J58890AP) in G3r — One in all systems and two in high reliability and critical reliability systems
- Switch Node (SN) carrier (J58890SA) in G3r — One (standard and high reliability) or two (critical reliability) with a Center Stage Switch (CSS)

![Diagram of Processor Port Network (PPN) Cabinet (J58890A)](image-url)
Expansion Port Network (EPN) Cabinet (J58890A)

Figure 2-3 shows an EPN cabinet containing the following carriers (J-identification numbers and quantities are included):

- Port Carrier (J58890BB) — One to four
- Expansion Control Carrier (J58890AF) — One
- Switch Node (SN) Carrier (J58890SA) in Center Stage Switch (CSS)-connected G3r systems only: zero, one, or two when required

![Diagram of EPN Cabinet]

Figure 2-3. Typical Multi-Carrier EPN Cabinet (J58890A)
Auxiliary Cabinet (J58886N)

Figure 2-4 shows an Auxiliary Cabinet containing hardware used to install optional equipment. The cabinet allows carrier, rack (width: 23 in. (58.4 cm)), and panel types of mountings. An auxiliary cabinet contains the following:

- Fuse Panel (J58889AB); to distribute -48 VDC to fused cabinet circuits
- Power receptacle strip; provides switched and non-switched 120 VAC receptacles
- DC connector block; required when the auxiliary cabinet is powered by an external DC source, or an AC to DC power supply that converts AC power provided by the AC power strip switched-outlet to the required DC

Figure 2-4. Typical Multi-Carrier Auxiliary Cabinet (J58886N)
Carriers in Multi-Carrier Cabinets

This section describes the following types of carriers that can be installed in Multi-Carrier Cabinets:

- Control Carrier (J58890AH) in G3i PPN cabinet
- Duplicated Control Carrier (J58890AJ) in G3i PPN cabinet
- Control Carrier (J58890AP (called “processor carrier”) in G3r PPN cabinet
- Port Carrier (J58890BB) in PPN cabinet and EPN cabinets
- Expansion Control Carrier (J58890AF) in EPN cabinets in G3i and G3r
- Switch Node Carrier (J58890SA) in G3r PPN and EPN cabinets

There are two types of circuit pack slots in the carriers:

1. **Port**: colored purple and can accept any purple-labeled circuit pack
2. **Control**: colored white and can accept only a circuit pack assigned to that slot

Each port slot in a port carrier, an expansion control carrier, and a control carrier in G3i is connected to a 50-pin connector on the carrier’s rear panel. A cable is routed from the connector to the Main Distribution Frame.

The following apparatus blank faceplates (specified with widths) cover unused circuit pack slots in the carriers to maintain proper air flow:

- Z100A (0.75 inches) (1.9 cm)
- Z100B (1.25 inches) (3.2 cm)
- Z100C (0.5 inches) (1.27 cm)
- Z100D (0.25 inches) (64 cm)

Throughout this section, the power units shown in the front views of the carriers are provided as examples only. See the circuit pack tables for lists of optional power units.

**Control Carrier (J58890AH) — G3i**

The control carrier has dedicated white-colored circuit pack slots that always contain specific control circuit packs. Purple-colored slots can contain any port circuit packs (see Figure 2-5 and Table 2-1).

AC or DC power units, located at each end of the carrier, supply power to the carrier. In G3i, the control carrier always contains the CPP1 Expansion Memory circuit pack.
Figure 2-5. G3i Control Carrier (J58890AH) — Front

Figure 2-6 and Table 2-1 describe the connectors on the rear of the control carrier.

Figure 2-6. Control Carrier (J58890AH) — Rear
The duplicated control carrier has dedicated white-colored circuit pack slots that always contain specific control circuit packs. The purple-colored circuit pack slots can be equipped with any port circuit packs. See Figure 2-7.

AC or DC power units, located at each end of the carrier, supply power to the carrier. The carrier is equipped with a Duplication Interface circuit pack in Slot 1. The duplicated control carrier contains the CPP1 Memory circuit pack. The memory cartridge is contained in the Network Control circuit pack.
Figure 2-7. G3i Duplicated Control Carrier (J58890AJ) — Front

Figure 2-8 and Table 2-2 describe the connectors on the rear panel of the duplicated control carrier.

Figure 2-8. G3i Duplicated Control Carrier (J58890AJ) — Rear
Control Carrier (J58890AP) — G3r

Figure 2-9 shows the Control Carrier (also called Processor Carrier) and its circuit packs. The control carrier contains only dedicated slots used for control circuit packs that compose the Switch Processing Element (SPE). It does not contain port circuit pack slots.

AC or DC power units, located at each end of the carrier, supply power to the carrier. The control carrier always contains two Memory circuit packs and one Packet Interface circuit pack.
Figure 2-10 and Table 2-3 describe the connectors on the control carrier rear panel.

Table 2-3. Control Carrier (J58890AP) Rear Connectors

<table>
<thead>
<tr>
<th>Connector</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLOCK (Stratum 3 clock)</td>
<td>Provides interface to a Stratum 3 Clock for digital frame timing. This is not a time-of-day clock</td>
</tr>
<tr>
<td>AUX (auxiliary)</td>
<td>Provides interface for customer alarms, attendant console power, or emergency power transfer panels</td>
</tr>
<tr>
<td>TERMINAL, Active</td>
<td>Connects an administration terminal to the System Access and Maintenance circuit pack in the control carrier</td>
</tr>
<tr>
<td>TERMINAL, Standby</td>
<td>Used only in duplicated processors to connect an administration terminal to the stand-by control carrier</td>
</tr>
<tr>
<td>P1</td>
<td>Provides position indicator of control carrier, power to fans, and access to alarm and control circuits</td>
</tr>
<tr>
<td>P2</td>
<td>Provides control signals to the control carrier</td>
</tr>
</tbody>
</table>

Figure 2-10. G3r Control Carrier (J58890AP) — Rear
A current limiter board (CFY1B) is plugged into the backplane of the control carrier located in the A position only. The board supplies emergency transfer logic and current-limited power, including: -48 VDC to fans and ring generator, 5 VDC to trip main circuit breaker in an over-temperature condition, and to operate the ringing transfer relay.

Two terminators on the backplane terminate each end of the processor expansion bus.

### Port Carrier (J58890BB)

Figure 2-11 shows the port carrier and the circuit packs in its port slots. A port carrier contains:

- Port slot locations 1 to 20 for the port circuit packs. Slot 1 contains an optional tone-clock circuit pack used for port carriers in the “B” position of an EPN cabinet in critical reliability systems. Slot 2 contains an optional Expansion Interface (EI) circuit pack.
- Power unit-service slots in which power unit circuit packs or maintenance circuit packs can be installed.
- AC or DC power units located at each end of the carrier.

**Figure 2-11. Port Carrier (J58890BB) — Front**
Figure 2-12 and Table 2-4 describe the connectors on the port carrier rear panel.

<table>
<thead>
<tr>
<th>Connector</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>B01 to B20</td>
<td>Ports interfacing between the circuit pack slots and the Main Distribution Frame</td>
</tr>
<tr>
<td>P1</td>
<td>Provides position indicator of port carrier, ringing voltage input to carrier, and access to alarm and control circuits</td>
</tr>
</tbody>
</table>

Expansion Control Carrier (J58890AF)

Figure 2-13 shows the Expansion Control Carrier and the port circuit packs. The carrier contains an Expansion Interface (EI) circuit pack in port slot 1 that is used in a fiber optic cabling path to another cabinet or the CSS in the same cabinet. The carrier also contains port slots 3 to 19 as well as the AC or DC power units located at each end of the carrier. The Tone-Clock and Maintenance circuit packs are also shown.
Figure 2-13. Expansion Control Carrier (J58890AF) — Front

Figure 2-14 and Table 2-5 describe the connectors on the expansion control carrier rear panel.
A current limiter board (CFY1B) is plugged into the backplane of the control carrier located in the A position only. The board supplies emergency transfer logic and current-limited power, including: -48 VDC to fans and ring generator and 5 VDC to trip main circuit breaker in an over-temperature condition and to operate the ringing transfer relay.

<table>
<thead>
<tr>
<th>Connector</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01</td>
<td>Provides fiber optic cable interface between Expansion Interface (EI) circuit pack in Slot 1 and EI circuit pack in a port carrier, control carrier (G3i) or a TN573 in an SN carrier, or for a DS1C</td>
</tr>
<tr>
<td>A02 to A19</td>
<td>Provides interfaces between port circuit packs and the Main Distribution Frame; an optional neon power unit can be in Slots 18 and 19</td>
</tr>
<tr>
<td>AUX</td>
<td>Provides interface for customer alarms, attendant console power, or emergency power transfer panels</td>
</tr>
<tr>
<td>TERM</td>
<td>Connects administration terminal to the maintenance circuit pack in an EPN cabinet</td>
</tr>
<tr>
<td>P1</td>
<td>Provides power to fans</td>
</tr>
<tr>
<td>P2</td>
<td>Connects ringing voltage from the ring generator to the carrier and produces control signals</td>
</tr>
</tbody>
</table>

Table 2-5. Expansion Control Carrier (J58890AF) Rear Connectors
Switch Node (SN) Carrier (J58890SA) — G3r

Figure 2-15 shows a typical Switch Node carrier and the port circuit pack slots. AC or DC power units, located at each end of the carrier, supply power to the carrier.

The carrier contains a Switch Node clock and the Switch Node Interface (SNI) circuit packs composing the CSS. A carrier can contain up to 16 SNI circuit packs; a DS1 Converter circuit pack and an Expansion Interface circuit pack; or two DS1 Converter circuit packs.

Figure 2-15. SN Carrier (J58890SA) — Front

Figure 2-16 and Table 2-6 describe the connectors on the rear panel.

Figure 2-16. SN Carrier (J58890SA) — Rear
This section describes the single-carrier cabinets:

- **Basic Control Cabinet (J58890L)** — G3s and G3i
- **Duplicated Control Cabinet (J58890M)** — G3i
- **Expansion Control Cabinet (J58890N)** — G3i and G3r
- **Port Cabinet (J58890H)** — G3s, G3i, and G3r
- **Compact Control Cabinet (J58890S)** — G3vs

**NOTE:**
The G3s only supports the PPN Single-Carrier Cabinet stack (4 cabinets) and does not support duplication or an EPN stack.

**CAUTION:**
*Slots in the cabinet are provided for air circulation. Do not place materials within six inches (15.2 cm) of the front or rear of the cabinet. Improper airflow can cause overheating of internal components.*
A maximum of four Single-Carrier Cabinets can be stacked on top of each other. See Figure 2-17 and Figure 2-18. Each cabinet has vertical slots to hold circuit packs. A blank faceplate covers each unused slot.

Each stack of Single-Carrier Cabinets requires at least one basic control cabinet or one expansion control cabinet on the bottom in G3s and G3i and one expansion control cabinet on the bottom in G3r. In these configurations, the maximum number of port cabinets per stack is three.

The positions of the stacked cabinets are labeled “A” through “D.” The position of the basic control cabinet or expansion control cabinet is always labeled “A.” Additional port cabinet positions are labeled “B,” “C,” and “D,” sequentially, as required.

A screw-type latch, located below the identification stripe, secures the front door to the cabinet. The cabinet can be secured to the floor (required for earthquake protection), using adapter brackets.

Cabinet clips in the front of the cabinets connect the cabinets together. At the rear, a ground plate connected between cabinets provides ground integrity. Chapter 3, “Power and Fans,” describes the power sources used in Single-Carrier Cabinets.
Figure 2-17. Single-Carrier Cabinet Stack — G3s and G3i
Figure 2-18. Single-Carrier Cabinet EPN Stack — G3
Dimensions and Weights

Table 2-7 lists Single-Carrier Cabinet dimensions and average weights.

Table 2-7. Single-Carrier Cabinet Dimensions and Weights

<table>
<thead>
<tr>
<th>Cabinet Type</th>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (basic and duplicated), Port and Expansion</td>
<td>20 in. H x 27 in. W x 22 in. D (51 cm H x 69 cm W x 56 cm D)</td>
<td>125 pounds (56 kg)</td>
</tr>
</tbody>
</table>

Heat Dissipation

The average heat dissipation of one Single-Carrier Cabinet is 1700 BTUs (438 gram-calories) per hour (including terminals). A fully-loaded stack of four cabinets dissipates about 5700 BTUs (1436 gram-calories) per hour (including terminals).

Carriers in Single-Carrier Cabinets

Two types of circuit pack slots are in Single-Carrier Cabinets:

- **Port**: colored purple and can accept any purple-labeled (not white-labeled) circuit pack
- **Dedicated**: colored white and can accept only a circuit pack assigned to that slot

The following apparatus blank faceplates (specified with widths) are used:

- 158J (.75 inches) (1.9 cm) covers any unused slot.
- 158C (.50 inches) (1.27 cm) used in DEFINITY® AUDIX™ R3 and DEFINITY® LAN Gateway

Basic Control Cabinet (J58980L) — G3s and G3i

Figure 2-19 shows a basic control cabinet containing dedicated white-colored circuit pack slots that house specific control circuit packs. Purple-colored slots can be equipped with any port circuit packs.

This cabinet is also called an “enhanced” control cabinet because, unlike the G3V1 basic control cabinet, it has an 80386 processor instead of an 80286.
processor, and flash-ROM instead of a tape drive, and 16 port slots instead of 10.

An AC or DC power supply, located at the right side of the cabinet, supplies power to the cabinet.

---

**Figure 2-19. G3s and G3i Basic Control Cabinet (J58890L) — Front**

**Figure 2-20 and Table 2-8** describe connectors on control cabinet rear panel.

---

**Figure 2-20. G3s and G3i Basic Control Cabinet (J58890L) — Rear**
Table 2-8. Basic Control Cabinet (J58890L) Rear Connectors

<table>
<thead>
<tr>
<th>Connector</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01 to A16</td>
<td>Provides interfaces between port circuit packs and the Main Distribution Frame or a cable access panel</td>
</tr>
<tr>
<td>AUX (auxiliary)</td>
<td>Provides interface for customer alarms, attendant console power, or emergency power transfer panels</td>
</tr>
<tr>
<td>PI (Processor Interface)</td>
<td>Connects directly to the Processor Interface circuit pack. Used only in AC standard reliability systems</td>
</tr>
<tr>
<td>DCE (Digital Communications Equipment)</td>
<td>Connects the processor to Call Detail Recording (CDR) equipment</td>
</tr>
<tr>
<td>TERM (terminal)</td>
<td>Connects an administration terminal to the maintenance circuit pack in standard reliability systems. Can be used to access a standby Switch Processing Element (SPE)</td>
</tr>
<tr>
<td>DOT (Duplication Option Terminal)</td>
<td>Used in high reliability and critical reliability systems to connect an administration terminal to the duplication interface slot</td>
</tr>
</tbody>
</table>

Duplicated Control Cabinet (J58890M) — G3i

Figure 2-21 shows a duplicated control cabinet. The cabinet contains dedicated white-colored circuit pack slots that are always equipped with specific control circuit packs. The purple-colored circuit pack slots can be equipped with any port circuit packs.

This cabinet is also called an “enhanced” duplicated control cabinet. Unlike the G3V1 duplicated control cabinet, it has a 386 processor instead of a 286 processor, and flash-ROM instead of a tape drive.

An AC or DC power supply, located at right side of the cabinet, supplies power to the cabinet. The cabinet is equipped with a duplication interface circuit pack in slot DUPN INTFC.
Figure 2-21. G3i Duplicated Control Cabinet (J58890M) — Front

Figure 2-22 and Table 2-9 describe the connectors on the rear panel.

Figure 2-22. G3i Duplicated Control Cabinet (J58890M) — Rear
The Expansion Control Cabinet is optional and is located only in an EPN in G3i and G3r. This cabinet contains port circuit packs, Tone-Clock circuit packs, Maintenance circuit pack, and provide an interface to a port cabinet.

Figure 2-23 shows an expansion control cabinet. In an EPN stack of cabinets, an expansion control cabinet is the first cabinet in a stack of Single-Carrier Cabinets. The expansion control cabinet contains optional port circuit packs in port slots 2 to 17 (see Table 2-10).

The AC or DC power supply, located at the right side of the cabinet, supplies power to the cabinet.

---

**Expansion Control Cabinet (J58890N)**

The Expansion Control Cabinet is optional and is located only in an EPN in G3i and G3r. This cabinet contains port circuit packs, Tone-Clock circuit packs, Maintenance circuit pack, and provide an interface to a port cabinet.

Figure 2-23 shows an expansion control cabinet. In an EPN stack of cabinets, an expansion control cabinet is the first cabinet in a stack of Single-Carrier Cabinets. The expansion control cabinet contains optional port circuit packs in port slots 2 to 17 (see Table 2-10).

The AC or DC power supply, located at the right side of the cabinet, supplies power to the cabinet.

---

**Table 2-9. G3i Duplicated Control Cabinet (J58890M) Rear Connectors**

<table>
<thead>
<tr>
<th>Connector</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>B01 to B16</td>
<td>Provide interfaces between port circuit packs and the Main Distribution Frame or a cable access panel (if provided)</td>
</tr>
<tr>
<td>TERM (terminal)</td>
<td>Connects an administration terminal to the processor in the duplicated control cabinet if the duplication interface circuit pack fails in the control carrier</td>
</tr>
</tbody>
</table>

---

**Figure 2-23. G3i and G3r Expansion Control Cabinet (J58890N) — Front**
Figure 2-24 and Table 2-10 describe the connectors on the Expansion Control Cabinet rear panel.

![Figure 2-24. G3i and G3r Expansion Control Cabinet (J58890N) — Rear](image)

<table>
<thead>
<tr>
<th>Connector</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01</td>
<td>Fiber optic cable interface between an Expansion Interface (EI) circuit pack in Slot 1 and an EI circuit pack in another Port Network (PN) or Switch Node Interface circuit pack in a Switch Node carrier (G3r only). Or to interface to a DS1 Converter circuit pack in Slot 2 for G3r only.</td>
</tr>
<tr>
<td>A02 to A17</td>
<td>Ports providing interfaces between circuit packs and the Main Distribution Frame</td>
</tr>
<tr>
<td>AUX (auxiliary)</td>
<td>Provides interface for customer alarms, attendant console power, or emergency power transfer panels</td>
</tr>
<tr>
<td>TERM (terminal)</td>
<td>Connects administration terminal to the Maintenance circuit pack</td>
</tr>
</tbody>
</table>
**Port Cabinet (J58890H)**

The Port cabinet is located in the PPN and in EPNs. This cabinet contains ports and an interface to an expansion control cabinet.

Figure 2-25 shows a port cabinet containing a port carrier. The cabinet contains optional port circuit packs in port Slots 1 to 18 (see Table 2-11) and any of the following circuit packs if required: tone-clock in Slot 1, Expansion Interface in Slot 2, and a neon power unit in Slots 17 and 18. The AC or DC power supply, located at the right side of the cabinet, supplies power to the cabinet.

Figure 2-26 and Table 2-11 describe the connectors on the rear panel.

---

**Figure 2-25. Port Cabinet (J58890H) — Front**

**Figure 2-26. Port Cabinet (J58890H) — Rear**
Figure 2-27 shows the compact Single-Carrier Cabinet containing three dedicated white-colored circuit pack slots always equipped with specific control circuit packs:

- **PROCR** slot containing the TN786B processor
- **NET CONT** slot containing the TN777B network control
- **PROC INTFC** and **TONE DET/GEN** slot containing the TN765 Processor Interface or the TN756 Tone Generator/Detector or TN2182 Tone-Clock. When both TN765 and TN756 or TN2182 are used, the TN765 or TN2182 is placed in port Slot 2.

The compact Single-Carrier Cabinet can contain optional port circuit packs in Slots 1 to 10. An AC power supply, located at the top of the cabinet, supplies power to the cabinet.
Figure 2-27. G3vs Compact Single-Carrier Cabinet (J58890S) — Front
This section describes the circuit packs and related hardware installed in slots in Multi-Carrier Cabinets and Single-Carrier Cabinets. The circuit packs are listed by apparatus code in Table 2-12 on page 2-34. Following the table, the circuit packs are described in alphabetical order.

All circuit packs are approximately 8 x 13 inches (20 x 33 cm). The following connectors are attached to one end of a circuit pack: 200-pin connector to a “TN”-labeled circuit pack and a 300-pin connector to a “UN”-labeled circuit pack. Faceplates on the circuit packs are sized to fill the width of a slot, typically .75 inches (1.9 cm). A color code on each faceplate identifies the circuit type.

Each circuit pack faceplate has a standard pattern of three LEDs to indicate the following conditions:

- Red indicates a fault condition
- Green indicates a test condition
- Yellow indicates a busy condition

A special grounding latch on each circuit pack protects it from electrostatic discharge during installation.

⚠️ WARNING:
*An electrostatic discharge wrist strap must be worn when installing a circuit pack in a cabinet. A jack is provided on each cabinet for this purpose.*

### Types of Circuit Packs

Four types of circuit packs can be installed in carriers:

1. *Port Circuit Packs*: provide links between analog and digital lines, trunks, networks, external communications equipment, and the TDM bus and packet bus. These circuit packs can be installed in any purple-colored port slot.

2. *Control Circuit Packs*: include processor, memory, network control, disk control, tape control, protocol interfaces, duplication, and maintenance. These circuit packs are installed in dedicated white-colored slots in the control carrier and do not function in any other slots.

3. *Service Circuit Packs*: produce and detect tones, synthesize speech, classify calls, record announcements, and allow administration and troubleshooting access.

4. *Power Unit Circuit Packs*: supply DC voltages to the port, control, and service circuit packs in the carriers and single-carrier cabinets. These circuit packs are installed in indicated white-colored slots in all carriers and in Single-Carrier Cabinets.
Port Circuit Packs

Figure 2-28 shows that all port circuit packs have the following common components:

- **Bus Buffers**
- **Sanity and Control Interface (SAKI)**
- **Microprocessor with external Random Access Memory (RAM)**
- **Network Processing Elements (NPEs)** or Switch Conferencing for TDM bus in Concentration Highway (SCOTCH) NPE

---

**Figure 2-28. Common Components of Port Circuit Packs**
Bus Buffers

The bus buffers are the digital interface between the TDM bus wires on the backplane and the circuitry on the circuit pack. They receive or transmit on either of the two 8-bit TDM buses.

SAKI

The Sanity and Control Interface (SAKI) is the circuit pack interface to the TDM bus. It receives control channel information from the TDM bus and sends the information to the microprocessor. Conversely, the microprocessor sends control channel information to the SAKI, which sends it to the TDM bus. The SAKI also controls status indicator LEDs on the circuit pack, initiates start-up procedures when power is turned on, checks the circuit pack’s microprocessor for sanity, and re-initializes the microprocessor in case of problems.

If a problem is detected, the SAKI takes the defective circuit pack out of service either on command from the SPE or when the SAKI determines that interference is present in the control time slots on the circuit pack.

Microprocessor with External RAM

The microprocessor performs all low-level functions such as scanning for changes and relay operations. In general, the microprocessor carries out commands received from the SPE and reports status changes to the SPE. Some port circuit packs contain more than one microprocessor.

The external RAM stores control channel information and port-related information.

Network Processing Element (NPE)

The Network Processing Element (NPE), or a high-density SCOTCH NPE, performs conference and gain-adjustment functions. An NPE (under control from the microprocessor) can connect a port circuit to any TDM bus time slot. Each port circuit pack has from one to six NPEs or a high-density SCOTCH NPE.
**Table 2-12. Circuit Packs in DEFINITY**

<table>
<thead>
<tr>
<th>Apparatus Code</th>
<th>Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>120A</td>
<td>Integrated CSU Module</td>
<td>Adjunct</td>
</tr>
<tr>
<td>122A</td>
<td>Music-on-Hold Interface</td>
<td>Adjunct</td>
</tr>
<tr>
<td>631DA1</td>
<td>Power Unit (AC)</td>
<td>Power</td>
</tr>
<tr>
<td>631DB1</td>
<td>Power Unit (AC)</td>
<td>Power</td>
</tr>
<tr>
<td>644A1</td>
<td>Power Unit (DC)</td>
<td>Power</td>
</tr>
<tr>
<td>645B1</td>
<td>Power Unit (DC)</td>
<td>Power</td>
</tr>
<tr>
<td>676B</td>
<td>Power Supply (DC)</td>
<td>Power</td>
</tr>
<tr>
<td>982LS</td>
<td>Current Limiter</td>
<td>Power</td>
</tr>
<tr>
<td>CFY1B</td>
<td>Current Limiter</td>
<td>Power</td>
</tr>
<tr>
<td>CPP1</td>
<td>Memory (Expansion)</td>
<td>Control</td>
</tr>
<tr>
<td>ED-1E546</td>
<td>CallVisor ASAI over the DEFINITY LAN</td>
<td>Port Assembly</td>
</tr>
<tr>
<td>TN417</td>
<td>Auxiliary Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN419B</td>
<td>Tone-Clock</td>
<td>Control</td>
</tr>
<tr>
<td>TN420B/C</td>
<td>Tone Detector</td>
<td>Service</td>
</tr>
<tr>
<td>TN429</td>
<td>DIOD Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN433</td>
<td>Speech Synthesizer</td>
<td>Service</td>
</tr>
<tr>
<td>TN436B</td>
<td>DID Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN437</td>
<td>Tie Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN438B</td>
<td>CO Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN439</td>
<td>Tie Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN447</td>
<td>CO Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN457</td>
<td>Speech Synthesizer</td>
<td>Service</td>
</tr>
<tr>
<td>TN458</td>
<td>Tie Trunk</td>
<td>Port</td>
</tr>
</tbody>
</table>
## Table 2-12. Circuit Packs in DEFINITY

<table>
<thead>
<tr>
<th>Apparatus Code</th>
<th>Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN459B</td>
<td>DID Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN464C/D/E/F</td>
<td>DS1 (T1/E1) Interface</td>
<td>Port</td>
</tr>
<tr>
<td>TN465/B/C</td>
<td>CO Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN467</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN468B</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN479</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN497</td>
<td>Tie Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN553</td>
<td>Packet Data Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN556/B</td>
<td>ISDN BRI 4-Wire S/T-NT Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN570/B</td>
<td>Expansion Interface (EI)</td>
<td>Port</td>
</tr>
<tr>
<td>TN572</td>
<td>SN Clock</td>
<td>Control</td>
</tr>
<tr>
<td>TN573</td>
<td>SN Interface</td>
<td>Control</td>
</tr>
<tr>
<td>TN574</td>
<td>DS1 Converter</td>
<td>Port</td>
</tr>
<tr>
<td>TN577</td>
<td>Packet Gateway</td>
<td>Port</td>
</tr>
<tr>
<td>TN722B</td>
<td>DS1 Tie Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN725B</td>
<td>Speech Synthesizer</td>
<td>Service</td>
</tr>
<tr>
<td>TN726/B</td>
<td>Data Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN735</td>
<td>MET Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN742</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN744/B/C</td>
<td>Call Classifier</td>
<td>Service</td>
</tr>
<tr>
<td>TN746/B</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN747B</td>
<td>CO Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN748/B/C/D</td>
<td>Tone Detector</td>
<td>Service</td>
</tr>
<tr>
<td>TN750/B/C</td>
<td>Announcement</td>
<td>Service</td>
</tr>
<tr>
<td>TN753</td>
<td>DID Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN754/B</td>
<td>Digital Line (4-Wire)</td>
<td>Port</td>
</tr>
<tr>
<td>TN755B</td>
<td>Power Unit, Neon</td>
<td>Power</td>
</tr>
<tr>
<td>TN756</td>
<td>Tone Detector</td>
<td>Service</td>
</tr>
<tr>
<td>TN758</td>
<td>Pooled Modem</td>
<td>Port</td>
</tr>
<tr>
<td>TN760B/C/D</td>
<td>Tie Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN762B</td>
<td>Hybrid Line</td>
<td>Port</td>
</tr>
<tr>
<td>Apparatus Code</td>
<td>Name</td>
<td>Type</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>TN763B/C/D</td>
<td>Auxiliary Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN765</td>
<td>Processor Interface</td>
<td>Control</td>
</tr>
<tr>
<td>TN767B/C/D/E</td>
<td>DS1 Interface</td>
<td>Port</td>
</tr>
<tr>
<td>TN768</td>
<td>Tone-Clock</td>
<td>Control</td>
</tr>
<tr>
<td>TN769</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN771D</td>
<td>Maintenance/Test</td>
<td>Service</td>
</tr>
<tr>
<td>TN772</td>
<td>Duplication Interface</td>
<td>Control</td>
</tr>
<tr>
<td>TN775/B</td>
<td>Maintenance</td>
<td>Service</td>
</tr>
<tr>
<td>TN776</td>
<td>Expansion Interface (EI)</td>
<td>Port</td>
</tr>
<tr>
<td>TN777/B</td>
<td>Network Control</td>
<td>Control</td>
</tr>
<tr>
<td>TN778</td>
<td>Packet Control</td>
<td>Control</td>
</tr>
<tr>
<td>TN780</td>
<td>Tone-Clock</td>
<td>Control</td>
</tr>
<tr>
<td>TN786B</td>
<td>Processor</td>
<td>Control</td>
</tr>
<tr>
<td>TN1648</td>
<td>System Access/Maintenance</td>
<td>Control</td>
</tr>
<tr>
<td>TN1650B</td>
<td>Memory</td>
<td>Control</td>
</tr>
<tr>
<td>TN1655</td>
<td>Packet Interface</td>
<td>Control</td>
</tr>
<tr>
<td>TN1656</td>
<td>Tape Drive</td>
<td>Control</td>
</tr>
<tr>
<td>TN1657</td>
<td>Disk Drive</td>
<td>Control</td>
</tr>
<tr>
<td>TN2135</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN2136</td>
<td>Digital Line (2-Wire)</td>
<td>Port</td>
</tr>
<tr>
<td>TN2138</td>
<td>CO Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN2139</td>
<td>DID Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN2140/B</td>
<td>Tie Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN2144</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN2146</td>
<td>DID Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN2147/C</td>
<td>CO Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN2149</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN2180</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
<tr>
<td>TN2181</td>
<td>Digital Line (2-Wire)</td>
<td>Port</td>
</tr>
<tr>
<td>TN2182</td>
<td>Tone-Clock</td>
<td>Control</td>
</tr>
<tr>
<td>TN2183</td>
<td>Analog Line</td>
<td>Port</td>
</tr>
</tbody>
</table>
Analog Line (TN467) — U.K. and Australia

The TN467 provides eight ports to interface between analog voice terminals and the TDM bus. The TN467 has administrable A-Law and Mu-Law companding as well as complex input impedance. The TN467 provides secondary lightning protection.

Analog Line (TN468B) — U.K. and Australia

The TN468B provides 16 analog line ports. Each port has Tip and Ring signal leads. The TN468B is defaulted to A-law companding and allows a down-link message to override the default and choose Mu-law companding. The TN468B has administrable ring patterns and secondary lightning protection.

Analog Line (TN479, TN742, TN746/B, and TN769)

The TN742 and TN769 have eight ports each. The TN479, TN746, and TN746B have 16 ports each. Each port has Tip and Ring signal leads.

The TN742 supports on-premises (in-building) or off-premises wiring (out-of-building only with AT&T-certified protection equipment) with either DTMF or rotary dialing and with or without LED message waiting indicators (message waiting indicators are not supported off-premises). The TN742 does not support neon message waiting indicators.

---

### Table 2-12. Circuit Packs in DEFINITY

<table>
<thead>
<tr>
<th>Apparatus Code</th>
<th>Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN2184</td>
<td>DIOD Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN2198</td>
<td>ISDN BRI 2-Wire U Interface</td>
<td>Port</td>
</tr>
<tr>
<td>TN2199</td>
<td>CO Trunk</td>
<td>Port</td>
</tr>
<tr>
<td>TN2202</td>
<td>Ring Generator</td>
<td>Service</td>
</tr>
<tr>
<td>UN330B</td>
<td>Duplication Interface</td>
<td>Control</td>
</tr>
<tr>
<td>UN331B</td>
<td>Processor</td>
<td>Control</td>
</tr>
<tr>
<td>UN332</td>
<td>Mass Storage/Network Control</td>
<td>Control</td>
</tr>
<tr>
<td>WP-90510</td>
<td>Power Supply (AC)</td>
<td>Power</td>
</tr>
<tr>
<td>WP-91153</td>
<td>Power Supply (AC)</td>
<td>Power</td>
</tr>
</tbody>
</table>

---
The TN746 (in-building only) meets the needs of most analog line applications requiring a single voice terminal. LED message waiting indicators are not supported off-premises. Each port supports one voice terminal with or without the LED message waiting indicators, such as AT&T 500 (rotary dial) and 2500 terminals (DTMF dial). The ringer load for this circuit pack is three (REN 3.0). The TN746 does not support voice terminals equipped with neon message waiting indicators. Auxiliary equipment, such as answering machines, modems, and amplifier handsets, is not supported.

The TN746B supports on-premises (in-building) wiring with either DTMF or rotary dialing and with or without the LED and neon message waiting indicators. The TN746B supports off-premises wiring (out-of-building only with AT&T-certified protection equipment) with either DTMF or rotary dialing, but LED or neon message waiting indicators are not supported off-premises. The TN746B, along with a TN755B Power Unit per carrier or per Single-Carrier Cabinet, supports voice terminals with neon message waiting indicators (on-premises use only). Vintage 6 and later circuit packs support A-Law and Mu-Law companding.

The TN769 supports on-premises (in-building) or off-premises wiring (out-of-building only with AT&T-certified protection equipment) with either DTMF or rotary dialing and with or without LED or neon message waiting indicators (message waiting indicators are not supported off-premises). The TN769, along with a TN755B Power Unit per carrier or per Single-Carrier Cabinet, is required to support neon message waiting indicators.

The TN479, TN742, TN746B, and TN769 support three ringer loads, such as three voice terminals with one ringer load each. Only one voice terminal can have an LED or neon message waiting indicator (the TN742 and TN479 do not support neon message waiting indicators). Two voice terminals maximum per port (TN742) can be off-hook simultaneously. The TN479, TN742, TN746B, and TN769 also support queue warning level lamps associated with the Direct Department Calling (DDC) and Uniform Call Distribution (UCD) features. These circuit packs support recorded announcements associated with the Intercept Treatment feature, dictation machines associated with the Recorded Telephone Dictation Access feature, and the Page Pac Paging System for the Loudspeaker Paging feature. Additional support is provided for external alerting devices associated with the trunk. Additional support for the TN746B is provided for external altering devices associated with the TAAS feature, neon message waiting indicators, and modems.

The TN746/B circuit packs interface between analog voice terminal lines and the TDM/packet bus. The TN746B consists of a ringing application circuit and port input/output (I/O) circuits. Table 2-13 lists the characteristics of each analog line circuit pack.
### Table 2-13. Analog Line Circuit Pack Characteristics

<table>
<thead>
<tr>
<th>Feature</th>
<th>Analog Line Circuit Packs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TN742</td>
</tr>
<tr>
<td>Number of Ports</td>
<td>8</td>
</tr>
<tr>
<td>Neon Message Waiting Indicators</td>
<td>No</td>
</tr>
<tr>
<td>LED Terminals</td>
<td>Yes</td>
</tr>
<tr>
<td>Feed Voltage</td>
<td>-48V</td>
</tr>
<tr>
<td>Hard Bridging</td>
<td>Yes</td>
</tr>
<tr>
<td>Station Adjunct</td>
<td>Yes</td>
</tr>
<tr>
<td>Secondary Lightning Protection</td>
<td>Yes</td>
</tr>
<tr>
<td>Same Premises—Out-of-Building</td>
<td>Yes</td>
</tr>
<tr>
<td>Terminals</td>
<td>500-Type 2500-Type 7100 Series 8100-Series 9100-Series</td>
</tr>
<tr>
<td>Range With 500-Type/2500-Type/7102A Terminals* (24 AWG Wire)</td>
<td>20,000 Feet</td>
</tr>
<tr>
<td>Range With 7101A/7103A Terminals (24 AWG Wire)</td>
<td>15,200 Feet</td>
</tr>
<tr>
<td>Range With 8100 series Terminals (24 AWG Wire)</td>
<td>10,000 Feet</td>
</tr>
<tr>
<td>Ringer Loads</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 2-13. Analog Line Circuit Pack Characteristics

<table>
<thead>
<tr>
<th>Feature</th>
<th>TN742</th>
<th>TN769</th>
<th>TN746</th>
<th>TN746B</th>
<th>TN479</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simultaneous Ports Ringing</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>8**</td>
<td>3</td>
</tr>
<tr>
<td>Administrable Timers</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>vintage 6 or greater</td>
<td>No</td>
</tr>
</tbody>
</table>

**NOTES:**

* The TN746 supports a 7102A terminal, but does not support 7101A or 7103A terminals.

** The TN746B allows ringing on four ports of each half of the circuit pack for a maximum of eight simultaneous ports ringing. A user attempting to ring one half of the circuit pack when all four ports are busy receives a busy tone.

** Analog Line (TN2135) — Italy**

The TN2135 provides 16 analog line ports and ground key detection. Each port has Tip and Ring signal leads. The TN2135 is defaulted to A-Law companding and can be administered for Mu-Law companding. The TN2135 has secondary lightning protection.

** Analog Line (TN2144) — Netherlands**

The TN2144 provides 16 analog line ports and ground key detection. Each port has Tip and Ring signal leads. The TN2144 is defaulted to A-Law companding and allows a down-link message to override the default and choose Mu-Law companding. The TN2144 has administrable ring patterns and secondary lightning protection.

** Analog Line (TN2149) — Belgium**

The TN2149 provides 16 analog line ports. Each port has Tip and Ring signal leads. The TN2149 is defaulted to A-Law companding and allows a down-link message to override the default and choose Mu-Law companding. The TN2149 has administrable ring patterns and secondary lightning protection.
Analog Line (TN2180) — Spain and Germany

The TN2180 provides 16 analog line ports. Each port has Tip and Ring signal leads. The TN2180 has administrable A-law and Mu-law companding, ring patterns, and secondary lightning protection.

Analog Line (TN2183) — Multi-Country

The TN2183 provides 16 analog line ports. Each port provides a voice channel to the switch from a Tip/Ring pair. Each port also sends or receives the necessary signaling to and from the connected station. Examples of stations are an analog telephone set, answering machine, G3 type facsimile, and loop-start PBX “CO port” (AUDIX application).

All communication between the PBX software control and the TN2183 port board occurs over the Network Control board’s Switch Processing Element (SPE). The TN2183 is used with service circuit packs providing tone generation and tone detection. A telephone going off-hook has dial tone provided to it from a tone generator board, through a TN2183 port, to the user. The user may then press buttons to send DTMF digits into the TN2183 port. The port passes them through to a tone detector board which interprets the signals and report the digits received to software.

The TN2183 provides rotary digit 1 recall, ground-key recall, and programmable flash timing. Additional support is provided for selectable ringing cadence, LED message waiting (AT&T protocol only), and secondary lightning protection. The TN2183 also supports balanced ringing (when configured for France with TN2202 Ring Generator circuit pack), and DTMF sending levels appropriate for CONVERSANT®.

The TN2183 is impedance and gain selectable for multiple countries. For more information, contact your AT&T representative.

Announcement (TN750 and TN750B)

The TN750 and TN750B record and store announcements to be played back on demand as part of a calling feature. The TN750 has sampling rates of 16, 32, or 64 kbps. The TN750 records announcement times of up to four minutes and 16 seconds at 32 kbps and eight minutes and 32 seconds at 16 kbps. The TN750B can record messages from on- or off-premises voice terminals and can store up to 128 recorded announcements of eight maximum minutes total.

The TN750B has 16 channels and each channel can play any announcement. Five call connections can listen to each channel. This means a total simultaneous call capacity of 80 calls in G3s and G3i and up to 255 callers can be connected to each channel in G3r.
Announcement (TN750C)

The TN750C records and stores announcements that can be played back on demand as part of a calling feature. The TN750C is required for the Multiple Integrated Announcements feature. However, the first circuit in a system with multiple announcement circuit packs can be a TN750B. The TN750C provides on-board FLASH memory to provide internal backup of the announcements on the board. This eliminates the need for a 30-40 minute restore/download process after a power failure or system reload, and allows support for multiple boards.

Using multiple Integrated Announcement circuit packs allows a more efficient method of providing many kinds of announcements. Equipping a G3r with ten Integrated Announcement circuit packs provides a total capacity of 2560 seconds (at 32 kbps) and 160 ports. In other words, 160 announcements can play simultaneously.

The 16 kbps compression rate (adequate for VDN of Origin Announcements) provides a total capacity of 5210 seconds.

The TN750C supports all the features of the TN750B in addition to providing reduced power-up restore time and elimination of manual saving, and improved management of integrated announcements.

Auxiliary Trunk (TN417) — Non-US Installations

The TN417 provides four ports for on-premises trunk applications such as Music-on-Hold, Loudspeaker Paging, Code Calling, and Recorded Telephone Dictation Access. The TN417 supports Audichron announcement equipment. TN417 hardware and firmware are identical to the TN763C, except the TN417 has A-Law companding on the Pulse Code Modulation (PCM) signal and the TN763C has Mu-Law companding on the PCM signal.

Each port has T, R, SZ, SZ1, S, S1 signal leads.

Auxiliary Trunk (TN763B/C/D)

The TN763B/C/D has four ports. Each port has T, R, SZ, SZ1, S, and S1 signal leads. The ports are used for on-premises applications such as Music-On-Hold, Loudspeaker Paging, and Recorded Telephone Dictation Access. The TN763C supports recorded announcement equipment and Code Calling. The interface between the PBX and the connected equipment varies with the type of equipment. The purpose of this circuit pack is to control the activity on this interface and to take necessary action when changes occur.

The TN763B/C supports A-Law companding only. The TN763D can be administered to select A-Law or Mu-Law companding.
Call Classifier (TN744/B)

The TN744/B has eight tone detectors used in Outgoing Call Management (OCM) and call prompting applications in the USA and Canada. The TN744 detects special intercept tones used in network intercept tone detection in OCM. The TN744 also detects tones when a CO answers a call. The TN744 does not classify data calls. Instead, a Tone Detector circuit pack classifies the calls. In addition, if the TN744 has not classified the call by the end of 60 seconds, it is removed from the call and Timed Far End Supervision classifies the call.

The TN744 provides tone generation and detection for Release 2 Multi-Frequency Compelled (R2-MFC) DID signaling used in non-US installations.

The TN744 allows gain or loss to be applied to Pulse Code Modulated (PCM) signals received from the bus and supports A-Law and Mu-Law companding. The TN744 detects 2025 Hz, 2100 Hz, or 2225 Hz modem answerback tones and provides normal broadband and wide broadband dial tone detection.

NOTE:
For MFC, the TN744 v7 or greater Call Classifier circuit pack is required.

Call Classifier — Detector (TN744C)

The TN744C contains eight ports of tone detection on the Time Division Multiplexing (TDM) bus that function the same as the TN2182. The difference is the TN744C does not support call progress, tone generation, or clocking.

The TN744C processor supports digital signal processing of Pulse Code Modulated (PCM) signals on each port to detect tones and other signals. Generation of tones is also supported for applications such as Release 2 Multi-Frequency Compelled (R2-MFC), Spain MF, and Russia MF. Gain (or loss) and conferencing can be applied to PCM signals received from the TDM bus. Additional support includes DTMF detectors to collect address digits during dialing, and A-Law and Mu-Law companding.

CO Trunk (TN438B)

The TN438B provides eight ports for loop-start CO trunks. Each port has Tip and Ring signal leads. The TN438B can detect 12 kHz and 50 Hz periodic metering pulses sent from the CO. Additional features include call still held timing and automatic guard fault detection circuitry.
CO Trunk (TN447) — United Kingdom

The TN447 provides eight analog CO trunk ports. Each port has Tip and Ring signal leads and connects to a two-wire analog line. The TN447 uses ground-start trunk signaling, 50 Hz Periodic Pulse Metering (PPM) detection and counting, and administrable timers.

CO Trunk (TN465/B/C) — Multi-Country

The TN465/B/C circuit packs provide eight analog CO trunk ports and uses loop-start trunk signaling, 12 kHz and 16 kHz PPM detection and counting, and administrable timers. The TN465B/C provides multi-country selectable signaling. Contact your AT&T representative for more information.

CO Trunk (TN747B)

The TN747B has eight ports for loop-start or ground-start CO, foreign exchange (FX), and Wide Area Telecommunications (WATS) trunks. Each port has Tip and Ring signal leads. A port can be connected to a Page Pac paging system. The TN747B supports the abandoned call search feature in Automatic Call Distribution (ACD) applications (if the CO has this feature).

Vintage 12 or greater of the TN747B also provides battery reversed signaling.

CO Trunk (TN2138) — Italy

The TN2138 provides eight analog CO trunk ports. Each port has Tip and Ring signal leads. The TN2138 has 50 Hz, 12 kHz, and 16 kHz Periodic Pulse Metering (PPM).

CO Trunk (TN2147/C) — Multi-Country

The TN2147 provides eight analog CO trunk ports. Each port has Tip and Ring signal leads.

The TN2147 uses four (one for each pair of ports) Dual Subscriber Line Audio Processing Circuits (DSLACs) to be administered to meet loop-start signaling, and Earth-calling and loop-calling guarded clearing signaling. The DSLACs convert analog signals to digital signals and digital signals to analog signals to interface the analog CO trunks to the system’s digital Time Division Multiplexing (TDM) bus.

The TN2147C provides multi-country selectable signaling. For more information, contact your AT&T representative.
CO Trunk (TN2199) — Russia

The TN2199 is a 4-port, 3-wire, Russia loop-start trunk circuit pack that can be used as a Direct Inward Dialing (DID) trunk, CO trunk (2-way, one-way incoming, or one-way outgoing CO). The TN2199 combines the functionality of the DID trunk and the one-way outgoing CO trunk (Direct Inward/Outward Dialing).

CSU Module (120A)

The 120A Channel Service Unit (CSU) module connects to either a TN464E/F or a TN767D/E DS1 circuit pack on one end. The other end is connected to the network interface Smart Jack. The 120A is powered from the +5 VDC port carrier power supply and uses a maximum of 1.2 Watts.

In combination with the DS1 circuit pack, it provides the essential functions provided by external CSUs such as the AT&T ESF T1 CSU and the AT&T 551 T1 CSU. These CSUs are externally-mounted and provide additional functionality not typically needed by TN464/767 to interface to the DS1 facility. The external CSUs support different framing and line coding options on the PBX and network sides of the CSU. Since the TN464/767 and switch administration support all framing and line coding options, this functionality is not required. However, this does not eliminate the need to manually set framing and line coding options via switches on the CSU as well as via administration on the TN464/767. These options were difficult to set.

The 120A CSU module incorporates the functions necessary to interface to the network Smart Jacks given the administration capabilities of the switches. Also, the 120A is small, a little larger than a wallet, and is simpler to install than an externally mounted CSU and does not require any option switch settings.

The following list describes the important characteristics of the 120A CSU:

- With circuit pack suffixes starting with TN767D and TN464E, a pair of 120As may be used to directly connect a TN767/464 board pair for range extension up to 3,000 feet over 22 gauge wire.
- With circuit pack suffixes starting with TN767E and TN464F and G3V3 and later software versions, maintenance and administration software (Enhanced ICSU Feature) provides 120A option administration and enhanced DS1 facility diagnostics. This option allows the 120A to connect to the network other than via a network interface Smart Jack.
- The CEPT1 (Conference of Postal and Telecommunications rate 1) interface is not supported by the 120A. CEPT1 is the 32-channel, 2.048 Mbps interface used in many countries other than the United States. The TN464F does support the CEPT1 rate.
- The integrated CSU module meets all applicable FCC Parts 15 and 68 requirements. It is also UL/CSA registered.
For board suffixes TN767D and TN464E, the 120A operates only with default options (Basic ICSU Feature). Therefore, only network interface (NI) connections to a NI Smart Jack are supported. NI Smart Jacks are devices placed at the NI by the DS1 facility provider. They listen for in-band loop back control signals on the incoming DS1 line and loop the DS1 facility back to the network when the control signals are detected. The NI Smart Jack’s customer equipment interface is an 8-pin modular jack. Not all network interfaces are via a Smart Jack. In these cases, the TN767E or TN464F may be used along with G3 software to allow administration of the 120A’s LBO value for the installation.

The 120A passes framing, either D4 or ESF, transparently between the network and the switch. The 120A also passes line coding, either AMI/ZCS or B8ZS, transparently between the network and the switch.

The 120A contains two loop back circuits, one for testing wiring between the DS1 circuit pack and the CSU module, and another for testing the data path through the CSU module. The TN767/464 circuit packs automatically use these loop backs to test the 120A during initialization diagnostics. Loop back test failure indications are provided on the TN767/464 circuit pack faceplate LEDs.

The 120A provides an in-band bit-oriented loop back detector that automatically responds to CSU line loop back requests from the network. The 120A automatically loops the network side DS1 signal back to itself, without regenerating it, upon loss of power to the 120A.

The 120A can be connected to external alarm equipment. A separate jack and cable are provided. The 120A contains a relay contact closure that activates the alarm equipment during DS1 facility alarms and excessive bit error rates.

The 120A protects and isolates the switch from secondary surges of up to 1500 Volts.

Vintage 2 of the 120A CSU Module (the 120A2 CSU) provides enhancements to support the payload loopback function available when the ESF framing format is optioned. This loopback is controlled from the network side using the data link provided by the ESF framing format. This provides a loopback of data back to the network and operates as defined in AT&T TR54016-1989.

Current Limiter (982LS) — G3s and G3i

The 982LS connects to the rear of the Processor circuit pack slot only in the Processor Port Network (PPN) and provides current-limited accessory 48 VDC, emergency transfer logic, current-limited 5 VDC to trip the main circuit breaker if high temperature is detected, and duplicated 48 VDC to fans in the PPN cabinet.
Current Limiter (CFY1B)

The CFY1B is used only in the G3r PPN, Multi-Carrier Cabinet Expansion Port Network (EPN), and Single-Carrier Cabinet EPN. The unit connects to the rear of the Maintenance circuit pack slot and provides current-limited accessory 48 VDC, emergency transfer logic, current-limited 5 VDC to trip main circuit breaker if high temperature is detected, and duplicated 48 VDC to fans in the EPN cabinet.

Data Line (TN726B)

The TN726B has eight serial asynchronous Electronic Industries Association (EIA) ports with modem interfaces connected through Asynchronous Data Units (ADUs) to EIA ports (such as RS-232) on Data Terminal Equipment (DTE). The TN726B uses Mode 2 or Mode 3 data transfer protocol. The DTE can be adjuncts and peripheral equipment such as data terminals, printers, host computers, personal computers (PCs), graphics and facsimile systems, and call detail acquisition and processing systems (CDAPs).

With software-administered system access ports in G3rV2, a TN726B is connected through a wall field to a TN553 packet data line circuit pack. The TN553 then converts Mode 2 protocol to Mode 3 protocol transferring the TN726B from the packet bus to the Time Division Multiplexing (TDM) bus for EIA connections.

Each port on a TN726B has TXT (terminal, transmit, and Tip), TXR (terminal, transmit, and Ring), PXT (port, transmit, and Tip), and PXR (port, transmit, and Ring) signal leads.

DEFINITY AUDIX R3 System (TN566/B, TN567, and TN2169, TN2170, ED-1E546)

The AUDIX™ R3 system allows a person to record and exchange voice messages over the telephone when direct communication is inconvenient or unnecessary. The unit is installed in five contiguous slots in a carrier. Preferably, the five rightmost slots are used.

The TN566/B and TN567 multi-function circuit pack holds the CPU, controllers, memory devices, and signal processors.

TN2169 alarm circuit pack operates with the TN566/B to provide monitoring for system power and environmental status, -48 VDC to +12 VDC power conversion for the disk drive and tape drive, and remote terminal access. The TN2170 alarm (with Ethernet interface) circuit pack provides a connection to an external LAN in addition to all of the functions provided by the TN2169.
The 160 Mbyte or 600 Mbyte Tape drive data cassette recorder distributes software onto a disk, stores periodic backups of data, installs new software releases, and removes core dumps and other maintenance information.

A 148, 248, 456, or 800 Mbyte Disk drive stores customer data, boots the system, and logs system error information.

Depending on the disk drive sizes, the unit can handle from 300 to 2,000 local and remotely administered subscribers. The unit has eight ports, two of the ports are used for each voice terminal. See the DEFINITY® AUDIX™ System, System Description, 585-300-205, for more information.

**DEFINITY LAN Gateway (ED-1E546)**

The ED-1E546 assembly provides an interface from the switch to the LAN Gateway. The TN2208 component of the LAN Gateway interfaces to the DEFINITY® switch. The interface also consists of a TN2170 Alarm Board/Ethernet Interface circuit pack that provides mounting for mass storage elements and interface to external connections (SAT terminal, and, optionally, Ethernet LANs).

The mass storage/cabling combination provides an interface to tape drive, disk drive, and cables. All application-specific labeling is provided, as required.

**DID Trunk (TN436B) — Australia**

The TN436B provides eight ports independently connected to a public network. Each port is an interface between a two-wire analog PBX line from a CO and the four-wire Time Division Multiplexing (TDM) network in the system. The TN436B has administrable timers.

**DID Trunk (TN459B) — U.K.**

The TN459B provides eight ports for immediate-start or wink-start DID trunks. Each port has Tip and Ring signal leads. Each port is an interface between a two-wire analog PBX line from a CO and the four-wire Time Division Multiplexing (TDM) network in the system. The TN459B has administrable timers and a backward busy circuit that complies with signaling requirements.

**DID Trunk (TN753)**

The TN753 has eight ports used for immediate-start and wink-start DID trunks. Each port on a TN753 has Tip and Ring signal leads.

For Czechoslovakia and the Commonwealth of Independent States, TN753 Vintage 17 (or higher) is required. The TN753 supports Mu Law companding only.
DIOD Trunk (TN429) — Japan

The TN429 provides eight ports for Direct Inward/Outward Dialing (DIOD) trunks. Each port has Tip and Ring signal leads.

DID Trunk (TN2139) — Italy

The TN2139 provides eight analog DID trunk ports for analog DID signaling. Each port has Tip and Ring signal leads. The TN2139 has zero dB loss digital transmission.

DID Trunk (TN2146) — Belgium

The TN2146 provides eight analog DID trunk ports. Each port has Tip and Ring signal leads. The TN2146 uses four (one for each pair of ports) Dual Subscriber Line Audio Processing Circuits (DSLACs) administered to meet trunk transmission characteristics. The DSLACs can be set to either a resistive or complex balance impedance in the voice or AC talk path on the trunk interfaces. The DSLACs convert analog signals to digital signals and vice-versa to match the analog DID trunks to the system’s digital Time Division Multiplexing (TDM) bus. Companding in the TN2146 firmware is set to the default A-Law and can be administered to select Mu-Law companding.

Digital Line (TN754 and TN754B) — 4-Wire DCP

The TN754 and TN754B each have eight asynchronous Digital Communications Protocol (DCP) ports connected to 4-wire terminals such as the 7400 and 8400-series digital voice terminals, attendant consoles, or data modules.

The TN754B has administrable A-Law and Mu-Law companding. Each port has TXT, TXR, PXT, and PXR signal leads. The maximum range of the 8400-series (8410 and 8411) terminals using 24 gauge wire is 10,000 feet.

Digital Line (TN2181) — 2-Wire DCP

The TN2181 has 16 Digital Communications Protocol (DCP) ports that can be connected to 2-wire terminals such as the 8400-series digital voice terminals and the 302B1 attendant console.

The TN2181 supports either A-Law or Mu-Law companding (software selectable). The maximum range of the 8400-series (including 8410 and 8411) terminals using 24 gauge wire is 10,000 feet.
Digital Line (TN2136) — 2-Wire DCP

The TN2136 provides eight ports for connecting the system to the following Digital Communications Protocol (DCP) endpoints: data adapter modules and digital telephone models one and two.

Each port can be connected to a two-wire digital line. The TN2136 has administrable A-law and Mu-law companding.

DIOD Trunk (TN2184) — Germany

The TN2184 contains 4 port circuits, each interfacing a 2-wire analog CO trunk with the Time Division Multiplexing (TDM) switching network of DEFINITY®. Each port allows incoming and outgoing calls to be made with addressing information being received from the CO for incoming calls and addressing information being sent to the CO for outgoing calls. It detects PPM (Periodic Pulse Metering) signals for call charge accounting on outgoing calls.

This circuit pack combines the features of both a CO trunk and a DID trunk to provide both outgoing and incoming calls with addressing information in both directions.

Disk Drive (TN1657) — G3r

The TN1657 contains a 180-Mbyte Small Computer System Interface (SCSI) disk drive. The TN1657 reduces the boot time of the system.

DS1 Converter (TN574) — G3r — T1, 24-Channel

When the coupling distance between the Processor Port Network and an Expansion Port Network exceeds five miles, or private right-of-way is not available, coupling is provided by a DS1 Converter complex and is limited to 100 circuit miles. A DS1 Converter consists of a pair of TN574 circuit packs and associated DS1 facilities. The converter complex is installed in place of fiber optic cable and supports from one to four facilities.
DS1 Interface (TN767B/C/D/E) — T1, 24-Channel

The TN767B and later suffix circuit packs support DS1 rate digital facility connectivity. The circuit packs support CO, TIE, DID, and OPS port types using the Robbed-Bit Signaling (RBS) protocol in G3s, G3i, and G3r.

These circuit packs also support ISDN-PRI connectivity in G3s and G3i. For these applications, the signaling (“D”) channel is either:

1. Connected from the TN767 to the TN765 Processor Interface via a permanent switched call over the Time Division Multiplexing (TDM) bus
   or:
2. Terminated at the TN778 Packet Control (G3s/i) (PRI over PACCON feature)
   or:
3. Terminated at the TN1655 Packet Interface (G3r).

The TN767 provides a 1 level physical interface to the DS1 facility and require a TN464C or greater DS1 interface. The TN767 has Line Out (LO), Line Out* (LO*), Line In (LI), Line In* (LI*) signal leads. The Line Out and Line In leads are unpolarized balanced pairs.

The TN767E or greater is required to communicate with CONVERSANT®. The TN767E or greater is also required to obtain the enhanced maintenance capabilities of the Enhanced Integrated Channel Service Unit (ICSU) feature provided by G3V3 and later software versions. These tests can be executed locally or remotely via the System Access Terminal (SAT). These tests include short duration loopback tests at the Digital Signal Level 1 (DS1) board edge or the 120A (if used), long duration Bit Error Rate (BER) loopback tests at the far-end Channel Service Unit (CSU), and long duration BER one-way DS1 facility tests. Other tests include single error injection capability provided for loopback testing and loopback testing specifically designed to locate DS1 facility faults.

In addition, other tests administer 120A options including transmit LBO, receive ALBO, TABS remote target address, and T1.403 one-second performance report messages. Enhanced ESF TABS performance reporting including ES, BES, SES, UAS, CSS, and LOFC counters for local, carrier-local, and remote end performance reporting is provided.
DS1, Interface (TN464C/D/E/F) — T1, 24-Channel and E1, 32-Channel

The TN464C and later suffix circuit packs support DS1 rate (24 channel) and E1 rate (32 channel) digital facility connectivity. All TN464 suffixes support CO, TIE, DID, and OPS port types using Robbed-Bit Signaling (RBS) protocol, proprietary Bit-Oriented Signaling (BOS) 24th channel signaling protocol, and DMI-BOS 24th channel signaling protocol. They also support ISDN-PRI connectivity. For ISDN-PRI, the signaling ("D") channel is connected from the TN464 to the TN778 Packet Control (G3s/i) or TN1655 Packet Interface (G3r) via the LAN bus. In DS1 (24 channel) mode, the DSX1 level interfaces to the DS1 facility.

The TN464 circuit packs provide board-level administrable A-Law and Mu-Law companding (on a per-board basis), CRC-4 generation and checking (E1 only), and Stratum 3 clock capability.

NOTE:
The Stratum 3 clock is not on-board the TN464 circuit pack.

The TN464E and later suffixes provide test jack access to the DS1 or E1 line and support the 120A Integrated CSU.

The TN464F and later suffix is required to communicate with CONVERSANT®. The TN464F and later is also required to obtain the enhanced maintenance capabilities of the Enhanced Integrated Channel Service Unit (ICSU) feature provided by G3V3 and later software versions. These tests can be executed locally or remotely via the G3-MT, and include the following:

- Short duration loopback tests at the DS1 board edge or the 120A (if used)
- Long duration Bit Error Rate (BER) loopback tests at the far-end CSU
- Long duration BER one-way DS1 facility tests.
- Single error injection capability provided for loopback testing.
- Loopback testing with stress patterns specifically designed to locate DS1 facility faults.
- The ability to administer 120A options including transmit LBO, receive ALBO, TABS remote target address, and T1.403 one-second performance report messages.
- Enhanced ESF TABS performance reporting including ES, BES, SES, UAS, CSS, and LOFC counters for local, carrier-local, and remote end performance reporting.

Protocols for Channel Associated Signaling (CAS) for multiple countries are available. For more information, contact your AT&T representative.

All TN464 suffixes have Line Out (LO), Line Out* (LO*), Line In (LI), Line In* (LI*) signal leads. The Line Out and Line In leads are unpolarized balanced pairs."
DS1 Tie Trunk (TN722B)

The TN722B has 24 independent trunk connections to a 1.544-Mbps DS1 facility. Each trunk transmits data at 64 kbps common channel or 56 kbps Robbed Bit Signaling. The TN722B has three types of digital tie trunk interfaces: voice-grade DS1, Alternate Voice/Data (AVD) DS1 tie trunks, and Digital-Multiplexed Interface (DMI).

The TN722B provides Bit-Oriented Signaling (BOS) on the automatic, immediate-start, delay-dial, and release-link trunks.

A TN722B has LBACK1, LBACK2, LO, LO (high), LI, LI (high) signal leads.

NOTE:
LBACK does not apply to the 120A.

Duplication Interface (TN772) — G3i

The TN772 selects the active processing element (control complex) in high reliability and critical reliability systems and coordinates the interchange of processing elements.

The TN772 controls the memory shadowing function with the duplication option, terminates the environmental sensors, and controls the integrated battery supply and charging circuits. The TN772 is also responsible for selecting the active Switch Processing Element (SPE), selecting the active Tone-Clock circuit pack, and providing an administration terminal interface in place of the processor.

A second TN772 circuit pack resides in the duplicated control carrier/cabinet and requires a cable connection to the Duplication Interface circuit pack in the basic control carrier/cabinet.

Duplication Interface (UN330B) — G3r

In high reliability and critical reliability systems with two Switch Processing Elements (SPEs), one UN330B resides in each SPE and connects to the other UN330B. The UN330Bs provide control and communication paths between the SPEs to keep the redundant standby (inactive) SPE ready to assume control if the active SPE fails. The UN330Bs select active/standby mode for the two SPEs, shadow (copy) the active SPE’s memory writes into the standby SPE memory, and support inter-SPE communications.

The duplication channel is a bidirectional high-speed path between the two SPEs. When memory shadowing is activated, all shadowed memory writes on the active processor’s bus are sent across the link and written into the standby processor’s memory. Standby memory writes are not sent to the active processor.
Expansion Interface (TN570/B) — G3i, G3r

The TN570 is an interface between the Time Division Multiplexing (TDM) bus and packet bus, and fiber optic links interconnecting cabinets. It is used in a Port Network (PN) between a PN and another PN in a directly connected system, and between a PN and a Switch Node Interface circuit pack in a Switch Node carrier in a Center Stage Connected (CSS)-connected system.

The TN570 provides control channel connectivity and time-slot interchanging between the PPN and EPNs. It is used in G3iV4 when ISDN-BRI and/or ASAI is connected in an EPN, and is always used in G3r.

The TN570 carries circuit-switched data, packet-switched data, network control, timing control, and DS1 control. The TN570 communicates with the TN775B Maintenance circuit pack in an EPN to send the EPN’s environmental and alarm status to the SPE.

Expansion Interface (TN776) — G3i

The TN776 connected to the Time Division Multiplexing (TDM) bus in one Port Network (PN) is an interface between that PN and the TDM bus extended to another PN. The TN776 packages the TDM control channel with Link Access Procedure on the D-channel (LAPD) for transmission over the fiber link between cabinets. The TN776 provides the time-slot interchange between cabinets. A system with ASAI/BRI requires TN570 Expansion Interface circuit packs in place of TN776 circuit packs.

External Alarm

The external alarm allows analog line ports to be used as additional external device alarm connections. This feature works with all supported analog line circuit packs and with all Maintenance circuit packs.

Each analog port used for this feature must be administered as an external alarm connection. This administration includes information identifying the port, the external device connected to the port, the alarm level assigned to the external device, and the “product identifier” of the adjunct or external equipment. This interface does not include a relay contact closure.
Hybrid Line (TN762B)

The TN762B has eight ports connecting to multi-appearance hybrid analog and digital voice terminals. It can connect to AT&T 7300 series telephones, an MDC-9000 (cordless telephone), and an MDW-9000 (cordless telephone with separate base station and charging stations).

Each port on a TN762B has VT and VR (analog voice), CT, CR, P-, and P+ (digital signals that control terminals) signal leads.

ISDN BRI Line (TN556/B) — All G3 Except G3vs
— 4-Wire S/T-N/T Interface

The TN556 has 12 ports connecting to ISDN-BRI terminals. Each port has TXT, TXR, PXT, and PXR signal leads. Up to eight ports can be used for ASA1 links. Each port operates at 192 kbps per second and has two B-channels and one D-channel (not used to carry data). The TN556 requires a packet control circuit pack (TN778) in G3s and G3i.

The TN556 has a range of up to 3,300 feet maximum from the PBX to the voice terminal (using 22 AWG wire) and uses standard protocol ANSI T1.605. The TN556 also has multipoint support, allowing 24 terminals to be connected, where each terminal uses one B-channel and shares the D-channel. In multi-support connectivity, two voice terminals, one voice terminal and one data terminal, or two data terminals can be connected to each port.

The TN556 ISDN-BRI Line circuit pack supports A-Law or Mu-Law companding.

ISDN BRI Line (TN2198) — All G3 Except G3vs
— 2-Wire U Interface

The TN2198 circuit pack allows connection to the ANSI standard 2-wire U-Interface. In line-side BRI applications, connect an NT1 at the other end of the U-Interface. The NT1, in turn, connects to ISDN-BRI terminals. The TN2198 does not provide a trunk-side interface.

The TN2198 contains 12 ports that interface at the ISDN U reference point. For each port, information is communicated over two 64 kbps channels called B1 and B2, and over a 16 kbps channel called the demand channel, or D channel. The D channel is used for signaling. Channels B1 and B2 can be circuit switched simultaneously, the D channel is always packet switched. The TN2198 requires a packet control circuit pack (TN778) on G3s and G3i. The circuit-switched connections have a Mu-Law or A-Law option (on a per-board basis) for voice operation and operate as 64 kbps clear channels when in the data mode. The D channel supports the LAPD protocol and is consistent with the CCITT Q.920 Recommendations for D channel signaling.
The 2-wire interface from the TN2198 connects to an NT1 network interface. The 4-wire interface on the other side of the NT1 may have one or two telephones connected to it. In a multiple terminal environment, the B channels are shared only on a per-call basis. For example, if the B2 channel is used for data, then the use of B2 by one terminal excludes the others from having access to it. When a device communicates over the D channel to access B1 or B2, that channel is owned until the call is taken down (no party on line). The D channel is always shared among the terminals.

The TN2198 circuit pack interfaces with the Time Division Multiplexing (TDM) bus and packet bus in the DEFINITY® backplane and terminates with 12 ISDN basic access ports.

The TN2198 has a long range of up to 18,000 feet (maximum) from the PBX to the NT1 interface and uses standard protocol ANSI T1.601. The TN2198 has a 160 kbps line rate, consisting of two bearer channels (data and voice, B1 and B2) at 64 Kb channels each, the D channel at 16 Kb, framing at 12 Kb, and maintenance at 4 Kb. The circuit pack uses demand channel (ringing, tone, etc.), 16 kbps channel, and supports up to 24 telephones or data modules per circuit pack.

Maintenance (TN775) — EPN G3i and G3r

The TN775 and TN775B are used in maintenance and monitor power failure signals in an EPN cabinet, monitor the clock, monitor and control power supplies and battery charger, and monitor air flow and high temperature sensors. These circuit packs provide two serial links to communicate with Expansion Interface circuit packs, and provide an RS-232 interface for connection to an administration terminal. Each circuit pack contains a three-position switch to control emergency power transfer.

Maintenance/Test (TN771D) — G3

The TN771D performs maintenance functions. These functions include packet bus reconfiguration (allows diagnosis and correction of recoverable packet bus failures before the LAPD links fail) . LAPD provides data transfer between two devices and error and flow control on multiple logical links. It recovers packet bus failures involving up to three malfunctioning leads (one or two data or parity leads and one control lead) by swapping spare leads with the malfunctioning leads.

Other maintenance functions include ISDN-PRI testing to originate and terminate loop-back tests on ISDN facilities. It provides bit and block error rate information indicating ISDN facility quality. A TN771D is required in all standard reliability G3rV2 PPNs and critical reliability G3rV2 EPNs, all standard reliability G3sV2 and G3iV2 PPNs when packet end points (BRI and/or ASAI) are supported, and in all critical reliability G3iV2 when packet endpoints are supported.
Mass Storage/Network Control (UN332) — G3r

The UN332 provides a Small Computer System Interface (SCSI) between the processing element and the mass storage system such as a disk drive. The UN332 also provides Time Division Multiplexing (TDM) network control for the PPN, and terminates one end of the processor-multiplexed bus.

Memory Expansion (CPP1) — G3i

The CPP1 is attached to the TN786B processor circuit pack. The CPP1 supplies an additional 4 Mbytes of Dynamic Random Access Memory (DRAM) used for system software, customer translations, and call processing maintenance. The CPP1 has the same access time as the TN786B memory.

Memory (TN1650B) — G3r

The TN1650B is a bus slave on the processor bus with 32 Mbytes of Dynamic Random Access Memory (DRAM) and error detection and correction circuitry. The Switch processing Element (SPE) design permits up to four TN1650B circuit packs to be present in the carrier.

The memory array on the TN1650B is partitioned into two parts: one part contains all even addressed word locations and the other part contains all odd addressed word locations. Each of these halves has its own EDC memory and EDC memory logic circuitry to allow two memory words to be processed concurrently during burst read operations.

The TN1650B is used for system software, customer translations, and call processing maintenance.

MET Line (TN735)

The TN735 has four ports to connect to MET (Multi-button Electronic Telephone) sets. Each port has Tip and Ring (analog voice) and BT, BR, LT and LR (digital signals to control terminals) signal leads.

Music-on-Hold Interface (122A) — France

A highly reliable music source is provided by the wall-mounted 122A adjunct circuit pack. It provides the correct electrical transformation between a port of the TN2183 analog line circuit and a customer-provided music source. The 122A monitors the customer-provided music source, and, if music is not present at the input, switches to a “Hold Tone” generated by the interface itself.
Network Control (TN777B) — G3s, G3i, and G3vs

The TN777B communicates control channel messages between the Processor circuit pack and the distributed network of port circuit packs on the Time Division Multiplexing (TDM) bus. The circuit pack also controls the four data channels that process and route information directly from the Processor circuit pack to customer-connected equipment. Some of the possible equipment connections are data services facilities, Call Detail Recording devices, an on-premises remote pooled modem or administration terminal, or an off-premises administration terminal. Some of these connections require modems such as a Modular Processor Data Module (MPDM) or a Modular Trunk Data Module (MTDM).

The TN777B has the time-of-day clock with battery backup for power failure or low voltage conditions. This circuit pack also has a 24-hour clock used with record keeping and system maintenance. The TN777B monitors the status of the system clocks and alerts the Processor circuit pack in the event of a failure of any clock. The TN777B supports the high reliability option and handles all the control channel messages from the PPN or EPN networks over the TDM. This circuit pack uses an AT&T Memory Card (flash card).

Packet Control (TN778) — G3s and G3i

The TN778 interfaces the packet bus with the Switch Processing Element (SPE) and terminates LAPD links. The TN778 supports packet bus signaling for ISDN D-channel signaling for ASAI applications and for packet bus maintenance. Packet bus signaling occurs over the LAPD links and terminates (at level 2) on the packet control circuit pack. The TN778 provides a protocol processing capability to interface the SPE with the packet bus and communicates with the SPE using a message-based interface, a shared memory based interface, and a combination of these interfaces. Additional features include packet bus loop-around testing, monitoring of the packet bus to detect packet bus faults in standard reliability systems, and maintaining of signaling links during planned SPE interchanges with the duplication option.

Packet Data Line (TN553) — G3r

The TN553 has 12 ports that are connected through a wall field to a TN726B circuit pack to provide software-administered connections between the Switch Processing Element (SPE) and system access ports. Inside the system, the TN553 connects to the packet bus and converts Mode-2 protocol to Mode-3 protocol connecting the TN726B to the Time Division Multiplexing (TDM) bus for asynchronous EIA connections to adjuncts.
Packet Gateway (TN577) — G3r

The TN577 (PGATE) provides four RS-423 physical ports for X.25 protocol interfaces between the system and adjuncts. In this application, PGATE functions as the G3r data communications interface unit providing protocol conversion between the X.25 protocol and the Mode 3 protocol carried across the LAN Bus. The X.25 protocol (Levels 1 and 2) are terminated and the data reformatted into the ISDN packet mode protocol for transport across the LAN Bus. Supported adjuncts include AUDIX™, Call Management System (CMS), and Message Server Adjunct (MSA).

TN577 also supports the DCS environment by providing X.25 signaling through one of the RS-423 physical ports, or back through the system using the Time Division Multiplexing (TDM) Bus to the appropriate DS1 or Tie Trunk board.

Packet Interface (TN1655) — G3r

The TN1655 provides the communication path between the Switch Processing Element (SPE) and the packet bus in the PPN. This path is used by the EPNs and Center Stage Switch (CSS), via Expansion Interface (EI) circuit packs in the PPN, to communicate with the RISC processor.

The TN1655 provides the LAPD (DMI mode-3) terminations of communication links across the packet bus that go to the RISC. The TN1655 also provides termination for ISDN-BRI and ISDN-PRI signaling links, expansion archangel links connecting the RISC to the expansion archangels on EI circuit packs in each PN, center stage control network links connecting the RISC with Switch Node interface circuit packs in the CSS, DCS links — CDR and adjuncts such as AUDIX™, and 8,192 LAPD links. The TN1655 supports firmware downloading.

Pooled Modem (TN758) — Mu-Law Only

The TN758 has two conversion resource ports (such as a trunk data module) for switched connections between digital data endpoints (data modules) and analog data endpoints (modems).

Power Supply — Compact Single-Carrier Cabinet

See description in Chapter 3, "Power and Fans."

Power Supply (AC) — Single-Carrier Cabinet

See description in Chapter 3, "Power and Fans."
Power Supply (DC) — Single-Carrier Cabinet

See description in Chapter 3, “Power and Fans.”

Power Converter (AC), +5V (631DA1) — Multi-Carrier Cabinet

The 631DA1 accepts 120 VAC 60 Hz and produces +5 VDC at 60A available on the carrier backplanes.

During normal operation, the 631DA1 converts the 120 VAC input to +5 VDC. If the AC input power fails, the unit converts 144 VDC supplied by optional batteries in the AC power distribution unit to +5 VDC. A circuit in the battery charger detects the highest equivalent AC or DC input voltage and switches in the correct input voltage.

Power Converter (AC), -48V/-5V (631DB1) — Multi-Carrier Cabinet

The 631DB1 accepts 120 VAC 60 Hz and produces -48 VDC at 8A and -5 VDC at 6A available on the carrier backplanes. The -48 VDC also supplies power to the cabinet fans.

During normal operation, the 631DB1 converts the 120 VAC input to -48 VDC and -5 VDC. If the AC input power fails, the unit converts 144 VDC supplied by optional batteries in the AC power distribution unit to -48 VDC and -5 VDC. A circuit in the optional battery charger detects the highest equivalent AC or DC input voltage and switches in the correct input voltage.

Power Converter (DC), +5V (644A1) — Multi-Carrier Cabinet

The 644A1 converts a -48-VDC input to a +5-VDC output at 60A. The +5 VDC is distributed on the carrier backplanes to circuit pack slots in the carriers.

Power Converter (DC), -48V/-5V (645B1) — Multi-Carrier Cabinet

The 645B1 converts a -48 VDC input to outputs of -48 VDC at 8A and -5 VDC at 6A. The -48 VDC and -5 VDC are distributed on the carrier backplanes to circuit pack slots in the carriers.
Power Unit, Neon (TN755B)

The TN755B produces 150 VDC to operate neon message waiting lamps on terminals connected to TN746B analog line circuit packs installed in the carriers.

Processor (TN786B) — G3vsV2, G3sV2, G3iV2

The TN786B manages the system and executes stored programs to perform call processing and maintenance. The Processor circuit pack consists of one 80386SX, 16 MHz, Intel processor, 7 Mbyte of Flash ROM used for the system program, 4 Mbyte of DRAM used for customer translations, an interface to the MBUS, and logic to support the shadowing function in duplicated systems.

The Processor monitors its sanity and reports processor failures, monitors and controls circuit pack conditions, releases or resets the processor on duplicated systems, monitors and controls cabinet level power supplies, manages alarm panel LEDs for system status, and provides direct access to a G3-MT.

Processor (TN786B) — G3i, G3s, and G3vs

The TN786B Processor circuit pack contains a 16 MHz 80386SX CPU, 7 Mbyte of Flash ROM, 4 Mbyte of RAM, and an 80188 Maintenance Processor (MTP). The TN786B is used in DEFINITY® G3i, G3s, and G3vs.

The ROM and RAM are two-way interleaved to achieve effective one wait state performance and are expandable to a maximum of 14 and 12 Mbyte, respectively. This expansion is achieved by the addition of a CPP1 or CPP2 memory circuit pack. The CPP1 contains 0 Mbyte of ROM and 4 Mbyte of RAM. A special inter-board bus allows memory devices on CPP1 or the CPP2 to operate with the same cycle times as the TN786B’s onboard memory. All RAM writes are shadowed to the M Bus for use in duplicated systems. The ROM is electrically erasable (Flash) and can be written by the 386SX to allow field upgrades.

The Maintenance Processor provides the same functionality as the MTP on TN773 except tape is not supported. The Maintenance Processor contains field upgradable 32 Kb of RAM, and 64 Kb of Flash ROM. It also contains a 1200/2400 Baud modem, three serial ports, and the emergency transfer and power management functions. The RAM is dual ported to the 386SX and is used for interprocessor communications.
Processor (UN331B) — G3r

The UN331B manages the G3r by controlling the system and executing stored programs that perform call processing activity and maintenance. The UN331B is a RISC designed around a MIPS R3000A CPU operating at 33 MHz. It employs 32-bit address and data buses to obtain and execute instructions at a rate approaching one instruction per clock cycle. The 256-Kbyte instruction cache with burst-mode refill and 256-Kbyte data cache are key to the performance of the G3r Processor. A read/write buffer chip tailors the UN331B to the call processing environment.

Peripheral devices residing on the UN331B are positioned outside the CPU-cache structure and interface to the CPU through the read/write buffers. These peripherals include 512-Kbytes of ROM for the monitor, counters/timers, UARTs, control/status/error registers, and the logic that provides bus arbitration and the Bus Time-Out feature.

The UN331B interfaces to the 32-bit multiplexed address/data processor bus (PM-Bus) and the 32-bit processor expansion bus (PX-Bus). The PM-Bus is used for all processor write operations and single-word (four-byte) read operations. Multiple-word or burst reads are performed using the PM-Bus to transfer the address to main memory, then the words of the burst are returned using both the PM-Bus and PX-Bus.

Processor Interface (TN765) — G3s, G3vs, G3i

The TN765 has four data links to the Time Division Multiplexing (TDM) bus and a link through the memory bus to the processor. This circuit pack is an interface to the 3B2 MSA, DCS, ISDN, and AUDIX™ Interface service. The TN765 allows direct access to one data link from an EIA port on the circuit pack in AC-powered standard reliability systems. The other data links connect to a digital line circuit and a PDM or TDM to access an MSA, DCS, CMS, ISDN, or AUDIX™. Data links can connect to DS1 tie trunks to access DCS or ISDN applications.

The TN765 terminates BX.25 and ISDN LAPD protocols. The Multi-Carrier Cabinet supports two TN765 circuit packs using a total of eight data links. Single-Carrier Cabinets, compact Single-Carrier Cabinets, and enhanced single-Carrier Cabinet systems support only one TN765 circuit pack using four data links.
Ring Generator (TN2202) — France

The TN2202 supplies 50 Hz ringing power. The TN2202 supplies balanced ringing, via a modified backplane, to terminals connected to the Multi-Country Analog Line circuit pack (TN2183) when administered for France analog transmission.

The TN2202 plugs into the Power Unit slot and is required for each carrier containing analog lines (one in a Single-Carrier Cabinet or one in each port carrier of a Multi-Carrier Cabinet). A one-lead modification is required in each backplane using TN2202 and all products made for France.

The TN2202 produces two symmetrical voltages (typically 28 Vrms) with respect to ground, and takes -48 VDC, -5 VDC, and ground from the backplane and generates 2 X 28 Vrms with added -48 VDC.

SN Clock (TN572) — G3r

The TN572 distributes the timing signals that synchronize the Switch Node (SN) carrier in which it is installed. The TN572 also receives maintenance data.

SN Interface (TN573) — G3r

The TN573 is an interface (installed in a Switch Node (SN) carrier in a Center Stage Switch (CSS) that terminates a fiber optic link from an Switch Node Interface (SNI) circuit pack in an SN carrier to an SNI circuit pack in another SN carrier, an Expansion Interface (EI) circuit pack in a PPN, and an EI circuit pack in an EPN.

The TN573 routes circuit, packet, and control messages. One TN573 is used per PN.

Speech Synthesizer (TN433) — Italy

The TN433 provides four ports that retrieve fixed messages for Leave Word Calling, Automatic Wakeup, and Visually Impaired Attendant Console features. Examples of the messages are: good morning, time-of-day, and extension number. Each of the ports has touch-tone detection. The TN433 has administrable Mu-Law and A-Law companding.
Speech Synthesizer (TN457) — U.K. English

The TN457 provides four ports that retrieve fixed UK-accent spoken messages for Leave Word Calling, Automatic Wakeup, and Visually Impaired Attendant Console features. Examples of the messages are: good morning, time-of-day, and extension number. Each of the ports has touch-tone detection.

The TN457 has administrable Mu-Law and A-Law companding.

Speech Synthesizer (TN725B) — U.S. English

The TN725B has four ports that send voice message information to voice terminals to activate Leave Word Calling, Automatic Wakeup, Voice Message Retrieval, and Do Not Disturb features. The ports can detect tones.

System Access and Maintenance (TN1648) — G3r

The TN1648 is a Switch processing Element (SPE) component used for maintenance. A processor in the TN1648 runs control routines that connect to maintenance software in the RISC processor. The TN1648 has a five-LED alarm panel and a toggle switch to manually inhibit automatic emergency transfer of PPN analog lines.

The TN1648 provides two RS-232 interfaces for connection to an administration terminal and, with duplication, connection to a standby maintenance terminal. The TN1648 also provides a Tip and Ring port with a built-in modem allowing a remote administration terminal to access the system. The circuit pack allows connection to the G3-MT terminal and connection to and termination of one end of the processor bus. The PPN alarm monitors and outputs including auxiliary alarms for auxiliary equipment and environmental monitoring for over-temperature conditions.

Other maintenance items include power supply sense and control for the A, B, C, D, and E carriers. The emergency transfer control activates if a catastrophic failure occurs. The emergency transfer control circuit consists of a three-position toggle switch that may be moved into manual forced-on, manual forced-off, or automatic position. Other maintenance items include:

- Time-of-day clock containing the Initialization and Administration System (INADS) telephone number, login password, and product identification in nonvolatile memory
- Connection to and termination of one end of the processor bus
- Alarm panel information with Major, Minor, and Warning LEDs, an ACKnowledge LED, and an Emergency Transfer LED
Tape Drive (TN1656) — G3rV2

The TN1656 contains a Small Computer System Interface (SCSI) tape drive that stores 3 Mbytes to 120 Mbytes of system software, including customer translations, bootstrap image, and any core dumps.

Tie Trunk (TN437) — Australia

The TN437 provides four ports for independent interface to another PBX four-wire E & M lead signaling tie trunk. This interface may be made via trunk-carrier frequency equipment or by direct connection. The TN437 provides selectable trunk type for outgoing calls and incoming calls — automatic (default), immediate, wink start, and delay dial. The TN437 supports administrable timers, A-Law companding, and selectable standard reliability type 5 signaling or E & M type 5 signaling.

Tie Trunk (TN439) — Australia and Japan

The TN439 provides four ports for two-wire tie trunks with loop disconnect signaling. The TN439 has administrable A-Law and Mu-Law companding and timers.

Tie Trunk (TN458) — U.K.

The TN458 provides four ports for independent interface to another PBX four-wire E & M lead signaling tie trunks. This interface may be made via trunk-carrier frequency equipment or by direct connection. The TN458 has administrable A-Law and Mu-Law companding and timers. The TN458 can be administered on each port for connection to Type 1 E & M standard (unprotected) format, Type 1 E & M compatible (unprotected) format, Type 1 E & M compatible (protected) format, and Type 5 simplex format.

Tie Trunk (TN497) — Italy

The TN497 provides four ports for two-wire tie trunks with loop disconnect signaling. Each port is administrable for A-law and Mu-law companding, timers, Translatore Giunzione Uscente (TGU) (outgoing tie), Translatore Giunzione Entrante (TGE) (incoming tie), and Translatore Giunzione Interno (TGI) (internal tie).
Tie Trunk (TN760D)

The TN760D has four ports used for Type 1 or Type 5 four-wire E & M lead signaling tie trunks, that can be automatic, immediate-start, wink-start, and delay-dial. Each port on the TN760D has T, R, T1, R1, E, and M signal leads. The TN760D provides release link trunks required for centralized attendant service and has administrable A-Law and Mu-Law companding.

Option switches on each TN760D port can select connections to Type 1 E & M standard (unprotected) format, Type 1 E & M compatible (unprotected) format, Type 1 E & M compatible (protected) format, and Type 5 simplex format.

For Belgium, Czechoslovakia, the Commonwealth of Independent States, and the Netherlands, use TN760D Vintage 11 or higher.

Tie Trunk (TN2140) — Italy and Hungary

The TN2140 provides four ports for independent interface to another PBX four-wire E & M lead signaling tie trunks. This interface may be made via trunk-carrier frequency equipment or by direct connection.

The TN2140 provides continuous and discontinuous E & M signaling, Administrable A-Law and Mu-Law companding, zero dB digital loss, and standard Type 1 and Type 5 signaling.

Tone-Clock (TN419B) — Italy, Australia, U.K.

The TN419B supplies call progress tones, touch tones, answer-back tones, and trunk transmission test tones. The TN419B provides 2 MHz and 160 kHz clocks, and the 8 kHz frame clock. This circuit pack can transmit the system clock and tones on either Time Division Multiplexing (TDM) bus A, TDM bus B, or both TDM bus A and TDM bus B. This circuit pack contains a ringing voltage alarm detection circuit.

Tone-Clock (TN768)

The TN768 supplies timing, including Stratum 4 timing, to the Port Network (PN). It produces the following tones: call progress, touch tones, answer-back, and trunk transmission test. The TN768 has 2 MHz, 160 kHz, and 8 kHz clocks. The TN768 can transmit the system clock and tones on either Time Division Multiplexing (TDM) bus A, TDM bus B, or both.
Tone-Clock (TN780)

The TN780 connects to and monitors an optional external Stratum 3 clock. It also couples the Stratum 3 clock output to local clocks. Only the control carrier, which supplies master timing to the system, uses this circuit pack. The TN780 produces the following tones: call progress, touch tones, answer-back, and trunk transmission test. It has 2 MHz, 160 kHz, and 8 kHz clocks. The TN780 can transmit the system clock and tones on either Time Division Multiplexing (TDM) bus A, TDM bus B, or both.

The TN780 can be administered to produce five different tone plans (countries outside the United States) other than the United States tone plan. Six tones can be customized in each plan. The TN780 can also operate in Mu-Law or A-Law companding.

Tone-Clock (TN2182) — With A-Law and Mu-Law
Tone Detector and Call Classifier

The TN2182 Tone-Clock integrates the tone generator, tone detection, system clock, and synchronization functions onto one circuit pack for use in standard, high, and critical reliability systems. The TN2182 supports eight ports for tone detection and allows gain or loss to be applied to Pulse Code Modulated (PCM) signals received from the bus. The TN2182 provides Stratum 4 enhanced clock accuracy, supports MFC signaling, and places a single tone on any of the 256 time slots of the system’s Time Division Multiplexing (TDM) bus.

TN2182 provides continuous, cadenced, and mixed tones, allows administrable setting of tone frequency and level, detects 2025 Hz, 2100 Hz, or 2225 Hz modem answerback tones, and provides normal and wide broadband dial tone detection. The TN2182 supports A-Law and Mu-Law companding.

In most configurations, the two- or three-board combination of tone generator circuit pack, tone detector circuit pack, and/or call classifier circuit pack can be replaced with this one circuit pack, freeing up one or two port slots.

Tone Detector (TN420C)

The TN420C can be administered to detect and analyze tones on the Time Division Multiplexing (TDM) bus. The TN420C has two Network Processing Elements (NPEs) with eight channels that provide four Dual Tone Multi-Frequency (DTMF) receiver ports, two general purpose tone detector ports, and two digital loop-around ports. Tones must be companded in A-Law code only.
Tone Detector (TN748C/D)

The TN748C/D has four Dual Tone Multi-Frequency (DTMF) receivers and two general purpose tone receivers to detect call progress tones, modem answer-back tones, transmission test tones, and noise. The circuit packs provide dial tone detection required for Automatic Route Selection (ARS), off-premises (out-of-building) keyboard dialing, and off-premises abbreviated dialing. Tones must be companded in Mu-Law code only.

TN756 Tone Detector

The TN756 has four Dual Tone Multi-Frequency (DTMF) receivers and two general-purpose tone receivers to detect call progress tones, modem answer-back tones, transmission test tones, and noise. The circuit packs provide dial tone detection required for the Automatic Route Selection (ARS) feature, off-premises (out-of-building) keyboard dialing, and off-premises abbreviated dialing.

The TN756 is used only in System 75 R1V3 XE and R1V4 applications where Multi-Frequency (MF) generation/detection is not required. The TN756 was replaced by the TN741 and TN748B.
This chapter describes power sources, power and ground wiring, and fan units, under the following topics:

- "Power Sources"
- "Multi-Carrier Cabinet Power System"
- "Single-Carrier Cabinet Power System"
- "Lightning Protection"
- "Sneak Current Protection"
- "Cabinet Fan Units"

Procedures used to plan a customer’s power and grounding requirements in a system before installation are given in DEFINITY® Communications System Generic 3 Planning and Configuration, 555-230-601.

Procedures used to connect a system to power and ground sources during installation are given in DEFINITY® Communications System Generic 1 and Generic 3 Installation and Test, 555-230-104.
Power Sources

This section describes AC power and DC power sources used for cabinets.

AC Power

Power feeders from a dedicated AC power source (usually located outside the building) are connected to an AC load center. The feeders do not power other equipment. The AC load center distributes the power to receptacles. The power cord from the AC power distribution unit in each Multi-Carrier Cabinet and AC power supply in each Single-Carrier Cabinet is plugged into a receptacle.

Either of the following types of AC power sources can supply 60 Hz power to the AC load:

- Single-phase 240 VAC supplying 120 VAC or 240 VAC. See Figure 3-1.
  This source has three wires plus ground: two “hot” wires, one neutral wire, and one ground wire. A “hot” wire has a voltage with respect to the neutral wire.

- Three-phase, Y, 208 VAC supplying 120 VAC or 208 VAC. See Figure 3-2.
  This source has four wires plus ground: three “hot” wires, one neutral wire, and one ground wire.

![Figure 3-1. Single-Phase 240 VAC Source](image-url)
Figure 3-2. Three-Phase Y 208 VAC Source

Table 3-1 lists the 60 Hz AC power sources that can supply power to a cabinet AC load. A National Electrical Manufacturers Association (NEMA) receptacle (North America) is connected to the wires from the unit or supply. The AC power cord from the power input of the unit or supply is plugged into a receptacle.

Table 3-1. AC Power for Multi-Carrier and Single-Carrier Cabinets

<table>
<thead>
<tr>
<th>Unit/Supply Type</th>
<th>Power Input</th>
<th>Power Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC power distribution (J58890CE, List 3 or List 9)</td>
<td>120 VAC, 60 Hz NEMA 5-50R</td>
<td>One phase 240 VAC with neutral, or one phase of 3-phase, 208 VAC with neutral</td>
</tr>
<tr>
<td>AC power distribution (J58890CE, List 4 or List 10)</td>
<td>208/240 VAC, 60 Hz NEMA L14-30R</td>
<td>One phase 208 VAC, or single-phase, 240 VAC</td>
</tr>
<tr>
<td>AC power supply (WP-91153) in a Single-Carrier Cabinet</td>
<td>120 VAC, 60 Hz NEMA 5-20R</td>
<td>One phase 240 VAC with neutral, or one phase of 3-phase, 208 VAC with neutral</td>
</tr>
<tr>
<td></td>
<td>220/240 VAC at country-specific receptacle</td>
<td>One phase 220 VAC or One phase of 240 VAC</td>
</tr>
<tr>
<td>AC power supply (WP-90510) in a compact Single-Carrier Cabinet (G3vs)</td>
<td>120 VAC 60 Hz NEMA 5-20R</td>
<td>One phase 240 VAC with neutral, or one phase of 3-phase, 208 VAC with neutral</td>
</tr>
<tr>
<td></td>
<td>220/240 VAC at country-specific receptacle</td>
<td>One phase 220 VAC or One phase of 240 VAC</td>
</tr>
</tbody>
</table>
DC Power

DC-powered cabinets require -42.5 VDC to -53.5 VDC source at up to 75 Amps. Most Multi-Carrier Cabinet installations require this DC source.

Fused Current Drains

Table 3-2 lists fused current drains of AC-powered cabinets.

Table 3-2. Fused Current Drains of AC-Powered Cabinets

<table>
<thead>
<tr>
<th>Cabinet</th>
<th>Fused Current Drain (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Carrier Cabinet (120 VAC)</td>
<td>50</td>
</tr>
<tr>
<td>Multi-Carrier Cabinet (208 VAC)</td>
<td>30</td>
</tr>
<tr>
<td>Multi-Carrier Cabinet (240 VAC)</td>
<td>30</td>
</tr>
<tr>
<td>Single-Carrier Cabinet (120 VAC)</td>
<td>15 or 20</td>
</tr>
<tr>
<td>Auxiliary Cabinet (120 VAC)</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 3-3 lists fused current drains of DC-powered cabinets.

Table 3-3. Fused Current Drains of DC-Powered Cabinets

<table>
<thead>
<tr>
<th>Cabinet</th>
<th>Fused Current Drain (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Carrier Cabinet</td>
<td>75</td>
</tr>
<tr>
<td>Single-Carrier Cabinet</td>
<td>25</td>
</tr>
<tr>
<td>Auxiliary Cabinet</td>
<td>20</td>
</tr>
</tbody>
</table>
Multi-Carrier Cabinet Power System

A Multi-Carrier Cabinet power system consists of an AC or DC power distribution unit in the bottom of each cabinet and cabling to distribute output voltages to power unit circuit packs in the carriers. Locations with only a 240 VAC 50 Hz power source are limited to using the DC power distribution unit.

**NOTE:**
G3s is only available in Single-Carrier Cabinets. G3vs is available only in the compact Single-Carrier Cabinet.

A Multi-Carrier Cabinet power system also consists of power unit circuit packs in the carriers supplying DC power to the circuit pack slots. [Chapter 2] Cabinets, Carriers, and Circuit Packs describes the AC and DC power supplies.

Table 3-4 lists the power inputs and outputs of each power distribution unit inside a Multi-Carrier Cabinet. A power cord with a NEMA plug is attached to each unit (AC units only). In Table 3-4, the AC power input voltage wires are in the power cord going to the unit.

### Table 3-4. Power Distribution Unit Inputs and Outputs

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>Power Input</th>
<th>Power Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC power distribution</td>
<td>120 VAC, 60 Hz, 50 Amp, three wires: one hot, one neutral, one ground, and a NEMA 5-50P plug</td>
<td>120 VAC (normal), 144 VDC (optional, emergency), and 75 VAC to 100 VAC at 20 Hz from the ring generator</td>
</tr>
<tr>
<td>(J58890CE, List 3 or List 9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC power distribution</td>
<td>208/240 VAC, 60 Hz, 20 Amp, four wires: two hot, one NEMA L14-30R plug</td>
<td>120 VAC (normal), 144 VDC (optional, emergency), and 75 VAC to 100 VAC at 20 Hz from the ring generator</td>
</tr>
<tr>
<td>(J58890CE, List 4 or List 10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC power distribution</td>
<td>-48 VDC at up to 75 Amps</td>
<td>-48 VDC, and 67 VAC to 100 VAC at 20 Hz or 25 Hz from the ring generator</td>
</tr>
<tr>
<td>(J58890CF, List 5 or List 9)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3-5 lists the input and output voltages of power converter circuit packs in carriers of Multi-Carrier Cabinets.

**Table 3-5. Carrier Power Unit Inputs and Outputs**

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>AC Power Input</th>
<th>DC Power Inputs</th>
<th>DC Power Input</th>
<th>DC Power Outputs</th>
<th>DC Power Outputs</th>
<th>DC Power Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 631DA1</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>AC 631DB1</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>DC 644A</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>DC 645B</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Power Distribution

_Figure 3-3_ shows AC power distribution in Multi-Carrier Cabinets. Five-conductor power distribution cables on each side of the cabinet connect the power distribution unit to the power converter circuit packs in each of the five carriers.

The power distribution cables carry 120 VAC during normal operation and 144 VDC from optional batteries during power backup operation when AC power fails. Another cable connects 120 VAC from the power distribution unit to the battery charger.

⚠️ _WARNING:_

_Power to the system MUST be turned OFF before a battery charger, fuse, or power distribution unit is removed. Failure to do so will result in damage to the equipment._
Figure 3-3. AC Power Distribution in Multi-Carrier Cabinets

The 631DA1 Power Converter is in the Port, Control, Switch Node, and Expansion Control Carriers. The 631DB1 AC Power Converter is in the Port, Control, and Expansion Carriers.

**NOTE:**
“LX” in the Figure refers to the L-number identifying a specific unit type.
Figure 3-4 shows DC power distribution in Multi-Carrier Cabinets. Three-conductor cables on each side connect the DC power distribution unit to the power converter circuit packs in the carriers.

![DC Power Distribution in Multi-Carrier Cabinets](image)

Figure 3-4. DC Power Distribution in Multi-Carrier Cabinets

The 644A DC Power converter is in the Port, Control, Switch Node, and Expansion Control Carriers. The 645B DC Power converter is in the Port, Control, and Expansion Carriers.

⚠️ WARNING:

*Power to the system MUST be turned OFF before a battery charger, fuse, or power distribution unit is removed. Failure to do so will result in damage to the equipment.*
AC Power Distribution Unit (J58890CE)

Figure 3-5 shows the AC power distribution unit located at the bottom of each Multi-Carrier Cabinet. Five-conductor cables connect the unit to the power units in the carriers. These cables carry 120 VAC to the carriers during normal operation and optional 144 VDC during emergency operation if the AC input power has failed.

The AC power distribution unit contains the following components:

- **Circuit breaker**
- Three optional **48 VDC batteries**, used only without an Uninterruptible Power Supply (UPS) powered cabinet and provide power to the cabinet
- **DC power relay** (used only without a UPS)
- **Electromagnetic interference (EMI) filter**
- Optional **battery charger**, used without UPS-powered cabinets
- **Ring generator**
- **20 Amp fuses**

⚠️ **WARNING:**

Power to the system MUST be turned OFF before a battery charger, fuse, or power distribution unit is removed. Failure to do so will result in damage to the equipment.
Circuit Breaker

The circuit breaker protects the AC input power to the cabinet and serves as the main AC input disconnect switch. The circuit breaker has two poles for 120 VAC or three poles for 208/240 VAC. When the cabinet overheats, the circuit breaker automatically opens and removes the AC power input.

48 VDC Batteries

The three 48 VDC batteries (used only without a UPS) are connected in series to produce a nominal 144 VDC, fused at 20 Amps. The batteries are trickle-charged from the battery charger.

Battery Charger

When AC power is restored after an outage, the battery charger (used only without a UPS) converts a 120 VAC input to DC voltage that recharges the batteries (usually within 30 hours).

DC Power Relay

This relay disconnects the batteries (used only without a UPS) from a system when AC power is being used. This relay also disconnects the batteries if power fails for more than ten minutes in a standard reliability system, five minutes in high reliability and critical reliability systems, and ten minutes in a G3 expansion port network (EPN). This protects the batteries from being discharged.

EMI Filters

The EMI filters suppress noise voltage on the AC input line to the unit.

Ring Generator

The ring generator converts the -48 VDC input to a 67 VAC to 100 VAC, 20 Hz or 25 Hz ringing voltage (the 20 Hz ring generator has an apparatus number of 124D and the 25 Hz ring generator has an apparatus number of 130A.) The analog line circuit packs use this AC voltage output to ring voice terminals. The AC outputs are routed from the ring generator to port carriers, expansion control carriers, and control carriers in G3i.

20 Amp Fuses

20 Amp fuses protect the power on each cable going from the AC power distribution unit to power converters in the carriers.
Backup Power

When AC power fails, the three 48 VDC batteries power the system for 10 seconds in a PPN cabinet. The batteries power the system for 15 seconds in an EPN cabinet and for 10 minutes in the control carrier in a standard reliability system. The batteries also provide system power for five minutes in the control carrier in high reliability and critical reliability systems, and for 10 minutes in the expansion control carrier in the “A” position of an EPN cabinet in G3r.

Uninterruptible Power Supply (UPS)

An external Uninterruptible Power Supply (UPS) (with a longer backup time than holdover batteries), can replace the batteries and battery charger. A UPS is connected from the AC power source to a cabinet's AC power cord. If AC power fails, the UPS senses the failure and supplies its own AC power to the cabinet.

DC Power Distribution Unit (J58890CF)

Figure 3-6 shows a typical DC power distribution unit located at the bottom of each Multi-Carrier Cabinet. The power distribution unit contains the ring generator, circuit breakers, terminal blocks, and fan power. Three-conductor cables connect the unit to the power units in the carriers. These cables carry -48 VDC to the carriers. 20 Amp circuit breakers protect the power on each cable.
**WARNING:**

*Power to the system MUST be turned OFF before a battery charger, fuse, or power distribution unit is removed. Failure to do so will result in damage to the equipment.*

**Ring Generator**

The ring generator converts the -48 VDC input to an AC output. The 130A1 Ring Generator creates a 75 VAC 25 Hz AC output. The 124D1 Ring Generator creates a 75 VAC to 100 VAC 20 Hz AC output.

The Analog Line circuit packs use this AC voltage output to ring voice terminals. The AC outputs are routed from the ring generator to the port and expansion interface carriers and the control carrier in G3i.

**Circuit Breakers**

The main circuit breaker is located on the front of the unit and serves as the main DC input disconnect switch. When the cabinet overheats, the circuit breaker automatically opens and removes the DC power input. The circuit breakers that control power to the carriers and filter circuits are located at the rear of the unit.

In the J58890CF list 1 and list 3 power unit, five circuit breakers control the power units in the carriers; one circuit breaker controls power to the fans and ring generator.

**Terminal Blocks**

-48 VDC from the DC source is connected to the Terminal blocks on the rear of the unit.
AC Power and Ground Wiring

This section covers AC power and ground wiring in Multi-Carrier Cabinets.

Multi-Carrier Cabinets

Figure 3-7 shows typical AC power and ground wiring in collocated PPN and EPN cabinets. A 6 AWG ground wire from the ground block on the EPN cabinet connects to the cabinet ground block on the PPN cabinet. A 6 AWG ground wire connects the cabinet ground block on the PPN cabinet to the system single-point ground bar on the AC power panel.

Figure 3-7. Typical Multi-Carrier Cabinet AC Power and Ground Wiring — Collocated EPN
Figure 3-8 shows typical AC power and ground wiring in a remote EPN cabinet. A ground wire is connected from the cabinet ground block of both the PPN and EPN cabinets to an approved external ground.

Figure 3-8. Typical Multi-Carrier Cabinet AC Power and Ground Wiring — Remote EPN
DC Power and Ground Wiring

This section describes DC power and ground wiring in Multi-Carrier Cabinets. Figure 3-9 shows a typical DC-powered Multi-Carrier Cabinet. The power and ground leads are routed through duct work or are routed underneath the cabinets.

Figure 3-9. Typical Multi-Carrier Cabinet DC Power and Ground Wiring
Multi-Carrier Cabinets

A DC power plant can be used to power Multi-Carrier Cabinets. Figure 3-10 shows typical power and ground wiring in a DC-powered Multi-Carrier Cabinet.

Figure 3-10. Typical Multi-Carrier Cabinet DC Power and Ground Wiring — Collocated EPN
AC- and DC-Powered Multi-Carrier Cabinets

This section describes combined AC power and DC power and ground wiring in Multi-Carrier Cabinets.

⚠️ WARNING:
Power to the system MUST be turned OFF before a battery charger, fuse, or power distribution unit is removed. Failure to do so will result in damage to the equipment.

Multi-Carrier Cabinets

Figure 3-11 and Figure 3-12 show power and ground wiring for AC- and DC-powered Multi-Carrier Cabinets. A 6 AWG ground wire is connected to the ground block in the bottom of each EPN cabinet. The ground wire is routed out of the cabinet and terminated at the ground discharge bar on the battery plant.

Figure 3-11. Typical Multi-Carrier Cabinet System AC and DC Power and Ground Wiring — Collocated EPN
Figure 3-12. Typical Multi-Carrier Cabinet System AC and DC Power and Ground Wiring — Remote EPN
Intracabinet Grounding

Figure 3-13 shows intracabinet grounding in AC- and DC-powered cabinets.

Figure 3-13. Intracabinet Grounding in AC- and DC-Powered Multi-Carrier Cabinets

NOTES:

1. GRD — Represents 14 AWG and 18 AWG wire straps used to interconnect adjoining carrier backplanes and cabinet single point ground block. GRD strapping must be continued by spanning a vacant carrier position such as cabinet position “B” with 14 AWG straps similar to those spanning the fan assembly unit.
2. FGRD — Represents 14 AWG strapping used to interconnect each carrier backplane with the carrier frame. For AC-powered cabinets, the backplane carrier is connected to the cabinet frame with 14 AWG straps.

3. MODGRDU — Represents a 6 AWG circuit ground wire that interconnects the cabinet ground block of an AC-powered module to the system single point ground terminal bar. If a system has more than one cabinet, a 6 AWG wire is connected between the Multi-Carrier Cabinets. The wire is then connected from the PPN or cabinet closest to the AC protector cabinet or to the system single point ground terminal bar. DC-powered cabinets have no MODGRDU because the +DC return serves this function.

4. Cabinet Ground Block — A copper block located at the base of AC-powered cabinets connected directly to the cabinet frame. A copper block is mounted on the rear of the DC distribution unit of DC-powered cabinets. Only the DC ground block is insulated from the cabinet frame. These ground blocks serve as the cabinet’s single point ground.

5. For systems featuring DC-powered cabinets, the gauge of the grounding conductor from the system single point ground (ground discharge bar) to the approved building ground must be the same gauge or larger than any conductor in the system and never smaller than 6 AWG.

6. The wire gauge is determined by the voltage drop of the wire. The voltage drop in the -48 VDC feeders between the power board (panel) and the system cabinet is specified not to exceed 0.5 VDC one way or 1.0 VDC round trip.
Single-Carrier Cabinet Power System

Each Single-Carrier Cabinet has one AC or one DC power supply (the compact Single-Carrier Cabinet has only an AC power supply), that distributes DC power and AC ringing voltage to the circuit pack slots in the cabinet.

AC Power Supply (WP-91153)

In a cabinet powered from an AC source, a single, plug-in, multi-output AC power supply is located in the power supply slot. A power cord with a three-prong plug on one end and a single connector on the other end connects the supply to a dedicated AC power source. Figure 3-14 shows the supply.

Figure 3-14. AC Power Supply in a Single-Carrier Cabinet

The inputs to the power supply can be (depending on List version):

- 120 VAC, 60 Hz, 15 Amp to 20 Amp; three wires in the power cord: one hot wire, one neutral wire, and one ground wire
- 220 VAC or 240 VAC, 50 Hz, 10 Amp; three wires in the power cord: one hot wire, one neutral wire, and one ground wire

The AC power supply produces the following DC outputs: +5 VDC, -5 VDC, -48 VDC, +12 VDC, and a battery-charging voltage. The DC outputs are distributed on the cabinet backplane to the slots for the circuit packs. The AC ringing voltage output value and frequency depend on the country of use. The power supply has a circuit breaker and EMI filtering.

A holdover circuit in the power supply allows a system to operate normally during AC power interruptions. When AC input power fails, reserve batteries supply power to the Memory and Processor circuit packs and fans for two minutes. All port circuit packs are inactive during this time. The power supply contains a battery charger to charge the holdover batteries.
DC Power Supply (676B)

In a cabinet powered from a DC source, a single, plug-in multi-output DC power supply is located in the power supply slots. Figure 3-15 shows the DC power supply.

A -48 VDC source supplies power to the DC power supply at up to 25 Amps. The DC power supply produces the following DC outputs: +5 VDC, -5 VDC, -48 VDC, and +12 VDC. The DC outputs are distributed on the cabinet backplane to the slots for the circuit packs. The AC ringing voltage output value and frequency depend on the country of use. The power supply has circuit breakers and EMI filtering.

![Diagram of DC Power Supply (676B)]

Figure 3-15. DC Power Supply (676B) — Single-Carrier Cabinet

116A Isolator

Each peripheral connected to a DC-powered system, via the asynchronous Electronic Industries Association (EIA) RS-232 interface, requires a 116A isolator. The isolator is inserted at the RS-232 interface between the peripheral and the interface connector to isolate ground between the system and external adjuncts.
AC Power and Ground Wiring

Figure 3-16 shows typical AC power and ground wiring in Single-Carrier Cabinets used in the United States. Only the EPN cabinet shown in the figure is used in G3r. A ground wire from the ground block on the bottom cabinet of the EPN connects to the single-point ground block on the bottom cabinet of the PPN. A 6 AWG ground wire connects the single-point ground block to an approved external ground.

Figure 3-16. Typical Single-Carrier Cabinet Power and Ground Wiring — Collocated EPN
Figure 3-17 shows typical AC power and ground wiring in Single-Carrier Cabinets with a remote EPN cabinet. A ground wire is connected from the cabinet ground block of the PPN and EPN cabinets to an approved external ground.
DC Power and Ground Wiring

Each cabinet has a separate DC power input. Figure 3-18 shows typical DC-powered and grounded Single-Carrier Cabinets. A ground wire is connected to the ground block in the bottom cabinet. The wire goes to the battery plant and is connected to the ground discharge bar. An approved external ground connects to the ground discharge bar.

Figure 3-18. Typical Single-Carrier Cabinet DC Power and Ground Wiring
AC Power Supply — Compact Single-Carrier Cabinet

In a G3vs compact Single-Carrier Cabinet, the plug-in, multi-output, auto-ranging, AC power supply (WP-90510) is mounted above the carrier at the top of the cabinet. A power cord with a three-prong plug on one end and a single connector on the other end connects the supply to a dedicated AC power source. Figure 3-19 shows the AC power supply.

![Diagram of AC Power Supply in G3vs Cabinet]

The inputs to the power supply can be (depending on List version):

- 120 VAC, 50 Hz or 60 Hz, 6 Amp; three wires in the power cord: one hot wire, one neutral wire, and one ground wire
- 220 VAC or 240 VAC, 50 Hz or 60 Hz, 3 Amp; three wires in the power cord: one hot wire, one neutral wire, and one ground wire

The AC power supply produces the following DC outputs: +5 VDC, -5 VDC, and -48 VDC. The DC outputs are distributed on the cabinet backplane to the slots for the circuit packs. The AC ringing voltage output value and frequency depend on the country of use. The power supply has EMI filtering.

A holdover circuit in the power supply allows a system to operate normally during AC power interruptions.
Lightning Protection

A Coupled Bonding Conductor (CBC) in the cabinet ground wiring protects the system from lightning. A CBC runs adjacent to wires in a cable and causes mutual coupling between the CBC and the wires. The mutual coupling reduces the potential differences resulting from lightning surges.

When an auxiliary cabinet is provided with a Multi-Carrier Cabinet system, a 6 AWG ground wire connects the cabinet single-point ground block to the auxiliary cabinet ground block. The ground wire is routed as close as possible to the cables connecting the system cabinet to the auxiliary cabinet.

If equipment is not mounted in the auxiliary cabinet, the power supply must be plugged into one of the two convenience outlets located on the back of the Multi-Carrier Cabinet to preserve ground integrity. The convenience outlet is fused at 5 Amps. A dedicated G3-MT terminal is usually plugged into the other convenience outlet.

Figure 3-20 shows CBC grounding in an AC-powered cabinet. A minimum one-foot spacing is maintained between CBC and other power and ground leads. In AC-powered systems, the system single-point ground terminal block is located on the AC load or AC protector cabinet. In DC-powered systems, the system single-point ground is the ground discharge bar at the DC power cabinet.

NOTE:
A CBC can be a 10 AWG ground wire, a continuous cable sheath surrounding wires within a cable, or six unused pairs of wire within a cable, twisted and soldered together. The CBC is connected from the cabinet single-point ground bar in an AC-powered cabinet or the ground discharge bar in a DC-powered cabinet to the CBC terminal bar at the PBX Main Distribution Frame (MDF).
Figure 3-20. CBC Grounding in an AC-Powered Cabinet

Sneak Current Protection

Sneak current protection uses fuses to protect building wiring between the network interface and trunk circuits when exposed to extraneous power. The fuses also protect the circuit packs. All incoming and outgoing trunks and off-premises station lines pass through the sneak fuses. Sneak fuse panels are installed on the switch-side of the network interface.
Cabinet Fan Units

This section describes the fan units in Multi-Carrier Cabinets, Single-Carrier Cabinets, and compact Single-Carrier Cabinets.

Multi-Carrier Cabinet Fan Unit

Figure 3-21 shows a cross-sectional side view of the fan unit in a Multi-Carrier Cabinet. The figure shows fan and air filter positions and air flow directions from the front and rear fans.

The fan unit is mounted in Position “F” and consists of six fans (three in front and three in rear) that operate at continuously variable speeds. A removable air filter is provided above and below the fan unit. Four sensors monitor the cabinet temperature. Three sensors are inside the cabinet top and one sensor is inside the cabinet bottom. One of the top sensors affects the speed of the front fans and the bottom sensor affects the speed of the rear fans.

A speed control and thermal alarm circuit in each fan monitors the thermal sensors. When a sensor indicates a change in cabinet temperature, the circuit in a fan changes that fan’s speed accordingly.
The P2 connector on the lower right rear side of the fan unit connects the fans to a power cable supplying -48 VDC to each fan, +5 VDC to the speed control and thermal alarm circuit in each fan in G3, and temperature sensor signals to the equivalent circuit in each fan. One pair of wires goes to each fan circuit. Alarm signals are also routed to the equivalent circuit in each fan. One pair of wires goes to each fan circuit.

The fans receive -48 VDC from the 631DB1 AC power unit located on the bottom of the cabinet. In the DC-powered Processor Port Network (PPN) and Expansion Port Network (EPN) cabinets, the fans receive -48 VDC from the DC distribution unit located in Position “G” of the cabinets.

A minor alarm is sent to the processor circuit pack in the Processor Port Network (PPN) cabinet and the maintenance circuit pack in an Expansion Port Network (EPN) cabinet if a fault in any fan’s speed drops below minimum. A minor alarm is also generated if a fan has stopped due to loss of -48 VDC. A major alarm is sent by one of the cabinet top thermal sensors if the exhaust temperature reaches 149 degrees Fahrenheit (65 degrees Celsius).

Another cabinet top sensor senses if the exhaust temperature reaches 158 degrees Fahrenheit (70 degrees Celsius). If so, the system shuts down and Emergency Transfer is invoked.

**Single-Carrier Cabinet Fan Unit**

Four constant-speed fans are mounted at the top rear of the cabinet. The fans receive -48 VDC from a cable plugged into the motherboard on the bottom of the cabinet. An air filter is located below the fan unit. Air flows down through the filter over the circuit packs. The filter can be removed and cleaned or replaced when necessary.

If the cabinet temperature reaches 158 degrees Fahrenheit (70 degrees Celsius), the temperature sensor in the power supply causes the system to shut down.

**Compact Single-Carrier Cabinet Fan Unit**

Two constant-speed fans are mounted at the top rear of the cabinet. The fans receive -48 VDC from a cable plugged into the motherboard on the bottom of the cabinet. There is no air filter. Air flows from the outside, into the bottom of the cabinet, around the circuit packs, and out through the back of the cabinet.

If the cabinet temperature reaches 158 degrees F (70 degrees Celsius), the temperature sensor in the power supply causes the system to shut down.
This chapter describes various cabinet and carrier configurations that compose DEFINITY® Generic 3 (G3). The configurations are described relative to combinations of cabinet interconnection options and system duplication options in the following order:

- "Sequence of Installing Carriers in Cabinets"
- "Minimum Cabinet Configurations"
- "Cabinet Configurations in Directly — Connected Systems"
- "Cabinet Configurations in a CSS-Connected G3r"

Procedures used to configure cabinets and carriers in a system before installation are given in DEFINITY® Communications System Generic 3 Planning and Configuration, 555-230-601.

Sequence of Installing Carriers in Cabinets

The following tables list the sequential positions of carriers installed in the Processor Port Network (PPN) and Expansion Port Network (EPN) cabinets.

Table 4-1 lists the positions of the carriers installed sequentially in the PPN cabinet. The installation of Switch Node (SN) carriers displaces port carriers. SN carriers are used in G3r only.
### Table 4-1. Carrier Positions in a PPN Cabinet

<table>
<thead>
<tr>
<th>Carrier Type</th>
<th>Carrier Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>First “B” if no control carrier duplication; “C” if control carrier duplication or no control carrier duplication; then “D,” and then “E”</td>
</tr>
<tr>
<td>Control</td>
<td>“A” if no control carrier duplication; “A” and “B” if control carrier duplication</td>
</tr>
<tr>
<td>Switch Node (G3r only)</td>
<td>First “E” if no duplication; if duplication, “D” and “E.” The “D” duplicate SN can also go in the “E” position of an EPN</td>
</tr>
</tbody>
</table>

Table 4-2 lists the positions of the carriers installed sequentially in an EPN cabinet.

### Table 4-2. Carrier Positions in an EPN Cabinet

<table>
<thead>
<tr>
<th>Carrier Type</th>
<th>Carrier Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>First “B”; then “C,” “D,” and then “E.” “B” is required for a critical reliability system.</td>
</tr>
<tr>
<td>Expansion control</td>
<td>“A” only</td>
</tr>
<tr>
<td>Switch Node (G3r only)</td>
<td>First “E” if no duplication; “D” and “E” if duplication</td>
</tr>
</tbody>
</table>

Table 4-3 lists the positions of the carriers installed sequentially in an EPN cabinet with two port networks (PNs).

### Table 4-3. Carrier Positions in an EPN Cabinet with Two PNs (G3r Only)

<table>
<thead>
<tr>
<th>Carrier Type</th>
<th>Carrier Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port</td>
<td>“B,” then “C” for first PN; “E,” then “D” for second PN</td>
</tr>
<tr>
<td>Expansion control</td>
<td>“A” for the first PN only</td>
</tr>
</tbody>
</table>
Minimum Cabinet Configurations

Minimum cabinet configurations in Multi-Carrier Cabinets and in stacks of Single-Carrier Cabinets serve as the foundations on which to build cabinets in directly connected systems and Center Stage Switch (CSS)-connected systems. Also described are the carrier and cabinet locations of the following minimum required circuit packs:

- Tone-clock)
- Expansion Interface (E1)
- DS1 Converter (DS1C)
- EPN Maintenance

A minimum cabinet configuration is determined by the following criteria: cabinet interconnection options (directly connected and CSS-connected); system duplication options (standard reliability, high reliability, and critical reliability); and traffic engineering, which determines the number of PNs.

Table 4-4 through Table 4-6 list the minimum required carriers and circuit packs in PPN and EPN cabinets.

Table 4-4. Minimum Requirements for PPN Cabinet

<table>
<thead>
<tr>
<th>Duplication Option</th>
<th>Connection Option</th>
<th>Control Carriers</th>
<th>Switch Node Carriers</th>
<th>Tone-Clocks</th>
<th>Expansion Interfaces in EPN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard reliability</td>
<td>Direct</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Equals Number of EPNs</td>
</tr>
<tr>
<td></td>
<td>CSS (G3r Only)</td>
<td>1</td>
<td>0 or 1*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>High reliability</td>
<td>Direct</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>Equals Number of EPNs</td>
</tr>
<tr>
<td></td>
<td>CSS (G3r Only)</td>
<td>2</td>
<td>0 or 1*</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Critical reliability</td>
<td>Direct</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>Twice Number of EPNs</td>
</tr>
<tr>
<td></td>
<td>CSS (G3r Only)</td>
<td>2</td>
<td>0 or 2*</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
### Table 4-5. Minimum Requirements for Each EPN Cabinet

<table>
<thead>
<tr>
<th>Duplication Option</th>
<th>Connection Option</th>
<th>Control Carriers</th>
<th>Switch Node Carriers</th>
<th>Tone-Clocks</th>
<th>Expansion Interfaces in EPN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard reliability</td>
<td>Direct</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Equals No. of EPNs</td>
</tr>
<tr>
<td></td>
<td>CSS (G3r Only)</td>
<td>1</td>
<td>0 or 1*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>High reliability</td>
<td>Direct</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>Equals No. of EPNs</td>
</tr>
<tr>
<td></td>
<td>CSS (G3r Only)</td>
<td>1</td>
<td>0 or 1*</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Critical reliability</td>
<td>Direct</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>Twice number of EPNs</td>
</tr>
<tr>
<td></td>
<td>CSS (G3r Only)</td>
<td>1</td>
<td>0 or 2*</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

* The first Switch Node is normally located in the PPN. The second and third Switch Nodes are normally located in an EPN to support up to 44 PNs. The first Switch Node may be located in an EPN.

### Table 4-6. Minimum Requirements for Two-Port Network Multi-Carrier Cabinet EPN Cabinets — G3r Only

<table>
<thead>
<tr>
<th>Duplication Option</th>
<th>Connection Option</th>
<th>Control Carriers</th>
<th>Switch Node Carriers</th>
<th>Tone-Clocks</th>
<th>Expansion Interfaces in EPN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard reliability</td>
<td>Direct</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>CSS</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>High reliability</td>
<td>Direct</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>CSS</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Critical reliability</td>
<td>Direct</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>CSS</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
Standard Reliability Systems

A standard reliability system has no duplicated hardware and includes:

- One Control carrier
- One Tone-Clock circuit pack per Port Network
- Port Networks interconnected by single cables
- One Switch Node carrier (G3r only), if required

Figure 4-1 shows a standard reliability directly connected system. It is shown in both the Single-Carrier Cabinet and the Multi-Carrier Cabinet configuration. The Expansion Interface (EI) circuit pack shown in the port carrier is used in G3r. In G3i, the EI circuit pack is installed in the control carrier.

G3s and G3vs do not support multiple PNs, and do not use the EI circuit pack. All G3 configurations support standard reliability.

The optional carriers shown in the Multi-Carrier Cabinets are port carriers that can be added as required. In G3r, a Switch Node carrier can be added to position “E” as required. Optional port carriers are determined by traffic engineering.
Figure 4-1. Minimum Single PN Cabinet Configurations — Standard Reliability
Figure 4-2 shows the only two-PN cabinet configuration in G3. It is only used in G3r standard reliability systems.

High Reliability Systems — G3, G3i or G3r

High reliability systems include two control carriers located in the PPN cabinet containing duplicate SPEs and tone-clock circuit packs (one active and the other in standby), one Tone-Clock circuit pack per EPN, duplicate Expansion Interface circuit packs in the PPN (only G3r with CSS), PNs interconnected by single cables, and duplicate SN clock circuit packs (one is active and the other is in standby) in the Switch Node carrier (G3r only).

With duplicate processors, one SPE is active and the other is in standby (ready to be substituted). The memory in the standby SPE is constantly updated to reflect the memory in the active SPE by a process called “memory shadowing.”

If the standby SPE becomes active, its memory is then identical to the formerly active SPE. The standby SPE becomes active when the active SPE fails or is reset by an external command. When the standby SPE becomes active, it can begin processing calls without interrupting the system.
High reliability systems require two control carriers in the PPN cabinet. The other cabinets used in high reliability systems are the same as the EPN cabinets or stacks shown in Figure 4-6.

Figure 4-3 shows a G3 high reliability system. Added optional port carriers result from PNs required by traffic engineering analysis. The switch node carrier is shown in the PPN cabinet for a high reliability CSS-connected G3r. Although G3iV1 did not offer high reliability, V2 and later releases provide this configuration.

![Diagram of PPN Cabinet Configurations](image-url)
Critical Reliability Systems — G3i

A critical reliability system includes the following duplicated components: control carrier, Tone-Clock circuit packs in each PN, Expansion Interface circuit packs in each PN, and cabling between PNs.

The duplicated processors use memory shadowing that functions exactly as described in the "High Reliability" section.

In a critical reliability system, all port network connectivity, including CSS, EI circuit packs, fiber optic cabling, and Digital Signal level-1 Converter (DS1C) facilities (if present) are fully duplicated. An active-standby method is used that sets up calls over the active PN connectivity and backs up the calls in the standby PN connectivity. If the active PN connectivity fails, the standby connectivity becomes active to continue the call service.

Each pair of Tone-Clock circuit packs in a PN is used in active-standby mode. The SN clock in each SN carrier is not duplicated, but each SN carrier is fully duplicated.

Critical reliability G3i systems require the duplication of the control carrier in the PPN cabinet. Figure 4-4 shows the minimum PPN cabinet configuration in critical reliability G3i systems.

Figure 4-4. Minimum Configuration — Critical Reliability G3i
Critical Reliability Systems — G3r

Critical reliability G3r systems require the duplication of carriers in PPN and EPN cabinets, as well as EPN stacks.

Figure 4-5 shows the minimum PPN cabinet configurations in critical reliability, directly connected systems and CSS-connected G3r.

Figure 4-5. Minimum Configurations — Critical Reliability G3r
Single Port Network EPN Cabinets in Critical Reliability Systems

Figure 4-6 shows the minimum cabinet configurations in single Port Network (PN) EPN cabinets in a critical reliability system. Included is a Multi-Carrier EPN cabinet and a Single-Carrier Cabinet EPN stack.

In G3r, the multi-carrier EPN cabinet can have optional duplicate SN carriers in carrier positions D and E. Optional port carriers result from PNs required by traffic engineering analysis.

Figure 4-6. Minimum Configurations — Critical Reliability
Two Port Network EPN Cabinets in Critical Reliability Systems — G3r

Figure 4-7 shows the minimum cabinet configurations in an EPN cabinet with two separate PNs in a G3r critical reliability system.

In a G3r, only the Multi-Carrier Cabinet without an SN carrier is arranged as a two-PN cabinet.

---

Figure 4-7. Minimum Configuration — Critical Reliability G3r
Cabinet Configurations in Directly — Connected Systems

Each directly-connected G3i has a maximum of three cabinets. The locations of Expansion Interface (EI) circuit packs are shown in Figure 4-8 through Figure 4-10.

**NOTE:**
G3s and G3vs support only one Single-Carrier Cabinet.

**Standard Reliability**

Table 4-7 lists the required Expansion Interface circuit pack slots, Tone-Clock circuit pack slots, Maintenance circuit pack slots, and remaining port circuit pack slots in a standard reliability directly connected system.

<table>
<thead>
<tr>
<th>Port Networks</th>
<th>Expansion Interfaces</th>
<th>Tone-Clocks</th>
<th>Remaining Port Slots</th>
<th>Maintenance Slots (G3r and G3i)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (PPN only)</td>
<td>0</td>
<td>1</td>
<td>89 (G3i)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>80 (G3r)</td>
<td></td>
</tr>
<tr>
<td>2 (One PPN and one EPN)</td>
<td>2</td>
<td>2</td>
<td>186 (G3i) 177 (G3r)</td>
<td>8</td>
</tr>
<tr>
<td>3 (One PPN and two EPNs)</td>
<td>6</td>
<td>3</td>
<td>281 (G3i) 272 (G3r)</td>
<td>12</td>
</tr>
</tbody>
</table>
Figure 4-8 shows the cabinet configurations in standard reliability directly connected systems. In cabinet 1, the Expansion Interface (EI) circuit pack is not required in a single PN (PPN only) system because no connection to another cabinet is required.
High Reliability

Table 4-8 lists the required Expansion Interface (EI) circuit pack slots, Tone-Clock circuit pack slots, Maintenance circuit pack slots, and remaining port circuit pack slots in a high reliability, directly connected system.

<table>
<thead>
<tr>
<th>PNs</th>
<th>EIs</th>
<th>Tone-Clocks</th>
<th>Remaining Port Slots</th>
<th>Maintenance Slots (G3r and G3i)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (PPN only)</td>
<td>0</td>
<td>2</td>
<td>78 (G3i) 60 (G3r)</td>
<td>2</td>
</tr>
<tr>
<td>2 (One PPN and one EPN)</td>
<td>2</td>
<td>3</td>
<td>175 (G3i) 157 (G3r)</td>
<td>3</td>
</tr>
<tr>
<td>3 (One PPN and two EPNs)</td>
<td>6</td>
<td>4</td>
<td>270 (G3i) 252 (G3r)</td>
<td>4</td>
</tr>
</tbody>
</table>

Figure 4-9 shows the cabinet configurations in high reliability, directly connected G3r systems. In cabinet 1, the Expansion Interface circuit pack is not required in a single PN (PPN only) system because no connection to another cabinet is required.

Figure 4-9. High Reliability, Directly-Connected Systems
Critical Reliability

Table 4-9 lists the required Expansion Interface (EI) circuit pack slots, Tone-Clock circuit pack slots, and remaining port circuit pack slots in critical reliability, directly-connected systems.

**NOTE:**
G3s and G3vs do not support multiple cabinets.

Table 4-9. Critical Reliability, Directly-Connected PNs and Circuit Pack Slots

<table>
<thead>
<tr>
<th>Port Networks</th>
<th>Expansion Interfaces</th>
<th>Tone-Clocks</th>
<th>Remaining Port Slots</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (PPN only)</td>
<td>0</td>
<td>2</td>
<td>78</td>
</tr>
<tr>
<td>PPN and EPN</td>
<td>4</td>
<td>4</td>
<td>172</td>
</tr>
<tr>
<td>PPN and two EPNs</td>
<td>12</td>
<td>6</td>
<td>262 (G3i) 244 (G3r)</td>
</tr>
</tbody>
</table>

Figure 4-10 shows the cabinet configurations in a critical reliability, directly connected system. The port carrier in cabinet 1 is optional in systems with only one PN (PPN only), but is required in systems with two or three PNs.

All Expansion Interface circuit packs are not required for systems with only a PPN, because no connection is required from the PPN to another cabinet. The EIs in cabinet 1 are shown in their G3r positions. These are moved to the control carriers in cabinet 1 of G3i.
Cabinet Configurations in a CSS-Connected G3r

A Center Stage Switch (CSS)-connected G3r supports from one to 44 Port Networks (PN). The locations of Expansion Interface circuit packs are shown in Figure 4-11 through Figure 4-16.

Standard Reliability

Table 4-10 lists from two to 22 Port Network (PN) cabinets for a standard reliability CSS-connected G3r. Also included is the required Expansion Interface (EI) circuit pack, Tone-Clock circuit pack, DS1 Converter circuit pack, Maintenance circuit pack slots, and remaining port circuit pack slots.
Table 4-10. Standard Reliability CSS-Connected Systems

<table>
<thead>
<tr>
<th>Port Networks</th>
<th>Switch Nodes</th>
<th>Expansion Interfaces</th>
<th>Tone-Clocks</th>
<th>Remaining Port Slots</th>
<th>DSIC in SN</th>
<th>Maintenance Slots</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>157</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>255</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>353</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>451</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>549</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>647</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>745</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>9</td>
<td>9</td>
<td>843</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>941</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>11</td>
<td>11</td>
<td>1039</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>12</td>
<td>12</td>
<td>1137</td>
<td>2</td>
<td>12</td>
</tr>
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<td>13</td>
<td>1</td>
<td>13</td>
<td>13</td>
<td>1235</td>
<td>2</td>
<td>13</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>14</td>
<td>14</td>
<td>1333</td>
<td>2</td>
<td>14</td>
</tr>
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<td>15</td>
<td>1</td>
<td>15</td>
<td>15</td>
<td>1431</td>
<td>2</td>
<td>15</td>
</tr>
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<td>16</td>
<td>1</td>
<td>16</td>
<td>16</td>
<td>1529</td>
<td>2</td>
<td>16</td>
</tr>
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<td>17</td>
<td>2</td>
<td>17</td>
<td>17</td>
<td>1607</td>
<td>4</td>
<td>17</td>
</tr>
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<td>2</td>
<td>18</td>
<td>18</td>
<td>1705</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>19</td>
<td>2</td>
<td>19</td>
<td>19</td>
<td>1803</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
<td>20</td>
<td>20</td>
<td>1901</td>
<td>4</td>
<td>20</td>
</tr>
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<td>21</td>
<td>21</td>
<td>1999</td>
<td>4</td>
<td>21</td>
</tr>
<tr>
<td>22</td>
<td>2</td>
<td>22</td>
<td>22</td>
<td>2097</td>
<td>4</td>
<td>22</td>
</tr>
</tbody>
</table>
Figure 4-11 and Figure 4-12 show the cabinet configurations in a standard reliability CSS-connected G3r.

Figure 4-11. Standard Reliability CSS-Connected G3r — One SN

In Figure 4-12, the two-SN CSS can have one to seven inter-SN fiber optic links to support up to 22 maximum Port Networks (PNs). The following numbers of links are used with the associated maximum number of PNs:

- One to five links support 22 Port Networks
- Six links support 20 Port Networks
- Seven links support 18 Port Networks
Figure 4-12. Standard Reliability CSS-Connected G3r — Two SNs

High Reliability

Table 4-11 lists from two to 22 PN cabinets for a high reliability CSS-connected G3r. Also included are the required Expansion Interface circuit packs, Tone-Clock circuit pack slots, DS1 Converter circuit pack slots, Maintenance circuit pack slots, and remaining port circuit pack slots.
Table 4-11. High Reliability, CSS-Connected Systems

<table>
<thead>
<tr>
<th>Port Networks</th>
<th>Switch Nodes</th>
<th>Expansion Interfaces</th>
<th>Tone-Clocks</th>
<th>Port Slots</th>
<th>DS1C in SN</th>
<th>Maintenance Slots</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>136</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>234</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>332</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>430</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>528</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>8</td>
<td>8</td>
<td>626</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>9</td>
<td>9</td>
<td>724</td>
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Figure 4-13 and Figure 4-14 show the cabinet configurations in a high reliability, CSS-connected G3r.

In Figure 4-14, the two-Switch Node CSS is assumed to have five inter-SN fiber optic links to support 21 maximum PNs. The following numbers of links are used with the associated maximum number of PNs:

- One to four links support 22 Port Networks
- Five links support 21 Port Networks
- Six links support 19 Port Networks
- Seven links support 17 Port Networks
Critical Reliability

Table 4-12 lists from two to 22 Port Network (PN) cabinets for a critical reliability, CSS-connected G3r. Also included are the required Expansion Interface (EI) circuit pack slots, Tone-Clock circuit pack slots, DS1 Converter circuit pack slots, Maintenance circuit pack slots, and remaining port circuit pack slots.
Table 4-12. Critical Reliability, CSS-Connected Systems

<table>
<thead>
<tr>
<th>Port Networks</th>
<th>Switch Nodes</th>
<th>Expansion Interfaces</th>
<th>Tone-Clocks</th>
<th>Port Slots</th>
<th>DS1C in SN</th>
<th>Maintenance Slots</th>
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</table>
Figure 4-15 and Figure 4-16 show the cabinet configurations in a critical reliability, CSS-connected G3r.

Figure 4-15. Critical Reliability, CCS-Connected G3r — One SN
In Figure 4-16, the two-Switch Node CSS can have one to seven inter-SN fiber optic links to support up to 22 maximum PNs. The following numbers of links are used with the associated maximum number of PNs:

- One to five links support 22 Port Networks
- Six links support 20 Port Networks
- Seven links support 18 Port Networks

Figure 4-16. Critical Reliability, CSS-Connected G3r — Two SNs
This chapter describes the system cabling in the following order:

- “Types of Cabling”
- “Cabling Between Carriers in Multi-Carrier Cabinets”
- “Cabling Between Carriers in Multi-Carrier Cabinets”
- “Cabling Between Single-Carrier Cabinets”
- “Cabling Between Single-Carrier and Multi-Carrier Cabinets”
- “Cabling to On- and Off-Premises Systems”

All cabling between carriers and cabinets is connected to the backplanes and rear panels.

The descriptions and illustrations provided in this document are for reference purposes only. Detailed procedures used to connect cables between cabinets during installation are given in DEFINITY® Communications System Generic 1 and Generic 3 Installation and Test, 555-230-104.

Types of Cabling

Two types of cabling are used in the system:

- Metallic: traditional copper cable
- Fiber Optic: glass cable that transports light
Metallic Cabling

Metallic cabling is used within Multi-Carrier Cabinets and Single-Carrier Cabinets to connect the Time Division Multiplexing (TDM) bus and packet bus (also called “LAN bus”) between carriers. Metallic cabling is also used to distribute AC and DC power to the carriers in Multi-Carrier Cabinets, and intraconnect carriers, such as duplicated control carriers.

Fiber Optic Cabling

Fiber optic cabling interconnects a Multi-Carrier Cabinet to another Multi-Carrier Cabinet, a Single-Carrier Cabinet to a Multi-Carrier Cabinet, and a Single-Carrier Cabinet to another Single-Carrier Cabinet.

Figure 5-1 shows a directly connected three-PN standard reliability system. Fiber optic cabling is connected from the PPN cabinet to both EPN cabinets and from one EPN cabinet to the other EPN cabinet.

In directly connected, critical reliability systems, fiber optic cabling is duplicated between the PPN and each EPN. Fiber optic cabling is also doubled between EPNs. One of the doubled fiber optic links is active while the other link is in standby.

---

Figure 5-1. Fiber Optic Cabling in a Directly Connected System
In a Center Stage Switch (CSS)-connected standard reliability system, shown in Figure 5-2, fiber optic cabling is connected from the PPN to the CSS and from the CSS to the EPNs.

![Diagram](image-url)

**Figure 5-2. Fiber Optic Cabling in a CSS-Connected System**

In CSS-connected, critical reliability systems, one fiber optic cable is connected from the PPN to the CSS, and one fiber optic cable is connected from the PPN to the duplicate CSS.

The TDM/LAN bus for the PPN in a critical reliability system is extended into the CSS and duplicate CSS, allowing the Expansion Interface (EI) circuit packs for the PPN to be installed in the Switch Node (SN) carriers. In this case, both ends of the fiber optic cable from the PPN to the CSS terminate in the same SN carrier.

Each one of the EPNs has one fiber optic cable connected to the CSS and another fiber optic cable connected to the duplicate CSS. Only one of the fiber optic links is active between the PPN and a CSS and between an EPN and a CSS, while the other link is in standby. Depending on the cabinet configuration, the following carriers in each cabinet can be interconnected by fiber optic cabling:

- Port
- Expansion Control
- Switch Node
Figure 5-3 shows an example of fiber optic cabling between carriers in separate cabinets. Using transceivers and interface circuit packs, each cable connects through one cabinet’s TDM bus and packet bus to that in another cabinet.

Cabinet Interconnections

Several methods are used to interconnect cabinets in a system. One method is to route a cable from each interface circuit pack to each port slot connector. Another method is to use fiber optic cable connected to lightwave transceivers. The transceivers can transmit light up to 4,900 feet (1.5 km) or 25,000 feet (7.6 km), respectively. Each transceiver is connected to a port slot connector in a carrier. The transceivers convert light signals to electric signals and vice-versa. The transmit (TX) output on one transceiver is connected to the receive (RX) input on the other transceiver (via the fiber optic cable) to allow full duplex (simultaneous bidirectional) transmission. Two separate 62.5-micron diameter fiber optic cables surrounded by a sheath compose the overall cable.

A third method to interconnect cabinets is to use Expansion Interface (EI) circuit packs that include the TN776 EI circuit pack in port and expansion control carriers in G3i, the TN570 EI circuit pack in port and expansion control carriers in G3i and G3r, and the TN573 Switch Node Interface (SNI) circuit pack in an SN carrier in G3r. The first EI in a carrier is always inserted in the port slot labeled EXPN INTFC. If a second EI is required, it is always inserted in the port slot (also labeled EXPN INTFC) adjacent to the first EI. In a G3r, according to a loading sequence, TN573 SNI circuit packs are inserted in slots labeled SWITCH NODE INTERFACE in an SN carrier.
Cabling Between Carriers in Multi-Carrier Cabinets

This section covers the following cabling:

- Cabinet Harness Cabling
- Control Carrier Cabling
- Switch Node (SN) Carrier Cabling
- Digital Signal Level-1 (DS1) Cabling
- TDM and Packet Bus (TDM/LAN) Cabling

**NOTE:**
The “LAN” portion of TDM/LAN bus cabling described in this section refers to the “packet bus.”

TDM/LAN Bus Cabling (Except G3r)

**NOTE:**
For G3r cabling, proceed to page 5-7.

TDM/LAN extension cables connect the carriers in each Multi-Carrier Cabinet. These cables are flat ribbon cables attached to connectors labeled TDM/LAN on each carrier backplane. See Figure 5-4 for a typical TDM/LAN bus cable installation. Note the cables are “daisy-chained” between the cabinets.

Each cable length is 15 feet (4.6m) across five carriers in a cabinet. The cable connected across the fans between the carrier in position “A” and the carrier in position “D” is longer than the other cables.

Each end of the TDM/LAN bus cable is terminated on a carrier backplane by a TDM/LAN bus terminator installed in a TDM/LAN connector. See Figure 5-4. Note the terminator is in the upper left in the top carrier and in the lower right in the bottom carrier. If a carrier is not in place, such as a port carrier in position “E” for example, the terminator is installed in the previous carrier (port carrier in position “D”).
Figure 5-4. TDM/LAN Bus Cabling — Rear of Multi-Carrier Cabinet
TDM/LAN Bus Cabling (G3r)

TDM/LAN cabling is identical across carriers in PPN and EPN cabinets in all systems except CSS-connected systems. See Figure 5-5.

Figure 5-5. TDM/LAN Bus Cabling — Rear of EPN Cabinet with High Reliability CSS-Connected Multi-Carrier Cabinet (G3r)
Refer to Figure 5-6 through Figure 5-8 for typical TDM/LAN bus cabling and terminator installation in G3r Multi-Carrier Cabinet installations.
Figure 5-7. TDM/LAN Bus Cabling — Rear of EPN Cabinet in Critical Reliability, CSS-Connected Multi-Carrier Cabinet (G3r)
Figure 5-8. TDM/LAN Bus Cabling — Rear of Two-PN EPN Cabinet in a Multi-Carrier Cabinet (G3r)
Cabinet Harness

The cabinet harness shown in Figure 5-9 runs vertically on the right rear side of each cabinet. The lower end of the harness is connected to the P2 connector on the power distribution unit in the bottom of the cabinet. Branch cables run from the harness to the P1 connector on each carrier located in the “A” through “E” carrier positions.

A branch cable also runs from the harness to the processor carrier in the PPN cabinet and expansion control carrier in an EPN cabinet. Branch cables provide the following electrical functions to each cabinet carrier: carrier identification (addressing), cabinet alarms, power distribution control signals, and power supply control signals.

The branch cables provide the circuit ground connection from the “A” carrier position to the cabinet ground block in the bottom of the cabinet. The cables also provide -48 VDC to the fan unit to operate the fans, and +5 VDC to the fan unit to power the speed control and alarm circuit in each fan.

---

Figure 5-9. Cabinet Harness and Branch Cabling — Rear
Control Carrier Cabling in G3i

The following connectors are on the backplane of a control carrier:

- ICCA and ICCB connectors for the shadowing and data control leads between the control carrier and the duplicated control carrier
- Cabinet harness connector to allow connection to the ring generator and to the environmental and power supply signals
- -48 VDC connector for the fans

The following connectors are on the backplane of a duplicated control carrier:

- ICCA and ICCB connectors for the shadowing and data control leads between the duplicated control carrier and the control carrier
- Cabinet harness connector to allow connection to the ring generator and to the environmental and power supply signals

Figure 5-10 shows the control carrier and duplicated control carrier Intercabinet Cables A and B (ICCA and ICCB).

![Control Carrier Backplane Interconnections in G3i](image)

Figure 5-10. Control Carrier Backplane Interconnections in G3i
Control Carrier Cabling in G3r

Figure 5-11 shows the control carrier cabling in the PPN cabinet of a high reliability and critical reliability G3r and the PPN cabinet of a standard reliability G3r. The following Intercabinet Cables (ICCs) are connected between the backplane of control carrier “A” and the backplane of control carrier “B” in high reliability and critical reliability systems:

- ICCA connects -48 VDC, +5 VDC, and -5 VDC to either control carrier when DC power fails in the other control carrier
- ICCC connects all signals from the AUX connector and the TERMINAL connectors on the rear panel to control carrier “B” when control carrier “A” fails
- ICCD carries memory bus signals and data bus signals between the UN330B Duplication Interface circuit pack in control carrier “A” and the UN330B in control carrier “B” to allow the inactive processor to shadow the active processor

In a standard reliability G3r only, ICCB is connected between control carrier “A” and port carrier “B” to duplicate the power.

Figure 5-11.  Control Carrier Backplane Interconnections (G3r)
Switch Node Carrier Cabling in G3r

In a CSS-connected G3r with one or two Switch Node (SN) carriers, the following shielded metallic cables (replaces fiber optic cabling) are used:

- Intraconnecting cable connects a TN570 EI circuit pack in Slot 1 of the SN carrier to a TN573 Switch Node Interface circuit pack in Slot 2 of the same carrier. The cable length is 13 inches (39cm).
- Cable connects a TN753 in Slot 2 of an SN carrier to a TN570 in Slot 2 of a port carrier in the same cabinet. The cable length is 5.5 feet (1.7m).

DS1 Remoting in G3r

DS1 remoting provides connectivity between two PNs to extend the distance beyond the 25,000-foot (7.6 km) limit of fiber optic cable. DS1 remoting can be used between two PNs up to 100 circuit miles (161 km) apart. DS1 remoting uses a dedicated DS1 circuit and proprietary non-truth-type signaling. DS1 remoting hardware is used in the CSS and in directly connected systems. A maximum of 20 EPNs can be connected to the PPN via DS1 remoting.

Standard metallic T1 transmission line cabling is assumed to exist between the PNs. This type of cabling produces a 2 ms echo delay across 100 circuit miles (worst case). Other transmission media, such as fiber optics, have less than a 2 ms delay across 100 miles. However, the 100-circuit mile limit is specified. As an example, suppose two EPNs use DS1, and one EPN is 75 circuit miles from the CSS. The other EPN can be a maximum of 25 circuit miles away from the CSS. A maximum of 20 EPNs can be connected remotely via DS1 to the PPN cabinet and EPN cabinet 2. This is because cabinet 2 contains one or two SN carriers that must be connected by fiber optic cable to the PPN cabinet.

A TN574 DS1 Converter (DS1C) circuit pack is used with the cabling. DS1C protection switching requires that any of the four DS1 facilities be capable of carrying wide-band packet data, circuit-switched data, or voice at any given time. The DS1C can reside in the port carrier (slot 3 to slot 20), the SN carrier (slot 1 or slot 21), and the expansion control carrier (port Slots 2 through 19).

Cabling on a Carrier for DS1C

As shown in a CSS-connected G3r in Figure 5-12, cabling on a carrier connects a DS1C to an appropriate EI or SNI and also provides a second connector to connect it to a public network. The DS1C to EI/SNI cable is a shielded cable held in place at the EI/SNI port connector by a 4B retainer and at the DS1C port connector by a 4C retainer. Table 5-1 lists the DS1 cables on a carrier.
Cabling Between Carriers in Multi-Carrier Cabinets

Table 5-1. TN574 DS1 Cable Lengths on a Carrier

<table>
<thead>
<tr>
<th>Connection Type</th>
<th>Length</th>
<th>Comcode Number</th>
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<tr>
<td>On same carrier</td>
<td>1 foot (.305 meters)</td>
<td>846448637</td>
</tr>
<tr>
<td>Between two carriers in same cabinet</td>
<td>5.5 feet (1.7 meters)</td>
<td>846448645</td>
</tr>
<tr>
<td>Between two adjacent cabinets</td>
<td>1 foot (.305 meters), used with two fiber optic transceivers, and one 20-foot (6.1 meters) fiber optic cable</td>
<td>846448652 and 1 846885259 bracket</td>
</tr>
</tbody>
</table>

Cabling to a Public Network for DS1C

Figure 5-12 shows cabling and the network between the remote PNs in a directly connected or CSS-connected G3r. TN574 DS1C circuit packs are plugged into the expansion control carrier in the EPN cabinet and into an SN carrier in the PPN cabinet. This connection is capable of maintaining timing (synchronism) from the PPN DS1 facility to the EPN DS1 facility.

A cable is connected from each DS1C port to a Channel Service Unit (CSU). The CSU is connected to a wall field, providing from one to four DS1 connections. The cable is plugged into the cable connected to the DS1C port connector. The other end of the cable has four 15-pin subminiature D-type connectors that plug into up to four CSUs. The PNs communicate across dedicated DS1 facilities in the public network between the wall fields.

Figure 5-12. DS1 Connectivity Between Remote PNs (G3r)
Cabling Between Multi-Carrier Cabinets

Table 5-2 lists the figures showing fiber optic cabling between cabinets in different configurations. Included in the figures are carrier positions, types of carriers, and EI circuit pack port slots used to terminate cabling between cabinets. Intracabinet cabling in the figures listed in Table 5-2 is metallic.

<table>
<thead>
<tr>
<th>Fiber Optic Cabling In:</th>
<th>See Figure</th>
</tr>
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<tbody>
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<td>Standard reliability directly connected system</td>
<td>Figure 5-13, Figure 5-14</td>
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<tr>
<td>High reliability directly connected G3r</td>
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<tr>
<td>Critical reliability, directly connected systems</td>
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<td>Two-port network cabinet G3r</td>
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<td>Standard reliability DS1C remote directly connected G3r</td>
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<td>Standard reliability CSS-connected G3r with one SN</td>
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<td>Standard reliability CSS-connected G3r with two SNs</td>
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<td>CSS-connected G3r with a two-PN cabinet</td>
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<td>DS1C remote CSS-connected G3r</td>
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Figure 5-13. Fiber Optic Cabling — Standard Reliability Directly Connected (Part 1)
Figure 5-14. Fiber Optic Cabling — Standard Reliability Directly Connected (Part 2)
Figure 5-15. Fiber Optic Cabling — High Reliability, Directly Connected G3r (Part 1)
Figure 5-16. Fiber Optic Cabling — High Reliability, Directly Connected G3r (Part 2)
Figure 5-17. Fiber Optic Cabling — Critical Reliability, Directly Connected (Part 1)
Figure 5-18. Fiber Optic Cabling — Critical Reliability, Directly Connected (Part 2)
Figure 5-19. Fiber Optic Cabling — Two-Port Network Cabinet
Figure 5-20. Fiber Optic Cabling — Standard Reliability DS1C Remote Directly Connected G3r (Part 1)
Figure 5-21. Fiber Optic Cabling — Standard Reliability DS1C Remote Directly Connected G3r (Part 2)
Figure 5-22. Fiber Optic Cabling — Standard Reliability CSS-Connected G3r with One SN
Figure 5-23. Fiber Optic Cabling — Standard Reliability CSS-Connected G3r with Two SNs (Part 1)
Figure 5-24. Fiber Optic Cabling — Standard Reliability CSS-Connected G3r with Two SNs (Part 2)
Figure 5-25. Fiber Optic Cabling — High Reliability CSS-Connected G3r with One SN
Figure 5-26. Fiber Optic Cabling — High Reliability CSS-Connected G3r with Two SNs (Part 1)
Figure 5-27. Fiber Optic Cabling — High Reliability CSS-Connected G3r with Two SNs (Part 2)
Figure 5-28. Fiber Optic Cabling — Critical Reliability CSS-Connected G3r with One SN
**Figure 5-29. Fiber Optic Cabling — Critical Reliability CSS-Connected G3r with Two SNs**
Figure 5-30. Fiber Optic Cabling — Critical Reliability CSS-Connected G3r with Two SNs
Figure 5-31. Fiber Optic Cabling — CSS-Connected G3r with a Two-PN Cabinet
Figure Notes:

1. In a standard reliability PPN, the first two DS1 remote EPN links are placed in the “E” position SN carrier (Slots 1 and 21). A cable connects the SNI circuit pack to the DS1C. A cable is used from the DS1C slot to the network DS1 facilities (through a CSU).

2. For more than two DS1 remote EPNs, the third through fifteenth remote EPNs require placement of the DS1C in the port carrier of the same cabinet (in port carriers “B”, “C”, or “D”). Recommendations are 1E Slots 4-9 to port carrier “C” and 1E Slots 13-19 to port carrier “B” for separate power failure groups. If PPN port carrier “C” and “D” are not provided, place the DS1Cs in “B.” Recommended placement order is 11, 10, 12, 9, 12, 8, etc.
3. For standard reliability systems requiring two switch nodes, the second SN is located in EPN cabinet 2, carrier “E.” For the first two DS1C remote EPNs from this second SN, a DS1C can be located in the SN carrier Slots 1 and 21. Beyond this, the DS1Cs are placed in the second SN cabinet carrier “A”, “B”, “C”, or “D” (as in the PPN shown). Recommended order of placement is 11, 10, 12, 9, 13, 8, etc. Recommendations are 2E Slots 4-9 to carrier “B” and 2E Slots 13-19 to carrier “A” for separate power failure groups.

4. In systems with a mixture of DS1 remote cabinets and fiber connections, only use the 846448645 cable in a port carrier. The 846448673 cable can be used between Switch Node carrier Slot 1 and Slots 2-9 or Slot 21 and Slots 13-20 as needed for the first two SNs, respectively.

5. Single-Carrier Cabinets can be used as DS1 remote EPNs using connections to the same slot as shown here.

6. Two port Multi-Carrier Cabinets can also be used as a DS1 remote cabinet. Place DS1C in upper PN (carriers “A”, “B”, and “C”). Place DS1C in lower PN (carriers “E” and “D”) in Slot E3 and use the appropriate cables as needed.

Cabling Between Single-Carrier Cabinets

This section covers the TDM/LAN bus cabling and the expansion control cabinet to port cabinet cabling.

TDM/LAN Bus Cabling

TDM/LAN extension cables connect the carriers in each cabinet. These are flat ribbon cables going to connectors labeled TDM/LAN on each cabinet backplane. The cable length is 25 feet (7.6m) through four stacked cabinets.

Each end of the TDM/LAN bus running across the cabinets is terminated on a cabinet backplane by a TDM/LAN bus terminator installed in Slot 01 of the bottom expansion control cabinet and in Slot 17 of the top port cabinet.

[Figure 5-33] through [Figure 5-35] show how the TDM/LAN bus is connected between Single-Carrier Cabinets.
Figure 5-33. TDM/LAN Bus Cabling — EPN Cabinet in Single-Carrier Cabinet Systems
Basic Control Cabinet to Duplicated Control Cabinet Cabling in G3i

Control cabinet backplanes on Single-Carrier Cabinets have Intercabinet Cable connectors (ICCA, ICCB, and ICCC) to connect shadowing and data control leads to the duplicated control cabinet.

Duplicated control cabinet backplanes have ICC connectors (ICCA, ICCB, and ICCC) to connect shadowing and control data leads to the basic control cabinet.

Figure 5-34 shows the cabling between the basic control cabinet and the duplicated control cabinet in a critical reliability system. An interconnect cable is connected between the respective ICCA, ICCB, and ICCC connectors on the basic control cabinet backplane and the duplicated control cabinet backplane.

**NOTE:**
In a standard reliability system, there is no interconnect cable between the basic control and duplicated control cabinets because there is no duplicated control cabinet.

---

**Figure 5-34. ICC Cabling Between Basic Control Cabinet and Duplicated Control Cabinet (G3i)**
Cabling Between Single-Carrier Cabinets in Standard Reliability and Critical Reliability

Figure 5-35 and Figure 5-36 show fiber optic cabling between Single-Carrier Cabinets in standard reliability directly connected systems.

Figure 5-37 and Figure 5-38 show fiber optic cabling between Single-Carrier Cabinets in high reliability directly connected systems.

Figure 5-39 and Figure 5-40 show fiber optic cabling between Single-Carrier Cabinets in critical reliability directly connected systems.

Included in the figures are carrier positions, types of carriers, and Expansion Interface (EI) circuit pack port slots.

NOTE:
Connections between Single-Carrier Cabinets are identical to connections between Multi-Carrier Cabinets. Single-Carrier Cabinets also have port slot locations identical to Multi-Carrier Cabinets.

Figure 5-35. Fiber Optic Cabling in Standard and High-Reliability Cabinets (Part 1)
Figure 5-36. Fiber Optic Cabling in Standard and High-Reliability Cabinets (Part 2)
Figure 5-37. Fiber Optic Cabling in Critical Reliability Cabinets (Part 1)
Figure 5-38. Fiber Optic Cabling in Critical Reliability Cabinets (Part 2)
Cabling Between Single-Carrier Cabinets in Remote Applications

Figure 5-39 shows fiber optic cabling between Single-Carrier Cabinets in remote applications. Included in the figures are carrier positions, types of carriers, and Expansion Interface (EI) circuit pack port slots.

<table>
<thead>
<tr>
<th>Port cabinet - J58890H</th>
<th>Port cabinet - J58890H</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Port cabinet - J58890H</td>
<td>Port cabinet - J58890H</td>
</tr>
<tr>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Expansion control cabinet - J58890N</td>
<td>Expansion control cabinet - J58890N</td>
</tr>
<tr>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>To cab1, E3-9 or E13-20 (or to SNI in another 'E' switch node carrier)</td>
<td>To cab1, E3-9 or E13-20 (or to SNI in another 'E' switch node carrier)</td>
</tr>
<tr>
<td>Standard or high reliability processor only</td>
<td>Standard or high reliability processor only</td>
</tr>
</tbody>
</table>

Figure 5-39. Fiber Optic Cabling Between Cabinets in Remote Applications
Cabling Between Single-Carrier and Multi-Carrier Cabinets

Fiber optic cables connect Single-Carrier Cabinets to Multi-Carrier Cabinets. This allows Single-Carrier Cabinets to use location numbering and port slot location numbering to be identical to Multi-Carrier Cabinets. Depending on the system configuration, the following fiber optic cables are connected between Single-Carrier Cabinets and Multi-Carrier Cabinets:

- Directly-connected system — Expansion control cabinet TN570 EI circuit pack in Slot 1 to TN570 EI circuit pack in a port carrier (position B or C) in the PPN cabinet in a two-PN G3r system, TN776 EI circuit pack in the control carrier in the PPN cabinet in a two-PN G3i system, and TN570 EI circuit pack in an expansion control carrier (position A) in an EPN cabinet in a three-PN system.

- CSS-connected system with one SN carrier — Expansion control cabinet TN570 EI circuit pack in Slot 1 to a TN573 SNI in the SN carrier.

- CSS-connected system with two SN carriers (critical reliability) expansion control cabinet TN570 EI circuit pack in Slot 1 to a TN573 SNI circuit pack in one SN carrier and port cabinet TN570 EI circuit pack in Slot 2 to a TN573 SNI circuit pack in the other SN carrier.

The cables from EI Slot 1 in cabinet A and EI Slot 2 in cabinet B always go to identical slot numbers in the two SN carriers.

The cabling between Single-Carrier Cabinets and Multi-Carrier Cabinets is shown in the following figures:

- Standard reliability, two-PN directly connected system (cabinets 1 and 2). See Figure 5-13 and Figure 5-14.
- Standard reliability, three-PN directly connected system. See Figure 5-13 and Figure 5-14.
- CSS-connected system with Single-Carrier Cabinet and Multi-Carrier Cabinet. See Figure 5-22.
- Critical reliability, CSS-Connected system with Single-Carrier Cabinets. See Figure 5-28.
- Three-PN, critical reliability, directly connected system with Single-Carrier Cabinets (G3r PPN must be Multi-Carrier Cabinet). See Figure 5-18 and Figure 5-19.
Cabling to On- and Off-Premises Systems

Cabling from the system to on-premises and off-premises systems is used to establish communications paths between the system line port circuits and trunk port circuits to external trunks, lines, and Data Terminal Equipment (DTE).

Figure 5-40 shows the cabling from the system through the network interface to off-premises trunks and lines going to the CO and remote equipment, and from the system to premises (house) wiring (data lines) going to information outlets (modular jacks) used for DTE equipment.

Main Distribution Frames (MDFs) are termination points for equipment cabling and distribution cabling. At an MDF, connections are made between those termination points to establish communications paths throughout the system.

Two major distribution frames are used:

- The **Main Distribution Frame (MDF)** is the field on which terminations and cross-connections for CO trunks, equipment cabling, and distribution cabling are made. See Figure 5-40. An MDF is the largest cross-connect field.

- The **Intermediate Distribution Frame (IDF)** is any cross-connect field other than an MDF. On an IDF, the terminations and cross-connections are made for the distribution cabling from the MDF, from other IDFs, and from the house wiring from information outlets.
Figure 5-40. Cabling from System Cabinet to On- and Off-Premises Wiring
This chapter describes the following parts of the system architecture:

- Functional Overviews of Operating System Layer and Applications Layer
- **Internal Connectivity** — Logical Links Spanning Cables and Optical Fibers Between Components
- Protocols

The G3V4 architecture evolved from the previous versions of G3. Code in G3r supports a Center Stage Switch (CSS) (G3r only). Processor connectivity, multiple port networks per cabinet, integrated provisioning, and the World Class Core (WCC) features are also supported. Except for the logical links for system components, the architecture is the same in both G1 and G3V1, and G3V4 architecture is essentially the same as G3V1 architecture.

**Operating System Layer**

Oryx/Pecos, the operating system used in G3V4, is a proprietary real-time system supporting multi-processing applications with message-passing between processes. Drivers are provided for interfacing to the system network, mass storage, and other peripherals.

**Applications Layer**

The applications layer consists of three major subsystems: call processing, management (administration), and maintenance.
Call Processing

Call processing is the sequence of events needed to connect, disconnect, and manage voice and data calls in a communications system. Figure 6-1 shows the actions to connect a call.

Figure 6-1. Example of Basic Call Set-up
Management functions employed in processing a call are:

- Terminal handling — Use of voice terminals ranging from a single-line analog set to a simultaneous voice/data station with display, multiple call appearances, feature buttons, and data module. Various trunks interconnect the terminals with other switching systems or a CO switch.

- Resource management — Management of resources such as Dual Tone Multi-Frequency (DTMF) receivers, time slots for circuit connections, tone generators, and internal software records for call processing, messaging, measurements, and call detail recording.

- Call sequencing control — Control of the sequencing logic that takes a call (such as a conference call) from one state to another.

- Routing and termination selection — Controls selection of a terminating endpoint or set of endpoints for a call. Some areas covered by routing and termination selection are hunting, bridging, coverage, least-cost routing, and routing data calls through modem-pooled resources.

A basic call model consists of these components:

- The call ties all parties of a connection together. It is defined by a record of these parties and the sequencing control logic that controls a call from origination to termination.

- The group appears as a party on the call and contains a set of users. The hunt group, for example, specifies how a user should be selected from a group to receive a call. The group is realized by a group manager in the layered software architecture discussed below.

- The user is one who uses a terminal or a set of terminals. The user is realized by the user manager described in the following layered software architecture.
Layered Software Architecture

Processes that provide messaging and station services and network and resource management functions are organized into a layered set of cooperating processes as described below and shown in Figure 6-2:

- **The service control layer** contains a service dispatcher process and a process for each of the different services of the switch. In the service control layer, call process provides the control and sequencing logic for call setup and takedown, and for a variety of feature operations in the system. Message service provides control for messaging services (such as Leave Word Calling). Station service provides miscellaneous station services such as integrated directory service, time-of-day display, and the programming of some translation data from the user’s terminal.

- **The resource control layer** provides general resource management for the services, service-specific functions, and the line-to-terminal signaling. System resources managed include the switch network, DTMF receivers, tones, trunks, voice terminals, data terminals, groups and databases such as the system dial plan, and the name and number directory. Service-specific functions provided are call routing, queuing, terminal administration, and maintenance. In the resource layer, the Group Manager contains all translation data for group membership and group properties and maintains the state of the group and its members. The User Manager contains both the user and terminal management software, and status information. It presents an abstract user or virtual terminal interface to the upper layers of software while handling the signaling with terminals at the driver layer. It also arbitrates terminal access contention among switch services, maintenance, and system administration.

The Dial-Plan Manager provides access to and interpretation of translation databases, including the system dial plan, the name/number directory, user permissions, least-cost routing patterns, and speed-calling numbers. The Connection Manager manages network resources and network control signaling and arbitrates among switch services, system maintenance, and administration for network resources.

- **The driver layer** encompasses the operating system drivers and the firmware in the intelligent port circuits of the communications network. Drivers include the switch-control channel driver, packet control driver, a timer driver, and maintenance circuit pack driver.
Call processing features can be classified as

- Voice management: voice communications available with the system
- Data management: data communications and management capabilities available with the system. Data communications is the process of transferring data from one point to another; data management is the process of planning, controlling, and effectively using data
- Network services: capabilities to assure efficient interconnection of the private network (the trunks and switching facilities dedicated for use by a business or organization)
- System management: capabilities needed to administer, control, and maintain the system and to generate system usage reports
- Hospitality services: for the lodging and health industries. Hotels, motels, and hospitals use the features to better manage the property and provide services to their guests/patients
- Call management services: for industries that receive many similar calls to allow balanced call distribution to a group of voice terminals
Management software controls the internal processes to install, administer, and maintain the system. A layered software architecture presents capabilities to the user in a simple and straightforward manner while the internal complexity of the system remains transparent.

Through the use of an online video display terminal, management software permits a customer or technician to install, test, re-arrange, and change equipment and services, and select user and system options.

Enhanced administration features are available through a personal computer (PC) or through terminals attached to other support systems, such as the Single Site Management and Network Management modules of Modular System Management.

System management software provides four functions through a terminal:

1. **Measurement collection and reporting** — Formatted reports of hourly traffic data on engineered resources such as trunk groups
2. **Maintenance testing and reporting** — Demand testing of circuit packs, terminal equipment, and the display of system error and alarm logs
3. **Translation data backup** — Translation data backup on tape
4. **Translation database management** — Provides *Data view mapping* to allow a user to display and change all translation data related to a station, trunk, or feature as a single task. *Database validation* ensures data entered is individually correct and consistent with other data, for example, extensions assigned to stations are consistent with the dialing plan. *Form transactions* ensure all translation data entered are either accepted as valid or rejected as inconsistent. *Concurrency control* allows multiple terminal users and ensures switch services software does not use critical data being changed.

System Management Layered Software consists of three layers. See [Figure 6-3].

1. The *user interface and control layer* provides users with access to the system through a terminal or through the X.25 remote link
2. The *command execution and validation layer* consists of measurement collection and storage, administration database update and validation, maintenance command execution, and translation backup on tape
3. The *data access and storage layer* consists of the administration database access module and the processes that store translation data
To support larger line size switches, management software allows the system administrator or technician to address a circuit pack with a cabinet number, carrier letter, and slot number to accommodate multiple port networks. The management software also provides support of multiple simultaneous administrators to allow high translation change activity associated with large switches. A protocol is available to ensure reliable data transfer for PC and Operations Support System Interfaces (OSSIs). OSSI is a system that performs provisioning and maintenance functions on the switch.
OSSI supplies provisioning features to minimize services installation costs and support of a large line switch including administration without Hardware (AWOH), to allow terminal translations to be entered before the hardware ports are assigned so port assignment can be performed later either manually or automatically. AWOH also provides support of additional terminal types such as attendant consoles, voice data terminals, data modules, Distributed Digital-Port Multiplexer (DDPM) endpoints, Basic Rate Interface (BRI) sets, analog queue warning ports, and announcement circuit packs. Terminal Translation Initialization (TTI) associates the terminal translation data with a specific port location through the entry of special codes and an extension number from a connected but untranslated terminal. Labor for system initialization, major additions, re-arrangements, and changes are greatly reduced.

The OSSI provides PC-based enhancements such as bulk station administration. This allows the user to perform global changes or edits for stations on the PC before downloading to the switch and for stations already downloaded to the switch. OSSI is used to make rapid changes to large amounts of station data.

**Maintenance**

Maintenance software offers a high level of service availability with minimum disruption to the system. Its interface with other software and hardware provides a quick and highly reliable fault-detection system and recovery action. If a problem occurs that cannot be solved by recovery action, LEDs on the circuit packs and/or alarm and error logs quickly indicate component faults for the system technician.

Because there is probably more equipment at a G3r site than at a G3s or G3i site, G3r maintenance software supports multiple concurrent administration and maintenance user sessions. This allows the connection of two or more terminals to perform simultaneous administration and maintenance tasks. Commands such as test, busyout, and release on different hardware elements can be administered at the same time from more than one terminal as long as the commands are not conflicting (they do not act on the same data).

Each of the following areas contributes to the overall reliability of the system:

- **Initialization** — Each software or hardware component maintained must be “initialized” (processes started, stations supplied power, etc.). Maintenance software initializes the system at boot time, including creating and starting processes, and inserting the circuit packs and ports

- **Switch Processing Element (SPE) recovery** — Recovery restart levels aid in maintaining SPE stability over transient SPE hardware or software errors. The SPE is the control complex that runs call processing, maintenance, and administration software

- **Hardware background testing** — Extensive background testing is performed by firmware and hardware on the circuit packs; if a problem is found, inline error messages are sent to maintenance software on the SPE
Maintenance software periodic and scheduled testing — Periodic tests (nondestructive tests) are typically run once an hour. Scheduled tests (including destructive tests), defined by the customer, are run once a day. Maintenance software runs either periodic or scheduled tests to ensure all errors are found and recovery or alarming can take place.

Error analysis — Maintenance software increments software counters, performs tests, and/or recovery actions when the following situations occur: inline errors are reported (typically by firmware), other errors are reported from software processes, and when periodic, scheduled, or demand testing for maintenance objects is performed.

When software error counters go over threshold, additional testing and/or recovery is performed.

Demand testing — Various demand tests can be run to check on the sanity of the system and individual maintenance objects. A “test long” command includes destructive tests and a “test short” command has only nondestructive tests.

Busyout and release — Allows system technician to remove components from normal service for testing and troubleshooting and to bring them back into normal service after testing.

Duplication — For system elements that require high reliability, the high reliability and critical reliability options provide a spontaneous interchange to a duplicate component if a serious failure occurs.

Other miscellaneous activity — Include control and manipulation of emergency transfer, power and environmental sensing, and treatment of the entire system as a maintained component.

Internal Connectivity

This section describes the logical links that traverse the physical links of the system, including wires, cables, and fiber optic cables. The major differences in the software architecture between G3s and G3i and G3r are in the internal connectivity.

G3r Connectivity

In G3r there are two kinds of links into the SPE: system links and Application links. The endpoints for both links can be ports on either the PPN or any EPN.

System Links

System links are established for internal system control. The general types of system links to the SPE are ISDN signaling, Expansion Archangel Links (EALs), and the Center Stage Control Network (CSCN).
ISDN Signaling

For ISDN connectivity, the D-channel goes over the packet bus through BRI circuit packs to stations or through DS1 interface circuit packs to PRI trunks. Connectivity is directly between the SPE and the endpoint; signals do not terminate at the EAL if they travel between the SPE and the EPN.

The following abbreviations are used for circuit packs shown in Figure 6-4 through Figure 6-12:

- **BRI** for Basic Rate Interface
- **DS1** for Digital Signal level-1
- **El** for Expansion Interface
- **MAINT** for Maintenance
- **MEM** for Memory
- **MSSNET** for Mass Storage/Network control
- **PACCON** for Packet Control
- **PGATE** for Packet Gateway
- **PKTINT** for Packet Interface
- **PROCR** for Processor
- **SNI** for Switch Node Interface
- **SYSAM** for System Access and Administration
Refer to Figure 6-4 for the ISDN signaling connections.

Figure 6-4. G3r ISDN Connectivity on a PPN

If the BRI or DS1 interface circuit packs are in an EPN, the link goes over the packet bus in the PPN, through the EI in the PPN and CSS, through the EI in the EPN, onto the EPN packet bus, and finally to the appropriate port circuit pack.
Connectivity is directly between the SPE on the PPN and the endpoint (station or trunk), as shown in Figure 6-5.

Figure 6-5. G3r ISDN Connectivity Between a PPN and an EPN
Expansion Archangel Links (EALs)

In the PPN, communication between the SPE and the ports takes place over a control channel in the Time Division Multiplexing (TDM) bus through a network control microprocessor called the archangel (AA). The AA communicates with microprocessors (called angels) located on each port circuit pack in a PPN. The AA controls operation of the control channel by granting bus usage to a specific angel or group of angels.

In EPNs, the AA is called the Expansion Archangel (EAA), as shown in Figure 6-6. The EAA communicates with all the ports in the EPN in the same way that the AA does in the PPN.

EALs (Expansion Archangel Links) are links between an EI circuit pack serving as an AA to the SPE via the PKTINT. The protocol, format, and content of the messages received from port circuit packs in an EPN are transferred over these links. The EAL goes from the PKTINT circuit pack, across the packet bus through the EI and the CSS, and terminates in the EAA. Messages sent to ports on the EPN are first sent to the EAA which, in turn, sends them over the TDM bus control channel in the EPN to the ports.
Figure 6-6. G3r Expansion Archangel Links
Center Stage Control Network (CSCN)

CSCN (Center Stage Control Network) links are packet bus connections between the SPE and a CSS Switch Node Interface (SNI) used for call setup and maintenance.

Local Indirect Neighbor Links (LINLs) are stage control network links between the SPE and an SNI connected to the PPN. Remote Indirect Neighbor Links (RINLs) are stage control network links between the SPE and an SNI circuit pack with an EPN connected to it. See Figure 6-7.

Figure 6-7. G3r Center Stage Control Network Links

To set up a circuit connection between two PNs, messages are sent from the SPE over the CSCN links to each SNI connected to the PNs. This causes the appropriate connections to be made in the CCS, resulting in a voice path between a time slot on each of the respective fiber optic cables.
Application Links

Application links are used by peripherals such as X.25 AUDIX™ adjuncts and printers, and Call Detail Recording Utility (CDRU) adjuncts.

Adjunct Links

In G3r, communication between the SPE and adjuncts such as AUDIX™, DCS, and CMS occurs through a logical link on the packet bus to a circuit pack called the packet gateway interface (PGATE). This circuit pack converts the Link Access Procedure process on the D-channel (LAPD) protocol used internally by the switch to X.25 protocol used by the adjuncts.

In certain cases, data coming from the PGATE interface circuit pack can go to a DS1 trunk to get DCS connectivity over DS1 facilities, as shown in Figure 6-8.

Figure 6-8. G3r Adjunct Links

In G3s, G3vs, and G3i, communication between the SPE and adjuncts occurs through a Digital Line circuit pack and a data module. DCS is also supported over and under ISDN-PRI through a DS1 circuit pack. Communications between the SPE and an Adjunct-Switch Application Interface (ASAI) occurs through a logical link on the packet bus and an ISDN-BRI circuit pack.
Application Adjuncts

Connection between the SPE and RS-232 devices such as printers, Property Management System (PMS), CDRU, and remote terminals is through a data line circuit or a digital line circuit connected to a data module. See Figure 6-9. Both of these circuits are connected only to the TDM bus, while the SPE in G3r has connectivity only to the packet bus.

Signals passing between the SPE and the digital line circuit or between the SPE and the data line circuit must be converted from Mode-3 protocol to Mode-2 and vice versa.

Figure 6-9. Application Adjuncts Connectivity
Internal G3s, G3vs, and G3i Connectivity

As in G3r, G3s, G3vs, and G3i also have two kinds of links into the SPE: system links and application links.

System links such as ISDN signaling links and expansion links are established for internal system control. Application links are used by peripherals such as AUDIX™ and CDRU adjuncts and printers. The endpoints for both system links and application links can be ports on either the PPN or any EPN.

System Links

The general types of G3s, G3vs, and G3i system links to the SPE are ISDN signaling and expansion neighbor.

ISDN Signaling

For ISDN connectivity, the D-channel goes over the packet bus through BRI circuit packs to stations or through DS1 circuit packs to PRI trunks.

NOTE:
G3s and G3vs support only one single-carrier cabinet without duplication. There is no EI circuit pack with G3s or G3vs.

If the BRI circuit pack is in the EPN, the link goes from the PACCON in the PPN, over the packet bus in the PPN through the EI circuit pack in the PPN, through the EI circuit pack in the EPN, onto the packet bus in the EPN, and finally to the BRI circuit pack.

If the DS1 circuit pack is in the EPN, the link goes from the Processor Interface (PI) in the PPN, over the TDM bus in the PPN, through the EI circuit pack in the PPN, to the TDM bus in the EPN, and over the TDM bus to the DS1 circuit pack. See Figure 6-10.
Figure 6-10. G3i ISDN Connectivity Between PPN and EPN
Expansion Neighbor

The archangel function in each EPN is provided by the EI circuit pack is connected to the PPN. The SPE controls the EPN through an extended Control-Channel Message Set (CCMS) sent across an expansion neighbor link. See Figure 6-11.

Figure 6-11. G3i Expansion Neighbor Link

Traffic flows between the PPN processor and its destination on the EPN through the network control to the EI circuit pack in the PPN via the CCMS channel. It travels across the optical fiber on a Link Access Procedure process on the D-Channel (LAPD) link to the EI circuit pack in the EPN where it is unbundled by the Archangel and sent to its destination over the EPN’s CCMS channel.
Figure 6-12 shows a typical G3i PPN and EPN configuration.

Figure 6-12. Typical G3i PPN and EPN Configuration
Protocols

This section describes the protocols handled by the system and the points where these protocols change. Figure 6-13 shows the data transmission state changes. The figure illustrates the flow of data from Data Terminal Equipment (DTE), like a terminal or host, through Data Communications Equipment (DCE), like a modem or data module, into a communications port on the system. The data flow is shown by solid lines. Below these lines are the protocols used at particular points in the data stream.

Not shown in Figure 6-13 is the treatment of D-channels in ISDN PRI and BRI transmissions. PRI and BRI D-channels transport information elements containing call-signaling and caller information. These elements conform to ISDN level-3 protocol. In the case of BRI, the elements are created by the terminal or data module; for PRI, the elements are created by the system, which inserts them into the D-channel at the DS1 port. For ISDN transmissions, BRI terminals and data modules, and DS1 ports insert, interpret, and strip both layer-2 DCE information and layer-3 elements. Also, the DS1 port passes layer-3 elements to the system for processing.

Layers

The Open System Interconnect (OSI) model for data communications contains seven layers, each with a specific function. Communications to and through the system concern themselves only with layers 1 and 2 of the model.

Layer 1, or the physical layer, covers the physical interface between devices and the rules by which bits are passed. Among the physical layer protocols are RS-232, RS-449, X.21, DCP, DS1, and others.

Layer 2, or the data-link layer, refers to code created and interpreted by the DCE equipment. The originating DCE equipment can send blocks of data with the necessary codes for synchronization, error control, or flow control. With these codes, the destination DCE equipment checks the physical-link reliability, corrects any transmission errors, and maintains the link. When a transmission reaches the destination DCE equipment, the DCE equipment strips any layer-2 information that the originating DCE equipment may have inserted. The destination DCE equipment passes to the destination DTE equipment only the information sent by the originating DTE equipment. The originating DTE equipment can also add layer-2 code to be analyzed by the destination DTE equipment. The DCE equipment treats this layer as data, and passes it along to the destination DTE equipment as it would any other binary bits.

Layers 3 to 7 (and the DTE-created layer 2) are embedded in the transmission stream and are meaningful only at the destination DTE equipment. Therefore, they are shown in the figure as “user defined,” with no state changes until the transmission stream reaches its destination.
Figure 6-13. Data Transmission States
Usage

The following is a list of the protocols used when data is transmitted to and through the system. The list is organized by protocol layers. Follow the protocol changes through the transmission paths shown in Figure 6-13.

Layer-1 Protocols

Layer-1 protocols are used between the terminal or host DTE equipment and the DCE equipment, used between the DCE equipment and the system port, and used inside the system.

DCE equipment can be data modules, modems, or Data Service Units (DSUs). A DSU is a device that transmits digital data to a particular digital endpoint over the public network without processing the data through any intervening private network switches.

The following layer-1 protocols are used between the DTE and the DCE:

- **RS-232** — A common physical interface used to connect a DTE to a DCE. This protocol is typically used for communicating up to 19.2 kbps
- **RS-449** — A replacement specification for RS-232. RS-449 was devised to overcome the RS-232 distance and speed restrictions and the lack of modem control offered by RS-232
- **V.35** — A physical interface used to connect a DTE to a DCE. This protocol is typically used for transmissions at 56 or 64 kbps

The following protocols constitute the conventions used at layer-1 to govern communication between the DCE and the port. These protocols consist of codes inserted at the originating DCE and stripped at the port. The DS1 protocol can be inserted at the originating, outgoing trunk port and stripped at the destination port.

- **DCP** — An AT&T proprietary standard for a 3-channel link. DCP sends digitized voice and digital data in frames at 160 kbps. Each frame consists of four channels. The DCP channel structure consists of two information channels and one signaling channel (2I+1S). Each I channel provides 64 kbps of voice and/or data communication and the S-channel provides 8 kbps of signaling communication between the system and DTE. DCP is similar to ISDN BRI
- **BRI in G3** — An ISDN standard for a 3-channel link, consisting of two 64 kbps bearer (B) channels and one 16 kbps signaling (D) channel. For AT&T implementation of this standard, see DEFINITY® Communications System and System 75 and System 85 ISDN BRI Reference, 555-025-103
■ **PRI** — An ISDN standard that sends digitized voice and digital data in T1 frames at 1.544 Mbps or, for countries outside the USA, in E1 frames at 2.048 Mbps. Layer 1 (physical layer), layer 2 (link layer), and layer 3 (network layer) ISDN PRI protocols are defined in *AT&T System 75 and 85 — DS1/DMI/ISDN-PRI — Reference Manual*, 555-025-101

At 1.544 Mbps, each frame consists of twenty four 64 kbps channels plus 8 kbps for framing. This represents 23 B-channels plus 1 D-channel. The maximum user rate is 64 kbps for voice and data. The maximum distances are based on T1 limitations

At 2.048 Mbps, each E1 frame consists of thirty two 64 kbps channels.

■ **Analog** — A modulated voice-frequency carrier signal

■ **ADU Proprietary** — A signal generated by an Asynchronous Data Unit (ADU). The signal is for communication over limited distances and can be understood only by a destination ADU or destination system port with a built-in ADU

■ **DS1** — A protocol that dictates the line coding, signaling, and framing used on a 24-channel line. Many types of trunk protocols (for example, PRI and 24th-channel signaling) use DS1 protocol at layer 1

■ **European conference of postal and telecommunications rate 1 (CEPT1)** — A protocol that dictates the line coding, signaling, and framing used on a 32-channel line. Countries outside the USA use CEPT1 protocol

Inside the system, data transmission appears in one of two forms. It can be raw digital data, where the physical layer protocols, like DCP, are stripped at the incoming port and reinserted at the outgoing port. Or, it can be PCM-encoded analog signals (analog transmission by a modem), the signal having been digitized by an analog-to-digital coder/decoder (CODEC) at the incoming port.

**Layer-2 Protocols**

Layer-2 protocols are given below:

■ **8-bit character code** between the DTE and the DCE. Depending on the type of equipment used, the code can be ASCII, EBCDIC, or any proprietary code set. ASCII code can be sent asynchronously (one character at a time), or synchronously (one transmission unit, or frame, at a time). EBCDIC is transmitted synchronously

■ **Digital multiplexed interface (DMI) proprietary family of protocols** between the originating DCE and the destination DCE for digital transmission. For a description of this protocol, see *DEFINITY® Communications System and System 75 and System 85 DS1/DMI/ISDN PRI Reference*, 555-025-101; and *Digital Multiplexed Interface [DMI] Technical Specification*, 555-025-204

■ **Voice-grade data** between the originating DCE and the destination DCE for analog transmission
States

Table 6-1 summarizes the protocols used at various points in the data transmission stream shown in Figure 6-13.

Table 6-1. Protocol States for Data Communication

<table>
<thead>
<tr>
<th>Transmission Type</th>
<th>Incoming DCE</th>
<th>OSI Layer</th>
<th>Protocols DTE to DCE</th>
<th>DCE to Switch Port</th>
<th>Inside Switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog</td>
<td>Modem</td>
<td>1</td>
<td>RS-232, RS-449, or V.35</td>
<td>analog</td>
<td>PCM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>8- or 10-bit code</td>
<td>voice-grade data</td>
<td>voice-grade data</td>
</tr>
<tr>
<td>ADU</td>
<td></td>
<td>1</td>
<td>RS-232</td>
<td>ADU proprietary</td>
<td>raw bits (digital data)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>asynchronous 8-bit code</td>
<td>asynch 8-bit code</td>
<td>DMI</td>
</tr>
<tr>
<td>Digital</td>
<td>Data Module</td>
<td>1</td>
<td>RS-232, RS-449, or V.35</td>
<td>DCP or BRI</td>
<td>raw bits (digital data)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>8-bit code</td>
<td>DMI</td>
<td>DMI</td>
</tr>
<tr>
<td>DS1</td>
<td></td>
<td>1</td>
<td>any</td>
<td>DS1</td>
<td>PCM or raw bits (digital data)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>8-bit code</td>
<td>DMI or voice-grade data</td>
<td>DMI or voice-grade data</td>
</tr>
</tbody>
</table>
Both the physical-layer protocol and the DMI mode used in the connection depend on the type of 8-bit code used at layer 2 between the DTE and DCE, as listed in Table 6-2 and Table 6-3.

### Table 6-2. Physical-Layer Protocol Versus Character Code

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-232</td>
<td>Asynchronous 8-bit ASCII, and synchronous</td>
</tr>
<tr>
<td>RS-449</td>
<td>Asynchronous 8-bit ASCII, and synchronous</td>
</tr>
<tr>
<td>V.35</td>
<td>Synchronous</td>
</tr>
</tbody>
</table>

### Table 6-3. DMI Mode Versus Character Code

<table>
<thead>
<tr>
<th>DMI Mode</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Synchronous (64 kbps)</td>
</tr>
<tr>
<td>1</td>
<td>Synchronous (56 kbps)</td>
</tr>
<tr>
<td>2</td>
<td>Asynchronous 8-bit ASCII (up to 19.2 kbps), and synchronous</td>
</tr>
<tr>
<td>3</td>
<td>Asynchronous 8-bit ASCII, and private proprietary</td>
</tr>
</tbody>
</table>

### Connectivity Rules

[Figure 6-13] implies the following connectivity rules:

- Only the DS1 port and the analog trunk port are trunking facilities (all other ports shown are line ports). For communication over these facilities, the destination DCE can be a hemisphere away from the system, and the signal can traverse any number of intervening switching systems before reaching the destination DCE.

- Data originating at any type of digital device, whether DCP or BRI, can exit the system at any type of digital port — BRI, digital-line, GPP, PRI, DS1, and so on — as long as the call destination is equipped with a data module using the same DMI mode used at the call origin. This is because once the data enters the system through a digital port its representation is uniform (raw bits, digital data — at layer 1, and DMI at level 2), regardless of where it originated.

- Voice-grade data can be carried over a DS1 facility as long as the destination DCE is a modem compatible with the originating modem.
Although data entering the system through an EIA port has not been processed through a data module, the EIA port itself has a built-in data module. Inside the system, EIA-port data is identical to digital-line or GPP data. Data entering the system at a DCP-line port (digital-line or GPP) can exit at an EIA port. Conversely, data entering the system at an EIA port can exit at any DCP-line port. The only caution is the destination data module must be set for Mode-2 DMI communication.

When a mismatch exists between the types of signals used by the endpoints in a connection (for example, the DCE at one end of the connection is an analog modem, and the DCE at the other end is a digital data module), a modem-pool member must be inserted in the circuit. When the endpoints are on different switches, the best place to insert the modem-pool member depends upon the transmission medium, but it is recommended the modem-pool member be put on the origination or destination switch. Note that a modem-pool member is always inserted automatically for calls to off-premises sites via analog or voice-grade trunking. For internal calls, however, the systems are capable of automatically inserting a modem-pool member.

Data cannot be carried over analog facilities unless inside the system it is represented as a PCM-encoded analog signal. To do this for data originating at a digital terminal, the signal enters the system at a digital port and exits the system at a digital port. The signal then re-enters the system through a modem-pool connection (data-module to modem to analog-port) and exits the system again at an analog port.

Although DS1 is commonly called a trunk speed, here it names the protocol used at layer-1 for digital trunks. There are trunks that use different signaling methods but use DS1 protocol at layer-1 (for example, PRI and 24th-channel signaling trunks). The “Trunks” section in Chapter 7, “Connections to Trunks, Lines, and Networks,” describes the trunk types.

**Disconnect Supervision**

Disconnect supervision means the CO has the ability to release a trunk when the party at the CO disconnects, and the PBX is able to recognize the release signal. In general, a United States CO provides disconnect supervision for incoming calls but not for outgoing calls. COs in many other countries do not provide disconnect supervision on either incoming or outgoing calls.

Administration is provided for each trunk group to indicate whether it provides disconnect supervision for incoming calls and for outgoing calls. The switch needs to provide the assurance that at least one party on the call can control the dropping of the call. This avoids locking up circuits on a call where no party is able to send a disconnect signal to the switch. Internal operations must be sure one party can provide disconnect supervision. An incoming trunk that does not provide disconnect supervision is not allowed to terminate to an outgoing trunk that does not provide disconnect supervision.
In a DCS environment, an incoming trunk without disconnect supervision can terminate to an outgoing DCS trunk connecting two nodes. The incoming trunk is restricted from being transferred to a party without disconnect supervision on the terminating node because, through DCS messaging, the terminating node knows the originating node cannot provide disconnect supervision. This messaging is not possible with non-DCS tie trunks, and the direct call is denied.

Transfer on Ringing

A station or attendant may conference in a ringing station or transfer a party to a ringing station. When a station conferences in a ringing station and then drops the call, the ringing station is treated like a party without disconnect supervision. However, when a station transfers a party to a ringing station, the ringing station party is treated like a party with disconnect supervision. Two timers (Attendant Return Call Timer and Wait Answer Supervision Timer) are provided to ensure the call is not locked to a ringing station.

Conference, Transfer, and Call-Forward Denial

If a station or attendant attempts to connect parties without disconnect supervision together, the following is possible:

- Digital Station or Local Attendant Transfer: if a digital station attempts to transfer the two parties together, the call appearance lamp flutters, indicating a denial. If transferring to a DCS trunk, the denial may drop the call since the transfer is allowed and the other switch is queried for disconnect supervision.

- Analog Station Transfer: if an analog station attempts to transfer two parties together by going on-hook, the analog station is no longer on the call and the transfer cannot be denied.

- CAS Attendant Transfer: if a CAS attempts to transfer two parties together by pressing the release key, the RLT trunk is released and the branch attempts a transfer by going on-hook.

- Station Conference/Dropout: if a station conferences all parties, the conference is allowed since the station has disconnect supervision. When the station is dropped from the call, the call is dropped since the other parties do not have disconnect supervision.

- Station Call Forwarding: if a station is call forwarded off-premise to a trunk without disconnect supervision, the calling party without disconnect supervision is routed to the attendant.
This chapter describes the following trunks, data lines, and networks, and how the system is connected to them:

- "Trunks"
- "Data Lines"
- "Private Networks"
- "Information System Network (ISN)"
- STAR-based Local Area Network ("STARLAN")

## Trunks

Trunks are the transmission medium that voice and data signals use to travel between switches. Calls needing a trunk are routed to the appropriate trunk group. An idle trunk, if available, is selected from the group. The system can be connected to:

- **Local exchange trunks**: carry transmissions between the system and the switch at a Central Office (CO)
- **Tie trunks**: carry transmissions between private communications systems
- **Special-access trunks**: carry transmissions between a system and the Point-Of-Presence (POP) of the Inter-exchange Carrier (IXC)
- **Auxiliary trunks**: link peripheral equipment (alarms and announcements) to the system
- **Miscellaneous trunks**: perform functions that do not neatly fit with the above applications. Included are Release Link Trunks (RLTs), remote-access trunks, and host-access trunks
Trunks are connected to the system via port circuit packs in port carriers and expansion control carriers in Multi-Carrier Cabinets, and in single-carrier port cabinets and expansion control cabinets.

Table 7-1 lists trunk circuit packs that can be installed in port slots of G3V4. Chapter 2, “Cabinets, Carriers, and Circuit Packs,” describes the circuit packs.

### Table 7-1. Trunk Circuit Packs in Port Slots

<table>
<thead>
<tr>
<th>Name</th>
<th>Apparatus Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary trunk</td>
<td>TN763B/C/D, TN417</td>
</tr>
<tr>
<td>DS1/E1 interface</td>
<td>TN464C/D/E/F, TN767B (DS1 only)</td>
</tr>
<tr>
<td>DS1 tie trunk</td>
<td>TN722B, TN767B (DS1 only)</td>
</tr>
</tbody>
</table>

### Local Exchange Trunks

Among local exchange trunks are the following varieties:

- **CO trunks**: one-way outgoing, one-way incoming attendant-completing, or two-way trunks connecting the switch to a CO

- **Foreign exchange (FX) trunks**: one-way outgoing, one-way incoming attendant-completing, or two-way trunks connecting a system to a CO outside the local exchange area. These trunks give a caller direct access to a CO outside the local exchange area without using the public network

- **Wide Area Telecommunications Service (WATS) trunks**: one-way outgoing trunks connecting a system to a CO equipped to handle WATS calls. The outgoing trunks allow a customer to place outgoing station-to-station calls to telephones in a defined service area. The service area has one or more geographic areas called WATS bands. Incoming trunk calls are completed by an attendant or Automatic Call Distribution (ACD) agents

- **800-service trunks**: one-way incoming trunks connecting the switch to a CO equipped to handle 800-service calls (also called INWATS). These trunks allow a customer to receive incoming station-to-station calls from telephones in a domestic or international service area without charge to the caller

- **Direct Inward Dialing (DID) trunks**: one-way incoming trunks connecting a system to a local CO. These trunks allow calls from the public network to complete to terminals (stations) assigned to a private network switch without attendant assistance
Direct Outward Dialing (DOD) trunks: one-way outgoing trunks for outgoing calls connecting the switch to a CO. These trunks allow terminal (station) users to place calls to a public network CO directly without attendant assistance.

Direct Inward/Outward Dialing (DIOD) trunks: two-way trunks used to connect to a CO.

Remote access trunks: connect a PBX to a CO to provide off-premises PBX users with access to outgoing PBX trunks. Remote access trunks offer this service by providing off-premises users with PBX dial tone through the CO.

Postal telephone and telegraph (PTT) trunks: analog trunks used to connect to a CO for local loop (within a country) and long-distance communication (between countries) outside the United States.

DS1/E1 Facilities

Digital Signal Level-1 (DS1) and E1 facilities are digital trunks that interconnect switches or connect switches to the public network. Port networks (PNs) up to 100 circuit miles apart can be connected by DS1/E1 facilities. DS1 multiplexes up to 24 digitized voice and/or data communications links onto a single T1 carrier (an industry standard used for interconnecting digital systems). E1 is a CCITT standard used in countries other than the United States, Canada, and Japan, and multiplexes up to 32 digitized voice and/or data communications links onto a single CEPT1 carrier. DS1/E1 facilities allow data calls to be transmitted at speeds up to 64 kbps.

DS1/E1 facilities may be used to provide TIE, DID, CO, OPS, and ISDN-PRI service. The type of signaling optioned for the DS1/E1 interface determines the type of calls the DS1/E1 interface can support. For DS1 interfaces, the options are:

- Robbed-Bit Signaling (RBS): provides voice and voice-grade data support. It is an alternative to analog trunks and may be used to connect a system to other switches, a CO, or the network. It provides up to 24 channels on the DS1 facility.

- DMI-Bit Oriented Signaling (BOS) and Proprietary BOS: support voice and DCP mode data. They are used to provide up to 23 Alternate Voice/Data (AVD) tie trunks to other DEFINITY®, System 75, or System 85 switches. It is not used for connection to a CO or to the network.

- ISDN-PRI: supports voice and data connections to other switches, to a CO, or to the network. It provides up to 23 bearer (“B”) channels and uses the 24th channel for signaling (“D” channel). It supports call by call service selection for each channel.
For E1 interfaces, the options are:

- **Channel Associated Signaling (CAS):** provides voice and data support and may be used to connect a system to other switches, to a CO, or to the network. It provides up to 30 channels on the E1 facility.

- **ISDN-PRI:** supports voice and data connections to other switches, to a CO, or to the network. It provides up to 30 bearer ("B") channels and one signaling (D) channel. It supports call by call service selection for each channel.

  D-channel backup with ISDN-PRI or DS1/E1 facilities provides a duplicated D-channel that takes over when the normal D-channel fails.

DS1 ISDN-PRI can be configured with both facility-associated signaling (FAS), administered as 23B + 1D, and nonfacility-associated signaling (NFAS). With FAS, the D-channel and associated B-channels are carried over the same facility. With NFAS, one D-channel can carry the signaling for up to 479 B-channels or 20 T1 trunks in a G3r. In G3s and G3i, a D-channel can carry the signaling for up to 400 trunks. E1 interfaces do not support NFAS arrangements and only provide 32B + 1D ISDN-PRI configurations.

A DS1/E1 connection is made from a system through a Channel Service Unit (CSU) to a DS1/E1 facility. The CSU terminates T1 transmission lines at the user's premises, ensures the signals entering the public network from DTE comply with the requirements of the T1 transmission system, and provide maintenance, diagnostics and testing. See Figure 7-1 for a simplified block diagram.

**NOTE:**
A C6C cable connects from the DS1 Tie Trunk circuit pack to a 551-type CSU. A C6D cable connects DS1 Tie Trunk circuit packs in collocated G1 systems. A C6E cable is an “extension” cable between the DS1 Tie Trunk circuit pack and other connector cables. Finally, a C6F cable connects the DS1 Tie Trunk circuit pack to channel multiplexers requiring hard wired connections. Refer to DEFINITY® Communications System Generic 1 and Generic 3 Installation and Test, 555-230-104, for detailed installation information.
Tie Trunks

Tie trunks can be of the following types:

- **Tandem Tie Trunk Network (TTTN):** a network of switches linked by dial-repeating trunks. Calls are not automatically routed to the final destination. To call a distant switch, the user steps the call through all the switches in the connection by repeatedly entering the dial access code of the trunk group to the next switch as soon dial tone is received from the newest switch along the path. When all switches in the connection have been traversed and a connection is made with the destination switch, the user dials the extension number.

- **Main-Satellite/Tributary (MS/T) Network:** a network of switches in which one switch is designated as the main, while subtending switches are satellites or tributaries. The main switch is fully functional; each satellite uses the trunks and attendants at the main switch. Tributary switches differ from satellite switches in that they have their own Listed Directory Number (LDN) and may have their own attendant and public network facilities. MS/T users reach other users by dialing their extension numbers.

- **Electronic Tandem Network (ETN):** a network of switches where one switch at each location is designated as the tandem switch where all communications must travel to reach the tandem at another location. Switches that communicate with the tandem at the same location are...
connections to trunks, lines, and networks

called main switches. ETN switches reach other nodes by sending a location code, followed by an extension number and, sometimes, a Traveling Class Mark (TCM)

■ Distributed Communications Systems (DCS): an information system that provides a messaging overlay for ETN or MS/T networks designed for DCS implementations. This overlay provides communication among the network nodes so the operation of a limited number of features is transparent across the network

The tie trunks between switches in these networks are in one or more of the following categories:

— Inter-Machine Trunks (IMTs): one-way incoming, one-way outgoing, and two-way trunks connecting tandem switches of private communications systems with each other. TCMs can be sent only over IMTs.

— Access trunks: one-way outgoing and two-way trunks that connect main switches to tandem switches in an ETN. They can also connect satellite or tributary switches with a main switch. Typically, extension numbers (without their accompanying location code) are sent over access trunks to identify a call destination.

— Bypass access trunks: one-way outgoing trunks that connect a tandem switch to a main switch that is “homed on” another tandem.

**Special-Access Trunks**

Interexchange carriers (IXCs), both within and outside the United States, offer some services through special-access arrangements.

**Outside the United States**

Outside the United States, the country’s Postal Telephone and Telegraph (PTT) determines the special access services available through local and long distance telephone networks.

**Inside the United States**

Inside the United States and between the United States and other countries, these special access services are installed to bypass the Local Exchange Company (LEC) and directly access the IXC Point-Of-Presence (POP). “Nodal services” is the name AT&T has given the services it offers through special access trunks. AT&T nodal services include:

■ AT&T MEGACOM: permits outward calling to diverse domestic and international geographical areas at reduced rates
- **AT&T MEGACOM 800**: permits inward 800-number calling from diverse domestic and international geographical areas. Dialed Number Identification Service (DNIS) is where the IXC switch sends the private switch the number of the destination extension. This allows MEGACOM callers to directly dial a station number.

- **AT&T ACCUNET services**: provide high-capacity terrestrial digital transmission services, such as ACCUNET T 1.5, ACCUNET Spectrum of Digital Services, ACCUNET Switched Digital Services, ACCUNET Switched Digital International, and voice-grade private lines. These services can be used for data transmission, bulk data transmission, video teleconferencing, and others.

- **AT&T Software-Defined Network (SDN)**: provides connections through the AT&T network so geographically dispersed user domestic (through SDN) and international (through Global SDN) locations can function like they were on the same private network.

- **MultiQuest service**: provides Automatic Alternate Routing (AAR)-like services over SDN. Included in the service are features that route calls to different destinations based on the time of day, the area code or exchange dialed, predetermined traffic ratios, and dialer input.

Special-access services can be arranged with the IXC over dedicated trunks. Also, switched services (including all services except ACCUNET T 1.5 and ACCUNET Spectrum of Digital Services) can share the ISDN PRI trunk linking the PBX with the IXC POP. MEGACOM and MEGACOM 800 services to and from the system are available only over a shared ISDN-PRI link. To share the link, the trunk must be administered for call-by-call selection. Note that at the switch end of the connection, special-access trunks are administered identically to private network tie trunks.

### Auxiliary Trunks

Auxiliary trunks connect units in the auxiliary cabinet with the switch. Among the features used are Recorded Announcements, Telephone Dictation Service, Malicious Call Trace (MCT), and Loudspeaker Paging.
Miscellaneous Trunks

The following trunks are considered “miscellaneous:”

RLTs

Release Link Trunks (RLTs) are used between a main location and a satellite/tributary location to provide Centralized Attendant Service (CAS) or Automatic Call Distribution (ACD) group availability. Like tie trunks, RLTs connect communications systems. Unlike tie trunks that carry calls from their initiation to completion, RLTs provide only a temporary service for the call. That is, RLTs carry calls from their originating switches to the switch where the attendants or agents are located. Upon receiving the call, the attendant or agent identifies the call destination, returns the call to the switch of origin for routing and processing, and then disengages the RLT, readying it for another call.

APLT Trunks

Advanced Private Line Trunks (APLT) handle calls between private switches on a customer premises and private switches on a CO premises.

Remote-Access Trunks

Remote-access trunks connect a PBX to a CO to provide off-premises PBX users with access to outgoing PBX trunks. Remote access trunks offer this service by providing off-premises users with PBX dial tone through the CO.

Host-Access Trunks

Although a system’s line ports can access a host computer’s ports, one type of trunk can also provide host access: Digital Multiplexed Interface (DMI) trunks. These trunks connect remote or local hosts to a system. Signaling over these trunks is either message-oriented or bit-oriented signaling (BOS).
Data Lines

Data lines from the system can be connected through digital interfaces to Data Terminal Equipment (DTE). Figure 7-2 shows a digital data communications connection from the system through an Asynchronous Data Unit (ADU) to a DTE. A Data Line Enhancement circuit pack containing an ADU is the system’s EIA interface.

Trunk type data should only be used in conjunction with facilities not routed through bit compression multiplexers and/or echo cancellers.

Figure 7-2. Digital Data Communications Connection to DTE

Wideband Switching

Wideband switching is the switching of data rates greater than 64 kbps between endpoints. G3 uses DS1/E1 to conduct wideband switching between endpoints at 128 kbps to 1536 kbps over T1 facilities and up to 1984 kbps over E1 facilities.

Wideband switching operates with AT&T H0 and H11 data services (384 kbps and 1536 kbps, respectively) and supports high-speed video conferencing and data applications. In addition to H0 and H11, G3 supports wideband switching with private networks, IXCs, local telephone companies, and countries outside the USA. The DS1/E1 interface circuit pack is used for wideband switching ports.
ACCUNET Packet Service

The system connects to the ACCUNET Packet Service (APS) through a Memotec X.25 Packet Assembler/Disassembler (PAD). APS is an X.25 Packet-Switched Public Data Network (PSPDN). The Memotec X.25 PAD SP-830 allows a system to access the APS, any X.25 PSPDN, or any X.25 hosts. The Memotec PAD can be connected directly to a system by a Data Line circuit pack and an ADU. APS delivers packetized data throughout the USA at digital speeds of 2.4 kbps to 56 kbps and analog speeds of 2.4 kbps, 4.8 kbps, and 9.6 kbps.

A system user can access remote X.25 hosts connected to the APS through the Memotec PAD as shown in Figure 7-3.

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**Figure 7-3. Connections to ACCUNET Packet Service**

Figure 7-4 shows direct access to a X.25 host.

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**Figure 7-4. Connections to X.25 Host**
Administered Connections

G3 provides data communication by means of “administered connection” and access endpoint features. An administered connection is between the system and a peripheral enabled by an entry from an administration terminal.

The administered connection feature automatically establishes an end-to-end connection between two access (data) endpoints. Access endpoints are either a nonsignaling channel on a DS1/E1 interface or a nonsignaling port on an analog tie trunk circuit pack assigned a unique extension.

An access endpoint supports devices, switches, or services that terminate on a trunk port without requiring any signaling capability on that port. These features enhance data networking and increase the effectiveness of the AT&T Network Service Software-Defined Data Network (SDDN).

For a detailed description of administered connections, refer to *AT&T Network and Data Connectivity*, 555-025-201.

Private Networks

A private network is a configuration of trunk and switching facilities dedicated to the use of a business or organization. The network can have as few as two switches or as many as hundreds of switches located throughout the world. This section describes connections between a system and the following private networks:

- MS/T
- Electronic Tandem Network (ETN)
- Software-Defined Network (SDN)
- ETN/SDN hybrid network
- Distributed Communications System (DCS)

MS/T

The Main Satellite/Tributary (MS/T) serves the needs of customers with a few locations in a small geographic area. This network normally serves moderate to heavy calling between locations. For a main/satellite configuration, attendant positions and public network trunk facilities are concentrated at the main, and calls to or from satellite locations pass through the main. To a caller outside the main/satellite complex, a system appears to be a single switch with one LDN.

A tributary location is similar to a satellite location except a tributary has one or more attendant positions and a tributary has its own LDN.
Figure 7-5 shows an MS/T configuration that can function independently or serve as an ETN access arrangement.

Figure 7-5. MS/T Configuration

ETN

An Electronic Tandem Network (ETN) serves customers with many locations in a large geographic area. This network normally serves moderate to heavy calling between locations without accessing toll facilities.

An ETN consists of tandem switches, intertandem tie trunks that interconnect them, access or bypass access tie trunks from a tandem switch to a main switch, and the capability to control call routing over these facilities.

Figure 7-6 shows a typical ETN configuration. As shown, an MS/T configuration can be served by an ETN. Although not shown in the figure, a DCS can also provide feature transparency for all or part of an ETN.
Within an ETN, each location is identified by a unique private network office code (RNX). There are 1000 possible RNXs (R=0-9, N=0-9, X=0-9) available for each ETN. After accessing the ETN by dialing a feature access code, a user simply dials the RNX plus the desired extension number. At most, seven digits are required.

Public network office codes (NXXs) are unique within an area code, whereas RNXs are unique within an ETN. The RNXs are assigned when the ETN is established and may match NXXs (although this is not always possible). When DID is provided by the local CO, the extension numbers (last four or five digits of the number) will usually match. Network inward dialing (NID) is the ETN equivalent of DID and can be provided without DID.

Software Defined Network (SDN)

A Software-Defined Network (SDN) provides a virtual private network using the public-switched network. An SDN handles voice and data between customer locations and off-net locations.

Figure 7-6. Typical ETN Configuration
ETN/SDN Hybrid Network

An Electronic tandem Network/Software-Defined Network (ETN/SDN) is a network in which users served by the public network are integrated into a private ETN. When users are scattered geographically, this may be a viable alternative to additional private network switches in dispersed locations or public network toll calls from remote locations.

DCS — G3V2 and Later

A Distributed Communications System (DCS) is a cluster of two to 63 maximum AT&T switches connected via ISDN PRI, or 20 maximum AT&T switches otherwise, that make it seem as if the cluster were a single switch in certain attendant and voice terminal features. A user at one switch can call or activate a feature toward a user at a different switch and notices no difference in operation.

A DCS allows uniform dialing so DCS users can dial a 4- or 5-digit extension to reach any extension in the cluster. The uniform dialing provides simplified dialing procedures between locations. DCS offers the convenience of using some features between locations. A DCS is suitable for frequent interlocation calling.

The DCS switches are interconnected by analog or digital tie trunks for voice communications and also by data links (also called DCS signaling links) for control and feature information. The voice network arrangement of the switches is either an ETN, a main/satellite network, or an ETN/SDN hybrid.

Some of the applications of DCS configurations are in a “campus environment” with two or more separate buildings and the switches are connected by local cable, and a larger area such as a city, several states, or even the entire country, where the switches are separated by distances too great for local cable and can be connected to different COs.

The following AT&T documents describe DCS:

- DEFINITY® Communications System Generic 3 Feature Description, 555-230-201
- AT&T -- Network and Data Connectivity, 555-025-201
- DCS Application Note, 555-209-003

DCS Plus sends signaling over ISDN PRI links on the D-channel. The signaling can be switched across a public network when temporary signaling connections are provided.
Figure 7-7 shows examples of DCS configurations.

**SYSTEM 85, SYSTEM 75 (V3), OR "DEFINITY" COMMUNICATIONS SYSTEM TANDEM; CENTRALIZED ATTENDANTS**

* The System 85, System 75 (V3), or "DEFINITY" communications is serving as a DCS tandem switch and as a centralized attendant service main; all other systems are endpoint nodes.

**"DEFINITY" COMMUNICATIONS SYSTEM WITH NO TANDEM; SEPARATE ATTENDANTS**

Each "DEFINITY" Communications System has its own attendant position(s).

**"DEFINITY" COMMUNICATIONS SYSTEM WITH NO TANDEM; CENTRALIZED (IAS) ATTENDANT**

Note that each switch has a tie trunk group to every other switch, but not necessarily a DCS signaling link. Message hopping is being used to take advantage of existing facilities. The switch with the attendant is an inter-pbx attendant service (IAS) main; the others are ias branches.

Figure 7-7. Examples of DCS Configurations
Information System Network (ISN)

The AT&T information System Network (ISN) is a packet-switched Local Area Network (LAN) linking mainframe computers, minicomputers, word processors, storage devices, personal computers (PCs), printers, and terminals into a single system.

Connections between a system and an ISN provide the following:

- Users on an ISN, in addition to having access to other endpoints directly connected to ISN, can have access to any endpoint connected to the system or addressable from the system.
- Users who either connect to or have access to the system can also access endpoints connected to an ISN.

An ADU or MPDM interface connects to an asynchronous interface module on a packet controller or terminal concentrator, an example is shown in Figure 7-8. This interface allows the system and the ISN to share data capabilities.

The DEFINTITY® Communications System Generic 3 Feature Description, 555-230-204, describes ISN.

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**Figure 7-8. Example of Connections to an ISN**
Figure 7-9 shows an ISN interface between a system and an asynchronous data terminal.

**Figure 7-9. ISN Interface to an Asynchronous Data Terminal**

STARLAN

A 1 Mbit or 10 Mbit AT&T STAR-based Local Area Network (STARLAN) interconnects small numbers of PCs, data terminals, resource units, and printers. When a STARLAN and a system are colocated, voice and data can be shared at the same information outlet. See Figure 7-10.

The voice pair connecting to an Analog Line circuit pack port occupies the first pair of the information outlet. The data pairs that connect to the STARLAN occupy the second and third pairs of the information outlet. The voice and data pairs must be separated at the blue or white field located in the equipment room or at the blue field located in a satellite location.
Figure 7-10. Connections to AT&T STARLAN

- PERSONAL COMPUTER EQUIPPED WITH NETWORK ACCESS UNIT (NAU)
- NETWORK EXTENSION UNIT (NEU)
- STATION SIDE
- SWITCH SIDE
- PART OF CROSS-CONNECT FIELD
- 4-PAIR LINE CORD
- 4-PAIR 4-PAIR LINE CORD
- BLUE OR WHITE FIELD
- PURPLE FIELD
- PAIR 1
- T, R
- PATCH CORDS
- PAIRS 2 AND 3
- ANALOG TN769 LINE CIRCUIT PACK (e.g. TN746)
This chapter describes how the system is connected to peripheral devices, including adjuncts. Adjuncts are optional external components, not residing in a system, that provide administrative and application functions.

The following peripherals and adjuncts are covered:

- "Data Terminal Equipment (DTE)"
- "Data Communication Equipment (DCE)"
- Terminals
- Printers
- Messaging Adjuncts
- Telemarketing Adjuncts
- Administration Adjuncts
- Call Record Acquisition Adjuncts
- Miscellaneous Adjuncts (Music-On-Hold, Loudspeaker Paging, etc.)
- Distributed Communications System (DCS) links
- Digital Signal Level 1 Converter (DS1C) Connections
- Digital Signal Level 1 (DS1) Connections

Procedures used to connect a system to peripherals are given in *DEFINITY® Communications System Generic 1 and Generic 3 Installation and Test*, 555-230-104.
Data Terminal Equipment (DTE)

DTE (Data Terminal Equipment) described in this chapter has EIA (Electronic Industries Association) RS-232, RS-449, RS-366, V.35, Category A coaxial interfaces, and International Telecommunications Union (ITU) interfaces. DTE includes data terminals and consoles, printers, graphics and facsimile (FAX) equipment, and computers — hosts and personal computers (PCs).

Data Communication Equipment (DCE)

DCE (Data Communication Equipment) described in this chapter are devices such as data modules, ADUs, and modems connected between the system and DTE. DCE provides analog-to-digital and digital-to-digital interfaces between the system and DTE and converts protocols between the system and DTE, and isolates the system electrically from DTE.

Data Modules

Data modules link DTE with a system’s Basic Rate Interface (BRI) and Digital Communications Protocol (DCP) digital ports. The system can be connected to the following types of data modules:

- Asynchronous Data Module (ADM) used with a 7505, 7506, 7507, 8510, or 8520 ISDN BRI voice terminal to support integrated voice and data
- Data stands (Z702A and Z703A) provide an RS-232 interface to a system for data terminals and PCs attached to a 7406D or 7407D digital voice terminal
- Digital Terminal Data Module (DTDM) transmit and receive serial data across a DCP interface; a DTDM has an RS-232 interface that connects to DTE
- Modular Processor Data Module (MPDM) and a high-speed data link provide serial data DCP interfaces between a system, DTE, host computers, and other switches
- 7400A and 7400B data modules provide full-duplex asynchronous voice and data connectivity in DCP applications
- 3270A, T, and C data modules convert DCP protocol to Category A coaxial protocol and allow PCs with the PC/PBX 3270 emulation package to communicate with an IBM 3270 cluster controller through a system
Figure 8-1 shows a G3 connected to a 3270C data module.

![Figure 8-1. Connections to a 3270C Data Module](image)

Figure 8-2 shows a G3 connected to a 3270A or 3270T data module.

![Figure 8-2. Connections to a 3270A or 3270T Data Module](image)

**ADUs**

The system can be connected to an ADU that extends the 50-foot limit of an RS-232 cable up to 40,000 feet and provides full-duplex asynchronous operation, or to a Modular Asynchronous Data Unit (MADU) (an eight-port ADU).
Modems

Modems link DTE with the system analog ports. Many AT&T and customer-supplied modems operate with the system. A Data Service Unit (DSU) is used as a modem with the system.

Channel Service Unit (CSU)

A Channel Service Unit (CSU) is a device that provides an interface between the DSX1 levels of a DS1 interface circuit pack (TN464F, TN767E) and the DS1 levels of a DS1 transmission facility. It includes the following functions:

- Isolates the DS1 interface circuit pack from DC voltages that may be present on the DS1 facility
- Provides status lamps to indicate the state of the signal from the network and from the DS1 board
- Provides jacks to allow test access to the receive and transmit signals between the DS1 board and the CSU
- Provides secondary surge protection between the DS1 facility and the DS1 board
- Provides loopbacks for the signals from the DS1 board and from the DS1 facility for fault isolation purposes

A CSU may be external to the switch such as the AT&T ESF T1 CSU, or it may be integrated into the switch, such as the 120A CSU Module.

Terminals

The system can be connected to all DTE terminals and have RS-232 or DCP interfaces.
Voice and Data Terminals

Table 8-1 lists voice and data terminals that can be connected to the system.

Table 8-1. Voice and Data Terminals

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-button Electronic Telephone (MET) sets: 10, 20, 30 Button</td>
<td>Voice</td>
</tr>
<tr>
<td>Analog: 500, 2500/2554, 2500 DMGC, 2500YMGK, S203A Speakerphone</td>
<td>Analog voice</td>
</tr>
<tr>
<td>71XXX series: 7101A, 7102A, 7103A, 7104A</td>
<td>Analog voice</td>
</tr>
<tr>
<td>73XXX series: 7302H, 7303H, 7303S, 7305S, 7305H</td>
<td>Hybrid voice</td>
</tr>
<tr>
<td>74XXD series: 7401D, 7403D, 7404D, 7405D, 7406D, 7407D, 7410D, 7434D, 7444</td>
<td>Digital voice</td>
</tr>
<tr>
<td>84XX series: 8403B, 8410B/D, 8411B/D, 8434 94XX series: 9403, 9410, 9434</td>
<td>Digital voice</td>
</tr>
<tr>
<td>81XX series: 8102, 8110 91XX series: BRI series (G3) (75XX series): 7505-, 7506-, 7507-VOM/T 85XX series: 8503, 8510, 8520</td>
<td>Analog voice</td>
</tr>
<tr>
<td>Workstation series: 510D BCT, 513 BCT, 515 BCT, 615 BCT, 715 BCT PC/PBX platform (digital): PC/ISDN platform (BRI)</td>
<td>BRI voice</td>
</tr>
<tr>
<td>Consoles: 301A Attendant Console 302A1 Enhanced Generic 1 Console 602A1 ACD Console (CallMaster® digital communications terminal)</td>
<td>Data and voice</td>
</tr>
</tbody>
</table>
Table 8-2 lists additional terminals that can be connected to the system.

### Table 8-2. Additional Voice and Data Terminals

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Type</th>
<th>Circuit Packs</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZE01A Expansion Module for 8434DX</td>
<td>Voice and Features</td>
<td>N/A</td>
</tr>
<tr>
<td>Cordless Hybrid: MDW 9000 (TransTalk 9000)</td>
<td>Voice</td>
<td>TN762B</td>
</tr>
<tr>
<td>Cordless Hybrid: MDC 9000</td>
<td>Voice</td>
<td>TN762B</td>
</tr>
<tr>
<td>DCP Data interface: Constellation ACD data terminal</td>
<td>Data and voice</td>
<td>TN754B</td>
</tr>
<tr>
<td>PassageWay interface: Conssoles: 302B1 Attendant Console</td>
<td>Data and voice</td>
<td>TN754B</td>
</tr>
<tr>
<td>603A/D ACD Console (CallMaster digital console)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>603E ACD Console (CallMaster digital console)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Administration Terminals

Table 8-3 lists the administration terminals that can be connected to the system.

### Table 8-3. Administration Terminals

<table>
<thead>
<tr>
<th>Administration Terminal</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>510D</td>
<td>Remote administration</td>
</tr>
<tr>
<td>513, 610, 610D, 615, 715* BCT (G3s, G3i) 4410, 4425, VT220</td>
<td>Generic 3 Management Terminal (G3-MT) (formerly System Access Terminal (SAT)) administration and general purpose</td>
</tr>
<tr>
<td>515 BCT</td>
<td>Remote administration, general purpose</td>
</tr>
<tr>
<td>615 MT (G3s, G3i)</td>
<td>Manager I system administration and maintenance terminal</td>
</tr>
</tbody>
</table>

*The keyboards and terminals are interchangeable when an adapter cable is used.
- The older version of the 715 BCT terminal (715 BCS) (406803148 and 406803155), has a 6-pin mini-DIN keyboard connector
- The new version of 715 BCT terminal (715 GBCS) (4073113881 and 407313899), has a 6-pin RJ-11 keyboard jack located on the side of the terminal
Figure 8-3 shows typical connections from a system to data terminals.

The following printers can be connected to a system: system printer: Models 443, 450, 460, 470, 475, 476, 477, 478, 479, 495, 5310, and 5320. Call Detail Recording (CDR) printer — Prints call records.

Figure 8-4 shows a G3r connected to a system printer and a CDR printer with EIA and DCP interfaces. The TN553s connected to the TN726Bs in the figure are used for system access ports. A TN553 converts Mode-2 protocol to Mode-3 protocol, connecting the TN726B to the TDM bus for the EIA interfaces.
Figure 8-4. Connections to Printers

Messaging Adjuncts

The following list includes messaging adjuncts that can be used with a system:

- **AUDIX™**, allows subscribers to originate, send, receive, and store voice messages
- **3B2 Message Server Adjunct (MSA)**, provides a set of messaging for services allowing the creation, transmission, storage, and retrieval of messages among users
Property Management System (PMS), provides a communications link between a system and a customer's computer used for services such as reservations, housekeeping, and billing.

Call Management System (CMS), collects and processes Automatic Call Distribution (ACD) information sent from a system.

ISDN Gateway, provides incoming call management telemarketing capabilities by monitoring and controlling system call-handling via a high-speed system-to-adjunct communications channel.

CONVERSANT™ Voice Information System, an interactive voice-response system that automates telephone-call transactions, such as routing data between departments, registering persons, and providing bank account records. CONVERSANT™ operates in a PC and communicates with users by digitally recorded speech.

Figure 8-5 through Figure 8-11 show a G3r connected to AUDIX.

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Figure 8-5. AUDIX Small/Tower — Direct Connection
Figure 8-6. AUDIX Small/Tower — DSU Connection

Figure 8-7. AUDIX Voice Power — Switch-Connected
Figure 8-8. AUDIX Voice Power — Direct-Connected

Figure 8-9. AUDIX Voice Power — DSU-Connected
Figure 8-10. AUDIX Small/Tower — Switch-Connected
Figure 8-11. AUDIX Voice Power — Switch-Connected
Figure 8-12 through Figure 8-15 show AUDIX™ control link connections.

**CAUTION:**

Electric shock and/or fire may result from a cabinet-to-cabinet connection of the H600-406 Control Link Cable.
Figure 8-13. AUDIX Control Link IDI Connection to G3i/s/vs
Figure 8-14. AUDIX Control Link MPDM Connection to G3r
Figure 8-15. AUDIX Control Link IDI Connection to G3r

Figure 8-16 shows the AUDIX alarm connection.

Figure 8-16. AUDIX Alarm Connection
Figure 8-17 through Figure 8-20 show a G3 connected to INTUITY™.

Figure 8-17. Direct Connection from G3vs, s, i to INTUITY

MAP/40

GP-SYNCH circuit card

MAP/100

ED1E43411 - Grp 175

H600-210 - Grp n

IDI

G3vs,s,i

EIA connector on back of control carrier

TN765 circuit pack

n = lengths of cable

MAP/40

MAP/100
Figure 8-18. Direct Connection from G3r to INTUITY

$G3r$ only

$TN577$

Packet gateway

$n =$ lengths of cable

$MAP/40$

$GP-SYNCH$

circuit card

$ED1E43411, G175$

$H600-210, G n$

$H600-347, G1$

(Use one RS-232 connector)

$MAP/100$

$IDI$
Figure 8-19. Connection to INTUITY via MPDM (Switch Connect)
Figure 8-20. G3r to INTUITY via MPDMs (Switch Connect)
Figure 8-21 through Figure 8-26 show a G3 connected to the CMS, MSA, and ISDN Gateway messaging adjuncts.

Figure 8-21. CMS/MSA/IG 3B — Direct Connection

Figure 8-22. CMS/MSA/IG 3B — DSU Connection
Figure 8-23. CMS/MSA/IG 6386 — Direct Connection

Figure 8-24. CMS/MSA/IG 6386 — DSU Connection
Figure 8-25. CMS/MSA/IG 3B — Switch Connection
Telemarketing Adjuncts

Telemarketing adjuncts include an external queue-status indicator lamp to provide status information about the number of calls and the time of the oldest call in an ACD queue. Other adjuncts include CONVERSANT™ Voice Inquiry Service to provide ICM features such as Voice Messaging and Automated Attendant. The recorded announcement used with ACD and non-ACD hunt groups provide recorded announcements for incoming calls queued for a longer time than the administered “delay announcement” time (0 to 999 seconds) or for calls directed to an announcement.

G3r supports integrated, auxiliary, and analog announcement. G3s and G3i support integrated announcement and analog announcement.
Figure 8-27 shows a G3 connected to a queue-status indicator lamp.

Figure 8-27. Connections to a Queue-Status Warning Lamp

Figure 8-28 and Figure 8-29 show a G3r connected to recorded announcement and dictation equipment.

Figure 8-28. Recorded Announcement or Dictation Equipment Connection — FCC-Registered Equipment
Administration Adjuncts

Administration adjuncts include Operation Support Systems (OSSs). The adjuncts are used to administer and maintain a system. The following list includes administration adjuncts that can be used with a system:

- PC-based DEFINITY® Generic 3 Management Applications (G3-MA)
- DEFINITY Generic 3 Management Terminal (G3-MT)
- Facility Diagnostics
- Network Reconfigurator
- Modular System Management (MSM)
Figure 8-30 shows a system connected from a PPN cabinet to a G3-MT.

Figure 8-30. Connection from a PPN Cabinet to a G3-MT

Figure 8-31 shows a system connected from an EPN cabinet to a G3-MT. The G3-MT connected to the TN775 in the EPN is used only for maintenance.

Figure 8-31. Connection from an EPN Cabinet to a G3-MT
Figure 8-32 and Figure 8-33 show a system connected to a remote G3-MT.

Figure 8-32. Remote G3-MT with Integrated Modem Pool

Figure 8-33. Remote G3-MT with Combined Modem Pool
Call Record Acquisition Adjuncts

Call record acquisition adjuncts collect call records produced by a system when calls are connected. These adjuncts store and process records and send them to other systems such as data processing equipment, tape drives, and printers. Call record acquisition adjuncts include Call Detail Recording Utility (CDRU), 3B2 CDRU, 6386 CDRU, CDRU/small (CDRU/S), and CDRU/SE which collects CDR records sent from G3. Other adjuncts include Call Accounting System (CAS) Plus, and Cost Allocator.

Figure 8-34 and Figure 8-35 show a G3r connected to a CDRU and a CDRU/S. The TN553s connected to the TN726Bs in the figure are used for system access ports. A TN553 converts Mode-2 protocol to Mode-3 protocol to allow the TN726B to communicate with the TDM bus for the EIA interfaces.

Figure 8-34. G3r to CDRU and CDRU/S — Using ADU
Figure 8-35. G3r to CDRU and CDRU/S — Using Data Module

Miscellaneous Adjuncts

A system can be connected to the following miscellaneous adjuncts: Incoming Call Management (ICM), office application servers, and industry-specific application servers. Other adjuncts include the Stratum 3 Clock (G3r) to provide system timing, and Music-on-Hold to provide customer-supplied music or other audible information to the held party when any single-party call is held by a station or an attendant. Miscellaneous adjuncts also include the following:

- Loudspeaker Paging
- Recorded Announcement
- Malicious Call Trace (MCT)
- Digital Announcement
- CallVisor® Host
- LAN/Gateway assembly platform (embedded). For more information, see:

  DEFINITY® Communications System Generic 3 CallVisor ASAI Technical Reference, 555-230-220

  DEFINITY® Communications System Generic 3 Installation, Administration, and Maintenance of CallVisor ASAI Over the DEFINITY® LAN Gateway, 555-230-223
Figure 8-36 shows a G3 connected to a Stratum 3 external synchronization clock.

Figure 8-36. Connections to a Stratum 3 Clock
Figure 8-37 and Figure 8-38 show connections to Music-On-Hold equipment. If the equipment is not FCC-registered or is in a country outside the USA, an AT&T representative should be contacted about registration.

**Figure 8-37. Connections to Music-On-Hold Equipment — FCC-Registered, via an Auxiliary Trunk**

**Figure 8-38. Connections to Music-On-Hold Equipment — Non-FCC Registered, via an Auxiliary Trunk**
Figure 8-39 and Figure 8-40 show connections to an analog line using a KS23395 and a KS21906, respectively.

Figure 8-39. Music-on-Hold (FCC-registered) via Analog Line using KS23395.
Figure 8-40. Music-on-Hold (non-FCC-registered) via Analog Line using KS21906
Figure 8-41 through Figure 8-47 show connections to Loudspeaker Paging equipment.

Figure 8-41. PagePac 50/100/200 Amplicenter for Loudspeaker Paging

Figure 8-42. PagePac 50/100/200 for Loudspeaker Paging
Figure 8-43. PagePac 20 without Zone-Mate for Loudspeaker Paging

Figure 8-44. Connections to PagePac VS
Figure 8-45. Loudspeaker Paging Equipment with 909 Coupler

Figure 8-46. Loudspeaker Paging Equipment without 909 Coupler
Figure 8-47. Loudspeaker Paging Equipment with Background Music
Figure 8-48 through Figure 8-50 show connections to recorded announcement equipment.

Figure 8-48. Recorded Announcement Equipment
Figure 8-49. Recorded Announcement Equipment Using Two Circuit Packs

Figure 8-50. Recorded Announcement Equipment Using Three Circuit Packs
Figure 8-51 shows connections to Malicious Call Trace (MCT) equipment.

Figure 8-51. Connections to MCT Equipment
Figure 8-52 and Figure 8-53 show connections to digital announcement equipment.

Figure 8-52. Digital Announcement Equipment with 909 Coupler

Figure 8-53. Digital Announcement Equipment without 909 Coupler
Figure 8-54 shows connections to a CallVisor ASAI host. As an alternate method of connection, the system can be connected to the CallVisor using the DEFINITY® LAN Gateway. See Figure 8-55.

Figure 8-54. Connections to a CallVisor ASAI Host

Figure 8-55 shows a typical G3 cabinet connected to a CallVisor ASAI host via the DEFINITY® LAN Gateway. Refer to the AT&T document DEFINITY® Communications System Generic 3 Installation, Administration, and Maintenance of CallVisor/ASAI Over the DEFINITY® LAN Gateway 555-230-223.

Figure 8-55. Connections to a CallVisor ASAI Host
DCS Links

Figure 8-56 through Figure 8-67 show a typical G3r cabinet connected through Distributed Communication System (DCS) links to other switches.

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**Figure 8-56. Connections Between Two G3r's, Using DCS Links via an IDI**

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**Figure 8-57. Connections Between Two G3r's, Using DCS Links via CSUs and DSUs**
Figure 8-58. Two G3r’s Connected Using DCS Links via CSUs

Figure 8-59. Two G3r’s Connected Using DCS Links via MTDMs, DSUs, and CSUs
Figure 8-60. Two G3r's Connected Using DCS Links via MPDM
Figure 8-61. G3r and System 85/G2 Connected Using DCS Links via CSUs and DSUs
Figure 8-62. G3r and System 75/G1 Connected Using DCS Links via CSUs and MPDM
Figure 8-63. G3r and System 85/G2 Connected Using DCS Links via CSUs and MPDM
Figure 8-64. G3r and System 85/G2 Connected Using DCS Links via IDI
Figure 8-65. G3r and G3i Cabinet Connected Using DCS Links via CSUs

Figure 8-66. Two G3’s Connected Using DCS Links Via CSUs
Figure 8-67. G3 and Public Network Connected Using DCS Links via CSU
DS1 Converter Connections

Figure 8-68 and Figure 8-69 show connections to a remote G3 using a DS1 Converter.

Figure 8-68. G3r to Remote G3r Connected Using DS1 Converter with Critical Reliability
Figure 8-69.  G3r to Remote G3r Connected Using DS1C
DS1 Connections

Figure 8-70 and Figure 8-71 show connections to a public or private network using DS1 connections.

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**Figure 8-70.** G3 to Public/Private Network Using DS1 and External CSU

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**Figure 8-71.** G3 to Public/Private Network Using DS1 and Integrated CSU
Connection from AUX Connector in PPN Cabinet

Figure 8-72 shows the connection from the AUX (auxiliary) connector in the PPN cabinet to the Main Distribution Frame.

AUX Connector Capacity

Up to three Attendant Consoles can be powered from the AUX connector in the “A” position in G3s, G3i, and G3r Control Carriers. Only one Attendant Console can be powered from the “A” position in G3vs Control Carriers. Refer to Chapter 11 “Technical Specifications” for other hardware requirements.

Up to seven Emergency Transfer Panels can be connected to the AUX connector in the “A” position in G3s, G3i, and G3r Control Carriers. Only one Emergency Transfer Panel can be connected in G3vs Control Carriers. Refer to Chapter 11 “Technical Specifications” for other hardware requirements.
Typical Connections to G3V3 and G3V4

The following circuit diagrams show connections to typical G3V3 and G3V4 systems.

Figure 8-73. Typical Connections through PassageWay

Figure 8-74. Typical Connections to a Two-Wire DCP Endpoint

NOTE: 8400-series voice terminals in 2-wire operation must be within 5500 feet of the TN2181 using 22-gauge wire, within 3500 feet using 24-gauge wire, and within 2200 feet using 26-gauge wire.
Figure 8-75. Typical Connections to Two-Wire DCP Workstation

* Use with 7401D, 7406D, 602A1, 603A1 and 603D1 telephones
** Digital line pack can be a TN754 or TN413
*** DS1 circuit pack can be a TN464C (or later) or TN767C (or later)

Figure 8-76. Typical Connections Through Constellation
Long haul PRI signaling: G3s/iV3 to G3s/iV3 or G3r via ISDN-PRI

![Diagram of connections](image)

Long haul signaling: G3s/iV3 to public network (CO) via ISDN-PRI

![Diagram of connections](image)

Figure 8-77. Typical Connections to Other Systems Using PRI over PACCON
Long haul PRI signaling: G3 to G3 via ISDN-PRI

Long haul signaling: G3 to public network (CO) via ISDN-PRI

Figure 8-78. Typical Connections Using Integrated CSU
The primary objective of maintenance in the system is to detect, report, and clear troubles as quickly as possible and with minimum disruption of normal service. Periodic tests, automatic software diagnostic programs, and fault detection hardware allow most troubles to be traced to a circuit pack in the system.

The system hardware is maintained as a group of independent units separately replaceable. The units include circuit packs, power units, fans, tape drive, and voice terminals.

The two general categories within maintenance are: system-alarmed troubles and user-reported troubles. For alarmed troubles, both a remote maintenance facility (if provided), a local terminal, and any customer-premises equipment (CPE) alarm are automatically alerted. Most alarms are also reported by lights on the circuit packs in the system. User-reported troubles usually result from service problems at individual voice and data terminals and are often related to alarmed conditions.

The major part of maintenance is directed toward system-alarmed troubles. The system detects and reports most problems automatically. The system automatically retires alarms. After an alarmed trouble has been cleared, the system retests the previously faulty area. When the trouble is no longer detected, the alarm is removed. It is not necessary for personnel to retire alarms after a problem has been fixed. However, testing a fixed condition and manually retiring the alarm may be faster than allowing the system to automatically retire the alarm.
Hardware Used for Maintenance

The following hardware is used in fault detection diagnosis and repair:

- The TN773 or TN786B Maintenance circuit located on the Processor circuit pack in G3vs, G3s, and G3i in the PPN cabinet. The maintenance circuit sends alarm information to a terminal, indicates system status by alarm lights, and provides emergency transfer switching and control. Other functions include monitoring and controlling the reset condition and operation of the SPE, and monitoring and controlling the power units. The maintenance circuit also provides direct access to a terminal, provides an asynchronous modem that allows personnel to enter maintenance and administration commands at a remote terminal, and displays alarms remotely.

- TN771D Maintenance/Test circuit pack in the PPN. This circuit pack provides ISDN-PRI trunk test calls and provides packet bus reconfiguration for systems with the critical reliability option and the CallVisor ASAI.

- TN775 Maintenance circuit pack in an EPN. This circuit pack controls emergency transfer switch for EPN cabinet, monitors and controls the cabinet environment and power signals, provides two serial links for communication with EI circuit packs, and provides direct access from the EPN to a terminal.

- G3-MT terminal provides a maintenance interface for personnel.

- Two red lights on the attendant console, labeled “Alm” and “Ack.” The left light is lit steadily when there is a major or minor alarm at the switch cabinet. The right light is lit steadily if the alarm has been successfully reported to a remote location. If the system is unable to report the alarm to the location, the right light flashes, which is a signal for the attendant to call the location and report the alarm. Both lights are off after the alarm is cleared or if there is no alarm.

- TN772 in G3i and UN330B in G3vs Duplication interface circuit pack with the high reliability and critical reliability options. This circuit pack monitors the status of each processor, controls the state of the standby processor, and allows maintenance to be performed on the standby processor and the results recorded in the active processor. The circuit pack also provides access to a terminal and has memory shadowing to update the memory of the standby SPE.

- Multi-function voice terminals. Major, minor, and warning buttons can be administered.

- Circuit pack lights indicate red (for alarm), the system has detected a fault in that circuit pack; green (for test), the system is running tests on that circuit pack; and yellow (for busy), that circuit pack is operating.

- In-line error detection circuitry checks for correct operation.
Maintenance Tests

Maintenance tests are divided into two groups: periodic and demand. The periodic tests run automatically at fixed intervals on a specific schedule. The short tests are run hourly and the long tests are run every 24 hours. Heavy call processing extends the interval of these tests.

Demand tests are run by the system when it detects a need or by personnel when required during trouble clearing activities. Demand tests include the periodic tests and others required only when trouble occurs. Some of the non-periodic tests may be disruptive to system operation. Using a terminal, personnel can initiate the same tests the system initiates, and the results are displayed on the terminal screen.

With the high reliability and critical reliability options, maintenance tests on the standby SPE are initiated by the active SPE. The active SPE transfers the standby SPE to the maintenance test mode before proceeding with any tests. When testing is completed, the active SPE places the standby SPE back in the standby mode.

Procedures

If part of the system fails some of the periodic tests a preset number of times, the system automatically generates an alarm to alert personnel. The system supports three levels of alarms:

1. Major alarms: failures causing critical degradation of service and require immediate attention
2. Minor alarms: failures causing marginal degradation of service while not rendering a crucial portion of the system inoperable. This condition requires action, but its consequences are not immediate. Problems that cause minor alarms might be impaired service in a few trunks or stations or interference with one feature across the entire system
3. Warning alarms: localized failures not causing noticeable degradation of service. Warning alarms are not reported to the attendant console or a remote location

The system sends an alarm to any CPE device such as a light, an automatic dialer, a bell, or other CPE device. The CPE alarm activation level field on the system parameters maintenance screen must be administered to indicate the alarm level (major, minor, warning, or none) that activates the CPE device. Some alarm levels are adjustable by the Set Options feature.
Error and Alarm Logs

A record of system errors is recorded on an error log that can be displayed on a terminal. The log is useful for analyzing problems that have not caused an alarm or when alarms cannot be retired by replacement of hardware.

When errors result in alarms, the alarms are listed on another record called the alarm log. The alarm log can also be displayed on a terminal. If a number of alarms are active, the alarm log can be used to determine which alarms should be cleared first.

The alarm log and the error log list current unresolved conditions and past alarms and errors that provide a profile of system maintenance. Both logs are saved on tape after a major system failure or restart.

Terminal Alarm Notification Buttons

Terminal alarms are for customers who have administered feature buttons on voice terminals or the attendant console to represent several types of alarms. A maximum of 10 digital and/or hybrid voice terminals may be used.

When an alarm occurs, the green (status) lamp associated with the assigned button assumes a steady state. The lamp is turned off by pressing the button associated with the lighted alarm lamp. If the lamp is turned off and the alarm has not been resolved by the time maintenance reschedules testing, the green (status) lamp resumes its steady state.

Each alarm type and its meaning is described below. The text of each button label appears in parenthesis:

- Administered Connection Alarm (ac-alarm) [G3i] — Lights if a locally administered connection (ADM-CONN) has a Major, Minor, or Warning alarm active
- Auto Wakeup Journal Printer Alarm (pr-awu-alm) — Lights if the automatic wakeup journal printer has a Major, Minor, or Warning alarm active
- DS1 Facility Alarm (ds1-alarm) — Lights if a DS1-BD has an off-board Major, Minor, or Warning alarm active
- Facility Access Alarm (trk-ac-alm) — Lights when the facility access trunk test feature is used
- Major Alarm (major-alm) — Lights if any Major system alarm is active.
- Major/Minor Alarm (mj/mn-alm) — Lights if any Major or Minor system alarm is active
- PI Link Alarm (link-alarm) — Lights if Processor Interface links 1 through 8 have a Major, Minor, or Warning alarm active
Local and Remote Testing

A terminal connected directly to the system or a remote terminal can be used to display error and alarm logs, test circuit packs, test system functions, turn off (busyout) and release system equipment, and reset the system.

Port Circuit Packs

A port circuit pack can be replaced without turning off power or interrupting service except in the area directly affected by the replacement. Verification tests are automatically run on the circuit pack when it is plugged in.

Documents

For maintenance information, see the following AT&T documents:

- DEFINITY® Communications System Generic 3i/s/vs Maintenance, 555-204-105
- DEFINITY® Communications System Generic 3r Maintenance, 555-230-105
Environmental Requirements

This chapter describes the floor and wall area required for the system and associated peripheral equipment installed in the equipment room. Also included are room specifications for temperature, humidity, air purity, and lighting levels.

Floor Area

Floor area requirements in the equipment room vary between Multi-Carrier Cabinets and Single-Carrier Cabinets.

Multi-Carrier Cabinets

The following system equipment and optional peripheral equipment occupies the following floor area in the equipment room:

Table 10-1. System Equipment Dimensions

<table>
<thead>
<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Clearance</th>
<th>Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 inches (1.8 m)</td>
<td>32 inches (81 cm)</td>
<td>28 inches (71 cm)</td>
<td>N/A</td>
<td>22 square feet (2 square m)</td>
</tr>
</tbody>
</table>
Table 10-2. Cable Slack Manager Dimensions

<table>
<thead>
<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Clearance</th>
<th>Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 inches</td>
<td></td>
<td>38 inches</td>
<td>between cabinet and wall</td>
<td>22 square feet</td>
</tr>
<tr>
<td>(81 cm)</td>
<td></td>
<td>(2 square m)</td>
<td></td>
<td>(2 square m)</td>
</tr>
</tbody>
</table>

Table 10-3. Auxiliary Cabinet Dimensions

<table>
<thead>
<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Clearance</th>
<th>Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>70 inches</td>
<td></td>
<td></td>
<td>N/A</td>
<td>22 square feet</td>
</tr>
<tr>
<td>(1.8 m)</td>
<td></td>
<td></td>
<td></td>
<td>(2 square m)</td>
</tr>
<tr>
<td>32 inches</td>
<td></td>
<td>28 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(81 cm)</td>
<td></td>
<td>(71 cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(71 cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 inches</td>
<td></td>
<td>22 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(56 cm)</td>
<td></td>
<td>(56 cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 inches</td>
<td></td>
<td>38 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(81 cm)</td>
<td></td>
<td>(2 square m)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Single-Carrier Cabinets

The following system equipment and optional peripheral equipment occupies the following floor area in the equipment room:

Table 10-4. System Cabinet Dimensions

<table>
<thead>
<tr>
<th>Height (1-4 Cabinet Stacks)</th>
<th>Width</th>
<th>Depth</th>
<th>Clearance</th>
<th>Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Cabinet 20 inches</td>
<td>27 inches</td>
<td>22 inches</td>
<td>38 inches between cabinet and wall</td>
<td>8 square feet</td>
</tr>
<tr>
<td>(51 cm)</td>
<td>(69 cm)</td>
<td>(56 cm)</td>
<td>(2 square m)</td>
<td>(74 square m)</td>
</tr>
<tr>
<td>2-Cabinet 39 inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(99 cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Cabinet 58 inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1.5 m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-Cabinet 77 inches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2 m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The average heat dissipation of a fully loaded (five carriers) Multi-Carrier Cabinet (disregarding terminals) is 4200 BTUs (1058 gram-calories) per hour. The average fully loaded Multi-Carrier PPN or EPN cabinet dissipates 6600 BTUs (2016 gram-calories) per hour (including terminals).

Main Distribution Frame

The Main Distribution Frame (MDF) must be installed and wired to the external environment before any AT&T equipment and installation personnel arrive on site. This allows a faster installation process.

The MDF must be a specified distance from the cable slack manager and must meet specific requirements. For more detailed information regarding the MDF and other site requirements, refer to the following AT&T documents:

- DEFINITY® Communications System Generic 3 Planning and Configuration 555-230-601
- DEFINITY® Communications System Generic 1 and Generic 3 Main Distribution Field Design, 555-230-630.

Floor Plans

Floor plans of the system and peripheral equipment vary depending on the size and shape of the equipment room and the extent of growth planned for the system in the future (including the Main Distribution Frame). The wall behind a system cabinet must be clear of all objects (pictures, shelves, or windows) not required in the system installation. The entire area behind a cabinet must be reserved for the Main Distribution Frame and the cable access panel (when provided).

<table>
<thead>
<tr>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Clearance</th>
<th>Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 inches (81 cm)</td>
<td>38 inches between cabinet and wall</td>
<td>8 square feet (74 square m)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 10-1 through Figure 10-4 show typical floor plans.

The following information applies to Figure 10-1:

- The power outlets should be located outside the MDF area and must not be controlled by a switch or be shared with other equipment.
- The PPN cabinets require special 120 VAC, 60 Hz, 15 Amp or 20 Amp power outlet (NEMA 5-15 or NEMA 5-20 receptacle or equivalent).
- The system must be grounded by one of the approved methods. See Page 10-14 “Approved Grounds.”
- Earthquake protection may be required, depending on the geographical location of the site. Refer to page 10-7.
- The trunk/auxiliary field may be located inside the MDF.
- Each Single-Carrier Cabinet uses 10-foot B25A cables from the “A” and “B” cabinet positions and 15-foot B25A cables from the “C” and “D” cabinet positions. Fiber connections between port networks use 20-foot (FLZP-P-20) cable.

---

Figure 10-1. Typical Single-Carrier Cabinet Floor Plan
The following information applies to Figure 10-2 through Figure 10-4:

- The power outlets should be located outside the MDF area and must not be controlled by a switch or be shared with other equipment.
- The PPN cabinets require a special 120 VAC, 60 Hz, 15 Amp or 20 Amp power outlet (NEMA 5-50R receptacle or equivalent) or a 208 VAC, 30 Amp (NEMA L14-30R receptacle or equivalent) power outlet.
- The auxiliary cabinet requires a special 120 VAC, 60 Hz, 20 Amp power outlet (NEMA 5-20R receptacle or equivalent).
- Allow at least 36 inches (91.4 cm) of space in front of the cabinet to allow door to open.
- The system must be grounded by one of the approved methods listed in this section.
- Earthquake protection may be required, depending on the geographical location of the site. Refer to page 10-7.
- The trunk/auxiliary field may be located inside the MDF.

---

**Figure 10-2. Typical Multi-Carrier PPN Cabinet and Auxiliary Cabinet Floor Plan**
Figure 10-3. Typical Multi-Carrier PPN Cabinet, EPN Cabinet, and Auxiliary Cabinet Floor Plan
Earthquake Protection

When earthquake or disaster protection is required, the cabinets can be bolted
to the floor. Figure 10-5 shows USA and Canadian earthquake zones where
bracing may be needed. A greater susceptibility of an area to earthquakes is
indicated by a higher number in Figure 10-5. In the United States, 0 represents
the lowest susceptibility and 4 represents the highest. In Canada, 0 represents
the lowest susceptibility and 3 represents the highest.

NOTE:
This seismic data is from the “Uniform Building Code” International
Conference of Building officials., 1975 Whittier, California, United States.
Other seismic data is from “The Supplement to the National Building Code
of Canada”, 1980 NRCC No. 17724.

The following AT&T document includes earthquake protection installation
procedures: DEFINITY® Communications System Generic 1 and Generic 3
Installation and Test, 555-230-104.
Figure 10-5. US and Canada Earthquake Environment

Table Area

The table area is reserved for the G3 management terminal (G3-MT) and an optional printer.
G3-MT

This section describes the areas needed by terminals that can be used as G3-MTs. The 510A or 510D personal terminal, and 513, 515, 610, 615, 715, 4410 and 4425 terminals can be located in the equipment room and require area on a table or desk.

The 513, 515, 610, 615, 715, 4410 and 4425 terminals each require approximately 3.2 square feet (0.3 square m) of area. The 510A or 510D with optional keyboard each requires approximately 2.1 square feet (0.2 square m) of area.

Optional Printers

The following AT&T printer documents include information on optional printers that require table or floor area:

- 445 Printer 999-700-023
- 443 Printer 999-700-024
- 450 Printer 999-700-025
- 460 Printer 999-700-022
- 470 Printer and 475 Printer 999-300-285IS
- 572 Printer and 573 Printer 999-300-562

Wall Area

Wall area required in the equipment room depends on the type of cross-connect hardware installed, such as Z100-type (modular) or 110-type. The area required also depends on the size of the system. The following AT&T documents provide details on cross-connect hardware:

- DEFINITY® Communications System Generic 1 and Generic 3i Wiring, 555-204-111
- DEFINITY® Communications System Generic 1 and Generic 3 Main Distribution Field Design, 555-230-630

If existing cross-connect hardware is re-used, refer to the space requirements and hardware requirements detailed in the system floor plans.
Floor Loading

This section presents the floor-loading requirements for Multi-Carrier and Single-Carrier Cabinet systems.

Multi-Carrier Cabinets

The floor must have a commercial floor loading code of at least 50 pounds per square foot (242 kg per square meter). A fully loaded Multi-Carrier Cabinet weighs about 800 pounds (360 kg). A maintenance area of at least 16 square feet (1.5 square m) is required for each cabinet.

Single-Carrier Cabinets

Table 10-6 details the floor loading weight of the single-carrier cabinets. Up to four cabinets may be stacked.

Table 10-6. Single-Carrier Cabinet Weight

<table>
<thead>
<tr>
<th>Number of Cabinets</th>
<th>Weight (Fully Loaded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>130 pounds (59 kg)</td>
</tr>
<tr>
<td>Two</td>
<td>255 pounds (115 kg)</td>
</tr>
<tr>
<td>Three</td>
<td>380 pounds (171 kg)</td>
</tr>
<tr>
<td>Four</td>
<td>500 pounds (225 kg)</td>
</tr>
</tbody>
</table>

**NOTE:**
A maintenance area of at least 10 square feet (.93 square m) is required for a four-cabinet system.

Temperature and Humidity

The system equipment must be installed in a well-ventilated area. Maximum equipment performance is obtained at an ambient temperature between 40 and 120 degrees Fahrenheit (4 and 49 degrees Celsius) for short term operation (not more than 72 consecutive hours or 15 days in a year) and up to 110 degrees Fahrenheit (43 degrees Celsius) for continuous operation.
The relative humidity range is 10 to 95 percent up to 84 degrees Fahrenheit (29 degrees Celsius). Above 84 degrees Fahrenheit (29 degrees Celsius), maximum relative humidity decreases from 95 percent down to 32 percent at 120 degrees Fahrenheit (49 degrees Celsius). Installations outside these limits may reduce system life or impede operation.

In addition to the maximum ranges, the recommended temperature and humidity range is: 65F to 85F (18C to 29C) at 20% to 60% relative humidity. Table 10-7 correlates room temperature with allowable relative humidity.

<table>
<thead>
<tr>
<th>Room Temperature (Degrees F)</th>
<th>Room Temperature (Degrees C)</th>
<th>Relative Humidity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 to 84</td>
<td>4.4 to 28.8</td>
<td>10 to 95</td>
</tr>
<tr>
<td>86</td>
<td>30.0</td>
<td>10 to 89</td>
</tr>
<tr>
<td>88</td>
<td>31.1</td>
<td>10 to 83</td>
</tr>
<tr>
<td>90</td>
<td>32.2</td>
<td>10 to 78</td>
</tr>
<tr>
<td>92</td>
<td>33.3</td>
<td>10 to 73</td>
</tr>
<tr>
<td>94</td>
<td>34.4</td>
<td>10 to 69</td>
</tr>
<tr>
<td>96</td>
<td>35.6</td>
<td>10 to 65</td>
</tr>
<tr>
<td>98</td>
<td>36.7</td>
<td>10 to 61</td>
</tr>
<tr>
<td>100</td>
<td>37.8</td>
<td>10 to 58</td>
</tr>
<tr>
<td>102</td>
<td>38.9</td>
<td>10 to 54</td>
</tr>
<tr>
<td>104</td>
<td>40.0</td>
<td>10 to 51</td>
</tr>
<tr>
<td>106</td>
<td>41.1</td>
<td>10 to 48</td>
</tr>
<tr>
<td>108</td>
<td>42.2</td>
<td>10 to 45</td>
</tr>
<tr>
<td>110</td>
<td>43.3</td>
<td>10 to 43</td>
</tr>
<tr>
<td>112</td>
<td>44.4</td>
<td>10 to 40</td>
</tr>
<tr>
<td>114</td>
<td>45.6</td>
<td>10 to 38</td>
</tr>
<tr>
<td>116</td>
<td>46.7</td>
<td>10 to 36</td>
</tr>
<tr>
<td>118</td>
<td>47.8</td>
<td>10 to 34</td>
</tr>
<tr>
<td>120</td>
<td>48.9</td>
<td>10 to 32</td>
</tr>
</tbody>
</table>
Altitude and Air Pressure

The normal operating air pressure range is: 9.4 psi to 15.2 psi (648 millibars to 1,048 millibars). At altitudes above 5,000 feet (1,525m), the maximum short-term temperature limit is reduced by 1F for each 1,000 feet (305m) of elevation above 5,000 feet (1,525m). At 10,000 feet (3,050m), for example, the maximum short-term temperature limit is 115F.

Air Purity

The cabinet should not be installed where the air may be contaminated by:

- Excessive dust, lint, carbon particles, paper fiber contaminants, or metallic contaminants
- Corrosive gases above the levels in Table 10-8.

Table 10-8. Corrosive Gas Concentrations

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Average Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter</td>
<td>185 micrograms/cubic meter</td>
</tr>
<tr>
<td>Nitrate in particulate matter</td>
<td>12 micrograms/ cubic meter</td>
</tr>
<tr>
<td>Total hydrocarbons equivalent to methane</td>
<td>10 ppm</td>
</tr>
<tr>
<td>Sulphur dioxide</td>
<td>0.20 ppm</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>0.30 ppm</td>
</tr>
<tr>
<td>Total oxidants equivalent to ozone</td>
<td>0.05 ppm</td>
</tr>
<tr>
<td>Hydrogen sulfide</td>
<td>0.10 ppm</td>
</tr>
</tbody>
</table>

NOTE:

All cabinets contain a filter that reduces particulates flowing through the equipment. The filter in the Multi-Carrier Cabinet filters all particles equal to or greater than 5 microns in diameter.

Lighting

Lighting should be bright enough to allow personnel to perform their tasks. The recommended light intensity is 50 to 70 footcandles, which meets Occupational Safety and Health Act (OSHA) standards.
RF Noise

In most cases, noise is introduced into the system through trunk or station cables, or both. However, electromagnetic fields near the system control equipment may also cause noise in the system. Therefore, the system and cable runs should not be placed in areas where a high electromagnetic field strength exists. Radio transmitters (AM or FM), television stations, induction heaters, motors with commutators of 0.25 horsepower (187 watts) or greater, and similar equipment are leading causes of interference. Small tools with universal motors are generally not a problem when they operate on separate power lines. Motors without commutators generally do not cause interference.

Field strengths below 1.0 volt per meter are unlikely to cause interference. These weak fields can be measured by a tunable meter. Field strengths greater than 1.0 volt per meter can be measured with a broadband meter.

The field strength produced by radio transmitters can be estimated by dividing the square root of the emitted power in kilowatts by the distance from the antenna in kilometers. This yields the approximate field strength in volts per meter and is relatively accurate for distances greater than about half a wavelength (150 meters for a frequency of 1000 kHz).

Acoustic Noise Levels

Acoustic noise levels are given for Multi-Carrier and Single-Carrier Cabinets.

Multi-Carrier Cabinets

The noise produced by a five-carrier cabinet is 51, 53, and 56 dBA at low, medium, and high fan speeds, respectively, at a distance of five feet (1.5 m). If the cabinet door is open, there is an additional 1 dBA of noise. The tape drive also causes additional noise. When the tape drive is reading data, there is an additional 1 dBA of noise. When the tape drive is fast winding, there is an additional 2 dBA of noise.

Single-Carrier Cabinets

The noise produced by the system is as follows at a distance of five feet (1.5 m):

- 1 cabinet — 48 dBA
- 2 cabinets — 50 dBA
- 3 cabinets — 52 dBA
- 4 cabinets — 53 dBA
If the system cabinet door is open, there is an additional 1 dBA of noise. The tape drive also causes additional noise. When the tape drive is reading data, there is an additional 2 dBA of noise. When the tape drive is fast winding, there is an additional 4 dBA of noise.

**Overvoltage Protection**

In the United States, Underwriters Laboratories (UL) codes protect the system against overvoltage, including lightning strikes. Loss of service caused by overvoltage can result in a loss of one or more terminals (voice and data), ports, and circuit packs.

The following devices protect the system from overvoltages:

- Analog trunks use the 79A sneak protector or the ITW equivalent.
- Analog voice terminals use one of the following types of protection:
  - Carbon block with heat coil for UL code 4B1C
  - Gas tube with heat coil for UL code 4B1E-W
  - Solid state with heat coil for UL code 4C1S
- DCP terminals use the solid state 4C3S-75 with heat coil protector

**Approved Grounds**

An approved ground is the closest acceptable medium for grounding the building entrance protector, the entrance cable shield, or single-point ground of the PBX.

If more than one type of approved ground is available on the premises, the grounds must be bonded together as required in Section 250-81 of the National Electrical Code, or the applicable electrical in the country where the equipment is installed.

For more information, refer to the AT&T document *DEFINITY® Communications System Generic 3 Installation (for Single-Carrier Cabinets)* 555-230-894.
This chapter includes the following technical specifications on the capabilities, performance, and feature capacities of DEFINITY® Generic 3 (G3):

- Representative Number of Lines
- Performance
- System Hardware and Software Capacity Limits
- Maximum Port Slot Capacities
- Additional Hardware to Use Features
- Allocation of Station Buttons
- Initialization and Recovery
- Cabling Distances
- DS1 Remoting Transmission Distance
- Tones
- Indicator Lamp Signals
- Protocols
- Transmission Characteristics
- Service Codes
- Facility Interface Codes
Representative Number of Lines

Table 11-1 lists a representative number of lines for each configuration of Processor Port Networks (PPNs), Expansion Port Networks (EPNs), and Center Stage Switches (CSS) in G3. The actual number of lines depends on the features and characteristics of the configuration.

Table 11-1. Representative Number of Lines (G3)

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Representative Number of Lines</th>
<th>G3s/vs</th>
<th>G3i</th>
<th>G3r</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PPN</td>
<td></td>
<td>200 (160 in G3vs)</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Direct connect with 1 PPN and 2 EPNs</td>
<td>Not Applicable</td>
<td>2,400</td>
<td>2,400</td>
<td></td>
</tr>
<tr>
<td>1 SN in the CSS with 1 PPN and 15 EPNs</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>12,500</td>
<td></td>
</tr>
<tr>
<td>3 SNs in the CSS with 1 PPN and 43 EPNs</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>25,000</td>
<td></td>
</tr>
</tbody>
</table>

Performance

Table 11-2 lists G3V2 (and later) Busy Hour Call Capacity performance. The capacities can vary with customer application. These capacities may require a Processor Occupancy Evaluation (POE) to achieve.

Table 11-2. G3 Busy Hour Call Capacities

<table>
<thead>
<tr>
<th>System Type</th>
<th>Busy Hour Call Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G3/i/s/vs</td>
</tr>
<tr>
<td>Basic</td>
<td>20,000</td>
</tr>
<tr>
<td>Integrated Services Digital Network (ISDN)</td>
<td>8,000</td>
</tr>
<tr>
<td>Automatic Call Distribution (ACD)</td>
<td>14,000</td>
</tr>
<tr>
<td>Inbound Call Management (ICM)</td>
<td>6,000</td>
</tr>
<tr>
<td>Outbound Call Management (OCM)</td>
<td>8,000</td>
</tr>
<tr>
<td>Adjunct Switch Applications Interface (ASAI) desk top</td>
<td>14,000</td>
</tr>
</tbody>
</table>
Table 11-3 lists G3 response times.

### Table 11-3. G3 Response Times

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Response Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call processing</td>
<td>General voice path cut-through: 750ms Attendant ring tip: 260ms Direct extension selection (DXS) lamp update: One second Announcement circuit pack upload (no call processing load): 40 minutes</td>
</tr>
<tr>
<td>System management</td>
<td>Four to six seconds mean response time</td>
</tr>
<tr>
<td>Maintenance</td>
<td>High-priority periodic tests must be completed within one hour. High-priority scheduled tests must be completed once each day, but not during busy hours.</td>
</tr>
<tr>
<td>Booting and recovery</td>
<td>11 minutes</td>
</tr>
</tbody>
</table>

Additional Hardware to Use Features

Table 11-4 describes additional hardware needed to use features. The hardware consists of circuit packs installed in carriers, devices installed in an auxiliary cabinet, and external devices. Specific circuit packs used for the features in Table 11-4 are described in Chapter 2, “Cabinets, Carriers, and Circuit Packs.”

Not all feature applications require additional hardware; the conditions for additional required hardware are also described.
Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abandoned Call Search</td>
<td>CO Trunk circuit pack</td>
</tr>
<tr>
<td>Abbreviated Dialing</td>
<td>Additional call progress tone detector ports on a Tone Detector circuit pack if the special “wait” character is used frequently</td>
</tr>
<tr>
<td>ACCUNET Service</td>
<td>Modular processor data module (MPDM) and printer</td>
</tr>
<tr>
<td>Adjunct Switch Application Interface (ASAI)</td>
<td>Port on a BRI Line circuit pack and a terminating resistor for each interface to be provided. Up to eight interfaces are supported. G3vs: BRI and ASAI are not supported. G3s and G3i: a Packet Control circuit pack is required for ASAI applications. A packet Expansion Interface circuit pack is also required for system connectivity in multiple port network systems. G3r: no additional hardware beyond BRI Line is required. G3: packet applications, such as ASAI, require a Maintenance/Test circuit pack in the PPN. In a critical reliability system, a Maintenance/Test circuit pack is also required in each additional expansion port network.</td>
</tr>
<tr>
<td>Administered Connection</td>
<td>Circuit packs: Data Line, Digital Line, BRI Line, Pooled Modem, or DS1 Interface Data Modules: 7400HS, MPDM, MTDM, 7400A, 7400B, 7500B, 7400D series voice terminals with DTDM; 7500 series BRI voice terminals with ADM</td>
</tr>
<tr>
<td>Advice of Charge</td>
<td>Same hardware as ISDN and CDR. See ISDN-PRI and CDR. See [ISDN-PRI] and [CDR].</td>
</tr>
<tr>
<td>Announcement</td>
<td>See Recorded Announcement.</td>
</tr>
<tr>
<td>Announcements — Intercept Treatment</td>
<td>Hardware to support recorded announcement, if equipped. See hardware required for Recorded Announcement.</td>
</tr>
<tr>
<td>Answer Machine Detection</td>
<td>Call Classifier circuit pack</td>
</tr>
<tr>
<td>Attendant Direct Extension Selection With Busy Lamp Field</td>
<td>Selector console</td>
</tr>
</tbody>
</table>
### Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Information Exchange (AUDIX)</td>
<td>Voice: AUDIX machine and appropriate ports on Analog Line circuit packs. Data Control Link: G3vs, G3s, and G3i use the Processor Interface (PI) RS-232 connector on the rear panel of the PPN control carrier and an MPDM. If the PI connector is not available, a port on a Digital Line circuit pack and an MPDM are required in addition to a PI link. G3r: port on a Packet Gateway circuit pack AUDIX networking requires ports on one or more Digital Line circuit packs.</td>
</tr>
<tr>
<td>Adjunct Voice Mail System</td>
<td>DEFINITY® AUDIX assembly resides in five consecutive port slots in G3s, G3i and G3r; the assembly resides in four port slots on the far right in G3vs AUDIX in Digital Port (DP) Mode does not require additional hardware for a data control link and supports only 8 AUDIX ports. AUDIX in control link mode requires the same additional data control link hardware as an AUDIX adjunct listed above. The AUDIX administration terminal can be connected via: direct connection, modems, Asynchronous Data Unit (ADU), and G3MA.</td>
</tr>
<tr>
<td>DEFINITY® AUDIX Embedded Voice Mail System</td>
<td>DEFINITY® AUDIX assembly resides in five consecutive port slots in G3s, G3i and G3r; the assembly resides in four port slots on the far right in G3vs AUDIX in Digital Port (DP) Mode does not require additional hardware for a data control link and supports only 8 AUDIX ports. AUDIX in control link mode requires the same additional data control link hardware as an AUDIX adjunct listed above. The AUDIX administration terminal can be connected via: direct connection, modems, Asynchronous Data Unit (ADU), and G3MA.</td>
</tr>
<tr>
<td>Barrier Code Aging</td>
<td>Printer</td>
</tr>
<tr>
<td>BCMS Reports</td>
<td>Printer</td>
</tr>
<tr>
<td>Automatic Circuit Assurance</td>
<td>Voice terminal with display or a speech synthesis circuit pack</td>
</tr>
<tr>
<td>Automatic Call Distribution (ACD) ACD</td>
<td>If needed: one port on an Analog Line circuit pack per auxiliary queue warning level lamp. Hardware to support recorded announcement or music-on-hold. See hardware required for recorded announcement and music-on-hold. Voice terminals (not 2500-type sets) are required for agents.</td>
</tr>
<tr>
<td>itself does not require any additional</td>
<td></td>
</tr>
<tr>
<td>hardware.</td>
<td></td>
</tr>
<tr>
<td>Automatic Incoming Call Display</td>
<td>515 BCT, display-equipped voice terminal, or voice terminal that can display information through an attached data terminal. The terminals require a PRI or DCS link; otherwise, they are station-to-station only.</td>
</tr>
</tbody>
</table>

Issue 4 March 1996 11-5
### Technical Specifications

#### Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Wake-up</td>
<td>If voice prompting is used, a Voice Synthesizer circuit pack is needed. Each circuit pack has four ports to provide voice prompting. If voice synthesis announcements are used, two ports are reserved for announcements. Audichron is used for customized recorded announcements. Journal printer and interface for automatic wake-up with integrated announcement, the Integrated Announcement circuit pack is needed.</td>
</tr>
<tr>
<td>Call-By-Call Service Selection (PRI feature)</td>
<td>G3vs, G3s and G3i: DS1 Interface and Processor Interface circuit packs. G3r: DS1 Interface circuit pack</td>
</tr>
<tr>
<td>Call Detail Recording (CDR)</td>
<td>Hardware depends on the type of CDR collector. G3vs, G3s and G3i: CDR collector can be connected to the RS-232 port on the Processor circuit pack to eliminate the need for data modules described below. G3r: CDR collector is connected via either: 1. Packet Data circuit pack cross-connected to a port on a Data Line circuit pack that is switch-connected to a second Data Line circuit pack port and then to an ADU, or 2. Packet Data circuit pack cross-connected to a port on a Data Line circuit pack switch-connected to a BRI Line circuit pack connected to a 7500 Data Module or a Digital Line connected to an MPDM. Reused equipment: printer, PC, tape unit, or the TELESEER unit — MPDM connected to a Digital Line circuit pack port, or a 212A modem connected to a port on an analog line circuit pack with a pooled modem. 94A LSU — MTDM connected to a Digital Line circuit pack port, or a 212A modem connected to a port on an analog line circuit pack with a pooled modem. Host computer — Private line terminated at the G3V2 with a Trunk Data Module. A private line modem is used if off-premises (out-of-building).</td>
</tr>
<tr>
<td>CDR Call Splitting, CDR Privacy</td>
<td>Terminal and DTDM</td>
</tr>
</tbody>
</table>
## Call Management System (CMS)

CMS adjunct G3vs, G3s, and G3i: port on a digital circuit pack and a Processor Interface G3r: port on a Packet Gateway circuit pack and, depending on distance, an 105B IDI or DSU. Alternately, a port on a Packet Gateway is connected to an MPDM. The MPDM is connected to an administered connection through a port on each of a pair of Digital Line circuit packs and terminates at the CMS.

## Call Prompting

Each Call Prompting announcement requires a port on an Integrated Announcement circuit pack or an external announcement facility. Each announcement requires a port on an analog line circuit pack. The Call-Classifier circuit pack is required for touch-tone receivers to collect digits input by callers.

## Calling Party Number/Billing Number (CPN/BN)

G3vs, G3s, and G3i: an Interface Link (requires a Processor Interface circuit pack) and a data module are assigned. Alternately, a port is used on a Digital Line circuit pack instead of a data module. The link is administered on the system’s Processor Channel Assignments form. The link is used as an interface to an ISDN Gateway adjunct to support CPN/BN. Optional ASAI Link (see ASAI for more information). Display terminals also require ACD related hardware. Refer to the ACD feature for hardware requirements. G3V4 does not support ISDN Gateway.

## CallVisor Adjunct/Switch Application Interface (ASAI)

A port on a BRI line circuit pack connected to the CallVisor Adjunct. See ISDN-BRI.

## Centralized Attendant Service (CAS) (Branch or Main)

A Tie Trunk circuit pack is used, which serves all other tie trunk applications. Alternately, the PRI DS1 Interface circuit pack can be used for the release link trunks of the CAS network.

## Code Calling Access

Loudspeaker paging equipment and one port on a Auxiliary Trunk circuit pack per zone, can be shared with the Loudspeaker Paging Access feature.

## Conference/Intrusion Tones

International Tone-Clock used to generate tones — TN780

## Cordless Telephone Support

An appropriate Analog Line or Hybrid (MFAT) Line circuit pack is used for the cordless set.

### Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call Management System (CMS)</td>
<td>CMS adjunct G3vs, G3s, and G3i: port on a digital circuit pack and a Processor Interface G3r: port on a Packet Gateway circuit pack and, depending on distance, an 105B IDI or DSU. Alternately, a port on a Packet Gateway is connected to an MPDM. The MPDM is connected to an administered connection through a port on each of a pair of Digital Line circuit packs and terminates at the CMS.</td>
</tr>
<tr>
<td>Call Prompting</td>
<td>Each Call Prompting announcement requires a port on an Integrated Announcement circuit pack or an external announcement facility. Each announcement requires a port on an analog line circuit pack. The Call-Classifier circuit pack is required for touch-tone receivers to collect digits input by callers.</td>
</tr>
<tr>
<td>Calling Party Number/Billing Number (CPN/BN)</td>
<td>G3vs, G3s, and G3i: an Interface Link (requires a Processor Interface circuit pack) and a data module are assigned. Alternately, a port is used on a Digital Line circuit pack instead of a data module. The link is administered on the system’s Processor Channel Assignments form. The link is used as an interface to an ISDN Gateway adjunct to support CPN/BN. Optional ASAI Link (see ASAI for more information). Display terminals also require ACD related hardware. Refer to the ACD feature for hardware requirements. G3V4 does not support ISDN Gateway.</td>
</tr>
<tr>
<td>CallVisor Adjunct/Switch Application Interface (ASAI)</td>
<td>A port on a BRI line circuit pack connected to the CallVisor Adjunct. See ISDN-BRI.</td>
</tr>
<tr>
<td>Centralized Attendant Service (CAS) (Branch or Main)</td>
<td>A Tie Trunk circuit pack is used, which serves all other tie trunk applications. Alternately, the PRI DS1 Interface circuit pack can be used for the release link trunks of the CAS network.</td>
</tr>
<tr>
<td>Code Calling Access</td>
<td>Loudspeaker paging equipment and one port on a Auxiliary Trunk circuit pack per zone, can be shared with the Loudspeaker Paging Access feature.</td>
</tr>
<tr>
<td>Conference/Intrusion Tones</td>
<td>International Tone-Clock used to generate tones — TN780</td>
</tr>
<tr>
<td>Cordless Telephone Support</td>
<td>An appropriate Analog Line or Hybrid (MFAT) Line circuit pack is used for the cordless set.</td>
</tr>
</tbody>
</table>
Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czechoslovakian Digital MFC</td>
<td>Czechoslovakian Digital Tie (DS1 Interface 24/32) and Call Classifier circuit packs</td>
</tr>
<tr>
<td>D-Channel Backup</td>
<td>PRI DS1 Interface circuit pack and PRI facilities. Refer to PRI for associated hardware requirements.</td>
</tr>
<tr>
<td>Data Call Setup</td>
<td>Each DCP data module requires one port on a Digital Line circuit pack. A Digital Terminal Data Module (DTDM) shares the port with the associated voice terminal. Reused equipment: each AT&amp;T Personal Terminal 510D or 515 BCT requires one port on a Digital Line circuit pack for shared use of voice and data. Each 7400, 7401D, 7404D, 7406D, or 7407D voice terminal requires one port on a Digital Line circuit pack for shared use of voice and data. Each BRI data module requires one port on a BRI Line circuit pack. Each 7505D w/ADM, 7506D w/ADM, 7507D w/ADM, 8510D w/ADM, or 8520D w/ADM terminal requires one port on a BRI Line circuit pack for shared use of voice and data. Each 7500 Data Module requires one port on a BRI Line circuit pack for data. Each modern requires one port on an Analog Line circuit pack. Modem pooling requires either a Modem Pool circuit board or a port on a Digital Line circuit pack with a TDM or MTDM, and one port on an Analog Line circuit pack with analog modem for each conversion resource. Keyboard Dialing to off-premises (out of building) data endpoints requires call progress tone detector ports on a Tone Detector circuit pack.</td>
</tr>
<tr>
<td>DCS Features (All DCS Features)</td>
<td>G3vs, G3s, and G3i: a Processor Interface circuit pack and an MPDM or DSU are required. G3r: a port on a Packet Gateway circuit pack is required.</td>
</tr>
<tr>
<td>DCS Plus</td>
<td>PRI D-channel link: a PRI DS1 Interface circuit pack is required and, if required by the network provider, a CSU per span.</td>
</tr>
<tr>
<td>Dialed Number Identification Service (DNIS)</td>
<td>For non-ISDN type calls, a port on a DS1 Interface circuit pack to support MEGACOM. 800 DNIS. The feature also requires that the answering voice terminals be equipped with a display.</td>
</tr>
<tr>
<td>DIOD International</td>
<td>DIOD circuit pack or DS1/E1 circuit pack</td>
</tr>
<tr>
<td>Digital Multiplexed Interface (DMI)</td>
<td>One PRI DS1 Interface circuit pack per 24 DMI trunks</td>
</tr>
</tbody>
</table>
## Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Department Calling and Uniform Call Distribution (DDC/UCD itself does not require any additional hardware.)</td>
<td>If needed: one port on a Analog Line circuit pack per queue warning level lamp. Hardware for support of recorded announcement, or music-on-hold if there is to be a delay announcement or music. See additional hardware required for recorded announcement and music-on-hold.</td>
</tr>
<tr>
<td>Direct Inward Dialing (DID)</td>
<td>One port on a DID Trunk circuit pack for each DID trunk. If R2 MFC signaling is used, then Call Classifier circuit pack ports are required and must be engineered.</td>
</tr>
<tr>
<td>Direct Outward Dialing (DOD)</td>
<td>One port on a CO Trunk circuit pack for each DOD trunk</td>
</tr>
<tr>
<td>Do Not Disturb</td>
<td>If voice prompting is used, one or more ports on a Voice Synthesizer circuit pack</td>
</tr>
<tr>
<td>DS1 Tie Trunk Service</td>
<td>One DS1 Interface circuit pack is required per 24 Voice-Grade DS1 tie trunks or per 23 AVD DS1 tie trunks.</td>
</tr>
<tr>
<td>DS1 Integrated CSU</td>
<td>DS1 Interface circuit pack and Integrated CSU module (120A)</td>
</tr>
<tr>
<td>DXS Button Enhancements</td>
<td>Attendant Console with DXS Console addition</td>
</tr>
<tr>
<td>E1 — 32 Channel</td>
<td>DS1 Interface 24/32 circuit pack</td>
</tr>
<tr>
<td>ECMA Conformance in ISDN-PRI</td>
<td>DS1 Interface 24/32 circuit pack</td>
</tr>
<tr>
<td>EIA Interface</td>
<td>One Data Line circuit pack per eight EIA interfaces, and one Asynchronous Data Unit (ADU) per port on the circuit pack are required.</td>
</tr>
<tr>
<td>Generalized MFC</td>
<td>DS1 Interface 24/32 or appropriate analog CO and DID or DIOD, and Call Classifier circuit packs</td>
</tr>
<tr>
<td>German — Digital</td>
<td>DS1 Interface 24/32 for German digital trunks (e.g. PRI)</td>
</tr>
<tr>
<td>Greece MFC</td>
<td>DS1 Interface 24/32 and Call Classifier circuit packs</td>
</tr>
<tr>
<td>Inbound Call Management (ICM)</td>
<td>ASAI hardware (refer to ASAI feature for hardware requirements) Use of ACD feature (refer to ACD feature for hardware requirements)</td>
</tr>
<tr>
<td>Information System Network (ISN) Interface</td>
<td>One Data Line circuit pack per eight ISN interfaces</td>
</tr>
</tbody>
</table>
### Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Services Digital Network Basic Rate Interface (BRI)</td>
<td>One BRI Line circuit pack for up to 12 BRI endpoints using the point-to-point 4-wire T interface; one BRI Line circuit pack for up to 24 BRI endpoints using passive bus G3vs: BRI is not supported. G3s and G3i: Packet Control circuit pack for BRI applications. A packet Expansion Interface circuit pack is also required for system connectivity in multiple port network systems. G3r: no additional hardware beyond BRI Line All systems; in packet applications, such as BRI, a Maintenance/Test circuit pack is required in the PPN for all systems. In a critical reliability system a Maintenance/Test circuit pack is also required in each additional expansion port network.</td>
</tr>
<tr>
<td>Integrated Services Digital Network Primary Rate Interface (PRI)</td>
<td>One PRI DS1/E1 Interface circuit pack provides a signaling link and up to 23/30 ISDN-PRI trunk group members. G3vs, G3s, and G3i: a Processor Interface or packet control circuit pack is required. G3r: no additional hardware beyond PRI DS1 Interface</td>
</tr>
<tr>
<td>Inter-PBX Attendant Calls</td>
<td>Tie trunk group between the branch and main locations</td>
</tr>
<tr>
<td>Leave Word Calling</td>
<td>Display voice terminal, and speech synthesis circuit pack are used to store the LWC message in the system. Alternately, an AUDIX system (adjunct), and voice terminals are used to store the LWC message on the AUDIX.</td>
</tr>
<tr>
<td>Loudspeaker Paging Access with Answerback</td>
<td>Loudspeaker paging equipment and one port on a Auxiliary Trunk circuit pack per zone. Paging interface equipment consisting of a 909-type voice coupler adapter (only if equipment is not FCC-registered) and a 24-volt power supply, per zone. This hardware can be shared with the Code Calling Access feature. If PagePac. paging system equipment is used, one port on a CO Trunk circuit pack, one port on a Analog Line circuit pack, or one port on a Auxiliary Trunk circuit is used, depending on the PagePac arrangement.</td>
</tr>
<tr>
<td>Malicious Call Trace</td>
<td>None</td>
</tr>
<tr>
<td>Mexico 2-way</td>
<td>DS1 Interface 24/32 and Call Classifier circuit packs</td>
</tr>
<tr>
<td>MFC Enhancements</td>
<td>DS1 Interface 24/32 and Call Classifier circuit packs</td>
</tr>
</tbody>
</table>
### Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modem Pooling</td>
<td>One Pooled Modem circuit pack per two integrated conversion resources are provided. Each combined conversion resource requires one port on the Digital Line circuit pack, one port on an Analog Line circuit pack, and an analog modem and MTDM or 7400 terminal.</td>
</tr>
<tr>
<td>Move Agents From CMS</td>
<td>CMS vehicle</td>
</tr>
<tr>
<td>Multiple Call Handling On Request</td>
<td>Multi-appearance set</td>
</tr>
<tr>
<td>Music-on-Hold Access</td>
<td>Music source and one port on a Auxiliary Trunk or Analog Line circuit pack are required. A 909-type voice coupler is required if the system is not FCC-registered (USA only).</td>
</tr>
<tr>
<td>National ISDN</td>
<td>PRI circuit pack</td>
</tr>
<tr>
<td>Network Access — Private</td>
<td>One port on a Tie Trunk circuit pack or one port on a DS1 Interface circuit pack for each trunk assigned</td>
</tr>
<tr>
<td>Network Access — Public</td>
<td>One port on a CO or DIOD Trunk circuit pack or one port on a DS1/E1 Interface circuit pack</td>
</tr>
<tr>
<td>Night Service — Trunk Answer From Any Station</td>
<td>Ringing device and one port on a Analog Line circuit pack</td>
</tr>
<tr>
<td>Off-Premises Data Extensions</td>
<td>Trunk Data Module and one port on a Digital Line circuit pack</td>
</tr>
<tr>
<td>Off-Premises Station</td>
<td>Cross-connecting capabilities and one port on a Analog Line circuit pack</td>
</tr>
<tr>
<td>PC Application Software Translation Exchange (PASTE)</td>
<td>A port on a Digital Line or BRI Line circuit pack connected through a Personal Computer configured with the PC/PBX, PC/ISDN, or PassageWay circuit card and application software to an appropriate voice terminal.</td>
</tr>
<tr>
<td>Personal Central Office Line</td>
<td>One port on a CO Trunk circuit pack for each CO, FX, or WATS trunk assigned as a PCOL</td>
</tr>
</tbody>
</table>
### Technical Specifications

11-12 Issue 4 March 1996

#### Power Failure Transfer

One emergency transfer panel per five or six trunks assigned to Power Failure Transfer are required, depending on the panel used. The following panels are available:

- **808A Panel** — Each unit serves up to five failure transfer terminals. The unit provides automatic ground start or loop start.
- **Z1A Panel** — Each unit serves up to six power failure transfer terminals. A ground-start key is required at each preselected voice terminal when ground-start trunks are used.
- **PORTA SYSTEMS. Model 574-5 Panel** — Each unit serves up to five failure transfer terminals. The unit provides automatic ground start or loop start.

#### Property Management System

G3vs, G3s, and G3i, either:
1. Using a Digital Line port and a MPDM, or
2. Using a Digital Line port and a ADU

G3r, either:
1. A Packet Data circuit pack cross-connected to a port on a Data Line circuit pack, which is switch connected to a second Data Line circuit pack port and then to an ADU, or
2. A Packet Data circuit pack cross-connected to a port on a Data Line circuit pack, which is switch-connected to either a BRI Line circuit pack connected to a 7500 Data Module or to a Digital Line connected to a MPDM. Data Line circuit pack with an ADU or a data module and port on a Digital Line circuit pack.

#### Queue Status or Queue Status Indication

One port on a Analog Line circuit pack for each auxiliary queue warning lamp, such as a 21C-49.

#### QSIG Global Networking

Same as ISDN-PRI. See [ISDN-PRI](#).

---

Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Failure Transfer</td>
<td>One emergency transfer panel per five or six trunks assigned to Power Failure Transfer are required, depending on the panel used. The following panels are available:</td>
</tr>
<tr>
<td></td>
<td>- 808A Panel — Each unit serves up to five failure transfer terminals. The unit provides automatic ground start or loop start.</td>
</tr>
<tr>
<td></td>
<td>- Z1A Panel — Each unit serves up to six power failure transfer terminals. A ground-start key is required at each preselected voice terminal when ground-start trunks are used.</td>
</tr>
<tr>
<td></td>
<td>- PORTA SYSTEMS. Model 574-5 Panel — Each unit serves up to five failure transfer terminals. The unit provides automatic ground start or loop start.</td>
</tr>
<tr>
<td>Property Management System</td>
<td>G3vs, G3s, and G3i, either:</td>
</tr>
<tr>
<td></td>
<td>1. Using a Digital Line port and a MPDM, or</td>
</tr>
<tr>
<td></td>
<td>2. Using a Digital Line port and a ADU</td>
</tr>
<tr>
<td></td>
<td>G3r, either:</td>
</tr>
<tr>
<td></td>
<td>1. A Packet Data circuit pack cross-connected to a port on a Data Line circuit pack, which is switch connected to a second Data Line circuit pack port and then to an ADU, or</td>
</tr>
<tr>
<td></td>
<td>2. A Packet Data circuit pack cross-connected to a port on a Data Line circuit pack, which is switch-connected to either a BRI Line circuit pack connected to a 7500 Data Module or to a Digital Line connected to a MPDM. Data Line circuit pack with an ADU or a data module and port on a Digital Line circuit pack.</td>
</tr>
<tr>
<td>Queue Status or Queue Status Indication</td>
<td>One port on a Analog Line circuit pack for each auxiliary queue warning lamp, such as a 21C-49.</td>
</tr>
<tr>
<td>QSIG Global Networking</td>
<td>Same as ISDN-PRI. See <a href="#">ISDN-PRI</a>.</td>
</tr>
</tbody>
</table>
## Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recorded Announcement</td>
<td>Announcements are provided by a port on an Analog Line circuit pack, a port on an Auxiliary Trunk circuit pack, or an Integrated Announcement circuit pack. G3vs, G3s, and G3i: each analog announcement has announcement equipment, such as an AT&amp;T 15A announcement unit configured with an analog interface, and one port on a Analog Line circuit pack. G3vs, G3s, and G3i can also use announcement equipment configured with an Auxiliary Trunk interface and port on an Auxiliary Trunk circuit pack. Each integrated announcement, accessed by a call, has one port on an Integrated Announcement circuit pack. Up to 128 G3vs, G3s and G3i, and 256 G3r announcements can be recorded on the Integrated Announcement circuit pack. A Network Control circuit pack restores messages after a power failure. G3r: each analog announcement has announcement equipment, such as an AT&amp;T 15A announcement unit configured with an analog interface, and one port on a Analog Line circuit pack. G3r can also use announcement equipment configured with an Auxiliary Trunk interface and port on an Auxiliary Trunk circuit pack. Each integrated announcement, accessed by a call, has one port on an Integrated Announcement circuit pack. Up to 128 G3vs, G3s and G3i, and 256 G3r announcements can be recorded on the Integrated Announcement circuit pack. The G3r has a System Access Port resource (Packet Data and Data Line combination) to save and restore announcements to the Integrated Announcement circuit pack.</td>
</tr>
<tr>
<td>Recorded Telephone Dictation Access</td>
<td>Telephone dictation machines and, depending on the type of machine, one port on a Analog Line circuit pack or one port on a Auxiliary Trunk circuit pack for each assigned machine</td>
</tr>
<tr>
<td>Remote Access</td>
<td>Dedicated trunks, such as a dedicated port on a CO trunk, or an extension number accessed by a Tie Trunk, DID or DIOD port circuit, if Remote Access is not available via DID</td>
</tr>
<tr>
<td>Remote Administration</td>
<td>Network Control circuit pack, a terminal, and an Integrated Modem Pool circuit pack or a combined modem pool setup</td>
</tr>
</tbody>
</table>
Report Scheduler and System Printer

Requirements depend on the type of interface used for the system printer (dedicated for Report Scheduler feature). The printer can be an AT&T model 470 or 570, which uses a serial interface, or it can be a compatible printer. A Personal Computer (PC) can be connected to the system printer port for collection of data. A serial interface on the PC is used for the connection.

(continued)

G3vs, G3s, and G3i: the system printer is connected via either of the following:

- Using the Data Communication Equipment (DCE) jack on the back of the PPN control carrier, which provides an RS-232 interface to eliminate a data module
- Using a Digital Line port and MPDM
- Using a BRI Line port and a 7500 Data Module
- Using a Data Line port and an ADU

R2-MFC
Analog or digital trunk and call classifier, e.g., TN744B or greater suffix circuit pack.

Russia MFR for ANI
DS1 Interface 24/32 and Call Classifier circuit packs

Security Violation Notification
Voice terminal with a display

Spain MFE
DS1 Interface 24/32 and Call Classifier circuit packs

Subnet Trunking
Additional call progress tone detector ports on Tone Detector circuit packs, if Routing Patterns containing "wait" symbols are used heavily and dial tone detection is preferable to waiting for interval time-out

SVN Refer Call with Announcements
Integrated Announcement circuit pack

System Administration Report Scheduler
See Report Scheduler and System Printer.

UK Networking (Name/Number)
DS1 Interface 24/32 circuit pack

VDN of Origin Announcement
Integrated Announcement circuit pack

Voice Message Retrieval
Speech Synthesizer circuit pack, which has four ports to provide Voice Message Retrieval. Traffic Engineering is required to determine the number of circuit packs.

Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report Scheduler and System Printer</td>
<td>Requirements depend on the type of interface used for the system printer (dedicated for Report Scheduler feature). The printer can be an AT&amp;T model 470 or 570, which uses a serial interface, or it can be a compatible printer. A Personal Computer (PC) can be connected to the system printer port for collection of data. A serial interface on the PC is used for the connection.</td>
</tr>
<tr>
<td>Report Scheduler and System Printer (continued)</td>
<td>G3vs, G3s, and G3i: the system printer is connected via either of the following:</td>
</tr>
<tr>
<td></td>
<td>- Using the Data Communication Equipment (DCE) jack on the back of the PPN control carrier, which provides an RS-232 interface to eliminate a data module</td>
</tr>
<tr>
<td></td>
<td>- Using a Digital Line port and MPDM</td>
</tr>
<tr>
<td></td>
<td>- Using a BRI Line port and a 7500 Data Module</td>
</tr>
<tr>
<td></td>
<td>- Using a Data Line port and an ADU</td>
</tr>
<tr>
<td>R2-MFC</td>
<td>Analog or digital trunk and call classifier, e.g., TN744B or greater suffix circuit pack.</td>
</tr>
<tr>
<td>Russia MFR for ANI</td>
<td>DS1 Interface 24/32 and Call Classifier circuit packs</td>
</tr>
<tr>
<td>Security Violation Notification</td>
<td>Voice terminal with a display</td>
</tr>
<tr>
<td>Spain MFE</td>
<td>DS1 Interface 24/32 and Call Classifier circuit packs</td>
</tr>
<tr>
<td>Subnet Trunking</td>
<td>Additional call progress tone detector ports on Tone Detector circuit packs, if Routing Patterns containing &quot;wait&quot; symbols are used heavily and dial tone detection is preferable to waiting for interval time-out</td>
</tr>
<tr>
<td>SVN Refer Call with Announcements</td>
<td>Integrated Announcement circuit pack</td>
</tr>
<tr>
<td>UK Networking (Name/Number)</td>
<td>DS1 Interface 24/32 circuit pack</td>
</tr>
<tr>
<td>VDN of Origin Announcement</td>
<td>Integrated Announcement circuit pack</td>
</tr>
<tr>
<td>Voice Message Retrieval</td>
<td>Speech Synthesizer circuit pack, which has four ports to provide Voice Message Retrieval. Traffic Engineering is required to determine the number of circuit packs.</td>
</tr>
</tbody>
</table>
Allocation of Buttons

Table 11-4. Additional Hardware to Use Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice Terminal Display</td>
<td>Display-equipped voice terminal that can be either of the following:</td>
</tr>
<tr>
<td></td>
<td>- Digital terminal requiring one port on a Digital Line circuit pack</td>
</tr>
<tr>
<td></td>
<td>- BRI terminal requiring one port on a BRI circuit pack</td>
</tr>
<tr>
<td></td>
<td>- Hybrid terminal requiring one port on a Hybrid Line circuit pack</td>
</tr>
<tr>
<td>VuStats</td>
<td>Terminal with display</td>
</tr>
<tr>
<td>Wideband Switching</td>
<td>TN464C/D/E/F DS1 Interface circuit pack for line-side and network facilities. G3vs, G3s, and G3i: Processor Interface circuit pack and Wideband Data Modules</td>
</tr>
<tr>
<td>World Class Core BRI</td>
<td>Same as ISDN-BRI. See <a href="#">ISDN-BRI</a></td>
</tr>
</tbody>
</table>

Allocation of Buttons

Table 11-5 lists the allocation of buttons by station type. The "Required Records and Button Units" column assumes three call appearances per station in button 1-3 with all other available buttons assigned. For call appearances other than 3, the total units are adjusted by the following:

\[
\text{adjustment} = (\text{Nca}-3)*((10*\text{Ndisp})+(6*\text{Nbri}))
\]

where:

- \(\text{Nca}\) = Number of call appearance (assumes first Nca button is CA)
- \(\text{Ndisp}\) = total Number of display stations in system
- \(\text{Nbri}\) = total Number of BRI station in system
The following legend defines the notation in Table 11-5:

<table>
<thead>
<tr>
<th>Notation</th>
<th>Meaning</th>
<th>G3iV2/G3sV2</th>
<th>G3r</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Attendant record</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>S</td>
<td>Basic station record</td>
<td>1,600</td>
<td>1,600</td>
</tr>
<tr>
<td>B</td>
<td>Large button module</td>
<td>2,000</td>
<td>None</td>
</tr>
<tr>
<td>M</td>
<td>Data module record</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>I</td>
<td>ISDN-BRI endpoint record</td>
<td>None</td>
<td>1,000</td>
</tr>
<tr>
<td>#</td>
<td>Button memory units</td>
<td>None</td>
<td>547,200</td>
</tr>
</tbody>
</table>

Table 11-5. Allocation of Buttons by Station Type

<table>
<thead>
<tr>
<th>Station Type</th>
<th>Required Records</th>
<th>Required Records and Button Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analog sets: 500, 2500, 7101A, 7103A, and 7104A</td>
<td>S</td>
<td>S+62</td>
</tr>
<tr>
<td>Analog sets: 8102,8110</td>
<td>S</td>
<td>S+62</td>
</tr>
<tr>
<td>10MET set — 10 buttons</td>
<td>S</td>
<td>S+52</td>
</tr>
<tr>
<td>20MET set — 20 buttons</td>
<td>S + [B]</td>
<td>S+152</td>
</tr>
<tr>
<td>30MET set — 30 buttons</td>
<td>S + [B]</td>
<td>S+252</td>
</tr>
<tr>
<td>Hybrid set — 7303S</td>
<td>S</td>
<td>S+102</td>
</tr>
<tr>
<td>Hybrid set — 7305S</td>
<td>S + [B]</td>
<td>S+342</td>
</tr>
<tr>
<td>Hybrid set — 7309S</td>
<td>S</td>
<td>S+102</td>
</tr>
<tr>
<td>515BCT</td>
<td>S + B + M</td>
<td>S+232</td>
</tr>
<tr>
<td>Basic Attendant Console</td>
<td>A+2B</td>
<td>A</td>
</tr>
<tr>
<td>Enhanced Attendant Console</td>
<td>A+2B</td>
<td>A</td>
</tr>
<tr>
<td>Attendant Selector Console</td>
<td>A+2B</td>
<td>A</td>
</tr>
</tbody>
</table>
### Table 11-5. Allocation of Buttons by Station Type

<table>
<thead>
<tr>
<th>Station Type</th>
<th>Required Records</th>
<th>Required Records and Button Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital set — 7401</td>
<td>S</td>
<td>S+92</td>
</tr>
<tr>
<td>Digital set — 7402</td>
<td>S</td>
<td>S+102</td>
</tr>
<tr>
<td>Digital set — 7403D</td>
<td>S + M</td>
<td>S+62</td>
</tr>
<tr>
<td>Digital set — 7404D</td>
<td>S + [B]</td>
<td>S+192</td>
</tr>
<tr>
<td>Digital set — 7404D w/display</td>
<td>S + B + M</td>
<td>S+342</td>
</tr>
<tr>
<td>Digital set — 7405D</td>
<td>S + [B]</td>
<td>S+472</td>
</tr>
<tr>
<td>Digital set — 7405D w/display</td>
<td>S + B + [B]</td>
<td>S+342</td>
</tr>
<tr>
<td>Digital set — 7406D</td>
<td>S + [B]</td>
<td>S+282</td>
</tr>
<tr>
<td>Digital set — 7406D w/display</td>
<td>S + B + [B]</td>
<td>S+342</td>
</tr>
<tr>
<td>Digital set — 7407D w/display</td>
<td>S + B + [B]</td>
<td>S+472</td>
</tr>
<tr>
<td>Digital set — 7410D</td>
<td>S</td>
<td>S+102</td>
</tr>
<tr>
<td>Digital set — 7434D</td>
<td>S + [B]</td>
<td>S+342</td>
</tr>
<tr>
<td>Digital set — 7434D w/call coverage mod.</td>
<td>S + B + [B]</td>
<td>S+542</td>
</tr>
<tr>
<td>Digital set — 7434D w/display</td>
<td>S + 2B + [B]</td>
<td>S+472</td>
</tr>
<tr>
<td>Digital set — 7444D</td>
<td>S + B + [B]</td>
<td>S+342</td>
</tr>
<tr>
<td>602A1</td>
<td>S + B + [B]</td>
<td>S+472</td>
</tr>
<tr>
<td>Personal computer (PC)</td>
<td>S + B + [B]</td>
<td>S+472</td>
</tr>
<tr>
<td>Feature Module</td>
<td>[B]</td>
<td>240</td>
</tr>
<tr>
<td>Display</td>
<td>B</td>
<td>*</td>
</tr>
<tr>
<td>DTDM</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>MPDM/MTDM/7400A/7400B</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Call Coverage Module</td>
<td>B</td>
<td>200</td>
</tr>
<tr>
<td>EIA (Pl-Simplex)</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>CDR</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Netcon Data Channel</td>
<td>2M</td>
<td>2M</td>
</tr>
<tr>
<td>Processor Interface Link</td>
<td>2M</td>
<td>2M</td>
</tr>
<tr>
<td>ISDN BRI UDM — 7500</td>
<td></td>
<td>M+I</td>
</tr>
<tr>
<td>ISDN BRI set — 7505D</td>
<td></td>
<td>S+I+190</td>
</tr>
<tr>
<td>ISDN BRI set — 7506D</td>
<td></td>
<td>S+I+250</td>
</tr>
<tr>
<td>ISDN BRI set — 7506D w/display</td>
<td></td>
<td>S+I+480</td>
</tr>
<tr>
<td>ISDN BRI set — 7507D</td>
<td></td>
<td>S+I+480</td>
</tr>
<tr>
<td>ISDN BRI set — 8503D</td>
<td></td>
<td>S+I+50</td>
</tr>
<tr>
<td>ISDN BRI set — 8510D</td>
<td></td>
<td>S+I+180</td>
</tr>
<tr>
<td>ISDN BRI set — 8520D</td>
<td></td>
<td>S+I+280</td>
</tr>
<tr>
<td>ISDN BRI set — 8520D w/display</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following notes apply to the button and data module records in Table 11-5:

- For G3rV1 and V2, [B] is equivalent to B. For G3iV1 and V2, [B] indicates large button modules allocated only when a button on that module is administered.
- Any digital communications protocol (DCP) station can add a 7400B, requiring one data module record.
- A digital terminal data module (DTDM) can be added to a 7403D or 7405D, requiring one data module record.
- The 6504-T is administered as a 7505D and the 6508-T is administered as a 7507D in G3V2.
- A data module (ADM-T) can be added to a 7505D, 7506D, or 7507D, requiring one data module record in G3V2.
- The PC/ISDN is administered as a 7506D, 7507D, or 8510 with ADM in G3V2.
- An ISDN-BRI endpoint record is required for each distinct ISDN-BRI endpoint. Thus each voice-only, data-only, or voice-data endpoint uses one of these records.

Initialization and Recovery

The time needed to initialize a system or for a system to recover from being reset depends on the line size of the system, features activated, trunks used, and adjuncts connected to the system. The system needs at least several minutes to initialize or recover automatically from being reset.
Cabling Distances

When the system layout is determined, maximum cabling distances to the
system cabinet must be considered. Table 11-6 lists the allowable intra-premises
abling distances. In case of mixed wire sizes, the table columns for 26-gauge
ire are used. These cabling distances are based on a minimum of -42.5 VDC at
the equipment connecting to the system.

Table 11-6. Allowable Intra-premises Cabling Distances

<table>
<thead>
<tr>
<th>Equipment</th>
<th>24 AWG Wire (0.5106 mm)</th>
<th>26 AWG Wire (0.4049 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Feet</td>
<td>Meters</td>
</tr>
<tr>
<td>Enhanced attendant console (302A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With selector console</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phantom powered</td>
<td>800</td>
<td>244</td>
</tr>
<tr>
<td>Locally powered</td>
<td>5000</td>
<td>1524</td>
</tr>
<tr>
<td>Without selector console</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phantom powered</td>
<td>1400</td>
<td>427</td>
</tr>
<tr>
<td>Locally powered</td>
<td>5000</td>
<td>1524</td>
</tr>
<tr>
<td>510D or 515 terminals</td>
<td>3000</td>
<td>914</td>
</tr>
<tr>
<td>513, 610 BCT, or 615 MT, 4410 or 4425 terminals (see also &quot;data module&quot; or &quot;EIA interface&quot;) 50-ft. maximum distance from terminal or BCT to module or ADU</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data modules:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z702AL1-DSU data module base</td>
<td>5000</td>
<td>1524</td>
</tr>
<tr>
<td>Z703AL1-DSU data module base</td>
<td>5000</td>
<td>1524</td>
</tr>
<tr>
<td>7404D data module</td>
<td>5000</td>
<td>1524</td>
</tr>
<tr>
<td>DTDM</td>
<td>3400</td>
<td>1037</td>
</tr>
<tr>
<td>High-speed data link</td>
<td>5000</td>
<td>1524</td>
</tr>
<tr>
<td>MTDM</td>
<td>5000</td>
<td>1524</td>
</tr>
<tr>
<td>3270 data module</td>
<td>5000</td>
<td>1524</td>
</tr>
<tr>
<td>EIA interface (data line circuit pack and ADU):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.2 kbps</td>
<td>2000</td>
<td>610</td>
</tr>
<tr>
<td>9.6 kbps</td>
<td>5000</td>
<td>1524</td>
</tr>
<tr>
<td>4.8 kbps</td>
<td>7000</td>
<td>2130</td>
</tr>
<tr>
<td>2.4 kbps</td>
<td>12000</td>
<td>3654</td>
</tr>
<tr>
<td>1.2 kbps</td>
<td>20000</td>
<td>6100</td>
</tr>
<tr>
<td>0.3 kbps</td>
<td>40000</td>
<td>12200</td>
</tr>
</tbody>
</table>
### Table 11-6. Allowable Intra-premises Cabling Distances

<table>
<thead>
<tr>
<th>Equipment</th>
<th>24 AWG Wire (0.5106 mm)</th>
<th>26 AWG Wire (0.4049 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Feet</td>
<td>Meters</td>
</tr>
<tr>
<td><strong>Voice terminals:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-port circuit pack (TN742, TN769), on-premises or out-of-building — same premises (notes 1 and 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500- or 2500-type (note 3)</td>
<td>20000</td>
<td>6100</td>
</tr>
<tr>
<td>7100 series</td>
<td>15200</td>
<td>4633</td>
</tr>
<tr>
<td>8100 series</td>
<td>10000</td>
<td>3050</td>
</tr>
<tr>
<td>16-port circuit pack (TN746/B), or TN2183), on-premises only no out-of-building or bridging (note 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT&amp;T 500 or 2500 type terminals without adjuncts</td>
<td>3100</td>
<td>945</td>
</tr>
<tr>
<td>8100 series</td>
<td>2500</td>
<td>762</td>
</tr>
<tr>
<td>16-port circuit pack (TN746B, TN2183), on-premises or out-of-building — same premises (notes 1 and 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500- or 2500-type (note 3)</td>
<td>20000</td>
<td>6100</td>
</tr>
<tr>
<td>7100 series</td>
<td>15200</td>
<td>4633</td>
</tr>
<tr>
<td>8100 series</td>
<td>12000</td>
<td>3654</td>
</tr>
<tr>
<td>Hybrid (TN762)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7300 series (without aux power)</td>
<td>1000</td>
<td>305</td>
</tr>
<tr>
<td>7300 series (with aux power)</td>
<td>2000</td>
<td>610</td>
</tr>
<tr>
<td>Digital (TN754B)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7400D series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phantom powered</td>
<td>3400</td>
<td>1037</td>
</tr>
<tr>
<td>Locally powered</td>
<td>5000</td>
<td>1524</td>
</tr>
</tbody>
</table>
### Table 11-6. Allowable Intra-premises Cabling Distances

<table>
<thead>
<tr>
<th>Equipment</th>
<th>24 AWG Wire (0.5106 mm)</th>
<th>26 AWG Wire (0.4049 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Feet</td>
<td>Meters</td>
</tr>
<tr>
<td>Digital (TN754)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7400D series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-premises-only terminals</td>
<td>3000</td>
<td>914</td>
</tr>
<tr>
<td>Out-of-building, same premises terminals</td>
<td>2400</td>
<td>732</td>
</tr>
<tr>
<td>ISDN BRI (TN556)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7500 series and 8500 series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Termination resistor (3 feet)</td>
<td>1900</td>
<td>579</td>
</tr>
<tr>
<td>Termination resistor (250 feet)</td>
<td>1600</td>
<td>488</td>
</tr>
<tr>
<td>MET sets (TN735)</td>
<td>1000</td>
<td>305</td>
</tr>
</tbody>
</table>

**NOTES:**

1. An out-of-building, same-premises, analog terminal installation requires a carbon block, gas tube, or equivalent solid state device at each end of the interbuilding cable.
2. Only AT&T 500- or 2500-type terminals can be used off-premises to a CO.
3. Point-to-point connections and terminals are within 33 feet of the jack.
4. If 22 AWG wire is used, contact your AT&T representative.
ISDN-BRI Two-Wire Line Cabling Distances

The TN2198 BRI 2-Wire Line circuit pack supports various cabling configurations using 22, 24, and 26 gauge (AWG) wire. Up to 18,000 feet (maximum) may be used between the TN2198 and the NT1 network interface.

Refer to Table 11-7 for the cabling distances from the NT1 network interface to the 7500-series and 8500-series voice terminals using 24 AWG and 26 AWG wire. If 22 AWG wire is used, contact your AT&T representative for cabling distances. Distances from the power closet to the voice terminal are typically less than 250 feet (75 meters).

Table 11-7. Cabling Distances from NT1 to ISDN-BRI Terminal

<table>
<thead>
<tr>
<th>Equipment</th>
<th>24 AWG</th>
<th>26 AWG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Feet</td>
<td>Meters</td>
</tr>
<tr>
<td>NT1 to ISDN-BRI Four-Wire Voice Terminal (7500 and 8500 Series)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Termination resistor (3 feet)</td>
<td>1900</td>
<td>579</td>
</tr>
<tr>
<td>Termination resistor (250 feet)</td>
<td>1600</td>
<td>488</td>
</tr>
</tbody>
</table>

Fiber Optic Cabling Distances

The requirements for maximum fiber optic cabling distances for a system are:
- The mean loss and the length of the outside plant fiber cable
- The mean loss and the length of fiber cable shipped with the cabinet (including any fiber riser cable)
- The mean loss of an ST connector and the number of ST connections
- The mean loss of a rotary mechanical splice and the number of splices
- Higher-order mode loss

Fiber optic cable is terminated at 9823A lightwave transceivers when the distance between cabinets is equal to or less than 4,900 feet (1.5 km).

Fiber optic cable is terminated at 9823B lightwave transceivers when the distance between cabinets is greater than 4,900 feet (1.5 km) and less than 25,000 feet (7.6 km).

The transmission speed across a fiber optic cable link between the PPN and an EPN is 32.788 Mbps.
DS1 Remoting Transmission Distance

When the distance between cabinets is greater than 25,000 ft. (7.6 km), or if fiber optic cabling right-of-way is not available, DS1 remoting is used in place of fiber optic cabling for distances up to 100 circuit miles (160 km). [Chapter 5, “Cabling,” describes DS1 remoting and the reasons for the 100-mile limit.]

Call Progress Tones

This section lists tones generated by the system. Table 11-8 lists the default call progress tones generated country code 1.

Table 11-8. Default Call Progress Tones

<table>
<thead>
<tr>
<th>Tone</th>
<th>Frequency</th>
<th>Pattern (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Answerback 3 tone</td>
<td>2225 Hz</td>
<td>3000 on followed by silence; no repeat</td>
</tr>
<tr>
<td>Answerback 5 tone</td>
<td>2225 Hz</td>
<td>5000 on followed by silence; no repeat</td>
</tr>
<tr>
<td>Bridging warning tone*</td>
<td>440 Hz</td>
<td>1750 on, 12000 off, 650 on; repeated</td>
</tr>
<tr>
<td>Busy tone</td>
<td>480 Hz + 620 Hz</td>
<td>500 on, 500 off; repeated</td>
</tr>
<tr>
<td>Call waiting tones:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>440 Hz</td>
<td>200 on followed by silence; no repeat</td>
</tr>
<tr>
<td>External or handled by attendant</td>
<td>440 Hz</td>
<td>200 on, 200 off, 200 on followed by silence; no repeat</td>
</tr>
<tr>
<td>Priority call</td>
<td>440 Hz</td>
<td>200 on, 200 off, 200 on, 200 off, 200 on followed by silence; no repeat</td>
</tr>
<tr>
<td>Call waiting ringback tone</td>
<td>440 Hz + 480 Hz; 440 Hz</td>
<td>900 on (440 Hz + 480 Hz), 200 on (400 Hz), 2900 off; repeated</td>
</tr>
<tr>
<td>Centralized attendant call:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>incoming call identification</td>
<td>480 Hz &amp; 440 Hz &amp; 480 Hz</td>
<td>100 on (480 Hz), 100 on (440 Hz), 100 on (480 Hz) followed by silence; no repeat</td>
</tr>
<tr>
<td>Coverage tone</td>
<td>440 Hz</td>
<td>600 on, followed by silence; no repeat</td>
</tr>
<tr>
<td>Confirmation tone</td>
<td>350 Hz + 440 Hz</td>
<td>100 on, 100 off, 100 on, 100 off, 100 on followed by silence; no repeat</td>
</tr>
<tr>
<td>Continuous confirmation tone</td>
<td>350 Hz + 440 Hz</td>
<td>100 on, 100 off; repeated</td>
</tr>
<tr>
<td>Dial tone</td>
<td>350 Hz + 440 Hz</td>
<td>continuous</td>
</tr>
</tbody>
</table>
Table 11-8. Default Call Progress Tones (Continued)

<table>
<thead>
<tr>
<th>Tone</th>
<th>Frequency</th>
<th>Pattern (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dial zero, attendant transfer, and test calls</td>
<td>440 Hz</td>
<td>100 on, 100 off, 100 on followed by silence; no repeat</td>
</tr>
<tr>
<td>Recall on don’t answer, audible ringing</td>
<td>440 Hz</td>
<td>300 on followed by silence; no repeat</td>
</tr>
<tr>
<td>Hold recall, hold confirmation</td>
<td>440 Hz</td>
<td>50 on, 50 off, 50 on, 50 off, 50 on, 50 off, 50 on, 50 off, 50 on followed by silence; no repeat</td>
</tr>
<tr>
<td>Camp-on recall, camp-on confirmation</td>
<td>440 Hz</td>
<td>100 on, followed by silence; no repeat</td>
</tr>
<tr>
<td>Executive override tone</td>
<td>440 Hz</td>
<td>3000 on followed by silence; not repeated</td>
</tr>
<tr>
<td>Intercept tone</td>
<td>440 Hz &amp; 620 Hz</td>
<td>250 on (440 Hz), 250 on (620 Hz); repeated</td>
</tr>
<tr>
<td>Precedence audible alert tone</td>
<td>440 Hz + 480 Hz</td>
<td>1600 on, 300 off; repeated</td>
</tr>
<tr>
<td>Recall dial tone</td>
<td>350 Hz + 440 Hz</td>
<td>100 on, 100 off, 100 on, 100 off, 100 on, 100 off followed by continuous dial tone</td>
</tr>
<tr>
<td>Reorder tone</td>
<td>480 Hz + 620 Hz</td>
<td>250 on, 250 off; repeated</td>
</tr>
<tr>
<td>Remote hold tone</td>
<td>440 Hz</td>
<td>50 on, 50 off; repeated</td>
</tr>
<tr>
<td>Ringback tone</td>
<td>440 Hz + 480 Hz</td>
<td>1000 on, 3000 off; repeated</td>
</tr>
<tr>
<td>Voice signaling tone</td>
<td>440 Hz</td>
<td>1000 on followed by silence; no repeat</td>
</tr>
<tr>
<td>Zip tone</td>
<td>480 Hz</td>
<td>500 on followed by silence; no repeat</td>
</tr>
</tbody>
</table>

* Used with the Busy Verification and Executive Override features, and Service Observing feature when the warning tone is enabled.
Table 11-9 lists the call progress tones available for customizing the tones in G3. The tones in the list can be generated only when a TN780 or TN2182 tone-clock circuit pack is installed and the tone customizing feature is used. Tag tones are available only on the TN2182 circuit pack. The tones are used to customize from one to 20 tones in the five administrable tone plans.

In the table, “Level” is the tone amplitude in decibels (dBm). “0” dBm is referenced to 1 milliwatt. To customize these tones, see DEFINITY® Communications System Generic 3 V3 Implementation, 555-230-655.

Table 11-9. Customizable Call Progress Tones

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Level (dbm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null</td>
<td>None</td>
</tr>
<tr>
<td>330Hz</td>
<td>-8.0 *</td>
</tr>
<tr>
<td>330Hz + 440Hz</td>
<td>-5.0 + 8.5 *</td>
</tr>
<tr>
<td>330Hz + 440Hz</td>
<td>-8 + -11 *</td>
</tr>
<tr>
<td>350Hz</td>
<td>-17.25</td>
</tr>
<tr>
<td>350Hz + 425Hz</td>
<td>-4.0 *</td>
</tr>
<tr>
<td>350Hz + 425Hz</td>
<td>-4.0</td>
</tr>
<tr>
<td>350Hz + 440Hz</td>
<td>-13.75</td>
</tr>
<tr>
<td>350Hz + 440Hz</td>
<td>-13.0 *</td>
</tr>
<tr>
<td>350Hz + 440Hz</td>
<td>-13.75 *</td>
</tr>
<tr>
<td>375Hz + 425Hz</td>
<td>-15.0</td>
</tr>
<tr>
<td>404Hz</td>
<td>-11.0</td>
</tr>
<tr>
<td>404Hz</td>
<td>-16.0</td>
</tr>
<tr>
<td>404Hz + 425Hz</td>
<td>-11.0</td>
</tr>
<tr>
<td>404Hz + 450Hz</td>
<td>-11.0</td>
</tr>
<tr>
<td>425Hz</td>
<td>-4.0 *</td>
</tr>
<tr>
<td>425Hz</td>
<td>-5.0 *</td>
</tr>
<tr>
<td>425Hz</td>
<td>-8.0 *</td>
</tr>
<tr>
<td>425Hz</td>
<td>-11.0 *</td>
</tr>
<tr>
<td>425Hz</td>
<td>-17.25 *</td>
</tr>
<tr>
<td>440Hz</td>
<td>-11.0 *</td>
</tr>
<tr>
<td>440Hz</td>
<td>-13.0 *</td>
</tr>
<tr>
<td>440Hz</td>
<td>-17.25</td>
</tr>
<tr>
<td>440Hz + 350Hz</td>
<td>-13.0 *</td>
</tr>
</tbody>
</table>
Table 11-9. Customizable Call Progress Tones

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Level (dbm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>440Hz + 480Hz</td>
<td>-13.0 *</td>
</tr>
<tr>
<td>440Hz + 480Hz</td>
<td>-19.0</td>
</tr>
<tr>
<td>480Hz + 620Hz</td>
<td>-13.0 *</td>
</tr>
<tr>
<td>480Hz + 620Hz</td>
<td>-24.0</td>
</tr>
<tr>
<td>525Hz</td>
<td>-11.0</td>
</tr>
<tr>
<td>620Hz</td>
<td>-17.25</td>
</tr>
<tr>
<td>697Hz or 700Hz</td>
<td>-8.5/-8.0</td>
</tr>
<tr>
<td>770Hz or 900Hz</td>
<td>-8.5/-8.0</td>
</tr>
<tr>
<td>852Hz or 1100Hz</td>
<td>-8.5/-8.0</td>
</tr>
<tr>
<td>950Hz</td>
<td>-5.0 *</td>
</tr>
<tr>
<td>950Hz</td>
<td>-10.0 *</td>
</tr>
<tr>
<td>Chimes (860Hz)</td>
<td>-3.0</td>
</tr>
<tr>
<td>941Hz or 1300Hz</td>
<td>-8.5/-8.0</td>
</tr>
<tr>
<td>DMW (1000Hz)</td>
<td>0.0</td>
</tr>
<tr>
<td>Square (1000Hz)</td>
<td>+3.0</td>
</tr>
<tr>
<td>1004Hz</td>
<td>0.0</td>
</tr>
<tr>
<td>1004Hz</td>
<td>-16.0</td>
</tr>
<tr>
<td>1209Hz or 1500Hz</td>
<td>-7.5/-8.0</td>
</tr>
<tr>
<td>1336Hz or 1700Hz</td>
<td>-7.5/-8.0</td>
</tr>
<tr>
<td>1400Hz</td>
<td>-5.0 *</td>
</tr>
<tr>
<td>1400Hz</td>
<td>-10.0 *</td>
</tr>
<tr>
<td>1400Hz</td>
<td>-11.0</td>
</tr>
<tr>
<td>1477Hz or 2600Hz</td>
<td>-7.5/-8.0</td>
</tr>
<tr>
<td>1633Hz or 1004Hz</td>
<td>-7.5/ 0.0</td>
</tr>
<tr>
<td>1700Hz</td>
<td>-16.0 *</td>
</tr>
<tr>
<td>1800Hz</td>
<td>-5.0 *</td>
</tr>
<tr>
<td>1800Hz</td>
<td>-10.0 *</td>
</tr>
<tr>
<td>2025Hz</td>
<td>-12.1</td>
</tr>
<tr>
<td>2100Hz</td>
<td>-12.1</td>
</tr>
</tbody>
</table>
Available only with TN2182 circuit pack

Audible Ringing Patterns

Table 11-10 lists the administrable audible ringing patterns that can appear on analog line circuit pack ports. The times under Set Number are in milliseconds. DEFINITY® Communications System Generic 3 V3 Implementation, 555-230-655, contains ringing pattern administration.

Table 11-9. Customizable Call Progress Tones

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Level (dbm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2225Hz</td>
<td>-12.1</td>
</tr>
<tr>
<td>2804Hz</td>
<td>-16.0</td>
</tr>
<tr>
<td>Count</td>
<td>None</td>
</tr>
</tbody>
</table>

* Available only with TN2182 circuit pack

Table 11-10. Ringing Patterns

<table>
<thead>
<tr>
<th>Bursts</th>
<th>Set Number</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>on</td>
<td>900</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>off</td>
<td>4100</td>
<td>2150</td>
<td>4000</td>
<td>4000</td>
<td>4000</td>
<td>2150</td>
</tr>
<tr>
<td>Two</td>
<td>on</td>
<td>400</td>
<td>300</td>
<td>600</td>
<td>400</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>off</td>
<td>200</td>
<td>300</td>
<td>200</td>
<td>200</td>
<td>300</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>on</td>
<td>300</td>
<td>400</td>
<td>200</td>
<td>400</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>off</td>
<td>4100</td>
<td>2150</td>
<td>4000</td>
<td>4000</td>
<td>4100</td>
<td>2150</td>
</tr>
<tr>
<td>Three</td>
<td>on</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>off</td>
<td>100</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>on</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>off</td>
<td>100</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>on</td>
<td>300</td>
<td>400</td>
<td>200</td>
<td>200</td>
<td>300</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>off</td>
<td>4100</td>
<td>2150</td>
<td>4000</td>
<td>4000</td>
<td>4100</td>
<td>2150</td>
</tr>
</tbody>
</table>
The following circuit packs default to the associated ringing pattern sets:

- TN2180 — Set 1
- TN2135 — Set 2
- TN2144 — Set 3
- TN468B — Set 4
- TN2149 — Set 4
- TN2183 — Set 0 (administrable ringing cadence)

The following list shows the intended usage for administered ringing pattern sets:

- Set 0 — United States
- Set 1 — Japan and Spain
- Set 2 — Italy
- Set 3 — Netherlands and Sweden
- Set 4 — Australia, Belgium, and United Kingdom
- Set 5 — India, Malaysia, New Zealand, and Singapore

**MFC Tones in G3**

With Multi-Frequency Compelled signaling (MFC) used on DID and DOD trunks in countries outside the United States, a G3 responds to the frequencies generated by the CO with answering frequencies.

The MFC tones and signalling sequence in G3 follows the CCITT recommendations for MFC signalling defined in *Volume VI, Fascicle VI.4 of the 1989 CCITT blue books*. CCITT is now the *International Telecommunications Union (ITU)*. *DEFINITY® Communications System Generic 3 V3 Implementation*, 555-230-655, contains MFC administration.
Indicator Lamp Signals

Table 11-11 lists the lamp signals generated by the system for the attendant console and multi-appearance voice terminals.

Table 11-11. Lamp Signals Generated by G3

<table>
<thead>
<tr>
<th>Lamp Signal</th>
<th>Pattern (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark</td>
<td>Off</td>
</tr>
<tr>
<td>Lighted</td>
<td>On</td>
</tr>
<tr>
<td>Flashing</td>
<td>500 on, 500 off; repeated</td>
</tr>
<tr>
<td>Fluttering</td>
<td>50 on, 50 off; repeated</td>
</tr>
<tr>
<td>Broken Flutter</td>
<td>5 cycles of 50 on, 50 off, followed by 500 off; repeated</td>
</tr>
<tr>
<td>Wink</td>
<td>350 on, 50 off; repeated</td>
</tr>
</tbody>
</table>
Protocols

Table 11-12 lists the various protocols used in G3, with applications and maximum limitations.

Table 11-12. Protocols Used in G3

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Applications</th>
<th>Maximum Data Rate</th>
<th>Maximum Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCP</td>
<td>Digital switch to data endpoints</td>
<td>64 kbps</td>
<td>5000 ft (1524 m) for data</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3000 ft (915 m) for voice</td>
</tr>
<tr>
<td>RS-232</td>
<td>PDM to AP Switch to administration terminal. PDM to host computer. AP to data set (M)PDM to printer</td>
<td>19.2 kbps</td>
<td>50 ft (15.2 m)</td>
</tr>
<tr>
<td></td>
<td>MPDM to AP</td>
<td>64 kbps</td>
<td>17 ft (5.9 m)</td>
</tr>
<tr>
<td></td>
<td>MTDM for downloading and high-speed data transfer EIA interface (Data line to ADU)</td>
<td>19.2 kbps</td>
<td>2000 ft (610 m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9.6 kbps</td>
<td>5000 ft (1524 m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.8 kbps</td>
<td>7000 ft (2130 m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.4 kbps</td>
<td>12000 ft (3654 m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2 kbps</td>
<td>20000 ft (6100 m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.3 kbps</td>
<td>40000 ft (12200 m)</td>
</tr>
<tr>
<td>RS-449</td>
<td>AP to AP</td>
<td>19.2 kbps</td>
<td>200 ft (61 m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9.6 kbps</td>
<td>400 ft (122 m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.8 kbps</td>
<td>800 ft (244 m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.4 kbps</td>
<td>1600 ft (488 m)</td>
</tr>
<tr>
<td>SSI</td>
<td>500 BCT to AP 400 series printers to AP</td>
<td>56 kbps</td>
<td>5000 ft (1524 m)</td>
</tr>
<tr>
<td>BISYNC</td>
<td>AP line controller to host computer for terminal Emulation (9.6 kbps)</td>
<td>2.4 kbps</td>
<td></td>
</tr>
<tr>
<td>Protocol</td>
<td>Applications</td>
<td>Maximum Data Rate</td>
<td>Maximum Distance</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------------</td>
<td>-------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>BX.25</td>
<td>Communication interface to MSA, DCS, ISDN, or AUDIX</td>
<td>9.6 kbps</td>
<td></td>
</tr>
<tr>
<td>SDCPI</td>
<td>(M)PDM to AP</td>
<td>64 kbps</td>
<td>17 feet (5.9 m)</td>
</tr>
<tr>
<td>RS-366</td>
<td>Host computer to ACU MTDM to ACU</td>
<td>64 kbps</td>
<td>50 feet (15.2 m)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>17 feet (5.9 m)</td>
</tr>
<tr>
<td>V.35</td>
<td>MPDM to data endpoints</td>
<td>56 kbps</td>
<td>50 feet (15.2 m)</td>
</tr>
<tr>
<td>Category</td>
<td>3270 data modules to coaxial 3270-type terminals or cluster controller</td>
<td>64 kbps</td>
<td>500 feet (152 m)</td>
</tr>
<tr>
<td>A</td>
<td>3270A data module in ASCII emulation mode</td>
<td>9.6 kbps</td>
<td></td>
</tr>
<tr>
<td>ISDN BRI</td>
<td>Communication interface to ISDN BRI</td>
<td>64 kbps</td>
<td>655 feet (199.3 m) to network interface or repeater or PBX to PBX</td>
</tr>
<tr>
<td></td>
<td>TN2198</td>
<td>160 kbps</td>
<td>1310 feet (399.3 m) PBX to PBX</td>
</tr>
<tr>
<td>ISDN PRI</td>
<td>Communication interface to ISDN PRI</td>
<td>64 kbps</td>
<td>655 feet (199.3 m) to network interface or repeater or 1310 feet (399.3 m) PBX to PBX</td>
</tr>
</tbody>
</table>
Transmission Characteristics

The system transmission characteristics comply with the American National Standards Institute/Electronic Industries Association (ANSI/EIA) PBX standard RS-464A (SP-1378A). The following tables list some general switch transmission characteristics.

Frequency Response

Table 11-13 lists the analog-to-analog frequency response of G3 for station-to-station or station-to-CO trunk, relative to loss at 1 kHz for the United States.

Table 11-13. Analog-to-Analog Frequency Response for the USA

<table>
<thead>
<tr>
<th>Analog-to-Analog</th>
<th>Frequency (Hz)</th>
<th>Max. Loss (dB)</th>
<th>Min. Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60</td>
<td>—</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>300 to 3000</td>
<td>1</td>
<td>-0.5</td>
</tr>
<tr>
<td></td>
<td>3200</td>
<td>1.5</td>
<td>-0.5</td>
</tr>
<tr>
<td></td>
<td>3400</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 11-14 lists the analog-to-digital frequency response of the system for station or CO-trunk-to-digital Interface (DS0), relative to loss at 1 kHz for the USA.

Table 11-14. Analog-to-Digital Frequency Response for the USA

<table>
<thead>
<tr>
<th>Analog-to-Digital</th>
<th>Frequency (Hz)</th>
<th>Max. Loss (dB)</th>
<th>Min. Loss (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60</td>
<td>—</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>300 to 3000</td>
<td>0.5</td>
<td>-0.25</td>
</tr>
<tr>
<td></td>
<td>3200</td>
<td>0.75</td>
<td>-0.25</td>
</tr>
<tr>
<td></td>
<td>3400</td>
<td>1.5</td>
<td>0</td>
</tr>
</tbody>
</table>
Transmission Characteristics

Insertion Loss for Port-to-Port; Analog or Digital Ports

Table 11-15 lists the insertion loss in the system for different connection types for the United States. Table 11-16 shows the overload and crosstalk characteristics.

Table 11-15. Insertion Loss for the USA

<table>
<thead>
<tr>
<th>Typical Connections</th>
<th>Nominal Loss (dB) at 1 kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-premises station to on-premises station</td>
<td>6</td>
</tr>
<tr>
<td>On-premises station to off-premises station</td>
<td>3</td>
</tr>
<tr>
<td>Off-premises station to off-premises station</td>
<td>0</td>
</tr>
<tr>
<td>On-premises station to 4-wire trunk</td>
<td>3</td>
</tr>
<tr>
<td>Off-premises station to 4-wire trunk</td>
<td>2</td>
</tr>
<tr>
<td>Station-to-trunk</td>
<td>0</td>
</tr>
<tr>
<td>Trunk-to-trunk</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 11-16. Overload and Crosstalk

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overload level:</td>
<td>+3 dBm0</td>
</tr>
<tr>
<td>Crosstalk loss:</td>
<td>&gt;70 dB</td>
</tr>
</tbody>
</table>

Intermodulation Distortion

Table 11-17 lists the intermodulation distortion in the system for analog-to-analog and analog-to-digital, up to 9.6 kbps data.

Table 11-17. Intermodulation Distortion

<table>
<thead>
<tr>
<th>Four-Tone Method</th>
<th>Distortion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second-order tone products</td>
<td>&gt;46 dB</td>
</tr>
<tr>
<td>Third-order tone products</td>
<td>&gt;56 dB</td>
</tr>
</tbody>
</table>
Quantization Distortion Loss

Table 11-18 lists the quantization distortion loss in the system for analog port to analog port.

Table 11-18. Analog-to-Analog Port Quantization Distortion Loss

<table>
<thead>
<tr>
<th>Signal Level</th>
<th>Distortion Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 dBm0</td>
<td>&gt;33 dB</td>
</tr>
<tr>
<td>-40 dBm0</td>
<td>&gt;27 dB</td>
</tr>
<tr>
<td>-45 dBm0</td>
<td>&gt;22 dB</td>
</tr>
</tbody>
</table>

Table 11-19 lists the quantization distortion loss in the system for analog port to digital port and digital port to analog port.

Table 11-19. Analog-to-Digital Port Quantization Distortion Loss

<table>
<thead>
<tr>
<th>Signal Level</th>
<th>Distortion Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to -30 dBm0</td>
<td>&gt;35 dB</td>
</tr>
<tr>
<td>-40 dBm0</td>
<td>&gt;29 dB</td>
</tr>
<tr>
<td>-45 dBm0</td>
<td>&gt;25 dB</td>
</tr>
</tbody>
</table>

Terminating Impedance: 600 Ohms nominal
Trunk balance impedance (selectable): 600 Ohms nominal or complex Z \([350 \text{ Ohms} + (1 \text{ kOhms} \text{ in parallel with } 0.215\text{F})]\)

Impulse Noise

On 95% or more of all connections the impulse noise is 0 count (hits) in 5 minutes at +55 dBmC (decibels above reference noise with C-filter) during the busy hour.
ERL and SFRL Talking State

Echo-Return Loss (ERL) and Single-Frequency Return Loss (SFRL) performance is usually dominated by termination and/or loop input impedances. The system provides an acceptable level of echo performance if the ERL and SFRL are met.

<table>
<thead>
<tr>
<th>Station-to-station</th>
<th>ERL should meet or exceed 18 dB, SFRL should meet or exceed 12 dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station to 4-wire trunk connection</td>
<td>ERL should meet or exceed 24 dB, SFRL should meet or exceed 14 dB</td>
</tr>
<tr>
<td>Station to 2-wire trunk connection</td>
<td>ERL should meet or exceed 18 dB, SFRL should meet or exceed 12 dB</td>
</tr>
<tr>
<td>4-wire to 4-wire trunk connection</td>
<td>ERL should meet or exceed 27 dB, SFRL should meet or exceed 20 dB</td>
</tr>
</tbody>
</table>

Peak Noise Level

- Analog to analog — 20 dBmC (decibels above reference noise with C-filter)
- Analog to digital — 19 dBmC (decibels above reference noise with C-filter)
- Digital to analog — 13 dBmC (decibels above reference noise with C-filter)

Echo Path Delay

- Analog port to analog port — <=3 ms
- Digital interface port to digital interface port — =<=2 ms
Service Codes

Service codes (for the United States only) are issued by the Federal Communications Commission (FCC) to equipment manufacturers and registrants. These codes denote the type of registered terminal equipment and the protective characteristics of the premises wiring of the terminal equipment ports.

Private line service codes are as follows:

- 7.0Y — Totally protected private communications (microwave) systems
- 7.0Z — Partially protected private communications (microwave) systems
- 8.0X — Port for ancillary equipment
- 9.0F — Fully protected terminal equipment
- 9.0P — Partially protected terminal equipment
- 9.0N — Unprotected terminal equipment
- 9.0Y — Totally protected terminal equipment

The G3 system product line service code is 9.0F indicating it is terminal equipment with fully protected premises wire at the private line ports.

Facility Interface Codes (FICs)

A Facility Interface Code (FIC) is a five-character code (for the USA only) that provides the technical information needed to order a specific port circuit pack for analog private lines, digital lines, MTS lines, and WATS lines in the United States. Table 11-20 through Table 11-22 list the FICs used to order analog private line, digital line, and MTS and WATS port circuit packs. Included with the FICs are service order codes, ringer equivalency numbers (RENs), and types of network jacks that connect a line to a rear panel connector on a carrier.
### Table 11-20. FICs for Analog Private Line, Port Circuit Packs

<table>
<thead>
<tr>
<th>Circuit Pack</th>
<th>FIC</th>
<th>Service Order Code</th>
<th>Network Jack</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN742 and TN747B OPS port, and TN746B OPS or on-premises station (ONS) port</td>
<td>OLI3C</td>
<td>9.0F</td>
<td>RJ21X</td>
</tr>
<tr>
<td>TN760, TN760B, and TN760D tie trunk</td>
<td>TL31M</td>
<td>9.0F</td>
<td>RJ2GX</td>
</tr>
</tbody>
</table>

### Table 11-21. FICs for Digital Line, Port Circuit Packs

<table>
<thead>
<tr>
<th>Circuit Pack</th>
<th>FIC</th>
<th>Service Order Code</th>
<th>Network Jack</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN574 DS1 converter, TN722 and TN722B DS1 tie trunk, and TN767 DS1 interface</td>
<td>04DU9B,C</td>
<td>6.0P</td>
<td>RJ48C and RJ48M</td>
</tr>
</tbody>
</table>

### Table 11-22. FICs for MTS and WATS, Port Circuit Packs

<table>
<thead>
<tr>
<th>Circuit Pack</th>
<th>FIC</th>
<th>REN</th>
<th>Network Jack</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN742 and TN746B analog line</td>
<td>02LS2</td>
<td>None</td>
<td>RJ21X and RJ11C</td>
</tr>
<tr>
<td>TN747 and TN747B CO trunk</td>
<td>02GS2</td>
<td>1.0A</td>
<td>RJ21X</td>
</tr>
<tr>
<td>TN753 DID trunk</td>
<td>02RV2-T</td>
<td>0,0B</td>
<td>RJ21X</td>
</tr>
<tr>
<td>TN773 processor</td>
<td>02LS2</td>
<td>0.5A</td>
<td>RJ21X</td>
</tr>
<tr>
<td>TN1648 system access and maintenance</td>
<td>02LS2</td>
<td>0.5A</td>
<td>RJ21X</td>
</tr>
</tbody>
</table>
System Capacity Limits

Overview

This appendix provides information on the overall characteristics and capacities of the system.

System Hardware and Software Capacity Limits

The maximum parameters for the DEFINITY® Communications System Generic 1 and Generic 3 hardware and software items are listed on the following pages. Unless otherwise noted, these parameters apply to both the Single-Carrier Cabinet and Multi-Carrier Cabinet systems. Also:

- For G3sV1/G3sV2 and G3vsV1/G3vsV2, when a capacity limit is the same for Advantage Business Package (ABP) and Premier Business Package (PBP), the common limit is listed. When a capacity limit for ABP and PBP differ, the ABP limit is given first followed by the PBP limit.
- Terminal and digital station capacities are reduced by such administered items as: attendant consoles, number of EAS login IDs, and number of ACD agents.
- Most G3iV1 and G3i-Global capacity limits are the same. In the few cases where a G3i-Global capacity limit differs from the corresponding G3i capacity limit, the G3i limit is given followed by the G3i-Global limit in parenthesis.

NOTE:
Not all maximum capacities listed in the following tables can be reached simultaneously with all versions or all configurations of the system.
Table A-1. Maximum System Parameters for G3V1

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1</th>
<th>G3sV1</th>
<th>G3iV1/ G3i-Global</th>
<th>G3rV1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviated Dialing (AD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AD Lists per System</td>
<td>200</td>
<td>200</td>
<td>1,600/2,400</td>
<td>5,000</td>
</tr>
<tr>
<td>AD List Entry Size</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>AD Entries per System&lt;sup&gt;1&lt;/sup&gt;</td>
<td>2,000</td>
<td>2,000</td>
<td>10,000/12,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Enhanced List (System List)</td>
<td>NA/1</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>NA/1,000</td>
<td>NA/1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Group Lists</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Group Lists per Extension</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>System List</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Personal Lists</td>
<td>200</td>
<td>200</td>
<td>1,600/2,400</td>
<td>5,000</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Personal Lists per Extension</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Applications Adjuncts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CallVisor ASAI Adjuncts</td>
<td>NA/NA</td>
<td>NA/4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Asynchronous Links (RS-232)</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>CDR Output Devices</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Journal/System Printer</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
</tr>
<tr>
<td>Property Management Systems</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BX.25 Physical Links&lt;sup&gt;2&lt;/sup&gt;</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Application Processors (such as 3B2-MCS)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>AUDIX Adjuncts</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>CMS Adjuncts</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ICM Adjuncts ISDN Gateway</td>
<td>NA/1</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BX.25 Processor Channels</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
<tr>
<td>Hop Channels</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
</tbody>
</table>

---

1. 100,000 for G3rV3
2. For Single-Carrier Cabinets (SCC), only four BX.25 physical links are supported in G3sV2 and G3iV2.
Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3IV1/ G3i-Global</th>
<th>G3rV1</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAR/ARS Patterns (Shared)</td>
<td>NA/40</td>
<td>NA/40</td>
<td>254</td>
<td>640</td>
</tr>
<tr>
<td>ARS/AAR Table Entries (NPA, NXX, RX, HNPA, FNPA)</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Choices per RHNPA Table</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Digit Conversion Entries</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>400</td>
</tr>
<tr>
<td>AAR/ARS Digit Conversion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digits Deleted for ARS/AAR</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Digits Inserted for ARS/AAR</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>AAR/ARS Sub-Net Trunking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digits Deleted for ARS/AAR</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Digits Inserted for ARS/AAR</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Entries in HNPA &amp; RHNPA Tables</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
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<tr>
<td>FRLs</td>
<td>8</td>
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<tr>
<td>Inserted Digit Strings³</td>
<td>450</td>
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<td>Patterns for Measurement</td>
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<td>Shared Patterns for Measurement</td>
<td>20</td>
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<td>RHNPA Tables</td>
<td>32</td>
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<td>Routing Plans</td>
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<td>Toll Tables</td>
<td>32</td>
<td>32</td>
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<tr>
<td>Entries per Toll Table</td>
<td>800</td>
<td>800</td>
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<td>Trunk Groups in an ARS/AAR Pattern</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>16</td>
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<tr>
<td>UDP (Entries)</td>
<td>NA/240</td>
<td>NA/240</td>
<td>240</td>
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<td>TOD Charts</td>
<td>8</td>
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</tbody>
</table>

1. AAR is **not an optional feature** in G3sV2 ABP.
2. ARS is available in G3s if the Automatic Route Selection Option is selected.
3. This is the number of 12 character inserted-digit-strings available for AAR/ARS preferences.
1. For G3vs, there can be four day consoles if there are no night consoles. Three of the four must be powered by auxiliary power.
2. This number is the same as the number of trunk groups in the system.
3. The “Maximum number of queue slots” is referred to as “emergency access queue length” in G1.
Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/ G3i-Global</th>
<th>G3rV1</th>
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<tbody>
<tr>
<td>Authorization (Continued)</td>
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<tr>
<td>Remote Access Barrier Codes</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
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<tr>
<td>CDR Forced Entry Account Code List</td>
<td>NA/1</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Toll Call List</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Unrestricted/Allowed Call Lists</td>
<td>10</td>
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<tr>
<td>Total Call List Entries</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
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<tr>
<td>Automatic Callback Calls</td>
<td>20</td>
<td>20</td>
<td>160/240</td>
<td>1,000</td>
</tr>
<tr>
<td>Automatic Wakeup</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Simultaneous Display Requests</td>
<td>10</td>
<td>10</td>
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<tr>
<td>Wakeup Requests per System</td>
<td>200</td>
<td>200</td>
<td>1,600/2,400</td>
<td>10,000</td>
</tr>
<tr>
<td>Wakeup Request per Extension</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Wakeup Requests per 15-minute Interval</td>
<td>150</td>
<td>150</td>
<td>300</td>
<td>950</td>
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<tr>
<td>Basic CMS</td>
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<td>Daily Summary Reports</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
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<tr>
<td>Measured Agent Logins, 75 for G3vs and G3s, 200 for G3i, and 600 for G3r</td>
<td>75</td>
<td>75</td>
<td>200</td>
<td>200</td>
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<tr>
<td>Measured Splits</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>99</td>
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<tr>
<td>Measured Trunk Groups</td>
<td>16/32</td>
<td>16/32</td>
<td>99</td>
<td>32</td>
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<tr>
<td>Measured VDNs</td>
<td>NA/24</td>
<td>NA/24</td>
<td>99</td>
<td>512</td>
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<tr>
<td>Reporting Periods (30 or 60 min)</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
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<tr>
<td>Number of Terminal User IDs</td>
<td>5</td>
<td>5</td>
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Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/ G3i-Global</th>
<th>G3rV1</th>
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<tbody>
<tr>
<td>Cabinets</td>
<td></td>
<td></td>
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<tr>
<td>Expansion Port Network (EPN)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-Carrier Cabinet (MCC)</td>
<td>NA</td>
<td>NA</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>Single-Carrier Cabinet (SCC)</td>
<td>NA</td>
<td>NA</td>
<td>8</td>
<td>80</td>
</tr>
<tr>
<td>Small(^1) (Upgrades only)(^3)</td>
<td>NA</td>
<td>NA</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Inter-Port Network Connectivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port Networks(^1)</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>Maximum Number of Port Networks per Cabinet</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Switch Node Carriers(^1) (Simplex)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>2</td>
</tr>
<tr>
<td>Switch Node Carriers(^1) (Duplex)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>4</td>
</tr>
<tr>
<td>DS1 Converter Complex(^1) (Simplex)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>20</td>
</tr>
<tr>
<td>DS1 Converter Complex(^1) (Duplex)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>40</td>
</tr>
<tr>
<td>Processor Port Network (PPN)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-Carrier Cabinet (MCC)(^4)</td>
<td>NA</td>
<td>NA</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Single-Carrier Cabinet (SCC) or Enhanced Single-Carrier Cabinet (ESCC)</td>
<td>NA</td>
<td>4</td>
<td>4</td>
<td>NA</td>
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<tr>
<td>Compact Single-Carrier Cabinet (CSCC)</td>
<td>1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Remote Modules</td>
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<tr>
<td>Remote Port Network</td>
<td>NA</td>
<td>NA</td>
<td>2/1</td>
<td>21</td>
</tr>
</tbody>
</table>

1. 43 for G3rV3 for MCC
2. 164 for G3rV3 for SCC
3. 41 for G3rV3 for Small
4. 44 for G3rV3 for Port Networks
5. 3 for G3rV3 for Switch Node Carriers (Simplex)
6. 6 for G3rV3 for Switch Node Carriers (Duplex)
7. 41 for G3rV3 for DS1 Converter Complex (Simplex)
8. The EPNs in G3r can be DS1-remote EPNs.
9. Small systems refer to the two-carrier cabinet systems that are no longer sold to new customers.
10. MCC includes Medium Cabinet.
1. The number of call appearances is the sum of primary and bridged appearances; at most ten can be primary. A maximum of 54 administrable buttons are supported for the 7434D terminal — 34 buttons in the basic terminal and an additional 20 buttons in the coverage module.

2. Does not apply to conferencing.

3. Only available with ABP when AT&T Voice Power adjunct (AUDIX, AUDIX Voice Power, AUDIX Voice Power Lodging, and DEFINITY AUDIX) are used.

4. The maximum number of users per coverage path equals the number of dial plan extensions (including hunt groups, TEGs, etc.).

5. 1,000 for G3iV3/5,000 for G3rV3
   10,604 for G3V3

6. The CDRU adjunct capacity is 40,000 calls per hour, and exceeds the system call capacity for all systems except for G3r.

### Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/ G3i-Global</th>
<th>G3rV1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Call Appearances</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Bridged Images per Appearance</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Call Appearances per Station(^1)</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Maximum Appearances per Extension</td>
<td>10</td>
<td>10</td>
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<td>10</td>
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<tr>
<td>Minimum Appearances per Extension</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total Bridged Appearances</td>
<td>200</td>
<td>200</td>
<td>1600/2,400</td>
<td>10,000</td>
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<tr>
<td>Maximum Simultaneous Off-Hook per Call(^2)</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<tr>
<td><strong>Call Coverage</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Coverage Answer Groups (CAG)</td>
<td>30</td>
<td>30</td>
<td>200</td>
<td>500</td>
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<tr>
<td>Coverage Paths</td>
<td>150</td>
<td>150</td>
<td>600</td>
<td>5,000</td>
</tr>
<tr>
<td>With Hospitality Parameter Reduction</td>
<td>NA/5</td>
<td>NA/5</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Coverage Paths Including in Call Coverage Report</td>
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<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Coverage Path per Station(^3)</td>
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<td>Coverage Points in a Path</td>
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<td>Maximum Users/Coverage Path(^4)</td>
<td>500</td>
<td>500</td>
<td>2900 (3500)</td>
<td>21,875</td>
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<tr>
<td>Members per CAG</td>
<td>8</td>
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<td>8</td>
<td>8</td>
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<tr>
<td><strong>Call Detail Recording</strong></td>
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<tr>
<td>CDRU Trackable Extensions</td>
<td>200</td>
<td>200</td>
<td>1,600/2,400</td>
<td>10,000</td>
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<tr>
<td>Intra-switch Call Trackable Extensions(^5)</td>
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<td>100</td>
<td>100</td>
<td>500</td>
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<tr>
<td>Number of CDRUs per System(^6)</td>
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</tbody>
</table>

1. The number of call appearances is the sum of primary and bridged appearances; at most ten can be primary. A maximum of 54 administrable buttons are supported for the 7434D terminal — 34 buttons in the basic terminal and an additional 20 buttons in the coverage module.

2. Does not apply to conferencing.

3. Only available with ABP when AT&T Voice Power adjunct (AUDIX, AUDIX Voice Power, AUDIX Voice Power Lodging, and DEFINITY AUDIX) are used.

4. The maximum number of users per coverage path equals the number of dial plan extensions (including hunt groups, TEGs, etc.).

5. 1,000 for G3iV3/5,000 for G3rV3
   10,604 for G3V3

6. The CDRU adjunct capacity is 40,000 calls per hour, and exceeds the system call capacity for all systems except for G3r.
### Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/ G3i-Global</th>
<th>G3rV1</th>
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</thead>
<tbody>
<tr>
<td><strong>Call Forwarding (Follow-me)</strong></td>
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<tr>
<td>Call Forwarded Digits (off-net)</td>
<td>16</td>
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<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Call Forwarded Numbers</td>
<td>200</td>
<td>200</td>
<td>1,600/2,400</td>
<td>10,000</td>
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<tr>
<td><strong>Call Park</strong></td>
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<td>Attendant Group Common Shared</td>
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<td>40</td>
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<tr>
<td>Extension Numbers</td>
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<tr>
<td>Number of Parked Calls(^5)</td>
<td>180</td>
<td>180</td>
<td>723</td>
<td>5,302</td>
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<tr>
<td><strong>Call Pickup Groups</strong></td>
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<td>Call Pickup Members per Group</td>
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<tr>
<td>Call Pickup Members per System</td>
<td>200</td>
<td>200</td>
<td>1,600/2,400</td>
<td>10,000</td>
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<tr>
<td>Number of Groups</td>
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<td>100</td>
<td>800</td>
<td>5,000</td>
</tr>
<tr>
<td>With Hospitality Parameter Reduction</td>
<td>NA/5</td>
<td>NA/5</td>
<td>5</td>
<td>5</td>
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<tr>
<td><strong>Call Vectoring/Call Prompting</strong></td>
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<td>Expert Agent Selection</td>
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<td>Skill Groups</td>
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<td>NA</td>
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<td>VDN Skill Preferences</td>
<td>NA</td>
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<td>NA</td>
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<tr>
<td>Multiple Skills per Call</td>
<td>NA</td>
<td>NA</td>
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<td>Multiple Skills per Agent</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Agent Login IDs</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Multiple Splits per Call</td>
<td>NA/3</td>
<td>NA/3</td>
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<td>Priority Levels</td>
<td>NA/4</td>
<td>NA/4</td>
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<td>Recorded Announcement</td>
<td>NA/128</td>
<td>NA/128</td>
<td>128</td>
<td>256</td>
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<td>Steps per Vector</td>
<td>NA/15</td>
<td>NA/15</td>
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<td>Vector Directory Numbers(^1)</td>
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<td>NA/100</td>
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<td>3,000</td>
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<tr>
<td>Measured VDNs</td>
<td>NA/100</td>
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<td>2,000</td>
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<td>Vectors per System</td>
<td>NA/48</td>
<td>NA/48</td>
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<td>512</td>
</tr>
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</table>

---

1. The total of VDN, Station, and Login ID extensions cannot exceed 25,000.
2,000 for G3rV3
7,084 for G3rV3 for “Simultaneous three-way Conference Calls”
3,520 for G3rV3 for “Simultaneous six-way Conference Calls”
1. The total of VDN, Station, and Login ID extensions cannot exceed 25,000.
   2,000 for G3rV3
   7,084 for G3rV3 for “Simultaneous three-way Conf. Calls”
   3,520 for G3rV3 for “Simultaneous six-way Conf. Calls”

2. Simultaneous 3-way Conference Call=(483 / 3) * number PNs. Simultaneous 3-way Conference Call is limited by the number of Simultaneous

3. Simultaneous 6-way Conference Call=(483 / 6) * number PNs.

### Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3svV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/G3i-Global</th>
<th>G3rV1</th>
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<tr>
<td>CallVisor ASAI</td>
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</tr>
<tr>
<td>Active Station Controlling Association</td>
<td>NA</td>
<td>NA/250</td>
<td>2,000/NA</td>
<td>6,000</td>
</tr>
<tr>
<td>Call Controllers per Call</td>
<td>NA</td>
<td>NA/1</td>
<td>1/NA</td>
<td>1</td>
</tr>
<tr>
<td>Call Monitors per Call</td>
<td>NA</td>
<td>NA/14</td>
<td>14/NA</td>
<td>14</td>
</tr>
<tr>
<td>Extension Controllers per Station Domain</td>
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<td>NA/2</td>
<td>2/NA</td>
<td>2</td>
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<tr>
<td>Maximum Simultaneous Call Classifications</td>
<td>NA</td>
<td>NA/40</td>
<td>40/NA</td>
<td>100</td>
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<tr>
<td>Number of ASAI Links</td>
<td>NA</td>
<td>NA/4</td>
<td>8/NA</td>
<td>8</td>
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<tr>
<td>Notification Requests¹</td>
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<td>NA/50</td>
<td>170/NA</td>
<td>460</td>
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<tr>
<td>Simultaneous Active Adjunct Controlled Calls</td>
<td>NA</td>
<td>NA/75</td>
<td>300/NA</td>
<td>3,000</td>
</tr>
<tr>
<td>Switch to Adjunct Associations</td>
<td>NA</td>
<td>NA/127</td>
<td>127/NA</td>
<td>127</td>
</tr>
<tr>
<td>Conference Parties</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Simultaneous 3-way Conference Calls¹,²</td>
<td>161</td>
<td>161</td>
<td>483</td>
<td>3,542</td>
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<td>Simultaneous 6-way Conference Calls¹,³</td>
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<td>Data Parameters</td>
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<td>Administered Connections</td>
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<td>Permanent Switched Call</td>
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<td>Alphanumeric Dialing</td>
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<tr>
<td>Maximum Entries</td>
<td>50</td>
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<tr>
<td>Characters per Entry</td>
<td>22</td>
<td>22</td>
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<tr>
<td>Digital Data Endpoints</td>
<td>75</td>
<td>75</td>
<td>800</td>
<td>5,000</td>
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</table>

1. The total of VDN, Station, and Login ID extensions cannot exceed 25,000.
2. 2,000 for G3rV3
3. 7,084 for G3rV3 for “Simultaneous three-way Conf. Calls”
4. 3,520 for G3rV3 for “Simultaneous six-way Conf. Calls”
5. Simultaneous 3-way Conference Call=(483 / 3) * number PNs. Simultaneous 3-way Conference Call is limited by the number of Simultaneous
6. Simultaneous 6-way Conference Call=(483 / 6) * number PNs.
Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3VsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/G3i-Global</th>
<th>G3rV1</th>
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<tbody>
<tr>
<td><strong>Dial Plan</strong></td>
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<tr>
<td>DID LDNs</td>
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<td>8</td>
<td>8</td>
<td>20</td>
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<tr>
<td>Extensions&lt;sup&gt;1&lt;/sup&gt;</td>
<td>500</td>
<td>500</td>
<td>2900/3500</td>
<td>21,875</td>
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<tr>
<td>Extension Number Portability&lt;sup&gt;2&lt;/sup&gt;</td>
<td>NA/240</td>
<td>NA/240</td>
<td>240</td>
<td>50,000</td>
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<td><strong>Feature Dial Access Codes</strong></td>
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<tr>
<td>Number of Access Codes</td>
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<tr>
<td>Number of Digits</td>
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<td>1-3</td>
<td>1-4</td>
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<tr>
<td>Integrated Directory Entries</td>
<td>204</td>
<td>207</td>
<td>1607/2407</td>
<td>10,000</td>
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<tr>
<td>Maximum Extension Size</td>
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<td>5</td>
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<tr>
<td>Minimum Extension Size</td>
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<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Miscellaneous Extensions&lt;sup&gt;3&lt;/sup&gt;</td>
<td>150</td>
<td>150</td>
<td>900</td>
<td>3317</td>
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<tr>
<td><strong>Names</strong></td>
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<td></td>
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<tr>
<td>Number of Names&lt;sup&gt;4&lt;/sup&gt;</td>
<td>448/464</td>
<td>448/464</td>
<td>3,406/4,215</td>
<td>22,569</td>
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<td>Number of Characters in a Name</td>
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<td>15</td>
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<td>Non-DID LDNs</td>
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<td>50</td>
<td>50</td>
<td>666</td>
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<tr>
<td>Prefix Extensions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td><strong>Trunk Dial Access Codes</strong></td>
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<td>Number of Access Codes</td>
<td>105</td>
<td>105</td>
<td>197</td>
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<td>Number of Digits</td>
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<td>1-3/1-4</td>
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<tr>
<td><strong>Do Not Disturb (DND)</strong></td>
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<tr>
<td>DND Requests per System</td>
<td>200</td>
<td>200</td>
<td>1600/2400</td>
<td>10,000</td>
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<tr>
<td>Simultaneous Display Requests</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
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<tr>
<td><strong>Facility Busy Indicators</strong></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Buttons per Tracked Resource</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Number of Indicators (Station and Trunk Groups)</td>
<td>450</td>
<td>450</td>
<td>2400/3600</td>
<td>2400</td>
</tr>
</tbody>
</table>

1. Extensions include stations, data endpoints, hunt groups, announcements, TEGs, VDNs, common shared extensions, and code calling IDs.
2. The numbers shown in “Extension Number Portability” are Uniform Dialing Plan (UDP) entries.
3. Used for PCOL groups, common shared extensions, access endpoints, administered TSCs, code calling IDs, VDNs, LDNs, hunt groups, announcements, and TEGs.
4. The Number of Names = number of stations + attendant consoles + trunk groups + digital data endpoints + miscellaneous extensions.
Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/G3i-Global</th>
<th>G3rV1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunt Groups or Splits</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Announcements per Group</td>
<td>2</td>
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<td>2</td>
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<tr>
<td>Announcements per System</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>256</td>
</tr>
<tr>
<td>Groups and/or Splits</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>With Hospitality Parameter Reduction</td>
<td>NA/5</td>
<td>NA/5</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Group Members per Group/Split</td>
<td>150</td>
<td>150</td>
<td>200</td>
<td>999</td>
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<tr>
<td>Group Members per System</td>
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<td>150</td>
<td>500</td>
<td>3,000</td>
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<tr>
<td>Measured ACD Agents (Switch Limits)</td>
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<td></td>
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<tr>
<td>Agents Logged in per System</td>
<td>75</td>
<td>75</td>
<td>400</td>
<td>1023</td>
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<tr>
<td>Logged-In Splits per System</td>
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<td>3</td>
<td>3</td>
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<tr>
<td>ACD Supervisor Assist Per System¹</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>255</td>
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<tr>
<td>Queue Slots per Group</td>
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<tr>
<td>Queue Slots per System</td>
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<td>200</td>
<td>1,000</td>
<td>10,000</td>
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<tr>
<td>Intercom Translation Table (ICOM)</td>
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</tr>
<tr>
<td>Automatic/Manual and Dial ICOM Groups per System</td>
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<td>10</td>
<td>32</td>
<td>256</td>
</tr>
<tr>
<td>Auto/Manual</td>
<td>16</td>
<td>16</td>
<td>32</td>
<td>256</td>
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<tr>
<td>Dial</td>
<td>16</td>
<td>16</td>
<td>32</td>
<td>256</td>
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<tr>
<td>Members per ICOM group</td>
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<tr>
<td>Dial</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
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<tr>
<td>Members per System</td>
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<td>1,024</td>
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<td>Last Number Dialed</td>
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<tr>
<td>Entries per System²</td>
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<td>275</td>
<td>2,400/3,200</td>
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<td>Number of Digits</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>24</td>
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</table>

1. One supervisor assist per split.
2. Last Number Dialed Entries = Stations + Digital Data Endpoints.
### Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vS V1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/G3i-Global</th>
<th>G3rV1</th>
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<tbody>
<tr>
<td><strong>Leave Word Calling</strong> (Switch-Based)</td>
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<td>Messages per User</td>
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<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Remote Message Waiting Indicators</td>
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<td>Per Extension</td>
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<td>Per System</td>
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<td>400</td>
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<td>System-Wide Message Retrievers</td>
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<td><strong>Malicious Call Trace</strong></td>
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<td>Maximum Simultaneous Traces</td>
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<tr>
<td>Via CO</td>
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<td><strong>Modem Pool Groups</strong></td>
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<td>Mode 2/Analog</td>
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<tr>
<td>Group Members per System</td>
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<td>2,016</td>
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<td>Number of Groups</td>
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</tr>
<tr>
<td>Members per Group</td>
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<td>32</td>
<td>32</td>
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<td><strong>Networking</strong></td>
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<td>CAS Nodes</td>
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<td>NA/99</td>
<td>99</td>
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<td>DCS Nodes</td>
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<td>BX.25</td>
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<td>ISDN PRI</td>
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<td>Hybrid</td>
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<td>UDP Nodes</td>
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<td>Code Calling IDs</td>
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<td>Loudspeaker Zones</td>
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</table>

1. Leave Word Calling is available with G3s ABP only if the Voice Mail Application Support Option is purchased.
Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/Global</th>
<th>G3rV1</th>
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<tbody>
<tr>
<td><strong>Partitions</strong></td>
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<tr>
<td>Attendant Partition</td>
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<td>1</td>
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<tr>
<td>Extension Partition Group</td>
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<tr>
<td>Extension Partition</td>
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<td>8</td>
<td>8</td>
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<tr>
<td><strong>Personal CO Lines (PCOL)</strong></td>
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<tr>
<td>PCOL Appearances</td>
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<td>PCOL Lines (Trunk Groups)</td>
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<td>40/200</td>
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<td>PCOL Trunks Per Trunk Group</td>
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<td>1</td>
<td>1</td>
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<tr>
<td><strong>Port Circuit Pack Slots</strong></td>
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<td>Per Expansion Port Network (EPN)</td>
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<td>Multi-Carrier Cabinet (MCC) Simplex</td>
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<td>NA</td>
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<td>99</td>
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<td>Single-Carrier Cabinet (SCC) Duplex</td>
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<td>70</td>
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</tr>
<tr>
<td>Small Cabinet Simplex (Upgrade only)</td>
<td>NA</td>
<td>NA</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>Small Cabinet Duplex (Upgrade only)</td>
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<td>38</td>
<td>38</td>
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<tr>
<td>Per Processor Port Network (PPN)</td>
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<tr>
<td>Multi-Carrier Cabinet (MCC) Simplex</td>
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<td>NA</td>
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<td>80</td>
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<tr>
<td>Multi-Carrier Cabinet (MCC) Duplex</td>
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<td>NA</td>
<td>78</td>
<td>60</td>
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<td>Single-Carrier Cabinet (SCC) Simplex</td>
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<td>64</td>
<td>NA</td>
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<td>Single-Carrier Cabinet (SCC) Duplex</td>
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<tr>
<td>Enhanced Single-Carrier Cabinet (ESCC) Simplex</td>
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<td>NA</td>
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<td>Enhanced Single-Carrier Cabinet (ESCC) Duplex</td>
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<tr>
<td>Compact Single-Carrier Cabinet (CSCC) Simplex</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

1. Only port slots are included in this count. For example, there are 99 port slots per MCC EPN cabinet. One slot in the cabinet is already dedicated for the Tone/Clock board. Other service circuits may be required which would further reduce the number of port slots available. In G3 carriers, the 21st slot of MCC port carriers may be equipped with service boards that do not require tip and ring connections.
Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/ G3i-Global</th>
<th>G3rV1</th>
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</thead>
<tbody>
<tr>
<td>Recorded Announcements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog Queue Slots per Announcement</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Analog Queue Slots per System</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Calls Connected per Announcement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated Announcement or Auxiliary Trunk</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>255</td>
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<tr>
<td>Analog Ports</td>
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<td>5</td>
<td>128</td>
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<tr>
<td>Channels per Integrated Announcement Circuit Pack</td>
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<td>16</td>
<td>16</td>
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<td>Integrated Announcement Circuit Pack</td>
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<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Integrated Announcement Recording Time (Minutes:Seconds)</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
</tr>
<tr>
<td>16 KB recording</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
</tr>
<tr>
<td>32 KB recording</td>
<td>4:16</td>
<td>4:16</td>
<td>4:16</td>
<td>4:16</td>
</tr>
<tr>
<td>Integrated Queue Slots per System</td>
<td>50</td>
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<td>50</td>
<td>300</td>
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<tr>
<td>Recorded Announcements</td>
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<tr>
<td>System Administration</td>
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<td>Administrable History File Entries</td>
<td>50</td>
<td>50</td>
<td>250</td>
<td>1,250</td>
</tr>
<tr>
<td>Simultaneous Administration Command</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Simultaneous Maintenance Command</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Simultaneous SM Sessions</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Printer Queue Size</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Speech Synthesis Circuit Packs</td>
<td>6</td>
<td>6</td>
<td>6</td>
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</tr>
<tr>
<td>Channels per Speech Circuit Pack</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
1. 241 Simultaneous Circuit-Switched Calls per port network, except for G3s, where the maximum is 180.
2. 512 time slots per port network.
3. 483 time slots for Voice and Data per port network. Even though an EPN is supported in G3sV2, giving a total of two port networks, G3sV2 is designed to support only 180 Simultaneous Circuit-Switched Calls.
4. Only one PI board is supported in G3vs/G3s (both MCC and SCC), and therefore a total of four physical links, used for BX.25 or PRI, are available.

In G3i, two PI boards can be supported in the MCC, and therefore a total of eight physical links (used for BX25 or PRI) are available. Since the SCC can only support one PI board, a total of four physical links (used for BX25 or PRI) are available in the SCC 286 and Medium configurations.

---

**Table A-1. Maximum System Parameters for G3V1 — continued**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/G3i-Global</th>
<th>G3rV1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Terminating Extension Groups (TEG)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEGs</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
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<tr>
<td>Users That May Share a TEG</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td><strong>Time Slots</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simultaneous Circuit Switched Calls¹</td>
<td>180</td>
<td>180</td>
<td>723</td>
<td>5,302</td>
</tr>
<tr>
<td>Total Slots²</td>
<td>512</td>
<td>512</td>
<td>1536</td>
<td>11,264</td>
</tr>
<tr>
<td>Time Slots for Voice and Data³</td>
<td>483</td>
<td>483</td>
<td>1449</td>
<td>10,604</td>
</tr>
<tr>
<td>Time Slots per Port Network</td>
<td>512</td>
<td>512</td>
<td>512</td>
<td>512</td>
</tr>
<tr>
<td><strong>Tone Classifiers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call Classifier Boards</td>
<td>NA/10</td>
<td>NA/10</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Call Progress/Touch Tone Receivers</td>
<td>NA/80</td>
<td>NA/80</td>
<td>80</td>
<td>400</td>
</tr>
<tr>
<td>Tone Detector Boards</td>
<td>10</td>
<td>20</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>General Purpose Tone Detectors</td>
<td>20</td>
<td>40</td>
<td>40</td>
<td>100</td>
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<tr>
<td>Touch-Tone Receivers</td>
<td>40</td>
<td>80</td>
<td>80</td>
<td>200</td>
</tr>
<tr>
<td>Prompting TTR Queue Size</td>
<td>NA</td>
<td>NA</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>TTR Queue Size</td>
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<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Trunks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DS1 Circuit Packs</td>
<td>8</td>
<td>8</td>
<td>30</td>
<td>166</td>
</tr>
<tr>
<td>Queue Slots for Trunks</td>
<td>32/64</td>
<td>32/64</td>
<td>198</td>
<td>1,332</td>
</tr>
<tr>
<td>PRI Interfaces via PI¹</td>
<td>NA/4</td>
<td>NA/4</td>
<td>8</td>
<td>NA</td>
</tr>
<tr>
<td>PRI Interfaces via PKTINT</td>
<td>NA/4</td>
<td>NA/4</td>
<td>NA/8</td>
<td>166</td>
</tr>
</tbody>
</table>

---

1. 241 Simultaneous Circuit-Switched Calls per port network, except for G3s, where the maximum is 180.
2. 512 time slots per port network.
3. 483 time slots for Voice and Data per port network. Even though an EPN is supported in G3sV2, giving a total of two port networks, G3sV2 is designed to support only 180 Simultaneous Circuit-Switched Calls.
4. Only one PI board is supported in G3vs/G3s (both MCC and SCC), and therefore a total of four physical links, used for BX.25 or PRI, are available.

In G3i, two PI boards can be supported in the MCC, and therefore a total of eight physical links (used for BX25 or PRI) are available. Since the SCC can only support one PI board, a total of four physical links (used for BX25 or PRI) are available in the SCC 286 and Medium configurations.
Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/ G3i-Global</th>
<th>G3rV1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Trunks (Continued)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRI Temporary Signaling Connections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSCs in System</td>
<td>NA/164</td>
<td>NA/164</td>
<td>656</td>
<td>4,256</td>
</tr>
<tr>
<td>Call Associated TSCs</td>
<td>NA/100</td>
<td>NA/100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>Non Call Associated TSCs</td>
<td>NA/64</td>
<td>NA/64</td>
<td>256</td>
<td>256</td>
</tr>
<tr>
<td>Administered TSCs</td>
<td>NA/32</td>
<td>NA/32</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>Ringback Queue Slots</td>
<td>120</td>
<td>120</td>
<td>120</td>
<td>1,332</td>
</tr>
<tr>
<td>Total PRI Interfaces (30)</td>
<td>NA/4</td>
<td>NA/4</td>
<td>8</td>
<td>166</td>
</tr>
<tr>
<td>Trunk Groups Hourly Measurements</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>75</td>
</tr>
<tr>
<td>Trunk Groups in the System</td>
<td>16/32</td>
<td>16/32</td>
<td>99</td>
<td>666</td>
</tr>
<tr>
<td>Trunk Members in a Trunk Group</td>
<td>50/99</td>
<td>50/99</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>Trunks in System (Including Remote Access)</td>
<td>50/100</td>
<td>50/100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>With Hospitality Parameter Reduction</td>
<td>NA/NA</td>
<td>NA/NA</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Measured Trunks in System</td>
<td>50/100</td>
<td>50/100</td>
<td>400</td>
<td>2000</td>
</tr>
</tbody>
</table>

1. G3vs has the same software capacities for stations and trunks as G3s. However, these software capacities are limited by the cabinet hardware. A typical switch may have 20 to 50 stations with 10 to 20 trunks. Station capacities can be reached only by administration without hardware (AWOH). This includes extensions administered without hardware.
1. All BRI stations can be display stations.

The following examples show how these units can be used. The assumption is that only three call appearances are assigned to the sets (except analog sets which have no call appearance).

- Analog sets (for example, 7104A): G3r, 76 units; all other releases, 62 units.
- Digital sets with 10 buttons (for example, 7403D): G3r, 124 units; all other releases, 102 units.
- Digital sets with 34 buttons, without display (for example, 7405D): G3r, 412 units; all other releases, 342 units.
- Digital sets with 34 buttons, with display (for example, 7405D): G3r, 568 units; all other releases, 472 units.
- 7406D Digital sets with display: G3r, 412 units; all other releases, 342 units.

BRI sets with 17 buttons, with display (for example, 7506D): G3r, 304 units; all other releases, 250 units. The station button capacity can support all stations equipped as 7406D digital sets with display. For example, a total of 342 * 1200 + 410.4K units for the G3iV1.1-286.

---

Table A-1. Maximum System Parameters for G3V1 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vV1 ABP/PBP</th>
<th>G3sV1 ABP/PBP</th>
<th>G3iV1/G3i-Global</th>
<th>G3rV1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice Terminals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associated Data Modules (such as DTDMs)</td>
<td>75</td>
<td>75</td>
<td>800</td>
<td>5,000</td>
</tr>
<tr>
<td>BRI Stations¹</td>
<td>NA</td>
<td>50</td>
<td>1,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Digital Stations</td>
<td>200</td>
<td>200</td>
<td>1,600</td>
<td>10,000</td>
</tr>
<tr>
<td>Stations</td>
<td>200</td>
<td>200</td>
<td>1,600</td>
<td>10,000</td>
</tr>
<tr>
<td>Station Button Capacity (K Units)²</td>
<td>102.6</td>
<td>102.6</td>
<td>547.2</td>
<td>4120</td>
</tr>
</tbody>
</table>

¹ All BRI stations can be display stations.
² In G3, “Station Button Capacity (units) ‘replaces’ Maximum Button Modules.”
Table A-2. Maximum System Parameters for G3V1.1 or V2

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
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</thead>
<tbody>
<tr>
<td>Abbreviated Dialing (AD)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AD Lists Per System</td>
<td>1,600</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>5,000</td>
</tr>
<tr>
<td>AD List Entry Size</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
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<tr>
<td>AD Entries Per System</td>
<td>10,000</td>
<td>2,000</td>
<td>2,000</td>
<td>12,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Enhanced List (System List)</td>
<td>1</td>
<td>NA/1</td>
<td>NA/1</td>
<td>1</td>
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</tr>
<tr>
<td>Maximum Entries</td>
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<td>NA/1,000</td>
<td>NA/1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Group Lists</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>1,000</td>
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<tr>
<td>Maximum Entries</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Group Lists per Extension</td>
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<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>System List</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Maximum Entries</td>
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<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Personal Lists</td>
<td>1,600</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>5,000</td>
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<tr>
<td>Maximum Entries</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Personal Lists per Extension</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Applications Adjucts</td>
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<tr>
<td>CallVisor ASAI Adjuncts</td>
<td>8</td>
<td>NA/NA</td>
<td>NA/4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Asynchronous Links (RS-232)</td>
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<td>5</td>
<td>5</td>
<td>10</td>
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<tr>
<td>CDR Output Devices</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Journal/System Printer</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
</tr>
<tr>
<td>Property Management Systems</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BX.25 Physical Links^2</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Application Processors (such as 3B2-MCS)</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>AUDIX Adjuncts</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>CMS Adjuncts</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>CM Adjuncts</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>ISDN Gateway</td>
<td>1</td>
<td>NA/1</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BX.25 Processor Channels</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
<tr>
<td>Hop Channels</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
</tbody>
</table>

1. 100,000 for G3rV3
2. In the case of Single-Carrier Cabinets (SCC), only four BX.25 physical links are supported in G3sV2 and G3iV2.
1. AAR is **not an optional feature** in G3sV2 ABP.
2. ARS is available in G3s if the Automatic Route Selection Option is selected.
3. This is the number of 12 character inserted-digit-strings available for AAR/ARS preferences.

Table A-2. **Maximum System Parameters for G3V1.1 or V2 — continued**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3V1.1-286</th>
<th>G3VsV2 ABP/PBP</th>
<th>G3VsV2 ABP/PBP</th>
<th>G3V2-386</th>
<th>G3rV2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARS/AAR</strong>&lt;sup&gt;1, 2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAR/ARS Patterns (Shared)</td>
<td>254</td>
<td>20/40</td>
<td>20/40</td>
<td>254</td>
<td>640</td>
</tr>
<tr>
<td>ARS/AAR Table Entries (NPA, NXX, RXX, HNPA, FNPA)</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Choices per RHNPA Table</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Digit Conversion Entries</td>
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<td>400</td>
<td>400</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td><strong>ARS/AAR Digit Conversion</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Digits Deleted for ARS/AAR</td>
<td>23</td>
<td>23</td>
<td>23</td>
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<td>23</td>
</tr>
<tr>
<td>Digits Inserted for ARS/AAR</td>
<td>18</td>
<td>18</td>
<td>18</td>
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<tr>
<td><strong>ARS Sub-Net Trunking</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Digits Deleted for ARS/AAR</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Digits Inserted for ARS/AAR</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Entries in HNPA &amp; RHNPA Tables</td>
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<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>FRLs</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Inserted Digit Strings&lt;sup&gt;3&lt;/sup&gt;</td>
<td>1,200</td>
<td>450</td>
<td>450</td>
<td>1,200</td>
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<tr>
<td><strong>Patterns for Measurement</strong></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Shared Patterns for Measurement</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>RHNPA Tables</td>
<td>32</td>
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<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Routing Plans</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Toll Tables</td>
<td>32</td>
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<td>Entries per Toll Table</td>
<td>800</td>
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<tr>
<td>Trunk Groups in an ARS/AAR Pattern</td>
<td>6</td>
<td>6</td>
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<td>UDP (Entries)</td>
<td>240</td>
<td>NA/240</td>
<td>NA/240</td>
<td>10,000</td>
<td>50,000</td>
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<td><strong>TOD Charts</strong></td>
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Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vS2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
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<tr>
<td>Attendant Service</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Attendant Consoles (day:night)¹</td>
<td>15:1</td>
<td>4:1</td>
<td>6:1</td>
<td>15:1</td>
<td>27:1</td>
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<td>Attendant Console 100s Groups/Attendant</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
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<td>Attendant Control Restriction Groups</td>
<td>96</td>
<td>96</td>
<td>96</td>
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<td>96</td>
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<tr>
<td>Centralized Attendant Service</td>
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<tr>
<td>Release Link Trunks at Branch</td>
<td>99</td>
<td>NA/99</td>
<td>NA/99</td>
<td>99</td>
<td>255</td>
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<tr>
<td>Release Link Trunk Group at Branch</td>
<td>1</td>
<td>NA/1</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Release Link Trunks at Main</td>
<td>400</td>
<td>NA/100</td>
<td>NA/100</td>
<td>400</td>
<td>4,000</td>
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<tr>
<td>Release Link Trunk Groups at Main²</td>
<td>99</td>
<td>NA/32</td>
<td>NA/32</td>
<td>99</td>
<td>666</td>
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<tr>
<td>Other Access Queues</td>
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<td>Maximum Number of Queues</td>
<td>12</td>
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<td>12</td>
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<tr>
<td>Maximum Queue Slots³</td>
<td>80</td>
<td>30</td>
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<td>Size Range of Reserved Queue</td>
<td>2-75</td>
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<td>Reserved Queue Default Size</td>
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<td>Queue Length</td>
<td>80</td>
<td>30</td>
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<td>80</td>
<td>300</td>
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<td>Switched Loops/Console</td>
<td>6</td>
<td>6</td>
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<td>Authorization</td>
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<td>Authorization Codes</td>
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<td>Classes of Restriction</td>
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<td>96</td>
<td>96</td>
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<td>Classes of Service</td>
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<tr>
<td>Length of Authorization Code</td>
<td>4-7</td>
<td>4-7</td>
<td>4-7</td>
<td>4-7</td>
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<tr>
<td>Length of Barrier Code</td>
<td>4-7</td>
<td>4-7</td>
<td>4-7</td>
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</tr>
<tr>
<td>Length of Forced Entry Account Codes</td>
<td>1-15</td>
<td>NA/1-15</td>
<td>NA/1-15</td>
<td>1-15</td>
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<tr>
<td>Restricted Call List</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

1. For G3vS, there can be four day consoles if there are no night consoles. Three of the four must be powered by auxiliary power.
2. This is the same as the number of trunk groups in the system.
3. Referred to as “emergency access queue length” in G1.
### Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3VsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
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<tr>
<td><strong>Authorization (con’t)</strong></td>
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<tr>
<td>Remote Access Barrier Codes</td>
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<td>10</td>
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<tr>
<td>CDR Forced Entry Account Code List</td>
<td>1</td>
<td>NA/1</td>
<td>NA/1</td>
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<tr>
<td>Toll Call List</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Unrestricted/Allowed Call Lists</td>
<td>10</td>
<td>10</td>
<td>10</td>
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</tr>
<tr>
<td>Total Call List Entries</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
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<tr>
<td><strong>Automatic Callback Calls</strong></td>
<td>160</td>
<td>20</td>
<td>20</td>
<td>240</td>
<td>1,500</td>
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<tr>
<td><strong>Automatic Wakeup</strong></td>
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<tr>
<td>Simultaneous Display Requests</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Wakeup Requests per System</td>
<td>1,200</td>
<td>200</td>
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<td>2,400</td>
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<tr>
<td>Wakeup Request per Extension</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Wakeup Requests per 15-minute Interval</td>
<td>300</td>
<td>150</td>
<td>150</td>
<td>450</td>
<td>950</td>
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<tr>
<td><strong>Basic CMS</strong></td>
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<td>Daily Summary Reports</td>
<td>7</td>
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<td>7</td>
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<tr>
<td>Measured Agent Logins, 75 for G3Vs and G3s, 200 for G3i, and 600 for G3r</td>
<td>200</td>
<td>75</td>
<td>75</td>
<td>200</td>
<td>200</td>
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<td>Measured Splits</td>
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<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>99</td>
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<tr>
<td>Measured Trunk Groups</td>
<td>32</td>
<td>16/32</td>
<td>16/32</td>
<td>32</td>
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<tr>
<td>Measured VDNs</td>
<td>99</td>
<td>NA/24</td>
<td>NA/24</td>
<td>99</td>
<td>512</td>
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<tr>
<td>Reporting Periods (30 or 60 min)</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
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<tr>
<td>Number of Terminal User IDs</td>
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Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
</tr>
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<tbody>
<tr>
<td>Cabinets</td>
<td></td>
<td></td>
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<tr>
<td>Expansion Port Network (EPN)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MCC(^1,(^2)</td>
<td>2</td>
<td>NA</td>
<td>NA</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>SCC(^1,(^2)</td>
<td>8</td>
<td>NA</td>
<td>NA</td>
<td>8</td>
<td>80</td>
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<tr>
<td>Small(^3) (Upgrades only)(^3)</td>
<td>2</td>
<td>NA</td>
<td>NA</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Inter-Port Network Connectivity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port Networks(^1)</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>Maximum Number of Port Networks/Cabinet</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Switch Node Carriers(^1) (Simplex)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>2</td>
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<tr>
<td>Switch Node Carriers(^1) (Duplex)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>4</td>
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<tr>
<td>DS1 Converter Complex(^1) (Simplex)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>20</td>
</tr>
<tr>
<td>DS1 Converter Complex(^1) (Duplex)</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>40</td>
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<td>Processor Port Network (PPN)</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>MCC(^4)</td>
<td>1</td>
<td>NA</td>
<td>NA</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SCC/ESCC</td>
<td>4</td>
<td>NA</td>
<td>4</td>
<td>4</td>
<td>NA</td>
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<tr>
<td>CSCC</td>
<td>NA</td>
<td>1</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<td>Remote Modules</td>
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<td>Remote Port Network</td>
<td>2</td>
<td>NA</td>
<td>NA</td>
<td>2</td>
<td>21</td>
</tr>
</tbody>
</table>

1. 43 for G3rV3 for “MCC”  
   164 for G3rV3 for “SCC”  
   41 for G3rV3 for “Small”  
2. The EPNs in G3r can be DS1-remote EPNs.  
3. Small systems refer to the two-carrier cabinet systems that are no longer sold to new customers.  
4. MCC includes Medium Cabinet.
1. The number of call appearances is the sum of primary and bridged appearances; at most ten can be primary. A maximum of 54 administrable buttons are supported for the 7434D terminal — 34 buttons in the basic terminal and an additional 20 buttons in the coverage module.

2. Does not apply to conferencing.

3. Only available with ABP when AT&T Voice Power adjunct (AUDIX, AUDIX Voice Power, AUDIX Voice Power Lodging, and DEFINITY AUDIX) are used.

4. The maximum number of users per coverage path equals the number of dial plan extensions (including hunt groups, TEGs, etc.).

5. 1,000 for G3iV3/5,000 for G3rV3
   10,604 for G3v3

6. The CDRU adjunct capacity is 40,000 calls per hour, and exceeds the system call capacity for all systems except for G3r.

### Table A-2. Maximum System Parameters for Hardware and Software Items for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Call Appearances</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridged Images per Appearance</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Call Appearances per Station²</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Maximum Appearances per Extension</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Minimum Appearances per Extension</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total Bridged Appearances</td>
<td>1,600</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
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<tr>
<td>Maximum Simultaneous Off-Hook per Call²</td>
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<td>5</td>
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<tr>
<td><strong>Call Coverage</strong></td>
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<td></td>
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<tr>
<td>Coverage Answer Groups (CAG)</td>
<td>200</td>
<td>30</td>
<td>30</td>
<td>200</td>
<td>750</td>
</tr>
<tr>
<td>Coverage Paths</td>
<td>600</td>
<td>150</td>
<td>150</td>
<td>600</td>
<td>7,500</td>
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<td>With Hospitality Parameter Reduction</td>
<td>5</td>
<td>NA/5</td>
<td>NA/5</td>
<td>5</td>
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<td>Coverage Paths Included in Call Coverage Report</td>
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<td>100</td>
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<td>Coverage Points in a Path</td>
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<tr>
<td>Maximum Users per Coverage Path⁴</td>
<td>2900</td>
<td>500</td>
<td>500</td>
<td>3,500</td>
<td>36,065</td>
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<td>Members per CAG</td>
<td>8</td>
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<td>8</td>
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<tr>
<td><strong>Call Detail Recording</strong></td>
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<tr>
<td>CDRU Trackable Extensions</td>
<td>1,600</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
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<tr>
<td>Intra-switch Call Trackable Extensions⁵</td>
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<td>100</td>
<td>100</td>
<td>500</td>
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<tr>
<td>Number of CDRUs per System⁶</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tbody>
</table>

1. The number of call appearances is the sum of primary and bridged appearances; at most ten can be primary. A maximum of 54 administrable buttons are supported for the 7434D terminal — 34 buttons in the basic terminal and an additional 20 buttons in the coverage module.

2. Does not apply to conferencing.

3. Only available with ABP when AT&T Voice Power adjunct (AUDIX, AUDIX Voice Power, AUDIX Voice Power Lodging, and DEFINITY AUDIX) are used.

4. The maximum number of users per coverage path equals the number of dial plan extensions (including hunt groups, TEGs, etc.).

5. 1,000 for G3iV3/5,000 for G3rV3
   10,604 for G3v3

6. The CDRU adjunct capacity is 40,000 calls per hour, and exceeds the system call capacity for all systems except for G3r.
Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
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<tbody>
<tr>
<td><strong>Call Forwarding (Follow-me)</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call Forwarded Digits (off-net)</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Call Forwarded Numbers</td>
<td>1,600</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
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<tr>
<td><strong>Call Park</strong></td>
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</tr>
<tr>
<td>Attendant Group Common</td>
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<td>10</td>
<td>80</td>
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<tr>
<td>Shared Extension Numbers</td>
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<td>Number of Parked Calls</td>
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<td>180</td>
<td>723</td>
<td>5,302</td>
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<td><strong>Call Pickup Groups</strong></td>
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<td>Call Pickup Members per Group</td>
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<td>With Hospitality Parameter Reduction</td>
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<sup>1</sup> The total of VDN, Station, and Login ID extensions cannot exceed 25,000.
2,000 for G3rV3
7,084 for G3rV3 for “Simultaneous 3-way Conference Calls”
1. The total of VDN, Station, and Login ID extensions cannot exceed 25,000.
2. Simultaneous 3-way Conference Call = \((483 \div 3)\) * number PNs. Simultaneous 3-way Conference Call is limited by the number of Simultaneous.
3. Simultaneous 6-way Conference Call = \((483 \div 6)\) * number PNs.

### Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vsV2</th>
<th>G3sV2</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
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¹ The total of VDN, Station, and Login ID extensions cannot exceed 25,000.
² 2,000 for G3rV3
³ 7,084 for G3rV3 for “Simultaneous 3-way Conference Calls”
⁴ 3,520 for G3rV3 for “Simultaneous 6-way Conference Calls”
### Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
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</table>

1. Extensions include stations, data endpoints, hunt groups, announcements, TEGs, VDNs, common shared extensions, and code calling IDs.
2. The numbers shown in “Extension Number Portability” are Uniform Dialing Plan (UDP) entries.
3. Used for PCOL groups, common shared extensions, access endpoints, administered TSCs, code calling IDs, VDNs, LDNs, hunt groups, announcements, and TEGs.
4. The Number of Names = number of stations + attendant consoles + trunk groups + digital data endpoints + miscellaneous extensions.
### Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3sV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
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<td>12/24</td>
<td>12/24</td>
<td>99</td>
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1. One supervisor assist per split.
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<th>G3iV1.1-286</th>
<th>G3vsV2 ABP/PBP</th>
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<td>20</td>
</tr>
<tr>
<td>ISDN PRI</td>
<td>63</td>
<td>NA/63</td>
<td>NA/63</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>Hybrid</td>
<td>63</td>
<td>NA/63</td>
<td>NA/63</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>UDP Nodes</td>
<td>240</td>
<td>NA/240</td>
<td>NA/240</td>
<td>240</td>
<td>999</td>
</tr>
</tbody>
</table>

1. Last Number Dialed Entries = Stations + Digital Data Endpoints.
2. Available with G3s ABP only if the Voice Mail Application Support Option is purchased.
### Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3VsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paging</td>
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<td>Code Calling IDs</td>
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<td>125</td>
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<td>Loudspeaker Zones</td>
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<td>9</td>
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<tr>
<td>Partitions</td>
<td></td>
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<td></td>
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<tr>
<td>Attendant Partition</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Extension Partition Group</td>
<td>8</td>
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<td>8</td>
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<tr>
<td>Extension Partition</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Personal CO Lines (PCOL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCOL Appearances</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>16</td>
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<tr>
<td>PCOL Lines (Trunk Groups)</td>
<td>40</td>
<td>15</td>
<td>15</td>
<td>200</td>
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<tr>
<td>PCOL Trunks Per Trunk Group</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Port Circuit Pack Slots¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Per Expansion Port Network (EPN)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>MCC Simplex</td>
<td>99</td>
<td>NA</td>
<td>NA</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>MCC Duplex</td>
<td>98</td>
<td>NA</td>
<td>NA</td>
<td>98</td>
<td>98</td>
</tr>
<tr>
<td>SCC Simplex</td>
<td>71</td>
<td>NA</td>
<td>NA</td>
<td>71</td>
<td>71</td>
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<tr>
<td>SCC Duplex</td>
<td>70</td>
<td>NA</td>
<td>NA</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Small Cabinet Simplex</td>
<td>39</td>
<td>NA</td>
<td>NA</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>(Upgrade only)</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Small Cabinet Duplex</td>
<td>38</td>
<td>NA</td>
<td>NA</td>
<td>38</td>
<td>38</td>
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<td>(Upgrade only)</td>
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<td></td>
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</tr>
<tr>
<td>Per Processor Port Network (PPN)</td>
<td></td>
<td></td>
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<tr>
<td>MCC Simplex</td>
<td>89</td>
<td>NA</td>
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<td>89</td>
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<tr>
<td>MCC Duplex</td>
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<td>NA</td>
<td>NA</td>
<td>78</td>
<td>60</td>
</tr>
<tr>
<td>SCC Simplex</td>
<td>64</td>
<td>NA</td>
<td>NA</td>
<td>64</td>
<td>NA</td>
</tr>
<tr>
<td>SCC Duplex</td>
<td>56</td>
<td>NA</td>
<td>NA</td>
<td>56</td>
<td>NA</td>
</tr>
<tr>
<td>ESCC Simplex</td>
<td>NA</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>NA</td>
</tr>
<tr>
<td>ESCC Duplex</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>68</td>
<td>NA</td>
</tr>
<tr>
<td>CSCC Simplex</td>
<td>NA</td>
<td>10</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

¹ Only port slots are included in this count. For example, there are 99 port slots per MCC EPN cabinet. One slot in the cabinet is already dedicated for the Tone/Clock board. Other service circuits may be required which would further reduce the number of port slots available. In G3 carriers, the 21st slot of MCC port carriers may be equipped with service boards that do not require tip and ring connections.
### Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recorded Announcements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog Queue Slots per Announcement</td>
<td>150</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Analog Queue Slots per System</td>
<td>150</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Calls Connected per Announcement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated Announcement or Auxiliary Trunk</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>25</td>
<td>255</td>
</tr>
<tr>
<td>Analog Ports</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>25</td>
<td>128</td>
</tr>
<tr>
<td>Channels per Integrated Announcement Circuit Pack</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Integrated Announcement Circuit Packs</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Integrated Announcement Recording Time (Minutes:Seconds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 KB recording</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
</tr>
<tr>
<td>32 KB recording</td>
<td>4:16</td>
<td>4:16</td>
<td>4:16</td>
<td>4:16</td>
<td>4:16</td>
</tr>
<tr>
<td>Integrated Queue Slots per System</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>1,000</td>
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<tr>
<td>Recorded Announcements</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>256</td>
</tr>
<tr>
<td><strong>System Administration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrable History File Entries</td>
<td>250</td>
<td>50</td>
<td>50</td>
<td>250</td>
<td>1,250</td>
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<tr>
<td>Simultaneous Administration Command</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Simultaneous Maintenance Command</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Simultaneous SM Sessions</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Printer Queue Size</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Speech Synthesis Circuit Packs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channels per Speech Circuit Pack</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Terminating Extension Groups (TEG)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>TEGs</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
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<tr>
<td>Users That May Share a TEG</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
1. 241 Simultaneous Circuit-Switched Calls per port network, except for G3s, where the maximum is 180.
2. 512 time slots per port network.
3. 483 time slots for Voice and Data per port network. Even though an EPN is supported in G3sV2, giving a total of two port networks, G3sV2 is engineered to support only 180 Simultaneous Circuit-Switched Calls.

### Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time Slots</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simultaneous Circuit Switched Calls$^1$</td>
<td>723</td>
<td>180</td>
<td>180</td>
<td>723</td>
<td>5,302</td>
</tr>
<tr>
<td>Total Slots$^2$</td>
<td>1536</td>
<td>512</td>
<td>512</td>
<td>1,536</td>
<td>11,264</td>
</tr>
<tr>
<td>Time Slots for Voice &amp; Data$^3$</td>
<td>1449</td>
<td>483</td>
<td>483</td>
<td>1,449</td>
<td>10,604</td>
</tr>
<tr>
<td>Time Slots per Port Network</td>
<td>512</td>
<td>512</td>
<td>512</td>
<td>512</td>
<td>512</td>
</tr>
<tr>
<td><strong>Tone Classifiers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Call Classifier Boards</td>
<td>10</td>
<td>NA/10</td>
<td>NA/10</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Call Progress/Touch Tone Receivers</td>
<td>80</td>
<td>NA/80</td>
<td>NA/80</td>
<td>80</td>
<td>400</td>
</tr>
<tr>
<td>Tone Detector Boards</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>General Purpose Tone Detectors</td>
<td>40</td>
<td>20</td>
<td>40</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Touch-Tone Receivers</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>200</td>
</tr>
<tr>
<td>Prompting TTR Queue Size</td>
<td>80</td>
<td>NA/80</td>
<td>NA/80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>TTR Queue Size</td>
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<td>4</td>
<td>4</td>
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</tr>
</tbody>
</table>

---

$^1$ 241 Simultaneous Circuit-Switched Calls per port network, except for G3s, where the maximum is 180.

$^2$ 512 time slots per port network.

$^3$ 483 time slots for Voice and Data per port network. Even though an EPN is supported in G3sV2, giving a total of two port networks, G3sV2 is engineered to support only 180 Simultaneous Circuit-Switched Calls.
Table A-2. Maximum System Parameters for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3vsV2 ABP/PBP</th>
<th>G3sV2 ABP/PBP</th>
<th>G3iV2-386</th>
<th>G3rV2</th>
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</thead>
<tbody>
<tr>
<td>Trunks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DS1 Circuit Packs</td>
<td>30</td>
<td>8</td>
<td>8</td>
<td>30</td>
<td>166</td>
</tr>
<tr>
<td>Queue Slots for Trunks</td>
<td>198</td>
<td>32/64</td>
<td>32/64</td>
<td>198</td>
<td>1,332</td>
</tr>
<tr>
<td>PRI Interfaces via PI1</td>
<td>8</td>
<td>NA/4</td>
<td>NA/4</td>
<td>8</td>
<td>NA</td>
</tr>
<tr>
<td>PRI Interfaces via PKTINT</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>166</td>
</tr>
<tr>
<td>PRI Temporary Signaling Connections</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSCs in System</td>
<td>656</td>
<td>NA/164</td>
<td>NA/164</td>
<td>656</td>
<td>4,256</td>
</tr>
<tr>
<td>Call Associated TSCs</td>
<td>400</td>
<td>NA/100</td>
<td>NA/100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>Non Call Associated TSCs</td>
<td>256</td>
<td>NA/64</td>
<td>NA/64</td>
<td>256</td>
<td>256</td>
</tr>
<tr>
<td>Administered TSCs</td>
<td>128</td>
<td>NA/32</td>
<td>NA/32</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>Ringback Queue Slots</td>
<td>198</td>
<td>32/64</td>
<td>32/64</td>
<td>198</td>
<td>1,332</td>
</tr>
<tr>
<td>Total PRI Interfaces2</td>
<td>8</td>
<td>NA/4</td>
<td>NA/4</td>
<td>8</td>
<td>166</td>
</tr>
<tr>
<td>Trunk Groups Hourly Measurements</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>Trunk Groups in the System</td>
<td>99</td>
<td>16/32</td>
<td>16/32</td>
<td>99</td>
<td>666</td>
</tr>
<tr>
<td>Trunk Members in a Trunk Group</td>
<td>99</td>
<td>50/99</td>
<td>50/99</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>Trunks in System (Including Remote Access)3</td>
<td>400</td>
<td>50/100</td>
<td>50/100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>With Hospitality Parameter Reduction</td>
<td>50</td>
<td>NA/50</td>
<td>NA/50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Measured Trunks in System</td>
<td>400</td>
<td>50/100</td>
<td>50/100</td>
<td>400</td>
<td>4000</td>
</tr>
</tbody>
</table>

1. Only one PI board is supported in G3vs/G3s (both MCC and SCC), and therefore a total of four physical links, used for BX25 or PRI, are available.
In G3i, two PI boards can be supported in the MCC, and therefore a total of eight physical links (used for BX25 or PRI) are available. Since the SCC can only support one PI board, a total of four physical links (used for BX25 or PRI) are available in the SCC 286 and Medium configurations.
2. All digital stations can be display stations.
3. G3vs has the same software capacities for stations and trunks as does G3s. However, these software capacities are limited by the cabinet hardware. A typical switch would probably have 20 to 50 stations with 10 to 20 trunks. Station capacities can be reached only by administration without hardware (AWCH). This includes extensions administered without hardware.
Table A-2. Maximum System Parameters for Hardware and Software Items for G3V1.1 or V2 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3iV1.1-286</th>
<th>G3v2 G3sV2 ABP/PBP</th>
<th>G3V2 G3sV2 ABP/PBP</th>
<th>G3V2-386</th>
<th>G3rV2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice Terminals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associated Data Modules</td>
<td>800</td>
<td>75</td>
<td>75</td>
<td>800</td>
<td>7,500</td>
</tr>
<tr>
<td>(such as DTDMs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BRI Stations</td>
<td>1,000</td>
<td>NA</td>
<td>50</td>
<td>1,000</td>
<td>7,000</td>
</tr>
<tr>
<td>Digital Stations</td>
<td>1,600</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
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<tr>
<td>Stations</td>
<td>1,600</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
</tr>
<tr>
<td>Station Button Capacity</td>
<td>410.4</td>
<td>68.4</td>
<td>68.4</td>
<td>547.2</td>
<td>5,260</td>
</tr>
<tr>
<td>(K Units)²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. All BRI stations can be display stations.

The following examples show how these units can be used. The assumption is that only three call appearances are assigned to the sets (except analog sets which have no call appearance).

- Analog sets (for example, 7104A): G3r, 76 units; all other releases, 62 units.
- Digital sets with 10 buttons (for example, 7403D): G3r, 124 units; all other releases, 102 units.
- Digital sets with 34 buttons, without display (for example, 7405D): G3r, 412 units; all other releases, 342 units.
- Digital sets with 34 buttons, with display (for example, 7405D): G3r, 568 units; all other releases, 472 units.
- 7406D Digital sets with display: G3r, 412 units; all other releases, 342 units.
- BRI sets with 17 buttons, with display (for example, 7506D): G3r, 304 units; all other releases, 250 units.

The station button capacity can support all stations equipped as 7406D digital sets with display. For example, a total of $342 \times 1200 + 410.4K$ units for the G3iV1.1-286.
### Table A-3. Maximum System Parameters for G3V3

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3svV3 G3iV3 G3rV3</th>
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<tr>
<td>Abbreviated Dialing (AD)</td>
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<td>Entries per System</td>
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<td>Enhanced List (System List)</td>
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<td>Maximum Entries</td>
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<td>Maximum Entries</td>
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<td>Group Lists per Extension</td>
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<td>System List</td>
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<td>Personal Lists</td>
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<td>Maximum Entries</td>
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<td>Personal Lists/Extension</td>
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<td>CallVisor ASAI Adjuncts</td>
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<td>Asynchronous Links (RS-232)</td>
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<td>SMDR Output Devices</td>
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<td>Journal/System Printer</td>
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<td>Property Management Systems</td>
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<td>BX.25 Physical Links²</td>
<td>4</td>
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<tr>
<td>Application Processors (such as 3B2-MCS)</td>
<td>1</td>
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<tr>
<td>AUDIX Adjuncts</td>
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<tr>
<td>CMS Adjuncts</td>
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<tr>
<td>ICM Adjuncts (ISDN Gateway)</td>
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<td>NA/1</td>
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<td>BX.25 Processor Channels</td>
<td>64</td>
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<tr>
<td>Hop Channels</td>
<td>64</td>
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</tr>
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</table>

1. No limit on the maximum number of auto dial buttons (other than the system limit on button capacity).
2. In the case of SCC/ESCC/CSCC, only four BX.25 physical links are supported in the configuration.
All references to Hospitality Parameter Reduction on the Customer Option form have been removed.

In the case where going from 4 to 3 login maximums, a change to the hunt group form will also be required, which in turn would require all agents to be logged-out. In one extreme case, this is potentially avoided and R2 & R3 CMS will handle the fourth login as UNSTAFFED, appropriately.

R3V3 CMS was renamed to R3V4 CMS to match the DEFINITY switch numbering.

AAR is **not an optional feature** in the G3vs/G3s ABP.

1. + up to 7 inter-exchange carrier (IXC) digits.

### Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
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<tbody>
<tr>
<td><strong>Automatic Call Distribution (ACD)</strong></td>
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<tr>
<td>Announcements per Split</td>
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<tr>
<td>Announcements per System</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>256</td>
</tr>
<tr>
<td>Splits&lt;sup&gt;1&lt;/sup&gt;</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>ACD Members per Split</td>
<td>150</td>
<td>150</td>
<td>200</td>
<td>999</td>
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<tr>
<td>Split Members per System Measured</td>
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<td></td>
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<tr>
<td>ACD Agents (Switch Limits)</td>
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<tr>
<td>Logged-In Splits per Agent&lt;sup&gt;2&lt;/sup&gt;</td>
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<tr>
<td>No CMS</td>
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<td>R2 CMS</td>
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<td>R3 CMS</td>
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<td>R3V2 CMS</td>
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<td>R3V4 CMS&lt;sup&gt;3&lt;/sup&gt;</td>
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<tr>
<td>Queue Slots per Group</td>
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<td>999</td>
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<tr>
<td>Queue Slots per System</td>
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<td>1,000</td>
<td>10,500</td>
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<tr>
<td><strong>ARS/AAR&lt;sup&gt;4&lt;/sup&gt;</strong></td>
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<td>AAR/ARS Patterns (Shared)</td>
<td>20/40</td>
<td>20/40</td>
<td>254</td>
<td>640</td>
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<tr>
<td>ARS/AAR Table Entries (NPA, NXX, RXX, HNPA, FNPA)</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
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<tr>
<td>Choices per RHNPA Table</td>
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<td>12</td>
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<td>Digit Conversion Entries</td>
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<td>AAR/ARS Digit Conversion</td>
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</tr>
<tr>
<td>Digits Deleted for ARS/AAR&lt;sup&gt;5&lt;/sup&gt;</td>
<td>23</td>
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<td>23</td>
</tr>
<tr>
<td>Digits Inserted for ARS/AAR</td>
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<td>18</td>
<td>18</td>
<td>18</td>
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<tr>
<td>AAR/ARS Sub-Net Trunking</td>
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<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Digits Inserted for ARS/AAR</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
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</tbody>
</table>

---

1. All references to Hospitality Parameter Reduction on the Customer Option form have been removed.
2. In the case where going from 4 to 3 login maximums, a change to the hunt group form will also be required, which in turn would require all agents to be logged-out. In one extreme case, this is potentially avoided and R2 & R3 CMS will handle the fourth login as UNSTAFFED, appropriately.
3. R3V3 CMS was renamed to R3V4 CMS to match the DEFINITY switch numbering.
4. AAR is **not an optional feature** in the G3vs/G3s ABP.
5. + up to 7 inter-exchange carrier (IXC) digits.
### Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
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</thead>
<tbody>
<tr>
<td>Entries in HNPA &amp; RHNPA Tables</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
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<td>FRLs</td>
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<tr>
<td>Inserted Digit Strings&lt;sup&gt;1&lt;/sup&gt;</td>
<td>450</td>
<td>450</td>
<td>1,200</td>
<td>3,000</td>
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<tr>
<td>Patterns for Measurement</td>
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<td></td>
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<tr>
<td>Shared Patterns for Measurement</td>
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<td>20</td>
<td>20</td>
<td>25</td>
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<tr>
<td>RHNPA Tables</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Routing Plans</td>
<td>8</td>
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<td>8</td>
<td>8</td>
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<tr>
<td>Toll Tables</td>
<td>32</td>
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<tr>
<td>Entries per Toll Table</td>
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<td>Trunk Groups in an ARS/AAR Pattern</td>
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<td>UDP (Entries)</td>
<td>NA/240</td>
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<td>50,000</td>
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<td>TOD Charts</td>
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<td><strong>Attendant Service</strong></td>
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<tr>
<td>Attendant Consoles (day:night)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>4:1</td>
<td>6:1</td>
<td>15:1</td>
<td>27:1</td>
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<tr>
<td>Attendant Console 100s Groups per Attendant</td>
<td>20</td>
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<td>20</td>
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<td>Attendant Control Restriction Groups</td>
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<tr>
<td><strong>Centralized Attendant Service</strong></td>
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<td></td>
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<tr>
<td>Release Link Trunks at Branch</td>
<td>NA/99</td>
<td>NA/99</td>
<td>99</td>
<td>255</td>
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<tr>
<td>Release Link Trunk Group at Branch</td>
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<td>NA/1</td>
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<tr>
<td>Release Link Trunks at Main</td>
<td>NA/100</td>
<td>NA/100</td>
<td>400</td>
<td>4,000</td>
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<tr>
<td>Release Link Trunk Groups at Main&lt;sup&gt;3&lt;/sup&gt;</td>
<td>NA/32</td>
<td>NA/32</td>
<td>99</td>
<td>666</td>
</tr>
</tbody>
</table>

---

1. This is the number of 12 character inserted-digit-strings available for AAR/ARS preferences.
2. The number for G3vs V2/V3 (4) is the recommended number of consoles that should be supported due to power limitations. Of the four consoles, one may be used as a night console. The software actually supports 6:1 day/night attendant consoles.
3. The number of “Release Link Trunk Groups at Main” is the same as the number of trunk groups in the system.
Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsv3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3IV3</th>
<th>G3rV3</th>
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<tbody>
<tr>
<td>Attendant Service (Continued)</td>
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</tr>
<tr>
<td>Other Access Queues</td>
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</tr>
<tr>
<td>Maximum Number of Queues</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Maximum Number of Queue Slots\footnote{1}</td>
<td>30</td>
<td>30</td>
<td>80</td>
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</tr>
<tr>
<td>Size Range of Reserved Queue</td>
<td>2-25</td>
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<td>2-75</td>
<td>2-75</td>
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<tr>
<td>Reserved Queue Default Size</td>
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<td>Queue Length</td>
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<td>80</td>
<td>300</td>
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<td>Switched Loops/Console</td>
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<td>6</td>
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<td>Authorization</td>
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<td>Authorization Codes</td>
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<td>Classes of Restriction</td>
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<td>96</td>
<td>96</td>
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<td>Classes of Service</td>
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<td>Length of Authorization Code</td>
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<td>4-7</td>
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<tr>
<td>Length of Barrier Code</td>
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<td>Length of Forced Entry Account Codes</td>
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<td>Remote Access Barrier Codes</td>
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<td>SMDR Forced Entry Account Code List</td>
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<td>Unrestricted/Allowed Call Lists</td>
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<td>Automatic Wakeup</td>
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<td>Simultaneous Display Requests</td>
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<td>Wakeup Requests per System</td>
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<td>Wakeup Request per Extension</td>
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<td>Wakeup Requests per 15-minute Interval</td>
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<td>450</td>
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</table>

\footnote{1} Referred to as “emergency access queue length” in G3i.
Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
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<tbody>
<tr>
<td><strong>Basic CMS</strong></td>
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<td>Measured Agents or Login IDs</td>
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<tr>
<td>Measured Splits</td>
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<td>12/24</td>
<td>99</td>
<td>99</td>
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<tr>
<td>Measured Trunk Groups</td>
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<td>16/32</td>
<td>32</td>
<td>32</td>
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<tr>
<td>Measured VDNs</td>
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<td><strong>Reporting Periods</strong></td>
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<td>Intervals</td>
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<td>Small (Upgrades only)²</td>
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<td><strong>Inter-Port Network Connectivity</strong></td>
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<td>Maximum Number of Port Networks</td>
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<td>2</td>
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<tr>
<td>per Cabinet</td>
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<td>Switch Nodes (Simplex)</td>
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<td>Switch Nodes (Duplex)</td>
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<td>DS1 Converter Complex (Simplex)</td>
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<td>Multi-Carrier Cabinet (MCC)³</td>
<td>NA</td>
<td>NA</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Single-Carrier Cabinet (SCC) or</td>
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<tr>
<td>Enhanced Single-Carrier Cabinet</td>
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<tr>
<td>(ESCC)</td>
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<td>Compact Single-Carrier Cabinet</td>
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<td>NA</td>
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<tr>
<td>(CSCC)</td>
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1. Only EPNs in G3r can be DS1-remote EPNs.
2. Small systems refer to the 2-carrier cabinet systems that are no longer sold to new customers.
3. MCC includes Medium Cabinet.
Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3v5V3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
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<tr>
<td><strong>Call Appearances</strong></td>
<td></td>
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<tr>
<td>Bridged Images per Appearance</td>
<td>7</td>
<td>7</td>
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<td>15</td>
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<tr>
<td>Call Appearances per Station¹</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
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<tr>
<td>Maximum Appearances per Extension</td>
<td>10</td>
<td>10</td>
<td>10</td>
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<tr>
<td>Minimum Appearances per Extension</td>
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<tr>
<td>Total Bridged Appearances</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
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<tr>
<td>Maximum Simultaneous Off-Hook per Call²</td>
<td>5</td>
<td>5</td>
<td>5</td>
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<tr>
<td><strong>Call Coverage</strong></td>
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<tr>
<td>Coverage Answer Groups (CAG)</td>
<td>30</td>
<td>30</td>
<td>200</td>
<td>750</td>
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<td>Coverage Paths</td>
<td>150</td>
<td>150</td>
<td>600</td>
<td>7,500</td>
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<td>Coverage Paths Included in Call Coverage Report</td>
<td>100</td>
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<td>Coverage Path per Station</td>
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<td>Coverage Points in a Path</td>
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<tr>
<td>Maximum Users per Coverage Path³</td>
<td>500</td>
<td>500</td>
<td>3,500</td>
<td>36,065</td>
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<tr>
<td>Members per CAG</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Number of Coverage Paths for which Each Station Can Be a Member</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<td><strong>Call Detail Recording</strong></td>
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<tr>
<td>CDRU Trackable Extensions</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
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<tr>
<td>Intra-Switch Call Trackable Extensions</td>
<td>100</td>
<td>100</td>
<td>1,000</td>
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<td>Number of CDRUs/System⁴</td>
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<td>1</td>
<td>1</td>
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<tr>
<td>Maximum Number of CDR Records that Can Be Buffered in the Switch</td>
<td>300</td>
<td>300</td>
<td>300</td>
<td>1,900</td>
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<tr>
<td>No. of Records Buffered for the Primary Output Device that will Cause Secondary Device to be Busied Out for 2 Minutes</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>1,800</td>
</tr>
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</table>

1. The number of call appearances is the sum of primary and bridged appearances; at most 10 can be primary. A maximum of 54 administrable buttons are supported for the 7434D terminal — 34 buttons in the basic terminal and an additional 20 buttons in the coverage module.
2. Does not apply to conferencing.
3. The maximum number of users per coverage path is equal to the number of extensions.
4. The CDRU adjunct capacity is 40,000 calls per hour, and it exceeds the system call capacity for all systems except for G3r.
### Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
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<tbody>
<tr>
<td><strong>Call Forwarding (Follow-me)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Call Forwarded Digits (off-net)</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
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<tr>
<td>Call Forwarded Numbers</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
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<tr>
<td><strong>Call Park</strong></td>
<td></td>
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<tr>
<td>Attendant Group Common Shared</td>
<td>10</td>
<td>10</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Extension Numbers</td>
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</tr>
<tr>
<td>Number of Parked Calls</td>
<td>180</td>
<td>180</td>
<td>723</td>
<td>10,604</td>
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<tr>
<td><strong>Call Pickup Groups</strong></td>
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<tr>
<td>Call Pickup Members per Group</td>
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<tr>
<td>Call Pickup Members per System</td>
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<td>200</td>
<td>2,400</td>
<td>25,000</td>
</tr>
<tr>
<td>Number of Groups</td>
<td>100</td>
<td>100</td>
<td>800</td>
<td>5,000</td>
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<tr>
<td><strong>Call Vectoring</strong></td>
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<tr>
<td>Maximum Skills a Call Can</td>
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<td>NA/3</td>
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<td>3</td>
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<td>Simultaneously Queue to</td>
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<td>Priority Levels</td>
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<td>NA/4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Recorded Announcement</td>
<td>NA/128</td>
<td>NA/128</td>
<td>128</td>
<td>256</td>
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<td>Steps per Vector</td>
<td>NA/32</td>
<td>NA/32</td>
<td>32</td>
<td>32</td>
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<tr>
<td>Vector Directory Numbers</td>
<td>NA/100</td>
<td>NA/100</td>
<td>512</td>
<td>20,000</td>
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<tr>
<td>CMS Measured VDNs&lt;sup&gt;1&lt;/sup&gt;</td>
<td>NA/100</td>
<td>NA/100</td>
<td>512</td>
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<tr>
<td>Vectors per System</td>
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<td>256</td>
<td>512</td>
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<td>Number of Collected Digits for</td>
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<td>NA/16</td>
<td>16</td>
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<td>Call Prompting</td>
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<td>Number of Dial-Ahead Digits for</td>
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<td>NA/24</td>
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<tr>
<td>Call Prompting</td>
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<td>Vector Routing Tables</td>
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<td><strong>CallVisor ASAI</strong></td>
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<tr>
<td>Active Station Control Association</td>
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<td>NA/250</td>
<td>2,000</td>
<td>6,000</td>
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<tr>
<td>Call Controllers per Call</td>
<td>NA</td>
<td>NA/1</td>
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<td>1</td>
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<tr>
<td>Call Monitors per Call</td>
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<td>Station Controllers per Station</td>
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<td>NA/2</td>
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<td>2</td>
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<td>Maximum Simultaneous Call</td>
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<td>NA/40</td>
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<tr>
<td>Classifications</td>
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</tbody>
</table>

1. Measured limits depend on the CMS release used.
1. Proprietary, exists in G3V3 only.
2. Simultaneous 3-way Conference Call = \((483 / 3)\)\* number PNs.
3. Simultaneous 6-way Conference Call = \((483 / 6)\)\* number PNs.
4. Login IDs count against the “Extensions” switch capacity.
5. These are Uniform Dialing Plan (UDP) entries.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
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<tr>
<td>CallVisor ASAI (Continued)</td>
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<td></td>
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</tr>
<tr>
<td>Number of CallVisor ASAI Links (Open &amp; Proprietary)</td>
<td>NA</td>
<td>NA/4</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Notification Requests (Monitors)</td>
<td>NA</td>
<td>NA/50</td>
<td>170</td>
<td>2,000</td>
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<tr>
<td>Simultaneous Active Call Controlled Calls</td>
<td>NA</td>
<td>NA/75</td>
<td>300</td>
<td>3,000</td>
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<tr>
<td>Switch to Adjunct Associations (Routing)</td>
<td>NA</td>
<td>NA/127</td>
<td>127</td>
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<tr>
<td>Number of Open MultiQuest Billing Requests</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
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<td>Conference Parties</td>
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<td>Simultaneous 3-way Conference Calls</td>
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<td>161</td>
<td>483</td>
<td>7,084</td>
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<td>Simultaneous 6-way Conference Calls</td>
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<td>240</td>
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<td>Data Parameters</td>
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<td>Administered Connections</td>
<td>NA/24</td>
<td>NA/24</td>
<td>128</td>
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<td>Alphanumeric Dialing</td>
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<td>Maximum Entries</td>
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<td>200</td>
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<td>Characters/Entry</td>
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<td>PRI Endpoints (PE)</td>
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<td>NA/25</td>
<td>25</td>
<td>50</td>
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<td>Access Endpoints (Number of Trunks)</td>
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<td>50/100</td>
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<td>Digital Data Endpoints</td>
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<td>DID LDNs</td>
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<td>EAS Agent Login IDs</td>
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<td>NA/450</td>
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<td>10,000</td>
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<tr>
<td>Extensions</td>
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<td>3,500</td>
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<td>Extension Number Portability</td>
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<td>Number of Digits</td>
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### Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
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</thead>
<tbody>
<tr>
<td><strong>Dial Plan (Continued)</strong></td>
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<td>Integrated Directory Entries(^1)</td>
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<td>207</td>
<td>2,416</td>
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<td>Maximum Extension Size</td>
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<td>Minimum Extension Size</td>
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<tr>
<td>Miscellaneous Extensions(^2)</td>
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<td>150</td>
<td>900</td>
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<td><strong>Names</strong></td>
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<td>Number of Names(^3)</td>
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<td>448/464</td>
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<td>Non-DID LDNs</td>
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<td>666</td>
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<td>Prefix Extensions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td><strong>Trunk Dial Access Codes</strong></td>
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<td>49/65</td>
<td>317</td>
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<td><strong>Do Not Disturb (DND)</strong></td>
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<td>DND Requests per System</td>
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<td>2,400</td>
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<td><strong>Expert Agent Selection (EAS)</strong></td>
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<td>Skill Groups</td>
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<td>99</td>
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<td>VDN Skill Preferences</td>
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<td>3</td>
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<td>Maximum Skills a Call Can Simultaneously Queue to</td>
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<td>3</td>
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<td>Agent Login IDs</td>
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<td>1,500</td>
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<tr>
<td>Maximum Skills per Agent</td>
<td>NA/4</td>
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<tr>
<td>Maximum Agents that can be Logged-In</td>
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<tr>
<td>When Each Has 4 Skills Assigned</td>
<td>NA/37</td>
<td>NA/37</td>
<td>125</td>
<td>1,300</td>
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<tr>
<td>When Each Has 1 Skill Assigned</td>
<td>NA/150</td>
<td>NA/150</td>
<td>500</td>
<td>5,200</td>
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</tbody>
</table>

---

2. Used for PCOL groups, common shared extensions, access endpoints, administered TSCs, code calling IDs, LDNs, hunt groups, announcements, and TEGs.
3. The Number of Names = number of stations + attendant consoles + trunk groups + digital data endpoints + miscellaneous extensions.
Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facility Busy Indicators</strong></td>
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</tr>
<tr>
<td>Buttons per Tracked Resource</td>
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<td>100</td>
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<td>Number of Indicators (Station and Trunk Groups)</td>
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<td><strong>Hunt Groups</strong></td>
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<td>Announcements per Group</td>
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<tr>
<td>Announcements per System</td>
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<td>Groups</td>
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<td>Group Members per Group</td>
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<td>200</td>
<td>999</td>
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<tr>
<td>Group Members per System</td>
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<td>5,200</td>
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<tr>
<td>Queue Slots per Group</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>999</td>
</tr>
<tr>
<td>Queue Slots per System</td>
<td>200</td>
<td>200</td>
<td>1,000</td>
<td>10,500</td>
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<tr>
<td>Number of Queue Warning Lamps per Split</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Number of Queue Warning Lamps per System</td>
<td>150</td>
<td>500</td>
<td>500</td>
<td>5,200</td>
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<td><strong>Intercom Translation Table (ICOM)</strong></td>
<td></td>
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<td>ICOM groups per system</td>
<td>10</td>
<td>10</td>
<td>32</td>
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<tr>
<td>Auto/Manual</td>
<td>10</td>
<td>10</td>
<td>32</td>
<td>256</td>
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<tr>
<td>Dial</td>
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<td>10</td>
<td>32</td>
<td>256</td>
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<tr>
<td>Members per ICOM group</td>
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<td></td>
<td></td>
<td></td>
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<td>Auto</td>
<td>32</td>
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<td>32</td>
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<tr>
<td>Dial</td>
<td>32</td>
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<td>Members per System</td>
<td>320</td>
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<td><strong>Last Number Dialed</strong></td>
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<tr>
<td>Entries per System¹</td>
<td>282</td>
<td>282</td>
<td>3,216</td>
<td>32,528</td>
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<tr>
<td>Number of Digits</td>
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1. The Last Number Dialed Entries = Stations + Digital Data Endpoints + Attendant Consoles.
### Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3</th>
<th>G3sV3</th>
<th>G3iV3</th>
<th>G3rV3</th>
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<tbody>
<tr>
<td><strong>Leave Word Calling (Switch-Based)</strong></td>
<td></td>
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<tr>
<td>Messages Stored</td>
<td>450</td>
<td>450</td>
<td>2,000</td>
<td>6,000</td>
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<tr>
<td>Messages per User</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Remote Message Waiting Indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per Extension</td>
<td>80</td>
<td>80</td>
<td>80</td>
<td>80</td>
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<tr>
<td>Per System</td>
<td>240</td>
<td>240</td>
<td>240</td>
<td>1,250</td>
</tr>
<tr>
<td>Simultaneous Message Retrievers</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>400</td>
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<tr>
<td>System-Wide Message Retrievers</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
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<tr>
<td><strong>Malicious Call Trace</strong></td>
<td></td>
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<tr>
<td>Maximum Simultaneous Traces</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
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<tr>
<td><strong>MLDN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Via DID</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>20</td>
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<tr>
<td>Via CO</td>
<td>50</td>
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<tr>
<td><strong>Modem Pool Groups</strong></td>
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<tr>
<td>Mode 2/Analog</td>
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<tr>
<td>Group Members per System</td>
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<td>Number of Groups</td>
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<td>5</td>
<td>63</td>
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<td>Members per Group</td>
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<td><strong>Networking</strong></td>
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<td>CAS Nodes</td>
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<td>NA/99</td>
<td>99</td>
<td>99</td>
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<tr>
<td>DCS Nodes$^2$</td>
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<td></td>
</tr>
<tr>
<td>BX.25</td>
<td>NA/20</td>
<td>NA/20</td>
<td>20</td>
<td>20</td>
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<td>ISDN PRI</td>
<td>NA/20</td>
<td>NA/20</td>
<td>20</td>
<td>20</td>
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<tr>
<td>Hybrid</td>
<td>NA/20</td>
<td>NA/20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>ENP Nodes$^3$</td>
<td>NA/999</td>
<td>NA/999</td>
<td>999</td>
<td>999</td>
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<tr>
<td><strong>Paging</strong></td>
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<tr>
<td>Code Calling IDs</td>
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<td>125</td>
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<tr>
<td>Loudspeaker Zones</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

1. Leave Word Calling is available in the ABP only if the Voice Mail Option is purchased.
2. The actual limit in the software is 63, but due to performance considerations the recommended number of DCS Nodes is 20.
3. The numbers here are node number addresses.
2. Only port slots are included in this count. For example, there are 100 port slots per MCC EPN cabinet. One slot in the cabinet is already dedicated for the Tone/Clock board. Other service circuits may be required which would further reduce the number of port slots available. In G3r and G3i carriers, the service slot may be equipped with service boards that do not require tip and ring connections.

Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Partitions</strong>¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendant Group</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Extension Partition Group</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Extension Partition</td>
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<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Tenant Partition</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td><strong>Personal CO Lines (PCOL)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCOL Appearances</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>16</td>
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<tr>
<td>PCOL Lines (Trunk Groups)</td>
<td>15</td>
<td>15</td>
<td>200</td>
<td>200</td>
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<tr>
<td>PCOL Trunks Per Trunk Group</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td><strong>Port Circuit Pack Slots</strong>²</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per Expansion Port Network (EPN)</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Multi-Carrier Cabinet (MCC) Standard Reliability</td>
<td>NA</td>
<td>NA</td>
<td>99</td>
<td>99</td>
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<tr>
<td>Single-Carrier Cabinet (SCC) Standard Reliability</td>
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<td>NA</td>
<td>71</td>
<td>71</td>
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<tr>
<td>Small Cabinet Standard Reliability (Upgrade only)</td>
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<td>NA</td>
<td>39</td>
<td>39</td>
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<tr>
<td>Per Processor Port Network (PPN)</td>
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<tr>
<td>Multi-Carrier Cabinet (MCC) Standard Reliability</td>
<td>NA</td>
<td>NA</td>
<td>89</td>
<td>80</td>
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<tr>
<td>Single-Carrier Cabinet (SCC) Standard Reliability</td>
<td>NA</td>
<td>NA</td>
<td>64</td>
<td>NA</td>
</tr>
<tr>
<td>Single-Carrier Cabinet (ESCC) Standard Reliability</td>
<td>NA</td>
<td>70</td>
<td>70</td>
<td>NA</td>
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<tr>
<td>Single-Carrier Cabinet (CSCC) Standard Reliability</td>
<td>10</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>
The capacity for the G3vs and G3s was reduced to make the capacity proportional to that provided in the larger sizes (about 25% of the maximum number of system trunks for one board). G3i integrated queue slots should be increased to 100 for one board (200 for 5 boards) but cannot be done in this release due to memory limitation (each queue slot requires 18 bytes). The G3r has been resized to 4000 queue slots for the 10 boards maximum (only 1,000 would have been needed for one board), since the common pool architecture requires a greater number of total queue slots.

Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vs V3 ABP/PBP</th>
<th>G3s V3 ABP/PBP</th>
<th>G3i V3</th>
<th>G3r V3</th>
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<tbody>
<tr>
<td><strong>Recorded Announcements</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog and Auxiliary Trunk Announcements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog and Auxiliary Trunk Queue Slots per Announcement</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Analog and Auxiliary Trunk Queue Slots per System</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Calls Connected per Announcement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary Trunk</td>
<td>5</td>
<td>5</td>
<td>25</td>
<td>255</td>
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<tr>
<td>Analog Port</td>
<td>5</td>
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<td>25</td>
<td>128</td>
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<tr>
<td><strong>Integrated Announcements</strong></td>
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<td></td>
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<tr>
<td>Integrated Announcement Circuit Pack</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Channels Connected per Integrated Announcement Circuit Pack</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
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<tr>
<td>Calls Connected per Integrated Announcement</td>
<td>5</td>
<td>5</td>
<td>25</td>
<td>255</td>
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<tr>
<td><strong>Integrated Announcement Recording Time (Minutes:Seconds)</strong></td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
</tr>
<tr>
<td>16 KB recording</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
</tr>
<tr>
<td>32 KB recording</td>
<td>4:16</td>
<td>4:16</td>
<td>4:16</td>
<td>4:16</td>
</tr>
<tr>
<td>64 KB recording</td>
<td>2:8</td>
<td>2:8</td>
<td>2:8</td>
<td>2:8</td>
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<tr>
<td>Integrated Queue Slots per System¹</td>
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<td>50</td>
<td>50</td>
<td>1,000</td>
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<tr>
<td>Total Recorded Announcements</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>256</td>
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<td><strong>System Administration</strong></td>
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<tr>
<td>Number of Logins</td>
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<td>15</td>
<td>15</td>
<td>15</td>
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<td>Administrative History File Entries</td>
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<td>50</td>
<td>250</td>
<td>1,250</td>
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<td>Simultaneous Administration Command</td>
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<td>1</td>
<td>1</td>
<td>5</td>
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<tr>
<td>Simultaneous Maintenance Command</td>
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<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Simultaneous SM Sessions</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Printer Queue Size</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
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</tbody>
</table>

¹ The capacity for the G3vs and G3s was reduced to make the capacity proportional to that provided in the larger sizes (about 25% of the maximum number of system trunks for one board). G3i integrated queue slots should be increased to 100 for one board (200 for 5 boards) but cannot be done in this release due to memory limitation (each queue slot requires 18 bytes). The G3r has been resized to 4000 queue slots for the 10 boards maximum (only 1,000 would have been needed for one board), since the common pool architecture requires a greater number of total queue slots.
1. 241 Simultaneous Circuit-Switched Calls per port network, except for G3vs and G3s which are 180 Simultaneous Circuit Switched Calls and G3r which has a total of 7,712 (limited by the number of call records supported).
2. There are 483 time slots for Voice and Data per port network.
3. G3V3 Release 3.0 or later, or G3V4, use TN744C Call Classifier-Detector for basic TTR usage as well as call prompting/call classification/MFC. In addition, the TN2182 Tone/Clock/Detector is used for multiple tone detection functions. The number of TN748, TN420, or TN744 boards is limited only by the number of available slots. There is a single limit on the total number of tone receiver (classifier) ports for the system. For G3V3 Release 3.0 or later, or G3V4: TN748/TN420 have 4 ports for TTR use, TN748/TN420 have 2 ports for GPTD use, TN744 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use, and TN2182 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use.

### Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3</th>
<th>ABP/PBP</th>
<th>G3sV3</th>
<th>ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
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<tbody>
<tr>
<td>Speech Synthesis Circuit Packs</td>
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<td>6</td>
<td>6</td>
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<td>Channels per Speech Circuit Pack</td>
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<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Terminating Extension Groups (TEG)</td>
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<td>TEGs</td>
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<td>32</td>
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<td>Users That May Share a TEG</td>
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<td>4</td>
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<tr>
<td>Time Slots</td>
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<td></td>
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<td>Simultaneous Circuit Switched Calls¹</td>
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<td>180</td>
<td>723</td>
<td>7,712</td>
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<tr>
<td>Total Slots</td>
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<td>512</td>
<td>1,536</td>
<td>22,528</td>
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<td>Time Slots for Voice and Data²</td>
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<td>483</td>
<td>1,449</td>
<td>21,208</td>
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<td>Time Slots per Port Network</td>
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<td>512</td>
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<tr>
<td>Tone Classifiers</td>
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<tr>
<td>Tone Receivers (General)³</td>
<td>80</td>
<td>200</td>
<td>200</td>
<td>840</td>
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<td>Call Classifier Boards</td>
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<td>Classifiers / Prompting TTRs</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
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<td>Tone Detector Boards</td>
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<tr>
<td>Touch-Tone Receivers</td>
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<td>NA</td>
<td>NA</td>
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</tr>
<tr>
<td>TTR Queue Size</td>
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<td>4</td>
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<td>4</td>
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<tr>
<td>Prompting TTR Queue Size</td>
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<td>NA/80</td>
<td>80</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1. 241 Simultaneous Circuit-Switched Calls per port network, except for G3vs and G3s which are 180 Simultaneous Circuit Switched Calls and G3r which has a total of 7,712 (limited by the number of call records supported).
2. There are 483 time slots for Voice and Data per port network.
3. G3V3 Release 3.0 or later, or G3V4, use TN744C Call Classifier-Detector for basic TTR usage as well as call prompting/call classification/MFC. In addition, the TN2182 Tone/Clock/Detector is used for multiple tone detection functions. The number of TN748, TN420, or TN744 boards is limited only by the number of available slots. There is a single limit on the total number of tone receiver (classifier) ports for the system. For G3V3 Release 3.0 or later, or G3V4: TN748/TN420 have 4 ports for TTR use, TN748/TN420 have 2 ports for GPTD use, TN744 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use, and TN2182 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use.
Table A-3. Maximum System Parameters for G3V3 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trunks</td>
<td>NA/164</td>
<td>NA/164</td>
<td>656</td>
<td>4,256</td>
</tr>
<tr>
<td>TSCs in System</td>
<td>NA/164</td>
<td>NA/164</td>
<td>656</td>
<td>4,256</td>
</tr>
<tr>
<td>Total PRI Interfaces</td>
<td>NA/164</td>
<td>NA/164</td>
<td>656</td>
<td>4,256</td>
</tr>
<tr>
<td>Ringback Queue Slots</td>
<td>32/64</td>
<td>32/64</td>
<td>198</td>
<td>1,332</td>
</tr>
<tr>
<td>Call Associated TSCs</td>
<td>NA/100</td>
<td>NA/100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>Non Call Associated TSCs</td>
<td>NA/64</td>
<td>NA/64</td>
<td>256</td>
<td>256</td>
</tr>
<tr>
<td>Administered TSCs</td>
<td>NA/32</td>
<td>NA/32</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>Total PRI Interfaces</td>
<td>NA/4</td>
<td>NA/8</td>
<td>30</td>
<td>166</td>
</tr>
<tr>
<td>Trunk Groups Hourly Measurements</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>Trunk Groups in the System</td>
<td>16/32</td>
<td>16/32</td>
<td>99</td>
<td>666</td>
</tr>
<tr>
<td>Trunk Members in a Trunk Group</td>
<td>50</td>
<td>50/99</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>Trunks in System (Including Remote Access)</td>
<td>50/100</td>
<td>50/100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>Measured Trunks in System</td>
<td>50</td>
<td>50/100</td>
<td>400</td>
<td>4,000</td>
</tr>
</tbody>
</table>

1. Only one Processor Interface (PI) board is supported in G3vs (CSCC) and G3s (ESCC) configurations, and therefore a total of four physical links (used for BX.25 or PRI) are available. PRI interface via the PI is not available in Germany. PRI interface via the Packet Control must be used.
2. PRI interface via the Packet Control is not available on G3vs. Therefore, PRI is not available on G3vs in Germany. Other Countries must use the PI when they have the G3vs configuration.
3. In the 286 or the G3i configuration, 2 PI boards can be supported in the MCC, and therefore a total of 8 physical links (used for BX.25 or PRI) is available. Since the SCC/ESCC/CSCC can only support 1 PI board, a total of 4 physical links (used for BX.25 or PRI) is available in the G3vs and the G3s configurations. When using the Packet Control, the G3s and the G3i limit is bounded by the DS1 CP limit.
4. G3vs has the same software capacities for stations and trunks as does G3s. However, these software capacities are limited by the cabinet hardware. A typical switch would probably have 20 to 50 stations with 10 to 20 trunks. Station capacities can be reached only by administration without hardware (AWCH). This includes extensions administered without hardware.
1. The following items detract from the total number of available “Stations” on a given switch:
   — Analog Music-On-Hold
   — Attendants
   — Modem Pool Conversion Resources
   — TAAS Port
   — Stations (Digital, Display, BRI, etc.)
   — Analog Announcements
   — Analog External Alarm Port
   — Agent Login IDs
   — ACD Agents

2. All BRI stations can be display stations (G3vs does not support BRI).

3. The software limit for digital stations in G3vs is 200 stations, but due to power limitations the recommended limit is 80 digital stations.

4. Including extensions administered without associated hardware (for the G3s, G3i and G3r Configurations). The Station Capacity for G3vs (200) is a software limit. The physical capacity of the CSCC (10 port slots) limits the G3vs configuration from reaching the software limit.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV3 ABP/PBP</th>
<th>G3sV3 ABP/PBP</th>
<th>G3iV3</th>
<th>G3rV3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice Terminals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associated Data Modules (such as DTMNs)</td>
<td>75</td>
<td>75</td>
<td>800</td>
<td>7,500</td>
</tr>
<tr>
<td>BRI Stations</td>
<td>NA</td>
<td>50</td>
<td>1,000</td>
<td>7,000</td>
</tr>
<tr>
<td>Digital Stations</td>
<td>80</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
</tr>
<tr>
<td>Display Stations</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>10,000</td>
</tr>
<tr>
<td>Stations</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
</tr>
<tr>
<td>Station Button Capacity (K Units)</td>
<td>68.4</td>
<td>68.4</td>
<td>700.8</td>
<td>5,260</td>
</tr>
<tr>
<td>VuStats</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured Agents or Login IDs</td>
<td>75</td>
<td>75</td>
<td>400</td>
<td>2,000</td>
</tr>
<tr>
<td>Measured Splits</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>Measured Trunk Groups</td>
<td>16/32</td>
<td>16/32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Measured VDNs</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>512</td>
</tr>
<tr>
<td>Reporting Periods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervals</td>
<td>1</td>
<td>1</td>
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<td>1</td>
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<tr>
<td>Days</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Display Formats</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Simultaneous Updating Displays</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>500</td>
</tr>
</tbody>
</table>

1. The following items detract from the total number of available “Stations” on a given switch:
   — Analog Music-On-Hold
   — Attendants
   — Modem Pool Conversion Resources
   — TAAS Port
   — Stations (Digital, Display, BRI, etc.)
   — Analog Announcements
   — Analog External Alarm Port
   — Agent Login IDs
   — ACD Agents

2. All BRI stations can be display stations (G3vs does not support BRI).

3. The software limit for digital stations in G3vs is 200 stations, but due to power limitations the recommended limit is 80 digital stations.

4. Including extensions administered without associated hardware (for the G3s, G3i and G3r Configurations). The Station Capacity for G3vs (200) is a software limit. The physical capacity of the CSCC (10 port slots) limits the G3vs configuration from reaching the software limit.
Table A-4. Maximum System Parameters for G3V4 Release 1.0

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3sV4 ABP/PBP</th>
<th>G3iV4</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviated Dialing (AD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AD Lists Per System</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>5,000</td>
</tr>
<tr>
<td>AD List Entry Size</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>AD Entries Per System</td>
<td>2,000</td>
<td>2,000</td>
<td>12,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Auto Dialing Button</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entries per System</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Enhanced List (System List)</td>
<td>NA/1</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>NA/2,000</td>
<td>NA/2,000</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Group Lists</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>1,000</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Group Lists per Extension</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>System List</td>
<td>1</td>
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<td>1</td>
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<tr>
<td>Maximum Entries</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Personal Lists</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>5,000</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Personal Lists per Extension</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Applications Adjuncts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CallVisor ASAI Adjuncts</td>
<td>NA</td>
<td>NA/4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Asynchronous Links (RS-232)</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>SMDR Output Devices</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Journal/System Printer</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
</tr>
<tr>
<td>Property Management Systems</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BX.25 Physical Links²</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Application Processors (such as 3B2-MCS)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>AUDIX Adjuncts</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>CMS Adjuncts</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ICM Adjuncts (ISDN Gateway)</td>
<td>NA/1</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BX.25 Processor Channels</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
<tr>
<td>Hop Channels</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
</tbody>
</table>

1. No limit on the maximum number of auto dial buttons (other than the system limit on button capacity).
2. In the case of SCC/ESCC/CSCC, only four BX.25 physical links are supported in the configuration.
1. All references to Hospitality Parameter Reduction on the Customer Option form have been removed.
2. In the case where going from 4 to 3 login maximums, a change to the hunt group form is required, forcing all agents to be logged-out. In one extreme case, this is potentially avoided and R2 & R3 CMS handles the fourth login as UNSTAFFED appropriately.
3. R3V3 CMS was renamed to R3V4 CMS to match the DEFINITY switch numbering.
4. AAR is not an optional feature in the G3vs/G3s ABP.
5. + up to 7 inter-exchange carrier (IXC) digits.

### Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3sV4 ABP/PBP</th>
<th>G3iV4</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Automatic Call Distribution (ACD)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Announcements per Split</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Announcements per System</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>256</td>
</tr>
<tr>
<td>Splits&lt;sup&gt;1&lt;/sup&gt;</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>ACD Members per Split</td>
<td>150</td>
<td>150</td>
<td>200</td>
<td>999</td>
</tr>
<tr>
<td>Split Members per System Measured</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACD Agents (Switch Limits)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logged-In Splits per Agent&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No CMS</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>R2 CMS</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>R3 CMS</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>R3V2 CMS</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>R3V4 CMS&lt;sup&gt;3&lt;/sup&gt;</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Queue Slots per Group</td>
<td>200</td>
<td>200</td>
<td>200</td>
<td>999</td>
</tr>
<tr>
<td>Queue Slots per System</td>
<td>200</td>
<td>200</td>
<td>1,000</td>
<td>10,500</td>
</tr>
<tr>
<td><strong>ARS/AAR&lt;sup&gt;4&lt;/sup&gt;</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAR/ARS Patterns (Shared)</td>
<td>20/40</td>
<td>20/40</td>
<td>254</td>
<td>640</td>
</tr>
<tr>
<td>ARS/AAR Table Entries (NPA, NXX, RXX, HNPA, FNPA)</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Choices per RHNPA Table</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Digit Conversion Entries</td>
<td>400</td>
<td>400</td>
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<td>400</td>
</tr>
<tr>
<td>AAR/ARS Digit Conversion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digits Deleted for ARS/AAR&lt;sup&gt;5&lt;/sup&gt;</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Digits Inserted for ARS/AAR</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>AAR/ARS Sub-Net Trunking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digits Deleted for ARS/AAR</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Digits Inserted for ARS/AAR</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>Digits Sent for ARS/AAR</td>
<td>40</td>
<td>56</td>
<td>31</td>
<td>68</td>
</tr>
</tbody>
</table>

---

1. All references to Hospitality Parameter Reduction on the Customer Option form have been removed.
2. In the case where going from 4 to 3 login maximums, a change to the hunt group form is required, forcing all agents to be logged-out. In one extreme case, this is potentially avoided and R2 & R3 CMS handles the fourth login as UNSTAFFED appropriately.
3. R3V3 CMS was renamed to R3V4 CMS to match the DEFINITY switch numbering.
4. AAR is **not an optional feature** in the G3vs/G3s ABP.
5. + up to 7 inter-exchange carrier (IXC) digits.
### Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3sV4 ABP/PBP</th>
<th>G3iV4</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ARS/AAR (continued)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entries in HNPA &amp; RHNPA Tables</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>FRLs</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Inserted Digit Strings¹</td>
<td>450</td>
<td>450</td>
<td>1,200</td>
<td>3,000</td>
</tr>
<tr>
<td>Patterns for Measurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shared Patterns for Measurement</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>RHNPA Tables</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Routing Plans</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Toll Tables</td>
<td>32</td>
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<td>Entries per Toll Table</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>800</td>
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<tr>
<td>Trunk Groups in an ARS/AAR Pattern</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>16</td>
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<tr>
<td>UDP (Entries)</td>
<td>NA/240</td>
<td>NA/240</td>
<td>10,000</td>
<td>50,000</td>
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<td>TOD Charts</td>
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<tr>
<td><strong>Attendant Service</strong></td>
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<td></td>
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<tr>
<td>Attendant Consoles (day:night)²</td>
<td>4:1</td>
<td>6:1</td>
<td>15:1</td>
<td>27:1</td>
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<tr>
<td>Attendant Console 100s Groups per Attendant</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
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<td>Attendant Control Restriction Groups</td>
<td>96</td>
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<td>96</td>
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<tr>
<td><strong>Centralized Attendant Service</strong></td>
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<td></td>
</tr>
<tr>
<td>Release Link Trunks at Branch</td>
<td>NA/99</td>
<td>NA/99</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>Release Link Trunk Group at Branch</td>
<td>NA/1</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Release Link Trunks at Main</td>
<td>NA/100</td>
<td>NA/100</td>
<td>400</td>
<td>4,000</td>
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<tr>
<td>Release Link Trunk Groups at Main³</td>
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<td>99</td>
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<tr>
<td><strong>Other Access Queues</strong></td>
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<td>Maximum Number of Queues</td>
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<td>12</td>
<td>12</td>
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<td>Maximum Number of Queue Slots⁴</td>
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<td>Size Range of Reserved Queue</td>
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<td>Reserved Queue Default Size</td>
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1. This is the number of 12 character inserted-digit-strings available for AAR/ARS preferences.
2. The number for G3vs V2/V3 (4) is the recommended number of consoles that should be supported due to power limitations. Of the four consoles, one may be used as a night console. The software actually supports 6:1 day/night attendant consoles.
3. This number is the same as the number of trunk groups in the system.
4. Referred to as “emergency access queue length” in G3i.
### Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3sV4 ABP/PBP</th>
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<th>G3rV4</th>
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<td><strong>Attendant Service (continued)</strong></td>
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<td>Queue Length</td>
<td>30</td>
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<td>80</td>
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<td>Switched Loops per Console</td>
<td>6</td>
<td>6</td>
<td>6</td>
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<tr>
<td><strong>Authorization</strong></td>
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<td>Authorization Codes</td>
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<td>Classes of Restriction</td>
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<td>Classes of Service</td>
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<td>Length of Authorization Code</td>
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<td>Length of Barrier Code</td>
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<td>Length of Forced Entry Account Codes</td>
<td>NA/1-15</td>
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<td>Restricted Call List</td>
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<td>Remote Access Barrier Codes</td>
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<td>SMDR Forced Entry Account Code List</td>
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<td>20</td>
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<td><strong>Automatic Wakeup</strong></td>
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<td>Simultaneous Display Requests</td>
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<td>Wakeup Requests per System</td>
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<td>Wakeup Request per Extension</td>
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<td>Wakeup Requests per 15-minute Interval</td>
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<td>Measured Agents or Login IDs</td>
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<td>Measured Splits</td>
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<td>Measured Trunk Groups</td>
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**Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued**

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<td>Expansion Port Network (EPN)</td>
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<td>Multi-Carrier Cabinet (MCC)</td>
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<td>NA</td>
<td>2</td>
<td>43</td>
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<tr>
<td>Single-Carrier Cabinet (SCC)</td>
<td>NA</td>
<td>NA</td>
<td>8</td>
<td>164</td>
</tr>
<tr>
<td>Small (Upgrades only)</td>
<td>NA</td>
<td>NA</td>
<td>2</td>
<td>41</td>
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<td><strong>Inter-Port Network Connectivity</strong></td>
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<td>Port Networks</td>
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<td>44</td>
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<tr>
<td>Maximum Port Networks per Cabinet</td>
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<td>Switch Nodes (Simplex)</td>
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<tr>
<td>Switch Nodes (Duplex)</td>
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<tr>
<td>DS1 Converter Complex (Simplex)</td>
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<tr>
<td>DS1 Converter Complex (Duplex)</td>
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<td><strong>Processor Port Network (PPN)</strong></td>
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<td>Multi-Carrier Cabinet (MCC)³</td>
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<td><strong>Call Appearances</strong></td>
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<td>Bridged Images per Appearance</td>
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<td>15</td>
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<td>Call Appearances per Station⁴</td>
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<td>Maximum Appearances per Extension</td>
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<tr>
<td>Total Bridged Appearances</td>
<td>200</td>
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<td>Maximum Simultaneous Off-Hook per</td>
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<td>5</td>
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<tr>
<td>Call⁵</td>
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<tr>
<td><strong>Call Coverage</strong></td>
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<tr>
<td>Coverage Answer Groups (CAG)</td>
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<td>200</td>
<td>750</td>
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<td>Coverage Paths</td>
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<td>150</td>
<td>600</td>
<td>7,500</td>
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</table>

1. Only EPNs in G3r can be DS1-remote EPNs.
2. Small systems refer to the 2-carrier cabinet systems that are no longer sold to new customers.
3. MCC includes Medium Cabinet.
4. The number of call appearances is the sum of primary and bridged appearances; at most 10 can be primary. A maximum of 54 administrable buttons are supported for the 7434D terminal — 34 buttons in the basic terminal and an additional 20 buttons in the coverage module.
5. Does not apply to conferencing.
1. The maximum number of users per coverage path is equal to the number of extensions.
2. The CDRU adjunct capacity is 40,000 calls per hour, and it exceeds the system call capacity for all systems except for G3r.

### Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3V4</th>
<th>G3S V4</th>
<th>G3I V4</th>
<th>G3R V4</th>
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<tbody>
<tr>
<td><strong>Call Coverage (Continued)</strong></td>
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<tr>
<td>Coverage Paths Included in Call Coverage Report</td>
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<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Coverage Path per Station</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<td>Coverage Points in a Path</td>
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<td>3</td>
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<tr>
<td>Maximum Users/Coverage Path(^1)</td>
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<td>500</td>
<td>3,500</td>
<td>36,065</td>
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<tr>
<td>Members per CAG</td>
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<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Number of Coverage Paths for which Each Station Can Be a Member</td>
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<td>300</td>
<td>300</td>
<td>300</td>
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<tr>
<td><strong>Call Detail Recording</strong></td>
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<tr>
<td>CDRU Trackable Extensions</td>
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<td>200</td>
<td>2,400</td>
<td>25,000</td>
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<td>Intra-Switch Call Trackable Extensions</td>
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<td>1,000</td>
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<td>Number of CDRUs/System(^2)</td>
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<td>1</td>
<td>1</td>
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<td>Maximum Number of CDR Records Buffered in the Switch</td>
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<td>300</td>
<td>300</td>
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<td>No. of Records Buffered for the Primary Output Device Causing Secondary Device to be Busied Out for 2 Minutes</td>
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<td>200</td>
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<td><strong>Call Forwarding (Follow-me)</strong></td>
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<td>Call Forwarded Digits (off-net)</td>
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<td><strong>Call Park</strong></td>
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<td>Attendant Group Common Shared Extension Numbers</td>
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<td>Number of Parked Calls</td>
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<td><strong>Call Pickup Groups</strong></td>
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<td>Call Pickup Members per Group</td>
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<td>Call Pickup Members per System</td>
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<td>Number of Groups</td>
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1. The maximum number of users per coverage path is equal to the number of extensions.
2. The CDRU adjunct capacity is 40,000 calls per hour, and it exceeds the system call capacity for all systems except for G3r.
1. Measured limits depend on the CMS release used.
2. Proprietary, exists in G3V3 only.
3. Simultaneous 3-way Conference Call = (483 / 3)* number PNs.
4. Simultaneous 6-way Conference Call = (483 / 6)* number PNs.

Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vSvV4 ABP/PBP</th>
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<td><strong>Call Vectoring</strong></td>
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<td>Maximum Skills a Call Can Simultaneously Queue to</td>
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<tr>
<td>Recorded Announcement</td>
<td>NA/128</td>
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<tr>
<td>Steps per Vector</td>
<td>NA/32</td>
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<td>Vector Directory Numbers</td>
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<td>CMS Measured VDNs</td>
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<td>Vectors per System</td>
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<td>Number of Collected Digits for Call Prompting</td>
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<td>Vector Routing Tables</td>
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<td>Active Station Control Association</td>
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<td>Call Monitors per Call</td>
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<td>Maximum Simultaneous Call Classification</td>
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<td>Simultaneous 3-way Conference Calls</td>
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<td>483</td>
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**Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued**

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<th>ITEM</th>
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<th>G3rV4</th>
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<td>Maximum Entries</td>
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<td>Characters/Entry</td>
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<td>22</td>
<td>22</td>
<td>22</td>
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<tr>
<td>PRI Endpoints (PE)</td>
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<td>NA/25</td>
<td>25</td>
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<td>Access Endpoints (Number of Trunks)</td>
<td>50/100</td>
<td>50/100</td>
<td>400</td>
<td>4,000</td>
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<tr>
<td><strong>Digital Data Endpoints</strong></td>
<td>75</td>
<td>75</td>
<td>800</td>
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<tr>
<td><strong>Dial Plan</strong></td>
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<tr>
<td>DID LDNs</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>20</td>
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<tr>
<td>EAS Agent Login IDs&lt;sup&gt;1&lt;/sup&gt;</td>
<td>NA/450</td>
<td>NA/450</td>
<td>1,500</td>
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</tr>
<tr>
<td>Extensions</td>
<td>500</td>
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<td>36,065</td>
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<td>Extension Number Portability&lt;sup&gt;2&lt;/sup&gt;</td>
<td>NA/240</td>
<td>NA/240</td>
<td>10,000</td>
<td>50,000</td>
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<tr>
<td><strong>Feature Dial Access Codes</strong></td>
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<td>Number of Access Codes</td>
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<tr>
<td>Number of Digits</td>
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<tr>
<td><strong>Integrated Directory Entries&lt;sup&gt;3&lt;/sup&gt;</strong></td>
<td>207</td>
<td>207</td>
<td>2,416</td>
<td>25,028</td>
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<td>Maximum Extension Size</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Minimum Extension Size</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Miscellaneous Extensions&lt;sup&gt;4&lt;/sup&gt;</td>
<td>150</td>
<td>150</td>
<td>900</td>
<td>3,317</td>
</tr>
<tr>
<td>Names&lt;sup&gt;5&lt;/sup&gt;</td>
<td>448/464</td>
<td>448/464</td>
<td>4,215</td>
<td>36,511</td>
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<td>Number of Characters in a Name</td>
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<td>Non-DID LDNs</td>
<td>50</td>
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<td>50</td>
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<tr>
<td>Prefix Extensions</td>
<td>Yes</td>
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<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Trunk Dial Access Codes</strong></td>
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<td></td>
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<tr>
<td>Number of Access Codes</td>
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<td>49/65</td>
<td>317</td>
<td>884</td>
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<tr>
<td>Number of Digits</td>
<td>1-4</td>
<td>1-4</td>
<td>1-4</td>
<td>1-4</td>
</tr>
</tbody>
</table>

---

1. Login IDs count against the “Extensions” switch capacity.
2. The numbers shown in “Extension Number Portability” are Uniform Dialing Plan (UDP) entries.
4. Used for PCOL groups, common shared extensions, access endpoints, administered TSCs, code calling IDs, LDNs, hunt groups, announcements, and TEGs.
5. The Number of Names = number of stations + attendant consoles + trunk groups + digital data endpoints + miscellaneous extensions.
Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3sV4 ABP/PBP</th>
<th>G3iV4</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Do Not Disturb (DND)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DND Requests per System</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
</tr>
<tr>
<td>Simultaneous Display Requests</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td><strong>Expert Agent Selection (EAS)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill Groups</td>
<td>NA/24</td>
<td>NA/24</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>VDN Skill Preferences</td>
<td>NA/3</td>
<td>NA/3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Maximum Skills a Call Can Simultaneously Queue to</td>
<td>NA/3</td>
<td>NA/3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Agent Login IDs</td>
<td>NA/450</td>
<td>NA/450</td>
<td>1,500</td>
<td>10,000</td>
</tr>
<tr>
<td>Maximum Skills per Agent</td>
<td>NA/4</td>
<td>NA/4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Maximum Agents that can be Logged-In</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>When Each Has 4 Skills Assigned</td>
<td>NA/37</td>
<td>NA/37</td>
<td>125</td>
<td>1,300</td>
</tr>
<tr>
<td>When Each Has 1 Skill Assigned</td>
<td>NA/150</td>
<td>NA/150</td>
<td>500</td>
<td>5,200</td>
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<tr>
<td><strong>Facility Busy Indicators</strong></td>
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<td></td>
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<tr>
<td>Buttons per Tracked Resource</td>
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<td>100</td>
<td>100</td>
<td>500</td>
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<tr>
<td>Number of Indicators (Station and Trunk Groups)</td>
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<td>450</td>
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<tr>
<td><strong>Hunt Groups</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>Announcements per Group</td>
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<td>2</td>
</tr>
<tr>
<td>Announcements per System</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>256</td>
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<tr>
<td>Groups</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>Group Members per Group</td>
<td>150</td>
<td>150</td>
<td>200</td>
<td>999</td>
</tr>
<tr>
<td>Group Members per System</td>
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<tr>
<td>Queue Slots per Group</td>
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<td>999</td>
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<tr>
<td>Queue Slots per System</td>
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<td>200</td>
<td>1,000</td>
<td>10,500</td>
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<tr>
<td>Number of Queue Warning Lamps per Split</td>
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<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Number of Queue Warning Lamps per System</td>
<td>150</td>
<td>500</td>
<td>500</td>
<td>5,200</td>
</tr>
</tbody>
</table>

1. With G3V4 and later releases this limit is enforced. However, customers upgrading to V4 or a later release are not forced to decrease the number of buttons.
Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vV4 ABP/PBP</th>
<th>G3sV4 ABP/PBP</th>
<th>G3IV4</th>
<th>G3rV4</th>
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</thead>
<tbody>
<tr>
<td>Intercom Translation Table (ICOM)</td>
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<td></td>
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<tr>
<td>Automatic/Manual and Dial</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICOM groups per system</td>
<td>10</td>
<td>10</td>
<td>32</td>
<td>256</td>
</tr>
<tr>
<td>Auto/Manual</td>
<td>10</td>
<td>10</td>
<td>32</td>
<td>256</td>
</tr>
<tr>
<td>Dial</td>
<td>10</td>
<td>10</td>
<td>32</td>
<td>256</td>
</tr>
<tr>
<td>Members per ICOM group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
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<tr>
<td>Dial</td>
<td>32</td>
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<td>Members per System</td>
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<tr>
<td>Last Number Dialed</td>
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<td></td>
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<tr>
<td>Entries/System</td>
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<td>3,216</td>
<td>32,528</td>
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<tr>
<td>Number of Digits</td>
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<tr>
<td>Leave Word Calling (Switch-Based)</td>
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<td>Messages Stored</td>
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<td>Messages per User</td>
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<td>Remote Message Waiting Indicators</td>
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<tr>
<td>Per Extension</td>
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<tr>
<td>Per System</td>
<td>240</td>
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<td>1,250</td>
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<td>Simultaneous Message Retrievers</td>
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<td>400</td>
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<tr>
<td>System-Wide Message Retrievers</td>
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<td>Malicious Call Trace</td>
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<td>Maximum Simultaneous Traces</td>
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<td>MLDN</td>
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<td>Via DID</td>
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<td>Via CO</td>
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<tr>
<td>Modem Pool Groups</td>
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<tr>
<td>Mode 2/Analog</td>
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</tr>
<tr>
<td>Group Members per System</td>
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<td>64</td>
<td>160</td>
<td>2,016</td>
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<tr>
<td>Number of Groups</td>
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<td>5</td>
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</tr>
<tr>
<td>Members per Group</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>

1. The Last Number Dialed Entries = Stations + Digital Data Endpoints + Attendant Consoles.
2. Leave Word Calling is available in the ABP only if the Voice Mail Option is purchased.
Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3svV4 ABP/PBP</th>
<th>G3Iv4</th>
<th>G3rV4</th>
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<tbody>
<tr>
<td><strong>Networking</strong></td>
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<tr>
<td>CAS Nodes</td>
<td>NA/99</td>
<td>NA/99</td>
<td>99</td>
<td>99</td>
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<tr>
<td>DCS Nodes^1</td>
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<tr>
<td>BX.25</td>
<td>NA/20</td>
<td>NA/20</td>
<td>20</td>
<td>20</td>
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<tr>
<td>ISDN PRI</td>
<td>NA/20</td>
<td>NA/20</td>
<td>20</td>
<td>20</td>
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<tr>
<td>Hybrid</td>
<td>NA/20</td>
<td>NA/20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>ENP Nodes^2</td>
<td>NA/999</td>
<td>NA/999</td>
<td>999</td>
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<td><strong>Paging</strong></td>
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<td>Code Calling IDs</td>
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<td>125</td>
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<td>Loudspeaker Zones</td>
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<tr>
<td><strong>Partitions^3</strong></td>
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<tr>
<td>Attendant Group</td>
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</tr>
<tr>
<td>Extension Partition Group</td>
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<tr>
<td>Extension Partition</td>
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<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Tenant Partition</td>
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<td>20</td>
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<td>100</td>
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<tr>
<td><strong>Personal CO Lines (PCOL)</strong></td>
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</tr>
<tr>
<td>PCOL Appearances</td>
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<td>16</td>
</tr>
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<td>PCOL Lines (Trunk Groups)</td>
<td>15</td>
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<td>200</td>
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<tr>
<td>PCOL Trunks Per Trunk Group</td>
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<td>1</td>
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<tr>
<td><strong>Port Circuit Pack Slots^4</strong></td>
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<tr>
<td>Per Expansion Port Network (EPN)</td>
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<tr>
<td>MCC Standard Reliability</td>
<td>NA</td>
<td>NA</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>SCC Standard Reliability</td>
<td>NA</td>
<td>NA</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>Small Cabinet Standard Reliability (Upgrade only)</td>
<td>NA</td>
<td>NA</td>
<td>39</td>
<td>39</td>
</tr>
</tbody>
</table>

1. The actual limit in the software is 63, but due to performance considerations, the recommended number of DCS Nodes is 20.
2. The numbers here are node number addresses.
4. Only port slots are included in this count. For example, there are 100 port slots per MCC EPN cabinet. One slot in the cabinet is already dedicated for the Tone/Clock board. Other service circuits may be required which would further reduce the number of port slots available. In G3r and G3si, the service slot may be equipped with service boards that do not require tip and ring connections.
### Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3sV4 ABP/PBP</th>
<th>G3rV4</th>
<th>G3rV4</th>
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<tbody>
<tr>
<td>Port Circuit Pack Slots (Continued)</td>
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</tr>
<tr>
<td>Per Processor Port Network (PPN)</td>
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<td></td>
</tr>
<tr>
<td>MCC Standard Reliability</td>
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<td>NA</td>
<td>89</td>
<td>80</td>
</tr>
<tr>
<td>SCC Standard Reliability</td>
<td>NA</td>
<td>NA</td>
<td>64</td>
<td>NA</td>
</tr>
<tr>
<td>ESCC Standard Reliability</td>
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<td>70</td>
<td>70</td>
<td>NA</td>
</tr>
<tr>
<td>CSCC Standard Reliability</td>
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<tr>
<td>Recorded Announcements</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Analog and Aux. Trunk Announcements</td>
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</tr>
<tr>
<td>Analog and Auxiliary Trunk Queue Slots per Announcement</td>
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<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Analog and Auxiliary Trunk Queue Slots per System</td>
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<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Calls Connected per Announcement</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary Trunk</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Analog Port</td>
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<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Integrated Announcements</td>
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<td>Integrated Announcement Circuit Packs</td>
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<tr>
<td>Channels Connected per Integrated Announcement Circuit Pack</td>
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<td>16</td>
<td>16</td>
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<tr>
<td>Calls Connected per Integrated Announcement</td>
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<td>25</td>
<td>50</td>
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<tr>
<td>Integrated Announcement Recording Time (Minutes:Seconds)</td>
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<td>16 KB recording</td>
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<td>8:32</td>
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<tr>
<td>32 KB recording</td>
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<td>4:16</td>
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<tr>
<td>64 KB recording</td>
<td>2:8</td>
<td>2:8</td>
<td>2:8</td>
<td>2:8</td>
</tr>
<tr>
<td>Integrated Queue Slots per System</td>
<td>25</td>
<td>25</td>
<td>50</td>
<td>4,000</td>
</tr>
<tr>
<td>Total Recorded Announcements</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>256</td>
</tr>
</tbody>
</table>

1. This capacity for the G3vs and G3s was reduced to make the capacity proportional to that provided in the larger sizes (about 25% of the maximum number of system trunks for one board). G3i integrated queue slots should be increased to 100 for one board (200 for 5 boards) but can not be done in this release due to memory limitation (each queue slot requires 18 bytes). The G3r has been resized to 4000 queue slots for the 10 boards maximum (only 1,000 would have been needed for one board), since the common pool architecture requires a greater number of total queue slots.
1. 241 Simultaneous Circuit-Switched Calls per port network, except for G3Vs and G3s with 180 and G3r with 7,712 (limited by the number of call records supported).

2. There are 483 time slots for Voice and Data per port network.

3. G3V3 Release 3.0 or later, or G3V4, use TN744 Call Classifier for basic TTR usage as well as call prompting/call classification/MFC. Also, the TN2182 Tone/Clock/Detector is used for multiple tone detection functions. The number of TN748, TN420, or TN744 boards is limited only by the number of available slots. There is a single limit on the total number of tone receiver (classifier) ports for the system. For G3V3 Release 3.0 or later, or G3V4: TN748/TN420 have 4 ports for TTR use, TN748/TN420 have 2 ports for GPTD use, TN744 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use, and TN2182 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use.

Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3VsV4 ABP/PBP</th>
<th>G3VsV4 ABP/PBP</th>
<th>G3Iv4</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System Administration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Logins</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Administrable History File Entries</td>
<td>50</td>
<td>50</td>
<td>500</td>
<td>1,250</td>
</tr>
<tr>
<td>Simultaneous Administration Command</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Simultaneous Maintenance Command</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Simultaneous SM Sessions</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Printer Queue Size</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Speech Synthesis Circuit Packs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channels per Speech Circuit Pack</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Terminating Extension Groups (TEG)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEGs</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Users That May Share a TEG</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Time Slots</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simultaneous Circuit Switched Calls</td>
<td>180</td>
<td>180</td>
<td>723</td>
<td>7,712</td>
</tr>
<tr>
<td>Total Slots</td>
<td>512</td>
<td>512</td>
<td>1,536</td>
<td>22,528</td>
</tr>
<tr>
<td>Time Slots for Voice &amp; Data</td>
<td>483</td>
<td>483</td>
<td>1,449</td>
<td>21,208</td>
</tr>
<tr>
<td>Time Slots per Port Network</td>
<td>512</td>
<td>512</td>
<td>512</td>
<td>512</td>
</tr>
<tr>
<td><strong>Tone Classifiers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tone Receivers (General)</td>
<td>80</td>
<td>200</td>
<td>200</td>
<td>840</td>
</tr>
<tr>
<td>Call Classifier Boards</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Classifiers / Prompting TTRs</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Tone Detector Boards</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>General Purpose Tone Detectors</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Touch-Tone Receivers</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

1. 241 Simultaneous Circuit-Switched Calls per port network, except for G3Vs and G3s with 180 and G3r with 7,712 (limited by the number of call records supported).

2. There are 483 time slots for Voice and Data per port network.

3. G3V3 Release 3.0 or later, or G3V4, use TN744 Call Classifier for basic TTR usage as well as call prompting/call classification/MFC. Also, the TN2182 Tone/Clock/Detector is used for multiple tone detection functions. The number of TN748, TN420, or TN744 boards is limited only by the number of available slots. There is a single limit on the total number of tone receiver (classifier) ports for the system. For G3V3 Release 3.0 or later, or G3V4: TN748/TN420 have 4 ports for TTR use, TN748/TN420 have 2 ports for GPTD use, TN744 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use, and TN2182 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use.
1. Only one Processor Interface (PI) is supported in G3vs (CSCC) and G3s (ESCC) configurations, therefore a total of 4 physical links (used for BX.25 or PRI) are available. PRI interface via the PI is not available in Germany. PRI interface via the Packet Control must be used.

2. PRI interface via the Packet Control is not available on G3vs. PRI is not available on G3vs in Germany. Other Countries must use the PI when they have the G3vs configuration.

3. In the 286 or the G3i configuration, 2 PI boards can be supported in the MCC, a total of 8 physical links (used for BX.25 or PRI) is available. Since the SCC/ESCC/CSCC can only support 1 PI board, a total of 4 physical links (used for BX.25 or PRI) is available in the G3vs and the G3s configurations. When using the Packet Control, the G3s and G3i limit is bounded by the DS1 CP limit.

4. G3vs has the same software capacities for stations and trunks as does G3s. However, these software capacities are limited by the cabinet hardware. A typical switch would have 20 to 50 stations with 10 to 20 trunks. Station capacities can be reached only by administration without hardware (AWOH). This includes extensions administered without hardware.

Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4</th>
<th>G3sV4</th>
<th>G3IV4</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tone Classifiers (Continued)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TTR Queue Size</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Prompting TTR Queue Size</td>
<td>NA/80</td>
<td>NA/80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td><strong>Trunks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DS1 Circuit Packs</td>
<td>8</td>
<td>8</td>
<td>30</td>
<td>166</td>
</tr>
<tr>
<td>Queue Slots for Trunks</td>
<td>32/64</td>
<td>32/64</td>
<td>198</td>
<td>1,332</td>
</tr>
<tr>
<td>PRI Interfaces via PI</td>
<td>NA/4</td>
<td>NA/4</td>
<td>8</td>
<td>NA</td>
</tr>
<tr>
<td>PRI Interfaces via Packet Control</td>
<td>NA</td>
<td>NA/8</td>
<td>30</td>
<td>NA</td>
</tr>
<tr>
<td>PRI Interfaces via PKTINT</td>
<td>NA</td>
<td>NA</td>
<td>166</td>
<td></td>
</tr>
<tr>
<td><strong>PRI Temporary Signaling Connections</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSCs in System</td>
<td>NA/164</td>
<td>NA/164</td>
<td>656</td>
<td>4,256</td>
</tr>
<tr>
<td>Call Associated TSCs</td>
<td>NA/100</td>
<td>NA/100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>Non Call Associated TSCs</td>
<td>NA/64</td>
<td>NA/64</td>
<td>256</td>
<td>256</td>
</tr>
<tr>
<td>Administered TSCs</td>
<td>NA/64</td>
<td>NA/64</td>
<td>128</td>
<td>128</td>
</tr>
<tr>
<td>Ringback Queue Slots</td>
<td>32/64</td>
<td>32/64</td>
<td>198</td>
<td>1,332</td>
</tr>
<tr>
<td><strong>Total PRI Interfaces</strong></td>
<td>NA/4</td>
<td>NA/8</td>
<td>30</td>
<td>166</td>
</tr>
<tr>
<td>Trunk Groups Hourly Measurements</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>Trunk Groups in the System</td>
<td>16/32</td>
<td>16/32</td>
<td>99</td>
<td>666</td>
</tr>
<tr>
<td>Trunk Members in a Trunk Group</td>
<td>50</td>
<td>50/99</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>Trunks in System (Including Remote Access)</td>
<td>50/100</td>
<td>50/100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>Measured Trunks in System</td>
<td>50</td>
<td>50/100</td>
<td>400</td>
<td>4,000</td>
</tr>
</tbody>
</table>

1. Only one Processor Interface (PI) is supported in G3vs (CSCC) and G3s (ESCC) configurations, therefore a total of 4 physical links (used for BX.25 or PRI) are available. PRI interface via the PI is not available in Germany. PRI interface via the Packet Control must be used.

2. PRI interface via the Packet Control is not available on G3vs. PRI is not available on G3vs in Germany. Other Countries must use the PI when they have the G3vs configuration.

3. In the 286 or the G3i configuration, 2 PI boards can be supported in the MCC, a total of 8 physical links (used for BX.25 or PRI) is available. Since the SCC/ESCC/CSCC can only support 1 PI board, a total of 4 physical links (used for BX.25 or PRI) is available in the G3vs and the G3s configurations. When using the Packet Control, the G3s and G3i limit is bounded by the DS1 CP limit.

4. G3vs has the same software capacities for stations and trunks as does G3s. However, these software capacities are limited by the cabinet hardware. A typical switch would have 20 to 50 stations with 10 to 20 trunks. Station capacities can be reached only by administration without hardware (AWOH). This includes extensions administered without hardware.
1. The following items detract from the total number of available “Stations” on a given switch:
   - Analog Music-On-Hold
   - Attendants
   - Modem Pool Conversion Resources
   - TAAS Port
   - Stations (Digital, Display, BRI, etc.)
   - Analog Announcements
   - Analog External Alarm Port
   - Agent Login IDs
   - ACD Agents

2. All BRI stations can be display stations (G3vs does not support BRI).

3. The software limit for digital stations in G3vs is 200 stations, but due to power limitations the recommended limit is 80 digital stations.

4. Including extensions administered without associated hardware (for the G3s, G3i and G3r Configurations). The Station Capacity for G3vs (200) is a software limit. The physical capacity of the CSCC (10 port slots) limits the G3vs configuration from reaching the software limit.

### Table A-4. Maximum System Parameters for G3V4 Release 1.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3sV4 ABP/PBP</th>
<th>G3iV4</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voice Terminals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associated Data Modules (DTDMs)</td>
<td>75</td>
<td>75</td>
<td>800</td>
<td>7,500</td>
</tr>
<tr>
<td>BRI Stations</td>
<td>NA</td>
<td>50</td>
<td>1,000</td>
<td>7,000</td>
</tr>
<tr>
<td>Digital Stations</td>
<td>80</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
</tr>
<tr>
<td>Display Stations</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>10,000</td>
</tr>
<tr>
<td>Stations</td>
<td>200</td>
<td>200</td>
<td>2,400</td>
<td>25,000</td>
</tr>
<tr>
<td>Station Button Capacity (K Units)</td>
<td>68.4</td>
<td>68.4</td>
<td>700.8</td>
<td>5,260</td>
</tr>
<tr>
<td><strong>VuStats</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured Agents or Login IDs</td>
<td>75</td>
<td>75</td>
<td>400</td>
<td>2,000</td>
</tr>
<tr>
<td>Measured Splits</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>Measured Trunk Groups</td>
<td>16/32</td>
<td>16/32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Measured VDNs</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>512</td>
</tr>
<tr>
<td>Reporting Periods</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervals</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Days</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Display Formats</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Simultaneous Updating Displays</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>500</td>
</tr>
</tbody>
</table>

1. The following items detract from the total number of available “Stations” on a given switch:
2. All BRI stations can be display stations (G3vs does not support BRI).
3. The software limit for digital stations in G3vs is 200 stations, but due to power limitations the recommended limit is 80 digital stations.
4. Including extensions administered without associated hardware (for the G3s, G3i and G3r Configurations). The Station Capacity for G3vs (200) is a software limit. The physical capacity of the CSCC (10 port slots) limits the G3vs configuration from reaching the software limit.
Table A-5. Maximum System Parameters for G3V4 Release 3.0

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vSvV4</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviated Dialing (AD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AD Lists Per System</td>
<td>400</td>
<td>400</td>
<td>2,400</td>
<td>5,000</td>
</tr>
<tr>
<td>AD List Entry Size</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>AD Entries Per System</td>
<td>2,000</td>
<td>2,000</td>
<td>12,000</td>
<td>100,000</td>
</tr>
<tr>
<td>Auto Dialing Button¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entries per System¹</td>
<td>NA</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Enhanced List (System List)</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>NA/2,000</td>
<td>2,000</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Group Lists</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>1,000</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Group Lists per Extension</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>System List</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Personal Lists</td>
<td>400</td>
<td>400</td>
<td>2,400</td>
<td>5,000</td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Personal Lists per Extension</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Applications Adjuncts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CallVisor ASAI Adjuncts</td>
<td>N/A</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Asynchronous Links (RS-232)</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>CDR Output Devices</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Journal: System Printer</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
<td>2:1</td>
</tr>
<tr>
<td>Property Management Systems</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BX.25 Physical Links²</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Application Processors (such as 3B2-MCS)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>AUDIX Adjuncts</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>CMS Adjuncts</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ICM Adjuncts (ISDN Gateway)</td>
<td>NA/1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>BX.25 Processor Channels</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
<tr>
<td>Hop Channels</td>
<td>64</td>
<td>64</td>
<td>64</td>
<td>128</td>
</tr>
</tbody>
</table>

1. No limit on maximum number of auto dial buttons (other than system limit on button capacity).
2. In the case of SCC/ESCC/CSCC, only four BX.25 physical links are supported in the configuration.
1. All references to Hospitality Parameter Reduction on the Customer Option form have been removed from the Capacities Tables.

2. When going from 4 to 3 login maximums, a change to the hunt group form is required. This means all agents must be logged-out. In one extreme case, this is potentially avoided and R2 & R3 CMS handles the fourth login as UNSTAFFED, appropriately.

3. R3V3 CMS was renamed to R3V4 CMS to match the DEFINITY switch numbering.

4. AAR is not an optional feature in the G3vs ABP.

5. Plus up to seven inter-exchange carrier (IXC) digits.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Call Distribution (ACD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Announcements per Split</td>
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<td>Splits</td>
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<td>ACD Members per Split</td>
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<td>R3V4 CMS</td>
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<td>Queue Slots per Group</td>
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<td>10,500</td>
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<td>ARS/AAR</td>
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<td>AAR/ARS Patterns (Shared)</td>
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<td>AAR/ARS Digit Conversion</td>
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<tr>
<td>Digits Deleted for AAR</td>
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<td>28</td>
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<td>Digits Inserted for AAR</td>
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<td>AAR/ARS Sub-Net Trunking</td>
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<td>Digits Sent for AAR</td>
<td>40</td>
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</table>

1. All references to Hospitality Parameter Reduction on the Customer Option form have been removed from the Capacities Tables.

2. When going from 4 to 3 login maximums, a change to the hunt group form is required. This means all agents must be logged-out. In one extreme case, this is potentially avoided and R2 & R3 CMS handles the fourth login as UNSTAFFED, appropriately.

3. R3V3 CMS was renamed to R3V4 CMS to match the DEFINITY switch numbering.

4. AAR is not an optional feature in the G3vs ABP.

5. Plus up to seven inter-exchange carrier (IXC) digits.
Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsv4</th>
<th>ABP/PBP</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
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<tbody>
<tr>
<td>ARS/AAR (Continued)</td>
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<td>Entries in each RHINPA Table</td>
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<td>1,000</td>
<td>1,000</td>
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<td>FRLs</td>
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<tr>
<td>Inserted Digit Strings¹</td>
<td>450</td>
<td>450</td>
<td>1,200</td>
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<td>Patterns for Measurement</td>
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<td>Shared Patterns for Measurement</td>
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<td>RHINPA Tables</td>
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<td>Routing Plans</td>
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<tr>
<td>ARS Toll Tables</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
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<td>Entries per Toll Table</td>
<td>800</td>
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<td>Trunk Groups in an ARS/AAR Pattern</td>
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<td>6</td>
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<td>UDP (Entries)</td>
<td>NA/240</td>
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<td>Attendant Service</td>
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<td></td>
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<tr>
<td>Attendant Consoles (day:night)²</td>
<td>4</td>
<td>6:1</td>
<td>15:1</td>
<td>27:1</td>
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<td>Attendant Console 100s Groups per Attendant</td>
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<td>20</td>
<td>20</td>
<td>20</td>
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<td>Attendant Control Restriction Groups</td>
<td>96</td>
<td>96</td>
<td>96</td>
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<td>Centralized Attendant Service</td>
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<td></td>
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<tr>
<td>Release Link Trunks at Branch</td>
<td>NA/99</td>
<td>99</td>
<td>99</td>
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<tr>
<td>Release Link Trunk Group at Branch</td>
<td>NA/1</td>
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<td>1</td>
<td>1</td>
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<tr>
<td>Release Link Trunks at Main</td>
<td>NA/100</td>
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<td>Release Link Trunk Groups at Main³</td>
<td>NA/32</td>
<td>32</td>
<td>99</td>
<td>666</td>
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<td>Other Access Queues</td>
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<td>Maximum Number of Queues</td>
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<td>Maximum Number of Queue Slots⁴</td>
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<td>30</td>
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<td>Size Range of Reserved Queue</td>
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<td>Queue Length</td>
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<td>Switched Loops per Console</td>
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<td>6</td>
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</table>

1. Number of available 12 character inserted-digit-strings available for AAR/ARS preferences.
2. Recommended number of consoles supported due to power limitations. Of the four consoles, one may be used as a night console. The software actually supports 6:1 day/night attendant consoles.
3. This is the same as the number of trunk groups in the system.
4. Referred to as “emergency access queue length” in G3s.
Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3siV4</th>
<th>+m</th>
<th>G3rV4</th>
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<tbody>
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<td>Authorization</td>
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<td>Authorization Codes</td>
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<td>Classes of Restriction</td>
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<td>Classes of Service</td>
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<td>Length of Authorization Code</td>
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<tr>
<td>Length of Barrier Code</td>
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<tr>
<td>Length of Account Codes</td>
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<td>Restricted Call List</td>
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<td>Remote Access Barrier Codes</td>
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<td>Automatic Wakeup</td>
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<td>Simultaneous Display Requests</td>
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<td>Wakeup Requests per System</td>
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<td>Wakeup Request per Extension</td>
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<td>Wakeup Requests per 15-minute Interval</td>
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<td>Basic CMS</td>
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<td>Measured Trunk Groups</td>
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<td>Measured VDNs</td>
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<td>Days</td>
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Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3V4</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
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<tr>
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<td>Expansion Port Network (EPN)</td>
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<tr>
<td>Multi-Carrier Cabinet (MCC)</td>
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<td>43</td>
</tr>
<tr>
<td>Single-Carrier Cabinet (SCC)</td>
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<td>N/A</td>
<td>8</td>
<td>164</td>
</tr>
<tr>
<td>Small (Upgrades only)</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>41</td>
</tr>
<tr>
<td>Inter-Port Network Connectivity</td>
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<td></td>
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<td>Port Networks</td>
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<td>44</td>
</tr>
<tr>
<td>Maximum Number of Port Networks per Cabinet</td>
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<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Switch Nodes (Simplex)</td>
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<td>N/A</td>
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<td>3</td>
</tr>
<tr>
<td>Switch Nodes (Duplex)</td>
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<td>NA</td>
<td>6</td>
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<td>DS1 Converter Complex (Simplex)</td>
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<td>N/A</td>
<td>NA</td>
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<td>DS1 Converter Complex (Duplex)</td>
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<td>N/A</td>
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<tr>
<td>Processor Port Network (PPN)</td>
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<tr>
<td>Multi-Carrier Cabinet (MCC)</td>
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<tr>
<td>Single-Carrier Cabinet (SCC) or Enhanced Single-Carrier Cabinet (ESCC)</td>
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<td>CSCC</td>
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<td>N/A</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Call Appearances</td>
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<td>Bridged Images per Appearance</td>
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<td>15</td>
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<td>Call Appearances per Station</td>
<td>54</td>
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<tr>
<td>Maximum Appearances per Extension</td>
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<td>Minimum Appearances per Extension</td>
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<td>Total Bridged Appearances</td>
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<td>2,400</td>
<td>25,000</td>
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<tr>
<td>Maximum Simultaneous Off-Hook per Call</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

1. Only EPNs in G3r can be DS1-remote EPNs.
2. Small systems refer to the 2-carrier cabinet systems no longer sold to new customers.
3. MCC includes the Medium Cabinet.
4. The number of appearances is the sum of primary and bridged appearances; at most 10 can be primary. A maximum of 54 administrable buttons are supported for the 7434D terminal — 34 buttons in the basic terminal and 20 additional buttons in the coverage module.
5. Does not apply to conferencing.
Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call Coverage</td>
<td></td>
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</tr>
<tr>
<td>Coverage Answer Groups (CAG)</td>
<td>30</td>
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<td>200</td>
</tr>
<tr>
<td>Coverage Paths¹</td>
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<td>600</td>
</tr>
<tr>
<td>Coverage Paths Including in Call Coverage Report</td>
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<td>100</td>
<td>100</td>
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<td>Coverage Paths per Station</td>
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<td>Coverage Points in a Path</td>
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<tr>
<td>Remote Coverage Points</td>
<td>225</td>
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<td>225</td>
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<tr>
<td>Maximum Users per Coverage Path²</td>
<td>700</td>
<td>700</td>
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<tr>
<td>Members per Call Answer Group</td>
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<tr>
<td>Call Detail Recording</td>
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<tr>
<td>Intra-Switch Call Trackable Extensions</td>
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<td>1,000</td>
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<tr>
<td>Maximum Number of CDR Records Buffered in Switch</td>
<td>300</td>
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</tr>
<tr>
<td>Number of Records Buffered for the Primary Output Device to Cause Secondary Device to be Busied Out for 2 Minutes</td>
<td>200</td>
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<td>200</td>
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<tr>
<td>Call Forwarding</td>
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<td>Call Forwarded Digits (off-net)</td>
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<td>16</td>
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<td>Call Forwarded Numbers</td>
<td>400</td>
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<td>Call Park</td>
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<tr>
<td>Attendant Group Common Shared Extension Numbers</td>
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<tr>
<td>Number of Parked Calls</td>
<td>180</td>
<td>180</td>
<td>723</td>
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<tr>
<td>Call Pickup Groups</td>
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<tr>
<td>Call Pickup Members per Group</td>
<td>50</td>
<td>50</td>
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<tr>
<td>Call Pickup Members per System</td>
<td>400</td>
<td>400</td>
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<tr>
<td>Number of Groups</td>
<td>100</td>
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1. All references to Hospitality Parameter Reduction on the Customer Option form have been removed from the Capacities Tables.
2. The maximum number of users per coverage path is equal to the number of extensions.
Table A-5.  Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
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<tr>
<td><strong>Call Vectoring</strong></td>
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<tr>
<td>Maximum Skills a Call Can Simultaneously Queue to</td>
<td>NA/3</td>
<td>3</td>
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<td>Priority Levels</td>
<td>NA/4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Recorded Announcement/Analog</td>
<td>NA/128</td>
<td>128</td>
<td>128</td>
<td>256</td>
</tr>
<tr>
<td>Steps per Vector</td>
<td>NA/32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Vector Directory Numbers</td>
<td>NA/100</td>
<td>100</td>
<td>512</td>
<td>20,000</td>
</tr>
<tr>
<td>CMS Measured VDNs&lt;sup&gt;1&lt;/sup&gt;</td>
<td>NA/100</td>
<td>100</td>
<td>512</td>
<td>2,000</td>
</tr>
<tr>
<td>Vectors per System</td>
<td>NA/48</td>
<td>48</td>
<td>256</td>
<td>512</td>
</tr>
<tr>
<td>Number of Collected Digits for Call Prompting</td>
<td>NA/16</td>
<td>16</td>
<td>16</td>
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<tr>
<td>Number of Dial-Ahead Digits for Call Prompting</td>
<td>NA/24</td>
<td>24</td>
<td>24</td>
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</tr>
<tr>
<td>Vector Routing Tables</td>
<td>NA/5</td>
<td>5</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td><strong>CallVisor ASAI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Station Control Association</td>
<td>N/A</td>
<td>250</td>
<td>2,000</td>
<td>6,000</td>
</tr>
<tr>
<td>Call Controllers per Call</td>
<td>N/A</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Call Monitors per Call</td>
<td>N/A</td>
<td>14</td>
<td>14</td>
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<tr>
<td>Station Controllers per Station</td>
<td>N/A</td>
<td>2</td>
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<tr>
<td>Maximum Simultaneous Call Classifications</td>
<td>N/A</td>
<td>40</td>
<td>40</td>
<td>400</td>
</tr>
<tr>
<td>Number of CallVisor ASAI Links (Open and Proprietary)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>N/A</td>
<td>4</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Notification Requests (Monitors)</td>
<td>N/A</td>
<td>50</td>
<td>170</td>
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<tr>
<td>Simultaneous Active Call Controlled Calls</td>
<td>N/A</td>
<td>75</td>
<td>300</td>
<td>3,000</td>
</tr>
<tr>
<td>Switch to Adjunct Associations (Routing)</td>
<td>N/A</td>
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<td>127</td>
<td>127</td>
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<tr>
<td>Number of Open MultiQuest Billing Requests</td>
<td>N/A</td>
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<td>100</td>
<td>1,000</td>
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<tr>
<td>Maximum Calls With Send DTMF Active</td>
<td>N/A</td>
<td>16</td>
<td>16</td>
<td>32</td>
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<tr>
<td>Selected Listen - Disconnect Paths</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>LAN Gateway Circuit Pack Maximum Links</td>
<td>N/A</td>
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<td>4</td>
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<tr>
<td><strong>Conference Parties</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simultaneous 3-way Conference Calls&lt;sup&gt;3&lt;/sup&gt;</td>
<td>161</td>
<td>161</td>
<td>483</td>
<td>7,084</td>
</tr>
<tr>
<td>Simultaneous 6-way Conference Calls&lt;sup&gt;4&lt;/sup&gt;</td>
<td>80</td>
<td>80</td>
<td>240</td>
<td>3,520</td>
</tr>
</tbody>
</table>

---

1. Measured limits depend on the CMS release used.
2. Proprietary, exists in G3V3 only.
3. Simultaneous 3-way Conference Call = (483 / 3)* number PNs.
4. Simultaneous 6-way Conference Call = (483 / 6)* number PNs.
### Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
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</thead>
<tbody>
<tr>
<td><strong>Data Parameters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administered Connections</td>
<td>NA/24</td>
<td>24</td>
<td>128</td>
<td>128</td>
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<tr>
<td>Alphanumeric Dialing</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Entries</td>
<td>50</td>
<td>50</td>
<td>200</td>
<td>1,250</td>
</tr>
<tr>
<td>Characters per Entry</td>
<td>22</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>PRI Endpoints (PE)</td>
<td>NA/25</td>
<td>25</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Access Endpoints (Number of Trunks)</td>
<td>50/100</td>
<td>100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td><strong>Digital Data Endpoints</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DID LDNs</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>EAS Agent Login IDs¹</td>
<td>NA/450</td>
<td>450</td>
<td>1,500</td>
<td>10,000</td>
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<tr>
<td>Extensions</td>
<td>700</td>
<td>700</td>
<td>3,500</td>
<td>36,065</td>
</tr>
<tr>
<td>Extension Number Portability²</td>
<td>NA/240</td>
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<td>10,000</td>
<td>50,000</td>
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<td>Feature Dial Access Codes</td>
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<td>77</td>
<td>77</td>
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<td>Number of Access Codes</td>
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<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Number of Digits</td>
<td>1-4</td>
<td>1-4</td>
<td>1-4</td>
<td>1-4</td>
</tr>
<tr>
<td>Integrated Directory Entries³</td>
<td>407</td>
<td>407</td>
<td>2,416</td>
<td>25,028</td>
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<tr>
<td>Maximum Extension Size</td>
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<td>5</td>
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</tr>
<tr>
<td>Minimum Extension Size</td>
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<td>1</td>
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<td>Miscellaneous Extensions⁴</td>
<td>150</td>
<td>150</td>
<td>900</td>
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<tr>
<td><strong>Names</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>Number of Names⁵</td>
<td>648/664</td>
<td>664</td>
<td>4,215</td>
<td>36,511</td>
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<tr>
<td>Number of Characters in a Name</td>
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<td>15</td>
<td>15</td>
<td>15</td>
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<tr>
<td>Non-DID LDNs</td>
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<td>50</td>
<td>50</td>
<td>666</td>
</tr>
<tr>
<td>Prefix Extensions</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1. Login IDs count against the “Extensions” switch capacity.
2. These numbers are Uniform Dialing Plan (UDP) entries.
4. Used for PCOL groups, common shared extensions, access endpoints, administered TSCs, code calling IDs, LDNs, hunt groups, announcements, and TEGs.
5. The Number of Names = number of stations + attendant consoles + trunk groups + digital data endpoints + miscellaneous extensions.
Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
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<tbody>
<tr>
<td>Dial Plan (Continued)</td>
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<tr>
<td>Trunk Dial Access Codes</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Number of Access Codes</td>
<td>49/65</td>
<td>65</td>
<td>317</td>
<td>884</td>
</tr>
<tr>
<td>Number of Digits</td>
<td>1-4</td>
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<td>1-4</td>
<td>1-4</td>
</tr>
<tr>
<td>Do Not Disturb (DND)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DND Requests per System</td>
<td>400</td>
<td>400</td>
<td>2,400</td>
<td>25,000</td>
</tr>
<tr>
<td>Simultaneous Display Requests</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>30</td>
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<tr>
<td>Expert Agent Selection (EAS)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill Groups</td>
<td>NA/24</td>
<td>24</td>
<td>99</td>
<td>255</td>
</tr>
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<td>VDN Skill Preferences</td>
<td>NA/3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Maximum Skills a Call Can Simultaneously Queue to</td>
<td>NA/3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Agent Login IDs</td>
<td>NA/450</td>
<td>450</td>
<td>1,500</td>
<td>10,000</td>
</tr>
<tr>
<td>Maximum Skills per Agent</td>
<td>NA/4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Maximum Agents that can be Logged-In</td>
<td>NA/37</td>
<td>37</td>
<td>125</td>
<td>1,300</td>
</tr>
<tr>
<td>When Each Has 4 Skills Assigned</td>
<td>NA/150</td>
<td>150</td>
<td>500</td>
<td>5,200</td>
</tr>
<tr>
<td>When Each Has 1 Skill Assigned</td>
<td>NA/150</td>
<td>150</td>
<td>500</td>
<td>5,200</td>
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<tr>
<td>Facility Busy Indicators</td>
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<td>Buttons per Tracked Resource</td>
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<td>Number of Indicators (Station and Trunk Groups)</td>
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<td>450</td>
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<td>Hunt Groups</td>
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<td>Announcements per Group</td>
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<td>Announcements per System</td>
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<td>256</td>
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<td>Groups$^1$</td>
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<td>99</td>
<td>255</td>
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<td>Group Members per Group</td>
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<td>150</td>
<td>200</td>
<td>999</td>
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<tr>
<td>Group Members per System</td>
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<td>150</td>
<td>500</td>
<td>5,200</td>
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<tr>
<td>Queue Slots per Group</td>
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<td>200</td>
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<td>1,000</td>
<td>10,500</td>
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</tbody>
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1. All references to Hospitality Parameter Reduction on the Customer Option form have been removed from the Capacities Tables.
Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3V4 AB/PBP</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
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<tbody>
<tr>
<td>Intercom Translation Table (ICOM)</td>
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</tr>
<tr>
<td>Automatic/Manual and Dial</td>
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</tr>
<tr>
<td>ICOM groups per system</td>
<td>10</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Auto/Manual</td>
<td>10</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Dial</td>
<td>10</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Members per ICOM group</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Auto</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Dial</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Members per System</td>
<td>320</td>
<td>320</td>
<td>1,024</td>
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<tr>
<td>Intercom Translation Table (ICOM)</td>
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<tr>
<td>Automatic/Manual and Dial</td>
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<tr>
<td>ICOM groups per system</td>
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<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Auto/Manual</td>
<td>10</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Dial</td>
<td>10</td>
<td>10</td>
<td>32</td>
</tr>
<tr>
<td>Members per ICOM group</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Auto</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Dial</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Members per System</td>
<td>320</td>
<td>320</td>
<td>1,024</td>
</tr>
</tbody>
</table>

| Last Number Dialed                        |             |           |       |
| Entries per System¹                        | 482         | 482       | 3,216 | 32,518 |
| Number of Digits                           | 24          | 24        | 24    | 24    |

| Leave Word Calling (Switch-Based)²        |             |           |       |
| Messages Stored                            | 650         | 650       | 2,000 | 6,000  |
| Messages per User                          | 125         | 125       | 125   | 125    |
| Remote Message Waiting Indicators         |             |           |       |
| Per Extension                              | 80          | 80        | 80    | 80     |
| Per System                                 | 240         | 240       | 240   | 1,250  |
| Simultaneous Message Retrievers           | 60          | 60        | 60    | 400    |
| System-Wide Message Retrievers            | 10          | 10        | 10    | 10     |

| Malicious Call Trace                       |             |           |       |
| Maximum Simultaneous Traces               | 16          | 16        | 16    | 16     |

| MLDN                                       |             |           |       |
| Via Direct Inward Dialing                  | 8           | 8         | 8     | 20     |
| Via Direct Inward Dialing with Tenant Partition | 20      | 20        | 20    | 100    |
| Via CO                                     | 99          | 99        | 99    | 99     |

| Modem Pool Groups                          |             |           |       |
| Mode 2/Analog                               |             |           |       |
| Group Members per System                    | 64          | 64        | 160   | 2,016  |
| Number of Groups                           | 2           | 2         | 5     | 63     |
| Members per Group                          | 32          | 32        | 32    | 32     |

1. The Last Number Dialed Entries = Stations + Digital Data Endpoints + Attendant Consoles.
2. Leave Word Calling is available in the ABP only if the Voice Mail Option is purchased.
1. The actual limit in the software is 63, but due to performance considerations the recommended number of DCS Nodes is 20.
2. These are node number addresses.
3. Only port slots are included in this count. For example, there are 100 port slots per MCC EPN cabinet. One slot in the cabinet is already dedicated for the Tone/Clock board. Other service circuits may be required that would further reduce the number of port slots available. In G3r and G3si carriers, the service slot may be equipped with service boards that do not require tip and ring connections.

### Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
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<tbody>
<tr>
<td>Networking</td>
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</tr>
<tr>
<td>CAS Nodes</td>
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<td>99</td>
</tr>
<tr>
<td>DCS Nodes(^1)</td>
<td>NA/20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>BX.25</td>
<td>NA/20</td>
<td>20</td>
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<tr>
<td>ISDN PRI</td>
<td>NA/20</td>
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<td>20</td>
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<td>Hybrid</td>
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<td>20</td>
<td>20</td>
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<td>ENP Nodes(^2)</td>
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<td>Paging</td>
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<td></td>
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<tr>
<td>Code Calling IDs</td>
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<tr>
<td>Loudspeaker Zones</td>
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<td>9</td>
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<tr>
<td>Partitions</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Attendant Group</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>27</td>
</tr>
<tr>
<td>Ext. Partition Group</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Extension Partition</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Tenant Partition</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>Personal CO Lines (PCOL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCOL Appearances</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>PCOL Lines (Trunk Groups)</td>
<td>15</td>
<td>15</td>
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<td>200</td>
</tr>
<tr>
<td>PCOL Trunks Per Trunk Group</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Port Circuit Pack Slots(^3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per Expansion Port Network (EPN)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCC Standard Reliability</td>
<td>N/A</td>
<td>N/A</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>SCC Standard Reliability</td>
<td>N/A</td>
<td>N/A</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>Small Cabinet Standard Reliability (Upgrade only)</td>
<td>N/A</td>
<td>N/A</td>
<td>39</td>
<td>39</td>
</tr>
</tbody>
</table>

\(^1\) These are node number addresses.
\(^2\) Only port slots are included in this count. For example, there are 100 port slots per MCC EPN cabinet. One slot in the cabinet is already dedicated for the Tone/Clock board. Other service circuits may be required that would further reduce the number of port slots available. In G3r and G3si carriers, the service slot may be equipped with service boards that do not require tip and ring connections.
Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Port Circuit Pack Slots (Continued)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per Processor Port Network (PPN)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCC Standard Reliability</td>
<td>N//A</td>
<td>N/A</td>
<td>89</td>
<td>80</td>
</tr>
<tr>
<td>SCC Standard Reliability</td>
<td>NA</td>
<td>N/A</td>
<td>64</td>
<td>NA</td>
</tr>
<tr>
<td>ESCC Standard Reliability</td>
<td>N/A</td>
<td>70</td>
<td>70</td>
<td>NA</td>
</tr>
<tr>
<td>CSCC Standard Reliability</td>
<td>10</td>
<td>N/A</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Recorded Announcements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog and Auxiliary Trunk Announcements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog and Auxiliary Trunk Queue Slots per Announcement</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Analog &amp; Auxiliary Trunk Queue Slots per System</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Calls Connected per Announcement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary Trunk</td>
<td>50</td>
<td>50</td>
<td>150</td>
<td>1,000</td>
</tr>
<tr>
<td>Analog Port</td>
<td>50</td>
<td>50</td>
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<td>1,000</td>
</tr>
<tr>
<td><strong>Integrated Announcements</strong></td>
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<td></td>
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<tr>
<td>Integrated Announcement Circuit Packs</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>10</td>
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<tr>
<td>Channels Connected per Integrated Announcement Circuit Pack</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Calls Connected per Integrated Announcement</td>
<td>25</td>
<td>25</td>
<td>50</td>
<td>1,000</td>
</tr>
<tr>
<td>Integrated Announcement Recording Time (Minutes:Seconds)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 KB recording</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
<td>8:32</td>
</tr>
<tr>
<td>32 KB recording</td>
<td>4:16</td>
<td>4:16</td>
<td>4:16</td>
<td>4:16</td>
</tr>
<tr>
<td>64 KB recording</td>
<td>2:8</td>
<td>2:8</td>
<td>2:8</td>
<td>2:8</td>
</tr>
<tr>
<td>Integrated Queue Slots per System</td>
<td>25</td>
<td>25</td>
<td>50</td>
<td>4,000</td>
</tr>
<tr>
<td>Total Recorded Announcements</td>
<td>128</td>
<td>128</td>
<td>128</td>
<td>256</td>
</tr>
</tbody>
</table>

1. The G3r has been resized to 4000 queue slots for the 10 boards maximum (only 1,000 is needed for one board), since common pool architecture requires a greater number of total queue slots.
1. 241 simultaneous circuit-switched calls per port network, except for G3vS and G3si with 180 and G3r with 7,712 (limited by number of call records supported).
2. G3V4 uses TN744 Call Classifier for basic TTR usage as well as call prompting/call classification/MFC. Also, the TN2182 Tone/Clock/Detector is used for multiple tone detection functions. The number of TN748, TN420, or TN744 boards is limited only by the number of available slots. The number of TN2182 boards is limited. There is a single limit on the total number of tone receiver (classifier) ports for the system: TN748/TN420 have 4 ports for TTR use, TN748/TN420 have 2 ports for GPTD use, TN744 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use, and TN2182 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use.

Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4 ABP/PBP</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System Administration</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Logins</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Administrable History File Entries</td>
<td>50</td>
<td>50</td>
<td>500</td>
<td>1,250</td>
</tr>
<tr>
<td>Simultaneous Administration Command</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Simultaneous Maintenance Command</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Simultaneous SM Sessions</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Printer Queue Size</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td><strong>Speech Synthesis Circuit Packs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channels per Speech Circuit Pack</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>40</td>
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<tr>
<td><strong>Terminating Extension Groups (TEG)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEGs</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Users That May Share a TEG</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Time Slots</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simultaneous Circuit-Switched Calls¹</td>
<td>180</td>
<td>180</td>
<td>723</td>
<td>7,712</td>
</tr>
<tr>
<td>Total Slots</td>
<td>512</td>
<td>512</td>
<td>1,536</td>
<td>22,528</td>
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<tr>
<td>Time Slots for Voice &amp; Data</td>
<td>483</td>
<td>483</td>
<td>1,449</td>
<td>21,208</td>
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<tr>
<td>Time Slots per Port Network</td>
<td>512</td>
<td>512</td>
<td>512</td>
<td>512</td>
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<tr>
<td><strong>Tone Classifiers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tone Receivers (General)²</td>
<td>80</td>
<td>200</td>
<td>200</td>
<td>840</td>
</tr>
<tr>
<td>Call Classifier Boards</td>
<td>N/A</td>
<td>N/A</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Classifiers / Prompting TTRs</td>
<td>N/A</td>
<td>N/A</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Tone Detector Boards</td>
<td>N/A</td>
<td>N/A</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>General Purpose Tone Detectors</td>
<td>N/A</td>
<td>N/A</td>
<td>NA</td>
<td>NA</td>
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<tr>
<td>Touch-Tone Receivers</td>
<td>N/A</td>
<td>N/A</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>TTR Queue Size</td>
<td>4</td>
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<tr>
<td>Prompting TTR Queue Size</td>
<td>NA/80</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
</tbody>
</table>

¹. 241 simultaneous circuit-switched calls per port network, except for G3vS and G3si with 180 and G3r with 7,712 (limited by number of call records supported).
². G3V4 uses TN744 Call Classifier for basic TTR usage as well as call prompting/call classification/MFC. Also, the TN2182 Tone/Clock/Detector is used for multiple tone detection functions. The number of TN748, TN420, or TN744 boards is limited only by the number of available slots. The number of TN2182 boards is limited. There is a single limit on the total number of tone receiver (classifier) ports for the system: TN748/TN420 have 4 ports for TTR use, TN748/TN420 have 2 ports for GPTD use, TN744 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use, and TN2182 has 8 ports for call prompting/call classification/MFC/TTR/GPTD use.
1. Only one Processor Interface (PI) circuit pack is supported in G3vs (CSCC) and G3s (ESCC) configurations, therefore a total of 4 physical links (used for BX.25 or PRI) are available. PRI interface via the PI is not available in Germany. PRI interface via the Packet Controller is used.

2. PRI interface via the Packet Controller is not available on G3vs. Therefore, PRI is not available on G3vs in Germany. Other Countries must use the PI when they have the G3vs configuration.

3. All references to Hospitality Parameter Reduction on the Customer Option form have been removed from the Capacities Tables.

Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4</th>
<th>G3siV4</th>
<th>G3siV4 +m</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trunks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DS1 Circuit Packs</td>
<td>8</td>
<td>8</td>
<td>30</td>
<td>166</td>
</tr>
<tr>
<td>Queue Slots for Trunks</td>
<td>32/64</td>
<td>64</td>
<td>198</td>
<td>1,332</td>
</tr>
<tr>
<td>PRI Interfaces via PI</td>
<td>NA/4</td>
<td>4</td>
<td>8</td>
<td>NA</td>
</tr>
<tr>
<td>PRI Interfaces via PACCON²</td>
<td>N/A</td>
<td>8</td>
<td>30</td>
<td>NA</td>
</tr>
<tr>
<td>PRI Interfaces via PKTINT</td>
<td>N/A</td>
<td>N/A</td>
<td>NA</td>
<td>166</td>
</tr>
<tr>
<td>PRI Temporary Signaling Connections</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSCs in System</td>
<td>NA/164</td>
<td>164</td>
<td>656</td>
<td>4,256</td>
</tr>
<tr>
<td>Call Associated TSCs</td>
<td>NA/100</td>
<td>100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>Non-Call Associated TSCs</td>
<td>NA/64</td>
<td>64</td>
<td>256</td>
<td>256</td>
</tr>
<tr>
<td>Administered TSCs</td>
<td>NA/64</td>
<td>64</td>
<td>128</td>
<td>128</td>
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<tr>
<td>Ringback Queue Slots</td>
<td>32/64</td>
<td>64</td>
<td>198</td>
<td>1,332</td>
</tr>
<tr>
<td>Total PRI Interfaces</td>
<td>NA/4</td>
<td>8</td>
<td>30</td>
<td>166</td>
</tr>
<tr>
<td>Trunk Groups Hourly Measurements</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>75</td>
</tr>
<tr>
<td>Trunk Groups in the System</td>
<td>16/32</td>
<td>32</td>
<td>99</td>
<td>666</td>
</tr>
<tr>
<td>Trunk Members in a Trunk Group</td>
<td>50</td>
<td>99</td>
<td>99</td>
<td>255</td>
</tr>
<tr>
<td>Trunks in System (Including Remote Access³)</td>
<td>50/100</td>
<td>100</td>
<td>400</td>
<td>4,000</td>
</tr>
<tr>
<td>Measured Trunks in System</td>
<td>50</td>
<td>100</td>
<td>400</td>
<td>4,000</td>
</tr>
</tbody>
</table>

1. Only one Processor Interface (PI) circuit pack is supported in G3vs (CSCC) and G3s (ESCC) configurations, therefore a total of 4 physical links (used for BX.25 or PRI) are available. PRI interface via the PI is not available in Germany. PRI interface via the Packet Controller is used.

2. PRI interface via the Packet Controller is not available on G3vs. Therefore, PRI is not available on G3vs in Germany. Other Countries must use the PI when they have the G3vs configuration.

3. All references to Hospitality Parameter Reduction on the Customer Option form have been removed from the Capacities Tables.
1. The following items detract from the total number of available “Stations” on a given switch:
   — Analog Music-On-Hold
   — Attendants
   — Modern Pool Conversion Resources
   — TAAS Port
   — Stations (Digital, Display, BRI, etc.)
   — Analog Announcements
   — Analog External Alarm Port
   — Agent Login IDs
   — ACD Agents

2. All BRI stations can be display stations (G3vs does not support BRI).

### Table A-5. Maximum System Parameters for G3V4 Release 3.0 — continued

<table>
<thead>
<tr>
<th>ITEM</th>
<th>G3vsV4</th>
<th>ABP/PBP</th>
<th>G3siV4</th>
<th>+m</th>
<th>G3rV4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voice Terminals[^1]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associated Data Modules (DTDMs)</td>
<td>75</td>
<td>75</td>
<td>800</td>
<td>7,500</td>
<td></td>
</tr>
<tr>
<td>BRI Stations[^2]</td>
<td>NA</td>
<td>50</td>
<td>1,000</td>
<td>7,000</td>
<td></td>
</tr>
<tr>
<td>Digital Stations</td>
<td>400</td>
<td>400</td>
<td>2,400</td>
<td>25,000</td>
<td></td>
</tr>
<tr>
<td>Display Stations</td>
<td>400</td>
<td>400</td>
<td>2,400</td>
<td>25,000</td>
<td></td>
</tr>
<tr>
<td>Stations</td>
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<td>400</td>
<td>2,400</td>
<td>25,000</td>
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</tr>
<tr>
<td>Station Button Capacity (K Units)</td>
<td>102.8</td>
<td>102.8</td>
<td>700.8</td>
<td>5,260</td>
<td></td>
</tr>
<tr>
<td>VuStats</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measured Agents or Login IDs</td>
<td>75</td>
<td>75</td>
<td>400</td>
<td>2,000</td>
<td></td>
</tr>
<tr>
<td>Measured Splits</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>Measured Trunk Groups</td>
<td>16/32</td>
<td>16/32</td>
<td>32</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Measured VDNs</td>
<td>12/24</td>
<td>12/24</td>
<td>99</td>
<td>512</td>
<td></td>
</tr>
<tr>
<td>Reporting Periods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervals</td>
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<td>25</td>
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</tr>
<tr>
<td>Days</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Display Formats</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
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</tr>
<tr>
<td>Simultaneous Updating Displays</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>500</td>
<td></td>
</tr>
</tbody>
</table>

[^1]: The following items detract from the total number of available “Stations” on a given switch:
[^2]: All BRI stations can be display stations (G3vs does not support BRI).
References

The following is a list of DEFINITY® Communications System Generic 3 documents, including a brief description of each document.

To order copies, refer to the address and telephone number on the inside cover of this document. For additional DEFINITY® Communications System documents, refer to the GBCS Publications Catalog, 555-000-010, available from the AT&T Customer Information Center.

Basic

The following are basic documents for the DEFINITY® Communications System.

DEFINY Communications System Generic 3 Feature Description, Issue 2  555-230-204

Provides comprehensive technical descriptions of system features and parameters. Includes the applications and benefits, feature interactions, administration requirements, hardware and software requirements, and a brief discussion of data communications and private networking configurations.
DEFINITY Communications System Generic 3 Version 4 Implementation, Issue 1

DEFINITY Communications System Generic 3 V2/V3 Implementation, Issue 1 Addendum 1 and Addendum 2

Provides step-by-step procedures for preparing the hardcopy forms that correspond to the screens and are required to implement the features, functions, and services of the system. Includes procedures for completing a communications survey. Includes an initial set of blank forms (555-230-655B, 555-230-653B).

DEFINITY Communications System Generic 3 Version 4 Implementation Blank Forms, Issue 1

DEFINITY Communications System Generic 3 V2/V3 Implementation Blank Forms, Issue 1

Provides additional blank hardcopy forms that correspond to the screens that are required to implement the features, functions, and services of the system.

Copies of these forms are automatically included with the DEFINITY Communications System Generic 3 Version 4 Implementation, Issue 1, 555-230-655 or DEFINITY Communications System Generic 3 V2/V3 Implementation, Issue 1, 555-230-653. Use this order number to purchase additional forms.

DEFINITY Communications System Generic 3 System Description and Specifications, Issue 3

Provides a technical description of the systems and is intended for service personnel, sales personnel, and customers who need a comprehensive overview of the system. Includes descriptions of hardware, software features, technical specifications, environment requirements, maintenance requirements, and illustration of components.
**DEFINITY Communications System Generic 3**

*Version 4 Traffic Reports, Issue 2*

Provides detailed descriptions of all the measurement, status, and security reports available in the system and is intended for administrators who validate traffic reports and evaluate system performance. This document was titled *System Reports* for earlier systems. Includes corrective actions for potential problems.

**DEFINITY Communications System Generic 1**

*and Generic 3 Installation and Test, Issue 5*

Provides descriptions of the procedures for installing and testing the system’s common equipment and adjuncts. Includes setup procedures for the system management terminal, power and grounding requirements, and testing steps. Includes compete details on system wiring. Provides both domestic and international information.

**DEFINITY Communications System Generic 3**

*Installation for Single-Carrier Cabinets, Issue 1*

555-230-894 UK English  
555-230-895 German  
555-230-896 French  
555-230-897 Spanish  
555-230-900 Chinese

Provides procedures and information for hardware installation and initial testing of the DEFINITY Communications System Generic 3 Single-Carrier Cabinets only. The UK version is shipped with all Single-Carrier Cabinet systems in the United States. Some languages may not be available until a future date.

**DEFINITY Communications System Generic 3**

*Version 1.1 - Version 4 Upgrades and Additions, Issue 2*

Provides procedures for an installation technician to convert an existing DEFINITY Communications System Generic 1, Generic 2, Generic 3 Version 1, Generic 3 Version 2, Generic 3 Version 3, or System 75 R1V3 to Generic 3 Version 4. Included are upgrade considerations, lists of required hardware, and step-by-step upgrade procedures. Also included are procedures to add control carriers, switch node carriers, port carriers, circuit packs, auxiliary cabinets, and other equipment.
Provides procedures for an installation technician to convert an existing
DEFINITY Communications System Generic 3 Version 1, Generic 3 Version 2,
Generic 3 Version 3, to Generic 3 Version 4. Included are upgrade
considerations, lists of required hardware, and step-by-step upgrade
procedures. Also included are procedures to add control carriers, switch node
carriers, port carriers, circuit packs, auxiliary cabinets, and other equipment.

Provides procedures for an installation technician to convert an existing
DEFINITY Communications System Generic 3r Version 1, Generic 3r Version 2,
Generic 3r Version 3, to Generic 3r Version 4. Included are upgrade
considerations, lists of required hardware, and step-by-step upgrade
procedures. Also included are procedures to add control carriers, switch node
carriers, port carriers, circuit packs, auxiliary cabinets, and other equipment.

Provide detailed descriptions of the procedures for monitoring, testing, and
maintaining the systems. Included are maintenance commands, step-by-step
trouble-clearing procedures, the procedures for using all tests, and explanations
of the system's error codes.

Provides a detailed overview of the system including descriptions of many of the
major features, applications, hardware, system capabilities, and the AT&T
support provided with the system. This document reflects Generic 3 Version 2
software, but still contains relevant information.
DEFINITY Communications System Generic 3
Planning and Configuration, Issue 2

Provides step-by-step procedures for the account team in determining the customer’s equipment and hardware requirements to configure a system according to the customer specifications. Includes detailed requirements and block diagrams. This document reflects Generic 3 Version 2 software, but still contains relevant information.

GBCS Products Security Handbook, Issue 4

Provides information about the risks of telecommunications fraud and measures for addressing those risks and preventing unauthorized use of GBCS products. This document is intended for telecommunications managers, console operators, and security organizations within companies.

DEFINITY Communications System and System 75 and System 85 Terminals and Adjuncts Reference, Issue 7

Provides descriptions of the peripheral equipment that can be used with System 75, System 85, and DEFINITY Communications System. This document is intended for customers and AT&T account teams for selecting the correct peripherals to accompany a system.

DEFINITY Communications System Generic 1 and Generic 3 Voice Terminal Operations, Issue 1

Provides detailed operating instructions for system features on each type of voice terminal. Included are definitions of voice features and user requirements.

DEFINITY Communications System Generic 1, Generic 3, and System 75 Voice Terminal Guide Builder, Issue 1

Provides capability to produce laser-printed documentation for specific voice terminals. The software is supported by a comprehensive user’s guide and on-line help. This product requires a 386 PC, minimum of 6 Mbytes disk space, minimum of 4 Mbytes RAM, a printer supported by Microsoft GDI printer drive, and Microsoft Windows 3.1 or higher. A mouse is recommended.
Call Center

The following list of documents are Call-Center specific. Refer also to the basic DEFINITY Communications System documents.

**DEFINITY Communications System Generic 3 Call Vectoring/Expert Agent Selection (EAS) Guide, Issue 4**

Provides information on how to write, use, and troubleshoot vectors, which are command sequences that process telephone calls in an Automatic Call Distribution (ACD) environment. It is provided in two parts: tutorial and reference.

The tutorial provides step-by-step procedures for writing and implementing basic call vector scripts.

The reference includes detailed descriptions of the call vectoring features, vector management, vector administration, adjunct routing, troubleshooting, and interactions with management information systems (including the Call Management System).

**DEFINITY Communications System Generic 3 Basic Call Management System (BCMS) Operations, Issue 4**

Provides detailed instructions on how to generate reports and manage the system and is intended for telecommunications managers who wish to use BCMS reports and system managers responsible for maintaining the system. If Issue 4 is unavailable, use Issue 3.
The following list of documents are network-specific. Refer also to the basic DEFINITY Communications System documents.

**DEFINITY Communications System Generic 3**  
*Wideband Technical Reference, Issue 1*  
555-230-230

Provides detailed information regarding the Wideband Switching feature for the system and is intended for users and technical support personnel involved with the installation, administration, and operation of this feature. This feature provides high speed end-to-end connectivity between customer endpoints where dedicated facilities are not economical or appropriate. The primary function is to support high speed video-conferencing and data applications.

**DEFINITY Communications System Generic 2.2**  
*and Generic 3 Version 2 DS1/CEPT1/ISDN PRI Reference Manual, Issue 1*  
555-025-107

Provides a detailed technical description of digital trunks in the DEFINITY Communications Systems. This includes trunks conforming to the DS1 standard (1.544 Mbps) and the CEPT1 standard and all other methods of signalling, including bit-oriented signalling as well as ISDN-PRI signalling. This document includes background information on these topics, information on how digital trunk capabilities have been designed into the DEFINITY Communications System and information for field personnel and customers on how to provision and administer digital trunk capabilities and features. Provides both domestic and international information.

### Application Specific

The following list of documents are application-specific. Refer also to the basic DEFINITY Communications System documents.

**DEFINITY Communications System Generic 2 to Generic 3 Version 4 Transition Reference, Issue 1**  
555-230-636

Provides detailed descriptions of the difference between features and administrative forms for systems Generic 2 to Generic 3 Version 4 and is intended for AT&T personnel and customers involved in planning upgrades and migrations from an older system. Includes descriptions of new administrative commands.
DEFINITY Communications System Generic 3 555-230-222
CallVisor ASAI Planning Guide, Issue 4

Provides procedures and directions for the account team and customer personnel for effectively planning and implementing the CallVisor Adjunct/Switch Application Interface (ASAI) PBX-Host environment. The CallVisor ASAI is a communications interface that allows adjunct processors to access switch features and to control switch calls. It is implemented using an Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI). Included are hardware and software requirements.

DEFINITY Communications System Generic 3 555-230-221
CallVisor ASAI Protocol Reference, Issue 4

Provides detailed layer 3 protocol information regarding the CallVisor Adjunct/Switch Application Interface (ASAI) for the systems and is intended for the library or driver programmer of an adjunct processor to create the library of commands used by the applications programmers. Describes the ISDN message, facility information elements, and information elements.

DEFINITY Communications System Generic 3 555-230-220
CallVisor ASAI Technical Reference, Issue 4

Provides detailed information regarding the CallVisor Adjunct/Switch Application Interface (ASAI) for the systems and is intended for the application designer responsible for building and/or programming custom applications and features.

DEFINITY Communications System Installation, Administration, and Maintenance of CallVisor ASAI Over the DEFINITY G3 LAN Gateway, Issue 1 555-230-223

Provides procedures for installation, administration, and maintenance of the CallVisor Adjunct/Switch Application Interface (ASAI) Ethernet application and is intended for system administrators, telecommunications managers, Management Information System (MIS) managers, LAN managers, and AT&T personnel. The ASAI-Ethernet application provides ASAI functionality using 10Base-T Ethernet rather than BRI as a transport media.
Provides information for use by agents after they have completed ACD training. Includes descriptions of ACD features and the procedures for using them.

DEFINITY Communications System Generic 3
Automatic Call Distribution Supervisor Instructions, Issue 3

Provides information for use by supervisors after they have completed ACD training. Includes descriptions of ACD features and the procedures for using them.

DEFINITY Communications System Generic 1 and Generic 3 Console Operation, Issue 2

Provides operating instructions for the attendant console. Included are descriptions of the console control keys and functions, call-handling procedures, basic system troubleshooting information, and routine maintenance procedures.

DEFINITY Communications System Console Operations Quick Reference, Issue 1

Provides operating instructions for the attendant console. Included are descriptions of the console control keys and functions, call handling, basic system-troubleshooting information, and routine maintenance procedures. Some languages may not be available until a future date.
An Introduction to DEFINITY Communications System Generic 3 Hospitality Services, Issue 1

Provides an overview of the features available for use by the lodging and health industries to improve their property management and to provide assistance to their employees and clients. Included are brief definitions of many of the system features, descriptions of the hardware, planning considerations, and list of the system capabilities.

DEFINITY Communications System Generic 1 and Generic 3 User’s Guide Hospitality Operations, Issue 2

Provides step-by-step procedures for using the features available for use by the lodging and health industries to improve their property management and to provide assistance to their employees and clients. Includes detailed descriptions of reports.
## Abbreviations

### A

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>Archangel</td>
</tr>
<tr>
<td>AAR</td>
<td>Automatic Alternate Routing</td>
</tr>
<tr>
<td>AC</td>
<td>Alternating Current</td>
</tr>
<tr>
<td>ACA</td>
<td>Automatic Circuit Assurance</td>
</tr>
<tr>
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</tr>
<tr>
<td>ACD</td>
<td>Automatic Call Distribution</td>
</tr>
<tr>
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</tr>
<tr>
<td>ACW</td>
<td>After Call Work</td>
</tr>
<tr>
<td>AD</td>
<td>Abbreviated Dialing</td>
</tr>
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<td>ADAP</td>
<td>AUDIX Data Acquisition Package</td>
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<td>Asynchronous Data Module</td>
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<td>Asynchronous Data Unit</td>
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<td>Access Endpoint</td>
</tr>
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<td>Asynchronous Interface Module</td>
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<td>AIOD</td>
<td>Automatic Identification of Outward Dialing</td>
</tr>
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</tr>
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<td>Analog</td>
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<td>AP</td>
<td>Applications Processor</td>
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<td>APLT</td>
<td>Advanced Private Line Termination</td>
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<td>Adjunct Switch Applications Interface</td>
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<td>ASCII</td>
<td>American Standard Code for Information Interchange</td>
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<td>ATB</td>
<td>All Trunks Busy</td>
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<td>ATD</td>
<td>Attention Dial</td>
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<td>AUDIX</td>
<td>Audio Information Exchange</td>
</tr>
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<td>AUX</td>
<td>Auxiliary</td>
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<tr>
<td>AVD</td>
<td>Alternate Voice/Data</td>
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<tr>
<td>AWOH</td>
<td>Administration Without Hardware</td>
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<tr>
<td>AWT</td>
<td>Average Work Time</td>
</tr>
</tbody>
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### B

<table>
<thead>
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</tr>
</thead>
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<tr>
<td>BCC</td>
<td>Bearer Capability Class</td>
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<td>BCMS</td>
<td>Basic Call Management System</td>
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<td>BCT</td>
<td>Business Communications Terminal</td>
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<td>BHCC</td>
<td>Busy Hour Call Completions</td>
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<td>BLF</td>
<td>Busy Lamp Field</td>
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Abbreviations

BN
Billing Number

BOS
Bit Oriented Signaling

BPN
Billed Party Number

BPS
Bits Per Second

BRI
Basic Rate Interface

BTU
British Thermal Unit

C

CA-TSC
Call-Associated Temporary Signaling Connection

CACR
Cancellation of Authorization Code Request

CAG
Coverage Answer Group

CAMA
Centralized Automatic Message Accounting

CARR-POW
Carrier Port and Power Unit for AC Powered Systems

CAS
Centralized Attendant Service, Call Accounting System

CBC
Call-By-Call and Coupled Bonding Conductor

CC
Country Code

CCIS
Common Channel Interoffice Signaling

CCITT
Consultative Committee for International Telephone and Telegraph

CCMS
Common Channel Message Set

CCS
Centum (Hundred) Call Seconds

CCSA
Common Control Switching Arrangement

CDM
Channel Division Multiplexing

CDOS
Customer-Dialed and Operator Serviced

CDR
Call Detail Recording

CDRP
Call Detail Record Poller

CDRR
Call Detail Recording and Reporting

CDRU
Call Detail Recording Utilities

CEM
Channel Expansion Multiplexing

CEPT1
European Conference of Postal and Telecommunications Rate 1

Cl
Clock Input

cm
Centimeter

CM
Connection Manager

CMDR
Centralized Message Detail Recording

CMS
Call Management System

CO
Central Office

COR
Class of Restriction

COS
Class of Service

CP
Circuit Pack

CPE
Customer Premises Equipment

CPN
Called-Party Number
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPN/BN</td>
<td>Calling Party Number/Billing Number</td>
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<td>CPTR</td>
<td>Call Progress Tone Receiver</td>
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<tr>
<td>CRC</td>
<td>Cyclical Redundancy Checking</td>
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<td>CSA</td>
<td>Canadian Safety Association</td>
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<td>CSCN</td>
<td>Center Stage Control Network</td>
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<td>CSD</td>
<td>Customer Service Document</td>
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<td>CSM</td>
<td>Centralized System Management</td>
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<td>CSS</td>
<td>Center Stage Switch</td>
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<td>Customer Services Support Organization</td>
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<td>Channel Service Unit</td>
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<td>CTS</td>
<td>Clear to Send</td>
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<td>CWC</td>
<td>Call Work Codes</td>
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<td>DDC</td>
<td>Direct Department Calling</td>
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<td>DDD</td>
<td>Direct Distance Dialed</td>
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<tr>
<td>DID</td>
<td>Direct Inward Dialed</td>
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<td>DIOD</td>
<td>Direct Inward and Outward Dialing</td>
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<tr>
<td>DIVA</td>
<td>Data In/Voice Answer</td>
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<td>DLC</td>
<td>Data Line Circuit</td>
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<td>DLDM</td>
<td>Data Line Data Module</td>
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<tr>
<td>DMI</td>
<td>Digital Multiplexed Interface</td>
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<td>DND</td>
<td>Do Not Disturb</td>
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<td>DNIS</td>
<td>Dialed Number Identification Service</td>
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<td>DOD</td>
<td>Direct Outward Dialing</td>
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<td>DOSS</td>
<td>Delivery Operations Support System</td>
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<td>DOT</td>
<td>Duplication Option Terminal</td>
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<td>DPM</td>
<td>Dial Plan Manager</td>
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<td>DPR</td>
<td>Dual Port RAM</td>
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<td>DS1</td>
<td>Digital Signal Level 1</td>
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<td>DS1C</td>
<td>Digital Signal Level-1 Converter</td>
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<td>Digital Signal Interface</td>
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<td>DSU</td>
<td>Data Service Unit</td>
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<td>DTDM</td>
<td>Digital Terminal Data Module</td>
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<tr>
<td>Abbreviation</td>
<td>Definition</td>
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<tr>
<td>DTE</td>
<td>Data Terminal Equipment</td>
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<td>DTGS</td>
<td>Direct Trunk Group Select</td>
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<td>DTMF</td>
<td>Dual-Tone Multi-Frequency</td>
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<td>DTS</td>
<td>Disk Tape System</td>
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<td>DXS</td>
<td>Direct Extension Selection</td>
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<td>ETA</td>
<td>Extended Trunk Access</td>
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<td>ETN</td>
<td>Electronic Tandem Network</td>
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<td>ETSI</td>
<td>European Telecommunications Standards Institute</td>
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<td>F</td>
<td>Feature Access Code</td>
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<td>FAC</td>
<td>Feature Access Code</td>
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<td>FAS</td>
<td>Facility-Associated Signaling</td>
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<td>FAT</td>
<td>Facility Access Trunk</td>
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<td>FAX</td>
<td>Facsimile</td>
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<td>FCC</td>
<td>Federal Communications Commission</td>
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<td>FEAC</td>
<td>Forced Entry of Account Codes</td>
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<td>FEP</td>
<td>Front End Processor</td>
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<td>FIC</td>
<td>Facility Interface Codes</td>
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<td>FNPA</td>
<td>Foreign Numbering-Plan Area</td>
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<td>FRL</td>
<td>Facilities Restriction Level</td>
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<td>FX</td>
<td>Foreign Exchange</td>
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<td>G3-MA</td>
<td>Generic 3 Management Applications</td>
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<td>G3-MT</td>
<td>Generic 3 Management Terminal</td>
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</tbody>
</table>
Abbreviations

G3r
Generic 3, RISC (Reduced Instruction Set Computer)

GM
Group Manager

GPTTR
General-Purpose Tone Receiver

GRS
Generalized Route Selection

IE
Information Element

IMT
Intermachine Trunk

in
Inch

INADS
Initialization and Administration System

INS
ISDN Network Service

INWATS
Inward Wide Area Telephone Service

IO
Information Outlet

ISDN
Integrated Services Digital Network

ISN
Information Systems Network

ISO
International Standards Organization

ISV
Independent Software Vendor

ITP
Installation Test Procedures

ITU
International Telecommunications Union

IXC
Interexchange Carrier Code

KHz
Kilohertz

kbps
Kilobits Per Second

kbyte
Kilobyte

kg
Kilogram
Abbreviations

L

LAP-D
Link Access Procedure on the D-channel

LAPD
Link Access Procedure Data

LATA
Local Access and Transport Area

lb
Pound

LDN
Listed Directory Number

LDS
Long-Distance Service

LEC
Local Exchange Carrier

LED
Light-Emitting Diode

LINL
Local Indirect Neighbor Link

LSU
Local Storage Unit

LWC
Leave Word Calling

M

M-Bus
Memory Bus

MA-UUI
Message Associated User-to-User Signaling

MADU
Modular Asynchronous Data Unit

MAP
Maintenance Action Process

Mbps
Megabits Per Second

MCC
Multi-Carrier Cabinet

MCS
Message Center Service

MDF
Main Distribution Frame

MDM
Modular Data Module

MDR
Message Detail Record

MEM
Memory

MET
Multibutton Electronic Telephone

MHz
Megahertz

MIM
Management Information Message

MIS
Management Information System

MISCID
Miscellaneous Identification

MMS
Material Management Services

MOS
Message-Oriented Signaling

MPDM
Modular Processor Data Module

MS
Message Server

ms
Millisecond

MS/T
Main Satellite/Tributary

MSA
Message Servicing Adjunct

MSG
Message Service

MSM
Modular System Management

MSS
Mass Storage System
Abbreviations

MSSNET
Mass Storage/Network Control

MT
Management Terminal

MTDM
Modular Trunk Data Module

MTP
Maintenance Tape Processor

MTT
Multi-Tasking Terminal

MWL
Message Waiting Lamp

Mbps
Megabits Per Second

Mbyte
Megabytes

NN
National Number

NPA
Numbering Plan Area

NPE
Network Processing Element

NQC
Number of Queued Calls

NSE
Night Service Extension

NSU
Network Sharing Unit

NXX
Public Network Office Code

N

NANP
North American Numbering Plan

NAU
Network Access Unit

NCA/TSC
Non-Call Associate/Temporary Signaling Connection

NCOSS
Network Control Operations Support Center

NCSO
National Customer Support Organization

NEC
National Engineering Center

NEMA
National Electrical Manufacturer's Association

NFAS
Non-Facility Associated Signaling

NID
Network Inward Dialing

NM
Network Management

OA
Operator Assisted

OCM
Outbound Call Management

ONS
On-Premises Station

OPS
Off-Premises Station

OQT
Oldest Queued Time

OSHA
Occupational Safety and Health Act

OSI
Open Systems Interconnect

OSS
Operations Support System

OSSI
Operations Support System Interface

OTQ
Outgoing Trunk Queuing
### Abbreviations

**P**

- **PACCON**
  - Packet Control
- **PAD**
  - Packet Assembly/Disassembly
- **PBX**
  - Private Branch Exchange
- **PC**
  - Personal Computer
- **PCM**
  - Pulse Code Modulated
- **PCOL**
  - Personal Central Office Line
- **PCOLG**
  - Personal Central Office Line Group
- **PCS**
  - Permanent Switched Calls
- **PDM**
  - Processor Data Module
- **PDS**
  - Premises Distribution System
- **PE**
  - Processing Element
- **PEC**
  - Price Element Codes
- **PEI**
  - Processor Element Interchange
- **PGATE**
  - Packet Gateway
- **PGN**
  - Partitioned Group Number
- **PI**
  - Processor Interface
- **PIB**
  - Processor Interface Board
- **PIDB**
  - Product Image Database
- **PKTINT**
  - Packet Interface
- **PL**
  - Private Line
- **PLS**
  - Premises Lightwave System
- **PMS**
  - Property Management System
- **PN**
  - Port Network
- **PNA**
  - Private Network Access
- **POP**
  - Point Of Presence
- **PPN**
  - Processor Port Network
- **PRI**
  - Primary Rate Interface
- **PROC**
  - Processor
- **PSC**
  - Premises Service Consultant
- **PSDN**
  - Packet Switch Public Data Network
- **PT**
  - Personal Terminal
- **PTC**
  - Positive Temperature Coefficient
- **PTT**
  - Postal Telephone and Telegraph

**R**

- **RAM**
  - Random Access Memory
- **RBS**
  - Robbed-Bit Signaling
- **RCL**
  - Restricted Call List
- **RFP**
  - Request For Proposal
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHNPA</td>
<td>Remote Home Numbering Plan Area</td>
</tr>
<tr>
<td>RINL</td>
<td>Remote Indirect Neighbor Link</td>
</tr>
<tr>
<td>RISC</td>
<td>Reduced Instruction Set Computer</td>
</tr>
<tr>
<td>RLT</td>
<td>Release Link Trunk</td>
</tr>
<tr>
<td>RMATS</td>
<td>Remote Maintenance, Administration, and Traffic System</td>
</tr>
<tr>
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<td>Route Number Index (Private Network Office Code)</td>
</tr>
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<td>ROM</td>
<td>Read-Only Memory</td>
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<td>RPN</td>
<td>Routing Plan Number</td>
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<td>RS-232C</td>
<td>Recommended Standard 232C</td>
</tr>
<tr>
<td>RS-449</td>
<td>Recommended Standard 449</td>
</tr>
<tr>
<td>RSC</td>
<td>Regional Support Center</td>
</tr>
<tr>
<td>SCOTCH</td>
<td>Switch Conferencing for TDM Bus in Concentration Highway</td>
</tr>
<tr>
<td>SCSI</td>
<td>Small Computer System Interface</td>
</tr>
<tr>
<td>SDDN</td>
<td>Software Defined Data Network</td>
</tr>
<tr>
<td>SDI</td>
<td>Switched Digital International</td>
</tr>
<tr>
<td>SDLC</td>
<td>Synchronous Data Link Control</td>
</tr>
<tr>
<td>SDN</td>
<td>Software Defined Network</td>
</tr>
<tr>
<td>SID</td>
<td>Station Identification Number</td>
</tr>
<tr>
<td>SIT</td>
<td>Special Information Tones</td>
</tr>
<tr>
<td>SMDR</td>
<td>Station Message Detail Recording</td>
</tr>
<tr>
<td>SN</td>
<td>Switch Node</td>
</tr>
<tr>
<td>SNA</td>
<td>Systems Network Architecture</td>
</tr>
<tr>
<td>SNC</td>
<td>Switch Node Clock</td>
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<tr>
<td>SNI</td>
<td>Switch Node Interface</td>
</tr>
<tr>
<td>SPE</td>
<td>Switch Processing Element</td>
</tr>
<tr>
<td>SPID</td>
<td>Service Profile Identifier</td>
</tr>
<tr>
<td>SSI</td>
<td>Standard Serial Interface</td>
</tr>
<tr>
<td>SSM</td>
<td>Single Site Management</td>
</tr>
<tr>
<td>SSV</td>
<td>Station Service</td>
</tr>
<tr>
<td>ST3</td>
<td>Stratum 3 Clock Board</td>
</tr>
<tr>
<td>STARLAN</td>
<td>Star-Based Local Area Network</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Definition</td>
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<tr>
<td>--------------</td>
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</tr>
<tr>
<td>SVN</td>
<td>Security Violation Notification</td>
</tr>
<tr>
<td>SXS</td>
<td>Step-by-Step</td>
</tr>
<tr>
<td>SYSAM</td>
<td>System Access and Administration</td>
</tr>
<tr>
<td>TTY</td>
<td>Teletypewriter</td>
</tr>
<tr>
<td>TAAS</td>
<td>Trunk Answer from Any Station</td>
</tr>
<tr>
<td>TABS</td>
<td>Telemetry Asynchronous Block Serial</td>
</tr>
<tr>
<td>TAC</td>
<td>Trunk Access Code</td>
</tr>
<tr>
<td>TC</td>
<td>Technical Consultant</td>
</tr>
<tr>
<td>TCM</td>
<td>Traveling Class Mark</td>
</tr>
<tr>
<td>TDM</td>
<td>Time-Division Multiplex(ing)</td>
</tr>
<tr>
<td>TDR</td>
<td>Time of Day Routing</td>
</tr>
<tr>
<td>TEG</td>
<td>Terminating Extension Group</td>
</tr>
<tr>
<td>TEI</td>
<td>Terminal Endpoint Identifier</td>
</tr>
<tr>
<td>TOD</td>
<td>Time of Day</td>
</tr>
<tr>
<td>TOP</td>
<td>Task Oriented Protocol</td>
</tr>
<tr>
<td>TSC</td>
<td>Technical Service Center</td>
</tr>
<tr>
<td>TTR</td>
<td>Touch-Tone Receiver</td>
</tr>
<tr>
<td>TTT</td>
<td>Terminating Trunk Transmission</td>
</tr>
<tr>
<td>TTTN</td>
<td>Tandem Tie Trunk Network</td>
</tr>
<tr>
<td>U</td>
<td>Usage Allocation Plan</td>
</tr>
<tr>
<td>UART</td>
<td>Universal Asynchronous Transmitter</td>
</tr>
<tr>
<td>UCD</td>
<td>Uniform Call Distribution</td>
</tr>
<tr>
<td>UCL</td>
<td>Unrestricted Call List</td>
</tr>
<tr>
<td>UDP</td>
<td>Uniform Dial Plan</td>
</tr>
<tr>
<td>UL</td>
<td>Underwriter Laboratories</td>
</tr>
<tr>
<td>UM</td>
<td>User Manager</td>
</tr>
<tr>
<td>UNMA</td>
<td>Unified Network Management Architecture</td>
</tr>
<tr>
<td>UNP</td>
<td>Uniform Numbering Plan</td>
</tr>
<tr>
<td>UPS</td>
<td>Uninterruptible Power Supply</td>
</tr>
<tr>
<td>USOP</td>
<td>User Service Order Profile</td>
</tr>
<tr>
<td>UUCP</td>
<td>UNIX-to-UNIX Communications Protocol</td>
</tr>
<tr>
<td>UUI</td>
<td>User-to-user information</td>
</tr>
<tr>
<td>V</td>
<td>Value Added Reseller</td>
</tr>
<tr>
<td>VDN</td>
<td>Vector Directory Number</td>
</tr>
</tbody>
</table>
Abbreviations

**VIS**
Voice Information System

**VLSI**
Very Large Scale Integration

**VM**
Voltmeter

**VNI**
Virtual Nodepoint Identifier

---

**W**

**WATS**
Wide Area Telecommunications Service

**WCC**
World Class Core

**WSA**
Waiting Session Accept

---

**Z**

**ZCS**
Zero Code Suppression
Glossary

Numerics

3B2 Message Server
An AT&T software application that combines voice and data messaging services for voice terminal users whose extensions are connected to a G3 switch.

800 service
A service in the United States that allows incoming calls from a certain area or areas to an assigned number for a flat-rate charge based on usage.

A

abandoned call
An incoming call, where the caller hangs up before being answered.

access code
A 1-, 2-, or 3-digit dial code used to activate or cancel a feature, or access an outgoing trunk. The star (*) and pound (#) can be used as the first digit of an access code.

access endpoint
Either a nonsignaling channel on a DS1 interface or a nonsignaling port on an analog tie trunk circuit pack that is assigned a unique extension.

access tie trunk
A trunk that connects a main communications system with a tandem communications system in an electronic tandem network (ETN). An access tie trunk can also be used to connect a system or tandem to a serving office or service node. Also called “access trunk.”

ACCUNET
A trademarked name for a family of digital services offered by AT&T in the USA.

ACD
See Automatic Call Distribution. ACD also refers to the "Work State" indicating that the agent is on an ACD call.

ACD split (or split)
A group of extensions that are staffed by agents trained to handle a certain type of incoming call. Valid split numbers range from 1 through 99. Each number identifies a unique grouping of ACD agent positions. ACD split is also referred to as an ACD hunt group or hunt group.

ACD work modes
See work modes.

active-notification association
A “link” that is initiated by the adjunct allowing it to receive Event Reports for a specific switch entity, for example, an outgoing call. This association is initiated by the adjunct via the Event Notification Request capability.
active-notification call
A call for which Event Reports are being sent over an active-notification association (communication channel) to the adjunct. Sometimes referred to as a monitored call.

active notification domains
Domains are VDNs and ACD split extensions for which Event Notification has been requested.

adjunct-control association
A relationship initiated by an application via the Third Party Make Call, the Third Party Take Control or Domain (Station) Control capabilities to set up calls and control calls already in progress.

adjunct-controlled calls
Include all the calls that can be controlled using an adjunct-control association. These calls must have been originated via the Third Party Make Call or Domain (Station) Control capabilities or must have been taken control of via the Third Party Take Control or Domain (Station) Control capabilities.

adjunct-controlled splits
ACD splits administered to be under adjunct control. Agents logged into such splits must do all telephony and ACD login and/or logout and change work mode functions through the adjunct (except for auto-available adjunct controlled splits, whose agents may not be logged in and/or logged out or have their work modes changed).

adjunct-monitored calls
Include all the adjunct-controlled calls and the active-notification calls. In addition it includes calls which provide event reporting over domain-control associations.

application
An application refers to an adjunct entity that requests and receives ASAI services or capabilities. One or more applications can reside on a single adjunct. However, the switch cannot distinguish among several applications residing on the same adjunct and treats the adjunct, and all resident applications, as a single application. The terms application and adjunct are used interchangeably throughout this document.

after call work (ACW) mode
In this mode, agents are unavailable to receive ACD calls. Agents should enter the ACW mode to perform ACD-related activities such as filling out a form after an ACD call. If agents are in the Manual-In mode and disconnect from an ACD call, they automatically enter the ACW mode. Agents who normally use Auto-In mode can enter the ACW state by depressing the ACW button while on a call.

adjunct
A processor that does one or more tasks for another processor and that is optional in the configuration of the other processor.

adjunct-switch application interface (ASAI)
An AT&T recommendation for interfacing adjuncts and communications systems, based on the CCITT Q.932 specification for layer 3.

administer
To access and change parameters associated with the services or features of a system.

Administered Connection (AC)
Administered Connection is a feature that allows the switch to automatically establish and maintain end-to-end connections between access endpoints (trunks) and/or data endpoints (data modules).
administration terminal
A terminal used to administer and maintain a system. See also terminal.

Administration Without Hardware (AWOH)
Provides the ability to administer ports without the need for the associated terminals or other hardware to be physically present.

agent (or ACD agent)
An answering position who receives calls that are directed to a split. A member of an ACD hunt group (ACD split).

agents in multiple splits
An agent may be logged into more than one split (three maximum). If, while logged into more than one split, the agent (1) answers an ACD call, (2) is in ACW mode for any split, or (3) makes or receives a direct extension call, the switch will not distribute additional ACD calls to that agent.

agent report
Provides historical traffic information for internally measured agents.

American National Standard Code for Information Interchange
See ASCII.

analog
The representation of information by means of continuously variable physical quantities such as amplitude, frequency, and phase.

analog data
Data that is transmitted over a digital facility in analog (pulse code modulation) form. The data must pass through a modem either at both ends or at a modem pool at the distant end.

analog telephone
A telephone that receives acoustic voice signals and sends analog electrical signals along the telephone line. Analog telephones are usually served by a single wire pair (tip and ring). The model-2500 telephone set is a typical example of an analog telephone.

analog-to-digital converter (ADC)
A device that converts an analog signal to digital form. See also digital-to-analog converter.

angel
A microprocessor located on each port card in a processor port network (PPN). The angel uses the control-channel message set (CCMS) to manage communications between the port card and the archangel on the controlling switch processing element (SPE). The angel also monitors the status of other microprocessors on a port card and maintains error counters and thresholds. See also archangel.

answerback code
An assigned number used to respond to a page from a code-calling or loudspeaker-paging system, or to retrieve a parked call.

appearance
A software process that is associated with an extension and whose purpose is to supervise a call. Also called “call appearance,” “line appearance,” and “occurrence.”

applications processor
A minicomputer used with several user-controlled applications such as traffic analysis and electronic documentation.

architecture
The organizational structure of a system, including hardware and/or software.
ASCII (American National Standard Code for Information Interchange)
The standard code, using a coded character set consisting of 7-bit coded characters (eight bits, including parity check), used for information interchange among data processing systems, data communications systems, and associated equipment. The ASCII set consists of control characters and graphic characters.

asynchronous data transmission
A method of transmitting data in which each character is preceded by a start bit and followed by a stop bit, thus permitting data characters to be transmitted at irregular intervals. This type transmission is advantageous when transmission is not regular (characters typed at a keyboard). Also called “asynchronous transmission.” See also synchronous data transmission.

association
An association is a communication channel between the adjunct and switch for messaging purposes. An active association is one which applies to an existing call on the switch or to an extension on the call.

Asynchronous Data Unit (ADU)
A Data Communications Equipment (DCE) type device that allows direct connection between RS-232C equipment and a digital switch.

attendant
A person at a console on a customer’s premises who provides personalized service for incoming callers and voice-services users by performing switching and signaling operations. See also attendant console.

attendant console
The workstation used by an attendant. The attendant console allows the attendant to originate a call, answer an incoming call, transfer a call to another extension or trunk, put a call on hold, and remove a call from hold. Attendants using the console can also manage and monitor some system operations. Also called “console.” See also attendant.

Audio Information Exchange (AUDIX)
A fully integrated voice-mail system that can be used with a variety of communications systems to provide call-history data, such as subscriber identification and reason for redirection.

auto-in trunk groups
Those trunk groups where the CO processes all of the digits for the incoming call. Whenever the switch determines that the CO has seized a trunk from an Auto-In trunk group, it automatically (without processing any digits) connects the trunk to the destination. The destination will typically be an ACD split where (if there are no agents available) the call will go into a queue in which the callers wait to be answered in the order in which they arrived.

auto-in work mode
One of four agent work modes. The work mode where an agent indicates, to the system, that the agent is ready to process another call as soon as the current call is completed. Specifically, if an agent disconnects from an ACD call while in Auto-in Work Mode, then that agent immediately becomes available to receive another ACD call. See Manual-In Work Mode for a contrast.

Automatic Call Distribution (ACD) split
Calls of a similar type are distributed among agents.

automatic trunk
A trunk that does not require the sending or receiving of addressing information because the destination is predetermined. A request for service on the trunk, called a “seizure,” is sufficient to route the call. The normal destination of an automatic trunk is the communications-system attendant group. Also called “automatic incoming trunk” and “automatic tie trunk.”
automatic restoration
A service that restores disrupted connections between access endpoints (nonsignaling trunks) and data endpoints (devices that connect the switch to data terminal and/or communications equipment). This restoration is done within seconds of a service disruption so that critical data applications can remain operational.

auxiliary equipment
Equipment used for optional system features, such as Loudspeaker Paging and Music-on-Hold.

auxiliary trunk
A trunk used to connect auxiliary equipment, such as radio-paging equipment, to a communications system.

aux-work mode
In this mode, agents are unavailable to receive ACD calls. Agents should enter aux-work mode when involved in non-ACD activities such as taking a break, going to lunch, or placing an outgoing call.

When agents log in, they are automatically placed in the Aux-Work mode. They can then use the Auto-In or Manual-In feature to make themselves available to answer the first call.

Also, the last available agent in a split cannot enter the aux-work mode if any ACD calls are remaining in the queue. If the last available agent attempts to enter aux-work mode, the following occurs: (1) Calls in the queue are routed to the agent until the queue is empty (2) If the last available agent has an aux-work button, the light next to the button flashes until all calls in the queue are answered. When the last call is answered, the light next to the button goes on steadily, and the agent then enters aux-work mode.

B

bandwidth
The difference, expressed in Hertz, between the defined highest and lowest frequencies in a frequency range.

barrier code
A security code used with the Remote Access feature to prevent unauthorized access to the system.

baud
In telecommunications applications, a unit of transmission speed equal to the number of signal events per second. See also bit rate and bits per second.

BCC
The Bearer Capability Class (BCC) identifies the type of a call, for example, voice and different types of data. Determination of BCC is based on the call originator’s characteristics for non-ISDN endpoints and on the Bearer Capability and Low-Layer Compatibility Information Elements of an ISDN endpoint.

Current BCCs are:
0: Voice-grade data and voice
1: DMI Mode 1, 56 kbps data transmission
2: DMI Mode 2, synchronous/asynchronous data transmission up to 19.2 kbps
3: DMI Mode 3, 64 kbps circuit/packet data transmission
bit (binary digit)
One unit of information in binary notation having two possible states or values, 0 or 1.

bits per second (bps)
The number of binary units of information that are transmitted or received per second. See also baud and bit rate.

bit rate
The speed at which bits are transmitted, usually expressed in bits per second. Also called “data rate.” See also baud and bits per second.

bridge (bridging)
The appearance of a voice terminal’s extension at one or more other voice terminals.

BRI
The ISDN Basic Rate Interface specification.

bridged appearance
A call appearance on a voice terminal that matches a call appearance on another voice terminal for the duration of a call.

buffer
(1) In hardware, a circuit or component that isolates one electrical circuit from another. Typically, a buffer holds data from one circuit or process until another circuit or process is ready to accept the data. (2) In software, an area of memory used for temporary storage.

bus
A multiconductor electrical path used to transfer information over a common connection from any of several sources to any of several destinations.

business communications terminal (BCT)
An integrated digital data terminal used for business applications. A BCT can function via a digital terminal data module (DTDM) or a processor data module (PDM) as a special-purpose terminal for services provided by an applications processor (AP) or, as a terminal for data entry and retrieval.

BX.25
An AT&T version of the CCITT X.25 protocol for data communications. BX.25 adds a fourth level to the standard X.25 interface. This uppermost level combines levels 4, 5, and 6 of the International Standards Organization (ISO) reference model.

bypass tie trunks
A one-way, outgoing tie trunk from a tandem switch to a main switch in an electronic tandem network (ETN). Bypass tie trunks, provided in limited quantities, are used as a “last-choice” route when all trunks to another tandem switch are busy. Bypass tie trunks are used only if all applicable intertandem trunks are busy.

byte
A sequence of (usually eight) bits processed together.
C

cabinet
Housing for racks, shelves, or carriers that hold electronic equipment.

cable
The physical connection between two pieces of equipment (em for example, cable from a data
terminal to a modem (em or between a piece of equipment and a termination field (em for exam-
ple, circuit pack I/O cables.

cable connector
A cable connector is either a jack (female) or plug (male) on the end of a cable. A cable connec-
to connects wires on a cable to specific leads on telephone or data equipment.

call appearance, attendant console
Six buttons, labeled “a” through “f,” and used to originate, receive, and hold calls. Each button
has two lights to show the status of the call appearance.

call appearance, voice terminal
A button labeled with an extension number and used to place outgoing calls, receive incoming
calls, or hold calls. Two lights next to the button show the status of the call appearance or the sta-
tus of the call.

call control capabilities
Call control capabilities are all the capabilities (Third Party Selective Hold, Third Party Reconnect,
Third Party Merge) that can be used in either of the Third Party Call Control ASE (cluster) subsets:
Call Control and Domain Control.

call detail recording
A switch feature that utilizes software and hardware to record call data (same as CDRU).

call detail recording utility (CDRU)
Applications software that collects, stores, optionally filters, and outputs call detail records for
direct or polled output to peripheral devices.

call management system (CMS)
An application, running on an adjunct processor, that collects information from an Automatic Call
Distribution (ACD) unit. CMS enables customers to monitor and manage telemarketing centers by
generating reports on the status of agents, splits, trunks, trunk groups, vectors, and vector direc-
tory numbers (VDNs), and enables customers to partially administer the ACD feature for a com-
munications system.

call reference value (CRV)
An identifier present in ISDN messages that serves to associate a related sequence of messages.
In ASAL, the CRVs distinguish between associations.

call vector
A set of up to 15 vector commands to be performed for an incoming or internal call.

callback call
A call that is automatically returned to a voice terminal user who activated the Automatic Callback
or Ringback Queuing feature.

call-waiting ringback tone
A low-pitched tone identical to ringback tone except the tone decreases in the last 0.2-second (in
the United States). A call-waiting ringback tone notifies the attendant the Attendant Call Waiting
feature has been activated and the called user is aware of the waiting call. Tones in countries outside the United States may sound different.

call work code
A number, up to 16 digits, entered by Automatic Call Distribution (ACD) agents to record the occurrence of customer-defined events (such as account codes, social security numbers, or phone numbers) on ACD calls.

carrier
An enclosed shelf containing vertical slots that hold circuit packs.

carried load
The amount of traffic actually served by traffic-sensitive facilities during a given interval.

CCS or hundred call seconds
A unit of traffic measure that is used to determine usage. In order to determine usage for a facility, it is scanned every 100 seconds. If the facility is found busy, then it is assumed to have been busy for the entire scan interval. There are 3600 seconds per hour. The Roman numeral for 100 is the capital letter “C.” The abbreviation for call seconds is CS. Therefore, 100 call seconds is abbreviated as CCS. If a facility is busy for an entire hour, then it is said to have been busy for 36 CCS. See also [Erlang].

capability
A capability is either a request or indication of an operation. For example, a Third Party Make Call is a request for setting-up a call and an Event Report is an indication that an event has occurred.

capability groups
Capability groups are sets of capabilities, provisioned through switch administration, that can be requested by an application. Each capability group may contain capabilities from several capability groups. Capability groups are also referred to, in other documentation, as administration groups or Application Service Elements (ASEs). Capability groups denote association types. For example, Call Control is a type of association which allows certain functions (the ones in the capability group) to be performed over this type of association.

cause value
A Cause Value is returned in responses to requests or in event reports when a denial occurs or an unexpected condition is encountered. ASAI cause values fall into two “coding standards”: Coding Standard 0 includes any cause values that are part of AT&T and CCITT ISDN specifications, and, Coding standard 3 includes any other ASAI cause values. This document uses a notation for cause value where the coding standard for the cause is given first, then a slash, then the cause value. For example, CS0/100 is coding standard 0, cause value 100.

CCITT
CCITT (Comité Consultatif International Téléphonique et Télégraphique) is now called International Telecommunications Union (ITU). See this name for information.

center stage switch (CSS)
The central interface between the processor port network (PPN) and expansion port networks (EPNs) in a CSS-connected system.

central office (CO)
The location housing telephone switching equipment that provides local telephone service and access to toll facilities for long-distance calling.

central office (CO) codes
The first three digits of a 7-digit public network telephone number in the USA. CO codes are numbered from 200 through 999.
central office (CO) trunk
A telecommunications channel that provides access from the system to the public network through the local CO.

channel
The term channel is nonspecific and must be taken in context. Channel can refer to a circuit-switched call or a communications path for transmitting voice and/or data.

In wideband, a channel refers to all of the time slots necessary to support a call. For example, an H0-channel uses six 64 kbps time slots. This definition of channel is the same whether the time slots necessary to support the call are contiguous or noncontiguous.

Channel can also refer to a DS0 on a T1 or E1 facility not specifically associated with a logical circuit-switched call. In this context, a channel is analogous to a single trunk.

channel negotiation
Channel negotiation is the process by which the channel offered in the Channel Identification Information Element (CIIE) in the SETUP message is “negotiated” to be another channel acceptable to the switch receiving the SETUP message and ultimately to the switch that sent the SETUP. Negotiation is only attempted if the CIIE is encoded as Preferred. Channel negotiation is not attempted for wideband calls.

circuit
(1) An arrangement of electrical elements through which electric current flows, providing one or more specific functions. (2) A channel or transmission path between two or more points.

circuit pack
A card on which electrical circuits are printed, and integrated circuit (IC) chips and electrical components are installed. A circuit pack is installed in a switch carrier.

Class of Restriction (COR)
A feature that allows up to 64 classes of call-origination and call-termination restrictions for voice terminals, voice terminal groups, data modules, and trunk groups. See also Class of Service (COS).

Class of Service (COS)
A feature that uses a number (0 through 15) to specify if voice terminal users can activate the Automatic Callback, Call Forwarding (All Calls, Data Privacy, or Priority Calling features.

common control switching arrangement (CCSA)
A private telecommunications network using dedicated trunks and a shared switching center for interconnecting company locations.

communications system
The software-controlled processor complex that interprets dialing pulses, tones, and/or keyboard characters and makes the proper interconnections both within the system and external to the system. The communications system itself consists of a digital computer, software, storage device, and carriers with special hardware to perform the actual connections. A communications system provides voice and/or data communications services, including access to public and private networks, for telephones and data terminals on a customer’s premises. See also switch.

confirmation tone
A tone confirming that a feature activation, deactivation, or cancellation has been accepted.

connectivity
The connection of disparate devices within a single system.

console
See attendant console.
contiguous
Contiguous, which is a wideband term, refers to adjacent DS0s within one T1 or E1 facility or adjacent TDM or fiber time slots. Note that the first and last TDM bus, DS0, or fiber time slots are not considered contiguous (no wraparound). For an E1 facility with a D-channel, DS0s 15 and 17 are considered contiguous.

control cabinet
See control carrier.

control carrier
A carrier in a Multi-Carrier Cabinet that contains the switch processing element (SPE) circuit packs and, unlike a G3r control carrier, port circuit packs. Also called “control cabinet” in a single-carrier cabinet. See also switch processing element.

controlled station
A station that is being monitored and controlled via a domain-control association.

coverage answer group
A group of up to eight voice terminals that ring simultaneously when a call is redirected to it by Call Coverage. Any one of the group can answer the call.

coverage call
A call that is automatically redirected from the called party’s extension number to an alternate answering position when certain coverage criteria are met.

coverage path
The order in which calls are redirected to alternate answering positions.

coverage point
An extension or attendant group, vector directory number (VDN), or Automatic Call Distribution (ACD) split designated as an alternate answering position in a coverage path.

covering user
A person at a coverage point who answers a redirected call.

critical reliability system
A system that has the following duplicated items: control carriers, tone-clock circuit packs, expansion interface (EI) circuit packs, and cabling between port networks (PNs) and center stage switch (CSS) in a CSS-connected system. See also duplicated common control, duplicate processor-only system, and duplication.

D

data channel
A communications path between two points used to transmit digital signals.

data communications equipment (DCE)
The equipment (em usually a modem, data module, or packet assembler/disassembler (em on the network side of a communications link that provides the functions to make the binary serial data from the source or transmitter compatible with the communications channel.

data link
The configuration of physical facilities enabling end terminals to communicate directly with each other.
data module
An interconnection device between a Basic Rate Interface (BRI) or Digital Communications Protocol (DCP) interface of the switch and Data Terminal Equipment (DTE) or Data Communications Equipment (DCE).

data path
The end-to-end connection used for a data-communications link. A data path is the combination of all elements of an interprocessor communication in a distributed communications system (DCS).

data port
A point of access to a computer that uses trunks or lines for transmitting or receiving data.

data rate
See [bit rate].

data service unit (DSU)
A device designed to transmit digital data on transmission facilities.

data terminal
An input/output (I/O) device that has either switched or direct access to a host computer or to an applications processor (AP).

data terminal equipment (DTE)
Equipment consisting of the endpoints in a connection over a data circuit. For example, in a connection between a data terminal and a host, the terminal, the host, and their associated modems or data modules make up the DTE. DTE usually consists of the following functional units: control logic, buffer store, and one or more input or output devices or computers. DTE can contain error control, synchronization, and telephone-identification capabilities.

D-channel backup
D-channel backup is used with Non-Facility Associated Signaling (NFAS). With D-channel backup, a primary D-channel provides signaling for an NFAS D-channel group (two or more PRIs facilities). A second (redundant) D-channel, located on a separate PRI facility of the NFAS D-channel group is designated as backup for the D-channel. The failure of the primary D-channel causes an automatic transfer of call-control signaling to the backup D-channel. When this happens, the backup becomes the primary D-channel, and when the previous primary is returned to service it becomes the backup D-channel.

delay-dial trunk
A trunk that allows dialing directly into a communications system (em that is, the digits are received as they are dialed).

denying a request
Denying a Request is the same as sending a negative acknowledgement (NAK), and is done by sending a facility information element with a return error component (a cause value is also provided). It should not be confused with the “denial” event report which applies to calls.

designated voice terminal
The specific voice terminal to which calls, originally directed to a certain extension number, are redirected. Commonly used to mean the “forwarded-to” terminal when Call Forwarding All Calls is active.

dial-repeating tie trunk
A tie trunk that transmits called-party addressing information between two communications systems.
digit conversion
A process used to convert specific dialed numbers into other dialed numbers.

digital communications protocol (DCP)
An AT&T proprietary protocol used to transmit both digitized voice and digitized data over the same communications link. A DCP link is made up of two 64 kbps information (I) channels and one 8 kbps signaling (S) channel.

digital data endpoints
Digital data endpoints include devices such as the 510D terminal or the 515-type Business Communications Terminal (BCT).

digital multiplexed interface (DMI)
An interface that provides connectivity between a communications system and a host computer or between two communications systems using digital signal level-1 (DS1) 24th-channel signaling. DMI provides 23 64-kbps data channels and 1 common signaling channel over a twisted-pair connection. DMI is offered through two capabilities: bit-oriented signaling (DMI-BOS) and message-oriented signaling (DMI-MOS).

digital signal level 0 (DS0)
A single 64 kbps voice channel. A DS0 is a single 64 kbps channel in a T1 or E1 facility and consists of eight bits in a T1 or E1 frame every 125 micro-seconds.

digital terminal data module (DTDM)
An integrated or adjunct data module that shares with a digital telephone the same physical port for connection to a communications system. The function of a DTDM is similar to that of a processor data module (PDM) and modular processor data module (MPDM) in that it converts RS-232C signals to DCP signals.

digital-to-analog converter
A device that converts data in digital form to the corresponding analog signals. See also analog-to-digital converter.

digital transmission
A mode of transmission in which the information to be transmitted is first converted to digital form and then transmitted as a serial stream of pulses.

digital trunk
A circuit in that carries digital voice and/or digital data in a telecommunications channel.

dial-repeating trunks
A PBX tie trunk capable of handling PBX station signaling information without attendant assistance.

direct agent
A switch feature accessed via Adjunct Switch Applications Interface (ASAI) that allows a call to be placed in a split queue but routed only to a specific agent in that split. This allows a call to receive normal ACD call treatment (for example, announcements) and to be measured as an ACD call and ensuring a particular agent answers.

Direct Extension Selection (DXS)
A feature on an attendant console that allows an attendant direct access to voice terminals by pressing a group select button and a DXS button.

Direct Inward Dialing (DID)
Allows an incoming call from the public network (not FX or WATS) to reach a specific telephone without attendant assistance. DID calls to DID-restricted telephone lines are routed to an attendant or recorded announcement, depending on the option selected.
direct inward dialing (DID) trunk
An incoming trunk used for dialing directly from the public network into a communications system without help from the attendant.

disk drive
An electromechanical device that stores data on and retrieves data from one or more disks.

distributed communications system (DCS)
A network configuration linking two or more communications systems in such a way that selected features appear to operate as if the network were one system.

domain
Available domains are VDNs, ACD splits, and stations. The VDN domain is used for active-notification associations, the station domain is only used for the domain-control associations. The ACD-split domain is for active-notification associations and domain-control associations.

domain-control association
A Third Party Domain Control Request capability initiates a unique “CRV/link number” combination, which is referred to as a domain-control association.

domain-controlled split
A split for which Third Party Domain Control request has been accepted. A domain-controlled split provides an event report for logout.

domain-controlled station
A station for which Third_Party_Domain_Control request has been accepted. A domain-controlled station provides event reports for calls that are alerting, connected, or held at the station.

domain-controlled station on a call
A station active on a call providing event reports over one or two domain-control associations.

duplicated common control
Two processors ensuring continuous operation of a communications system. While one processor is on-line, the other functions as a backup. The backup processor goes on-line periodically or when a problem condition occurs.

duplication
The use of redundant components to improve availability. When a duplicated subsystem fails, its backup redundant system automatically takes over.

duplication option
A system option that duplicates the following:

a. Control carrier containing the Switch Processing Element (SPE)
b. Expansion Interface (EI) circuit packs in carriers
c. Fiber optic cabling between port networks (PNs)
d. Center Stage Switch (CSS) in a CSS-connected system

E1
A digital transmission standard that carries traffic at the rate of 2.048 Mbps. The E1 facility is divided into 32 channels (DS0s) of 64 kbps information numbered from 0 to 31. Channel 0 is
reserved for framing and synchronization information. When a D-channel is present, it occupies channel 16.

**ear and mouth (E & M) signaling**
Trunk supervisory signaling, used between two communications systems, whereby signaling information is transferred through two-state voltage conditions (on the E and M leads) for analog applications and through a single bit for digital applications.

**electronic tandem network (ETN)**
A tandem tie trunk network that has automatic call routing capabilities based on the number dialed and the most preferred route available at the time the call is placed. Each switch in the network is assigned a unique private network office code (RNX), and each voice terminal is assigned a unique extension number.

**Electronics Industries Association (EIA)**
A trade association of the electronics industry that establishes electrical and functional standards.

**emergency transfer**
If a major system failure occurs, the automatic transfer within a communications system of a predefined set of central office (CO) lines to a group of answering telephones with at least one telephone capable of making outgoing calls. The system operates in this mode until the failure is repaired and the system automatically returns to normal operation. Also called “power-failure transfer.”

**end-to-end signaling**
The transmission of touch-tone signals generated by dialing from a voice terminal user to remote computer equipment. A connection must first be established over an outgoing trunk from the calling party to the computer equipment. Then additional digits can be dialed to transmit information to be processed by the computer equipment.

**enhanced private-switched communications service (EPSCS)**
An analog private telecommunications network based on the No. 5 Crossbar and 1A ESS that provides advanced voice and data telecommunications services to companies with many locations.

**Erlang**
A unit of traffic intensity, or load, used to express the amount of traffic it takes to keep one facility busy for one hour. One Erlang is equal to 36 CCS. See also Hundred Call Seconds.

**expansion archangel (EAA)**
A network-control microprocessor located on an expansion interface (EI) port circuit pack in an expansion port network (EPN). The EA provides an interface between the EPN and its controlling switch processing element (SPE).

**expansion-archangel link (EAL)**
A link-access function on the D-channel (LAPD) logical link that exists between a switch processing element (SPE) and an expansion archangel (EA). The EAL carries control messages from the SPE to the EA and to port circuit packs in an expansion port network (EPN).

**expansion control cabinet**
See expansion control carrier.

**expansion control carrier**
A carrier in a Multi-Carrier Cabinet that contains extra port circuit packs and a maintenance interface. Also called “expansion control cabinet” in a single-carrier cabinet.

**expansion interface (EI)**
A port circuit pack in a port network (PN) that provides the interface between a PN’s time-division multiplex (TDM) bus and packet bus, and a fiber-optic link. The EI carries circuit-switched data,
packet-switched data, network control, timing control, and DS1 control. In addition, an EI in an expansion port network (EPN) communicates with the master maintenance circuit pack to provide the EPN’s environmental and alarm status to the switch processing element (SPE).

**expansion port network (EPN)**
A port network (PN) that is connected to the TDM bus and packet bus of a processor port network (PPN). Control is achieved by indirect connection of the EPN to the PPN via a port-network link (PNL). See also [port network](#).

**extension-in**
Extension-In (ExtIn) is the work state agents go into when they answer (receive) a non-ACD call. If the agent is in Manual-In or Auto-In and receives an extension-in call, it is recorded by CMS as an AUX-In call.

**extension-out**
Extension-Out (ExtOut) is the work state agents go into when they place (originate) a non-ACD call. If the agent is in Manual-In or Auto-In and places an extension-out call, it is recorded by CMS as an AUX-Out call.

**external measurements**
Refers to those ACD measurements that are made by the External CMS adjunct.

**extension number**
A 1- to 5-digit number by which calls are routed through a communications system or, with a Uniform Dial Plan (UDP) or main-satellite dialing plan, through a private network. Extension numbers are primarily used for telephones and data terminals but can also be used with specific features.

**external call**
A connection between a communications system user and a party on the public network or on another communications system in a private network.

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**F**

**facility**
A general term used for a telecommunications transmission pathway and associated equipment.

**facility associated signaling (FAS)**
Signaling in which a D-channel carries the signaling only for those channels on the same physical interface.

**feature**
A specifically defined function or service provided by the system.

**feature button**
A labeled button on a telephone or attendant console used to access a specific feature.

**fiber optics**
A technology using materials that transmit ultrawideband electromagnetic light-frequency ranges for high-capacity carrier systems.

**fixed**
Fixed is a trunk allocation term. In the fixed allocation scheme, the time slots necessary to support a wideband call are contiguous, and the first time slot is constrained to certain starting points.
flexible
Flexible is a trunk allocation term. The flexible allocation scheme allows the time slots of a wideband call to occupy noncontiguous positions within a single T1 or E1 facility.

floating
Floating is a trunk allocation term. In the floating allocation scheme, the time slots necessary to support a wideband call are contiguous, but the position of the first time slot is not fixed.

foreign exchange (FX)
A central office (CO) other than the one providing local access to the public telephone network.

foreign exchange trunk
A telecommunications channel that directly connects the system to a central office (CO) other than its local CO.

foreign numbering-plan area code (FNPAC)
An area code other than the local area code. The FNPAC must be dialed to call outside the local geographical area.

generalized route selection (GRS)
An enhancement to Automatic Alternate Routing/Automatic Route Selection (AAR/ARS) that performs routing based on call attributes, such as Bearer Capability Classes (BCCs), in addition to the address and facilities restriction level (FRL), thus facilitating a Uniform Dial Plan (UDP) that is independent of the type of call being placed.

glare
The simultaneous seizure of a two-way trunk by two communications systems, resulting in a standoff.

grade of service
The number of call attempts that fail to receive service immediately. Grade of service is also expressed as the quantity of all calls that are blocked or delayed.

ground-start trunk
A trunk on which, for outgoing calls, the system transmits a request for services to a distant switching system by grounding the trunk ring lead. To receive the digits of the called number, that system grounds the trunk tip lead. When the system detects this ground, the digits are sent.

handshaking logic
A format used to initiate a data connection between two data module devices.

H0
An ISDN information transfer rate for 384 kbps data defined by CCITT and ANSI standards.

H11
An ISDN information transfer rate for 1536 kbps data defined by CCITT and ANSI standards.
**H12**
An ISDN information transfer rate for 1920 kbps data defined by CCITT and ANSI standards.

**Hertz (Hz)**
A unit of frequency equal to one cycle per second.

**high reliability system**
A system having the following: two control carriers, duplicate expansion interface (EI) circuit packs in the PPN (in G3r with CSS), and duplicate switch node clock circuit packs in the switch node (SN) carriers. See also [duplicated common control, duplication, duplication option] and [critical reliability system].

**holding time**
The total length of time in minutes and seconds that a facility is used during a call.

**home numbering-plan area code**
The local area code. The area code does not have to be dialed to call numbers within the local geographical area.

**hop**
Nondirect communication between two switch communications interfaces (SCIs) whereby the SCI message passes automatically without intermediate processing through one or more intermediate SCIs.

**host computer**
A computer, connected to a network, that processes data from data-entry devices.

**hunt group**
A group of extensions that are assigned the Station Hunting feature so that a call to a busy extension will reroute to an idle extension in the group.

**I**

**immediate-start tie trunk**
A trunk on which, after making a connection with a distant switching system for an outgoing call, the system waits a nominal 65 ms before sending the digits of the called number. This allows time for the distant system to prepare to receive digits. On an incoming call, the system has less than 65 ms to prepare to receive the digits.

**information exchange**
The exchange of data between users of two different systems, such as the switch and a host computer, over a local area network (LAN).

**information systems network (ISN)**
A wide area network (WAN) and local area network (LAN) with an open architecture combining host computers, minicomputers, word processors, storage devices, PCs, high-speed printers, and nonintelligent terminals into a single packet-switching system.

**inside call**
A call placed from one telephone to another within the local communications system.

**Integrated Services Digital Network (ISDN)**
A public or private network that provides end-to-end digital communications for all services to which users have access by a limited set of standard multipurpose user-network interfaces defined by the CCITT. Through internationally accepted standard interfaces, ISDN provides digi-
nal circuit-switched or packet-switched communications within the network and links to other ISDNs to provide national and international digital communications. See also Integrated Services Digital Network Basic Rate Interface and Integrated Services Digital Network Primary Rate Interface.

Integrated Services Digital Network Basic Rate Interface (ISDN-BRI)
The interface between a communications system and terminal that includes two 64 kbps B-channels for transmitting voice or data and one 16 kbps D-channel for transmitting associated B-channel call control and out-of-band signaling information. ISDN-BRI also includes 48 kbps for transmitting framing and D-channel contention information, for a total interface speed of 192 kbps. ISDN-BRI serves ISDN terminals and digital terminals fitted with ISDN terminal adapters. See also Integrated Services Digital Network Primary Rate Interface.

Integrated Services Digital Network Primary Rate Interface (ISDN-PRI)
The interface between multiple communications systems that in North America includes 24 64 kbps channels, corresponding to the North American digital signal level-1 (DS1) standard rate of 1.544 Mbytes per second.

The most common arrangement of channels in ISDN-PRI is twenty three 64 kbps B-channels for transmitting voice and data and one 64 kbps D-channel for transmitting associated B-channel call control and out-of-band signaling information. Although with nonfacility-associated signaling (NFAS), ISDN-PRI can include 24 B-channels and no D-channel. See also Integrated Services Digital Network and Integrated Services Digital Network Basic Rate Interface.

intercept tone
An tone that indicates a dialing error or denial of the service requested.

interface
A common boundary between two systems or pieces of equipment.

internal call
A connection between two users within a system.

International Tele-communications Union (ITU)
Formerly known as International Telegraph and Telephone Consultative Committee (CCITT), ITU is an international organization that sets universal standards for data communications, including Integrated Services Digital Network (ISDN). ITU members are from telecommunications companies and organizations around the world. See also BX.25.

International Telegraph and Telephone Consultative Committee
See International Telecommunications Union (ITU).

interflow
Allows calls to forward to other splits on the same PBX or a different PBX using the Call Forward All Calls switch feature.

intraflow
Allows calls to be redirected to other splits on the same PBX on a conditional or unconditional basis using call coverage “busy,” “don’t answer,” or “all” criteria.

internal measurements
Refers to those BCMS measurements that are made by the system. ACD measurements that are made external to the system (via External CMS) are referred to as external measurements.

in-use lamp
A red light on a multiappearance voice terminal that is illuminated to show which call appearance will be selected when the handset is lifted or which call appearance is active when a user is off-hook.
ISDN Gateway (IG)
A feature allowing integration of the switch and a host-based telemarketing application via a link to a gateway adjunct. The gateway adjunct is a 3B-based product that notifies the host-based telemarketing application of call events.

ISDN trunk
A trunk administered for use with Integrated Services Digital Network primary rate interface (ISDN-PRI). Also called “ISDN facility.”

ISDN-PRI Terminal Adapter
A terminal adapter acts as interface between endpoint applications and an ISDN PRI facility. ISDN-PRI terminal adapters are currently available from other vendors and are primarily designed for video conferencing applications. Accordingly, currently available terminal adapters adapt the two pairs of video codec data (V.35) and dialing (RS-366) ports to an ISDN PRI facility.

light-emitting diode (LED)
A semiconductor device that produces light when voltage is applied. LEDs provide a visual indication of the operational status of hardware components, the results of maintenance tests, and the alarm status of circuit packs, and the activation of telephone features.

lightwave transceiver
Hardware that provides an interface to fiber-optic cable from port circuit packs and digital signal level-1 (DS1) converter circuit packs. Lightwave transceivers convert electrical signals to light signals and vice versa.

line
A transmission path between a communications system or central office (CO) switching system and a voice terminal or other terminal.

line port
The hardware that provides the access point to a communications system for each circuit associated with a telephone and/or data terminal.

link
A transmitter-receiver channel that connects two systems.

link-access procedure on the D-channel (LAPD)
A link-layer protocol on the Integrated Services Digital Network basic rate interface (ISDN-BRI) and primary rate interface (ISDN-PRI) data-link layer (level 2). LAPD provides data transfer between two devices, and error and flow control on multiple logical links. LAPD is used for signaling and low-speed packet data (X.25 and mode 3) on the signaling (D-) channel and for mode-3 data communications on a bearer (B-) channel.

local area network (LAN)
A networking arrangement designed for a limited geographical area. Generally, a LAN is limited in range to a maximum of 6.2 miles and provides high-speed carrier service with low error rates. Common configurations include daisy chain, star (including circuit-switched), ring, and bus.

logical link
The communications path between a processor and a basic rate interface (BRI) terminal.
loop-start trunk
A trunk on which, after establishing a connection with a distant switching system for an outgoing call, the system waits for a signal on the loop formed by the trunk leads before sending the digits of the called number.

main distribution frame
This device mounts to the wall inside the system equipment room. The main distribution frame (MDF) provides a connection point from the outside telephone lines, to the PBX switch, and to the inside telephone stations.

main-satellite-tributary
A private network configuration that can either stand alone or access an electronic tandem network (ETN). A "main" switch provides interconnection, via tie trunks, with one or more subtending switches, called "satellites"; all attendant positions for the main/satellite configuration; and access to and from the public network. To a user outside the complex, a main/satellite configuration appears as one switch, with one listed directory number (LDN). A "tributary" switch is connected to the main switch via tie trunks, but which has its own attendant positions and LDN.

maintenance
The activities involved in keeping a telecommunications system in proper working condition: the detection and isolation of software and hardware faults, and automatic and manual recovery from these faults.

management terminal
The terminal that is used by the system administrator to administer the switch. The terminal may also be used to access the BCMS feature.

major alarm
An indication of a failure that has caused critical degradation of service and requires immediate attention. Major alarms are automatically displayed on LEDs on the attendant console and maintenance or alarming circuit pack, logged to the alarm log, and reported to a remote maintenance facility, if applicable.

manual-in work mode
In this mode, agents automatically enter the ACW mode when they disconnect from an ACD call. However, in order to become available to receive another ACD call, they must then manually enter the Auto-In or Manual-In mode. See Auto-In Work Mode for a contrast.

memory
A device into which information can be copied and held, and from which the information can be obtained at a later time.

message center
An answering service that supplies agents to and stores messages for later retrieval.

message center agent
A member of a message center hunt group who takes and retrieves messages for voice terminal users.

minor alarm
An indication of a failure that could affect customer service. Minor alarms are automatically displayed on LEDs on the attendant console and maintenance or alarming circuit pack, sent to the alarm log, and reported to a remote maintenance facility, if applicable.
modem
A device that converts digital data signals to analog signals for transmission over telephone circuits. The analog signals are converted back to the original digital data signals by another modem at the other end of the circuit.

modem pooling
A capability that provides shared conversion resources (modems and data modules) for cost-effective access to analog facilities by data terminals. When needed, modem pooling inserts a conversion resource into the path of a data call. Modem pooling serves both outgoing and incoming calls.

modular processor data module (MPDM)
A processor data module (PDM) that can be configured to provide several kinds of interfaces (RS232C, RS449, and V.35) to customer-provided data terminal equipment (DTE). See also processor data module.

modular trunk data module (MTDM)
A trunk data module (TDM) that can be configured to provide several kinds of interfaces (RS232C, RS449, and V.35) to customer-provided data terminal equipment (DTE).

modulator-demodulator
See modem.

multiappearance voice terminal
A terminal equipped with several call appearance buttons for the same extension number, allowing the user to handle more than one call, on that same extension number, at the same time.

Multi-Carrier Cabinet
A structure that holds one to five carriers. See also single-carrier cabinet.

Multi-Frequency Compelled (MFC), release 2 (R2) signalling
A signal consisting of two frequency components, such that when a signal is transmitted from a switch, another signal acknowledging the transmitted signal is received by the switch. “R2” designates signaling used in the USA and countries outside the USA.

multiplexer
A device used to combine a number of individual channels into a single common bit stream for transmission.

multiplexing
A process whereby a transmission facility is divided into two or more channels, either by splitting the frequency band into a number of narrower bands or by dividing the transmission channel into successive time slots. See also time-division multiplexing.

multirate
Multirate refers to the new N x DS0 service (see N x DS0).

N
N x DS0
N x DS0, equivalently referred to as N- x 64-kbps, is an emerging standard for wideband calls separate from H0, H11, and H12 ISDN channels. The emerging N x DS0 ISDN multirate circuit mode bearer service will provide circuit-switched calls with data rate multiples of 64 kbps up to 1536 kbps on a T1 facility or up to 1920 kbps on an E1 facility. In the switch, N x DS0 channels will range up to 1984 kbps using NFAS E1 interfaces.
narrowband
A circuit-switched call at a data rate up to and including 64 kbps. All nonwideband switch calls are considered narrowband.

Non-Facility Associated Signaling (NFAS)
A method that allows multiple T1 and/or E1 facilities to share a single D-channel to form an Integrated Services Digital Network primary rate interface (ISDN PRI). If D-Channel Backup is not used, one facility is configured with a D-channel, while the other facilities that share the D-channel are configured without D-channels. If D-Channel Backup is used, two facilities are configured to have D-channels (one D-channel on each facility), while the other facilities that share the D-channels are configured without D-channels.

On every facility, all DS0s that are not D-channels are available as B-channels. Therefore, a T1 facility without a D-channel has 24 B-channels, and an E1 facility without a D-channel has 31 B-channels.

network
A series of points, nodes, or stations connected by communications channels.

network-specific facility (NSF)
An information element in an ISDN-PRI message that specifies which public-network service is used. NSF applies only when Call-by-Call Service Selection is used to access a public-network service.

network interface
A common boundary between two systems in an interconnected group of systems.

node
A switching or control point for a network. Nodes are either “tandem” (em they receive signals and pass them on (em or “terminal” (em they originate or terminate a transmission path.

offered load
The traffic that would be generated by all the requests for service occurring within a monitored interval, usually one hour.

othersplit
The Work State that indicates the agent is currently active on another split’s call, or in ACW for another split.

packet
A group of bits (em including a message element, which is the data, and a control information element (IE), which is the header (em used in packet switching and transmitted as a discrete unit. In each packet, the message element and control IE are arranged in a specified format. See also packet bus and packet switching.

packet bus
A wide-bandwidth bus that transmits packets.
packet switching
A data-transmission technique whereby user information is segmented and routed in discrete
data envelopes called “packets,” each with its own appended control information, for routing,
sequencing, and error checking. Packet switching allows a channel to be occupied only during
the transmission of a packet; on completion of the transmission, the channel is made available for
the transfer of other packets. See also BX.25 and packet.

paging trunk
A telecommunications channel used to access an amplifier for loudspeaker paging.

party/extension active on call
A party is on the call if it is actually connected to the call (in active talk or in held state). An origina-
tor of a call is always a party on the call. Alerting parties, busy parties, and tones are not parties
on the call.

PCOL
Personal Central Office Line.

primary extension
The main extension associated with the physical station set.

principal
A station that has its primary extension bridged on one or more other stations.

personal computer (PC)
A personally controllable microcomputer.

pickup group
A group of individuals authorized to answer any call directed to an extension number within the
group.

port
A data- or voice-transmission access point on a device that is used for communicating with other
devices.

port carrier
A carrier in a Multi-Carrier Cabinet or a single-carrier cabinet containing port circuit packs, power
units, and service circuits. Also called a “port cabinet” in a Single-Carrier Cabinet.

port network (PN)
A cabinet containing a TDM bus and packet bus to which the following components are con-
nected: port circuit packs, one or two tone-clock circuit packs, a maintenance circuit pack, ser-
vice circuit packs, and (optionally) up to four expansion interface (EI) circuit packs in G3. Each
PN is controlled either locally or remotely by a switch processing element (SPE). See also expansion port network and processor port network.

port-network connectivity
The interconnection of port networks (PNs), regardless of whether the configuration uses direct or
switched connectivity.

Primary Rate Interface (PRI)
A standard Integrated Services Digital Network (ISDN) frame format that specifies the protocol
used between two or more communications systems. PRI runs at 1.544 Mbps and, as used in
North America, provides 23 64 kbps B-channels (voice or data) and one 64 kbps D-channel (sig-
naling). The D-channel is the 24th channel of the interface and contains multiplexed signaling
information for the other 23 channels.
PRI endpoint (PE)
The wideband switching capability introduces PRI Endpoints on switch line-side interfaces. A PRI endpoint consists of one or more contiguous B-channels on a line-side T1 or E1 ISDN PRI facility and has an extension number. Endpoint applications have call control capabilities over PRI endpoints.

principal (user)
A person to whom a telephone is assigned and who has message center coverage.

private network
A network used exclusively for the telecommunications needs of a particular customer.

private network office code (RNX)
The first three digits of a 7-digit private network number. These codes are numbered 220 through 999, excluding any codes that have a 0 or 1 as the second digit.

processor carrier
A phrase used for “control carrier” in G3rV2. See also control carrier.

processor data module (PDM)
A device that provides an RS232C data communications equipment (DCE) interface for connecting to data terminals, applications processors (APs), and host computers and provides a digital communications protocol (DCP) interface for connection to a communications system. See also modular processor data module.

processor port network (PPN)
A port network (PN) controlled by a switch processing element (SPE) that is directly connected to that PN's time-division multiplex (TDM) bus and local area network (LAN) bus. See also port network.

processor port network (PPN) control carrier
A carrier containing the maintenance circuit pack, tone/clock circuit pack, and switch processing element (SPE) circuit packs for a processor port network (PPN) and, optionally, port circuit packs.

Property Management System (PMS)
A stand-alone computer used by lodging and health services organizations use for services such as reservations, housekeeping, and billing.

protocol
A set of conventions or rules governing the format and timing of message exchanges to control data movement and correction of errors.

public network
The network that can be openly accessed by all customers for local or long-distance calling.

pulse-code modulation (PCM)
An extension of pulse-amplitude modulation (PAM) in which carrier-signal pulses modulated by an analog signal, such as speech, are quantized and encoded to a digital, usually binary, format.

Q

quadrant
A quadrant is a group of six contiguous DS0s in fixed locations on an ISDN PRI facility. Note that this term comes from T1 terminology (one-fourth of a T1), but there are five quadrants on an E1 ISDN PRI facility (30B + D).
A quadrant is considered available or idle when all six contiguous DS0s are idle. Otherwise, the quadrant is considered contaminated or partially contaminated. This is a dynamic condition; quadrants become idle and contaminated as calls are placed and dropped. Note that a T1 facility containing the primary or backup D-channel (23B + D) has a maximum of three idle quadrants. The fourth quadrant (DS0s 19-24) never has six contiguous idle DS0s because one is always allocated to the D-channel. On an E1 facility, channel 0 is reserved for framing and synchronization, and channel 16 contains the D-channel when present, but five quadrants are potentially available.

queue
An ordered sequence of calls waiting to be processed.

queueing
The process of holding calls in order of their arrival to await connection to an attendant, to an answering group, or to an idle trunk. Calls are automatically connected in first-in, first-out sequence.

R

random access memory (RAM)
A storage arrangement whereby information can be retrieved at a speed independent of the location of the stored information.

read-only memory (ROM)
A storage arrangement primarily for information retrieval applications.

recall dial tone
Tones signalling that the system has completed a function (such as holding a call) and is ready to accept dialing.

redirection criteria
The information administered for each voice terminal’s coverage path that determines when an incoming call is redirected to coverage.

redirection on no answer
An optional feature that redirects an unanswered ringing ACD call after an administered number of rings. The call is then redirected back to the agent.

remote home numbering-plan area code (RHNPA)
A foreign numbering-plan area code that is treated as a home area code by the Automatic Route Selection (ARS) feature. Calls can be allowed or denied based on the area code and the dialed central office (CO) code rather than just the area code. If the call is allowed, the ARS pattern used for the call is determined by these six digits.

reorder tone
A tone to signal that at least one of the facilities, such as a trunk or a digit transmitter, needed for the call was not available at the time the call was placed.

report scheduler
Software that is used in conjunction with the system printer for the purpose of scheduling the days of the week and time of day that the desired reports are to be printed.

RS-232C
A physical interface specified by the EIA. RS-232C transmits and receives asynchronous data at speeds of up to 19.2 kbps over cable distances of up to 50 feet.
ROSE
Remote Operations Service Element is a CCITT and ISO standard that defines a notation and services that support interactions between the various entities that make up a distributed application.

S
sanity and control interface (SAKI)
A custom, very-large-scale-integration (VLSI) microchip located on each port circuit pack. The SAKI provides address recognition, buffering, and synchronization between the angel and the five control time slots that make up the control channel. The SAKI also scans and collects status information for the angel on its port circuit pack and, when polled, transmits this information to the archangel.

simplex system
A system that has no redundant hardware.

simulated bridged appearance
The same as a temporary bridged appearance, allows the station user (usually the principal) the ability to bridge onto a call which had been answered by another party on its behalf.

single-carrier cabinet
A combined cabinet and carrier unit that contains one carrier. See also Multi-Carrier Cabinet.

single-line voice terminal
A voice terminal served by a single-line tip and ring circuit (models 500, 2500, 7101A, 7103A).

small computer system interface (SCSI)
An ANSI bus standard that provides a high-level command interface between host computers and peripheral devices.

software
A set of computer programs that perform one or more tasks.

split
A condition whereby a caller is temporarily separated from a connection with an attendant. A split condition automatically occurs when the attendant, active on a call, presses the start button.

split number
The split’s identity to the switch and BCMS.

split report
Provides historical traffic information for internally measured splits.

split (agent) status report
Provides the real-time status and measurement data for internally measured agents and the split to which they are assigned.

staffed
Indicates an agent position is logged-in. A staffed agent will be functioning in one of four work modes: Auto-In, Manual-In, ACW, or AUX-work.

Station Message Detail Recording (SMDR)
An obsolete term now called “CDR” (see call detail recording), which is a switch feature that utilizes software and hardware to record call data.
standard serial interface (SSI)
A communications protocol developed by AT&T Teletype Corporation for use with the 500 business communications terminals (BCTs) and the 400-series printers.

status lamp
A green light that shows the status of a call appearance or a feature button by the state of the light (lit, flashing, fluttering, broken flutter, or unlit).

stroke counts
A method used by Automatic Call Distribution (ACD) agents to record up to nine customer-defined events per call when the Call Management System (CMS) is active.

switch
Any kind of telephone switching system. See also communications system.

switchhook
The buttons located under the receiver on a voice terminal.

switch node (SN) carrier
A carrier containing a single switch node, power units, and, optionally, one or two digital signal level-1 (DS1) converter circuit packs. An SN carrier is located in a center stage switch (CSS).

switch node (SN) clock
The circuit pack in a switch node (SN) carrier that provides clock and maintenance alarm functions and environmental monitors for an SN.

switch node interface (SNI)
The basic building block of a switch node. An SNI circuit pack controls the routing of circuit, packet, and control messages.

switch node link (SNL)
The hardware that provides a bridge between two or more switch nodes. The SNL consists of the two switch node interface (SNI) circuit packs residing on the switch nodes and the hardware connecting the SNIs. This hardware can include lightwave transceivers that convert the SNI's electrical signals to light signals, the copper wire that connects the SNIs to the lightwave transceivers, a full-duplex fiber-optic cable, digital signal level-1 (DS1) converter circuit cards and DS1 facilities if a company does not have rights to lay cable, and appropriate connectors.

switch processing element (SPE)
A complex of circuit packs (em processor, memory, disk controller, and bus-interface cards (em mounted in a processor-port-network (PPN) control carrier. The SPE serves as the control element for that PPN and, optionally, for one or more expansion port networks (EPNs).

synchronous data transmission
A method of sending data in which discrete signal elements are sent at a fixed and continuous rate and specified times.

system administrator
The person who maintains overall customer responsibility for system administration. Generally, all administration functions are performed from the G3 Management Terminal (G3-MT). The switch requires a special login, referred to as the system administrator login, in order to gain access to the system administration capabilities.

system printer
An optional printer that may be used to print scheduled reports via the report scheduler.

system report
Provides historical traffic information for all internally measured splits.
**system status report**
Provide real-time status information for internally measured splits.

**system manager**
A person responsible for specifying and administering features and services for a system.

**system reload**
A process that allows stored data to be written from a tape into the system memory (normally after a power outage).

---

**T**

**T1**
A digital transmission standard that in North America carries traffic at the digital signal level-1 (DS1) rate of 1.544 Mbps. A T1 facility is divided into 24 channels (DS0s) of 64 kbps information numbered from 1 to 24. These 24 channels, with an overall digital rate of 1.536 Mbps, and an 8 kbps framing and synchronization channel make up the 1.544 Mbps transmission. When a D-channel is present, it occupies channel 24.

T1 facilities are also used in Japan and some Middle-Eastern countries.

**TAC**
Trunk Access Code.

**tandem switch**
A switch within an electronic tandem network (ETN) that provides the logic to determine the best route for a network call, possibly modifies the digits outpulsed, and allows or denies certain calls to certain users.

**tandem through**
The switched connection of an incoming trunk to an outgoing trunk without human intervention.

**tandem tie-trunk network**
A private network that interconnects several customer switching systems by dial-

**TEG**
Terminating Extension Group.

**terminal**
A device that sends and receives data within a system. See also [administration terminal](#).

**tie trunk**
A telecommunications channel that directly connects two private switching systems.

**time-division multiplex (TDM) bus**
A bus that is time-shared regularly by preallocating short time slots to each transmitter. In a PBX, all port circuits are connected to the TDM bus, permitting any port to send a signal to any other port.

**time-division multiplexing (TDM)**
Multiplexing that divides a transmission channel into successive time slots. See also [multiplexing](#).

**time interval**
The period of time, either one hour or one-half hour, that BCMS measurements are collected for reports.
time slice
See [time interval].

time slot
A time slot refers to 64 kbps of digital information structured as eight bits every 125 micro-seconds. In the switch, a time slot refers to either a DS0 on a T1 or E1 facility or a 64 kbps unit on the TDM bus or fiber connection between port networks.

time slot sequence integrity
Time slot sequence integrity means the "N" octets of a wideband call transmitted in one T1 or E1 frame arrive at the output in the same order they were introduced.

to control
An application can invoke Third Party Call Control capabilities using either an adjunct-control or a domain-control association.

to monitor
An application can receive Event_Reports on either an active-notification, adjunct-control, or a domain-control association.

tone ringer
A device with a speaker, used in electronic voice terminals to alert the user.

trunk
A dedicated telecommunications channel between two communications systems or central offices (COs).

trunk allocation
The manner in which trunks are selected to form wideband channels.

trunk data module
A device that provides the interface for connection between off-premises private-line trunk facilities and a G3V2 switch. The trunk data module provides conversion between the RS232C and the Digital Communications Protocol (DCP), and can connect to direct distance dialing (DDD) modems as the DCP member of a modem pool.

trunk group
Telecommunications channels assigned as a group for certain functions that can be used interchangeably between two communications systems or central offices (COs).

uniform dial plan
Allows a unique 4- or 5-digit number assignment for each terminal in a multiswitch configuration such as a distributed communications system (DCS) or main-satellite-tributary system.

vector directory number (VDN)
An extension that provides access to the Vectoring feature on the switch. Vectoring allows a customer to specify the treatment of incoming calls based on the dialed number.
vector-controlled split
A hunt group or ACD split administered with the “vector” field enabled. Access is only possible by dialing a VDN extension. Vector-Controlled Splits cannot be Active Notification Domains.

voice terminal
A single-line or multiappearance telephone.

wide area tele-communications service (WATS)
A service in the USA to allow calls to certain areas for flat-rate charges based on expected usage.

wideband
A circuit-switched call at a data rate greater than 64 kbps. A circuit-switched call on a single T1 or E1 facility with a bandwidth between 128 and 1536 (T1) or 1984 (E1) kbps in multiples of 64 kbps. H0, H11, H12, and N x DS0 calls are all wideband.

wideband access endpoint
The wideband switching capability extends access endpoints to include wideband access endpoints. An endpoint consists of one or more contiguous DS0s on a line-side T1 or E1 facility and has an extension number. The administered connections feature provides call control for calls originating from wideband access endpoints.

wink-start tie trunk
A trunk with which, after making a connection with a distant switching system for an outgoing call, the system waits for a momentary signal (wink) before sending the digits of the called number. Similarly, on an incoming call, the system sends the wink signal when ready to receive digits.

work modes (or ACD work modes)
A work mode is one of four states (Auto-In, Manual-In, ACW, AUX-work) that an ACD agent enters after logging in. Immediately upon logging in, an agent enters the AUX-work mode. To become available to receive ACD calls, the agent enters either the Auto-In or Manual-In work modes. To do work associated with an ACD call, at the conclusion of the call, an agent would enter the ACW mode.

work state
An ACD agent may be a member of up to three different splits. Each ACD agent continuously exhibits a work state for every split that it is a member of. Valid work states are Avail, Unstaffed, AUX-work, ACW, ACD (answering an ACD call), ExtIn, ExtOut, and OtherSpl. An agent’s work state for a particular split may change for a variety of reasons (for example, whenever a call is answered, abandoned, the agent changes work modes, etc.). The BCMS feature monitors the work states and uses this information to provide the BCMS reports.

write operation
The process of putting information onto a storage medium, such as a hard disk.
## Index

### A

- **AA**, see archangel
- **AAR**, see Automatic Alternate Routing
- abbreviations used for circuit packs, 6-10

### AC power

<table>
<thead>
<tr>
<th>Power Unit</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>631DA1</td>
<td>2-60</td>
</tr>
<tr>
<td>631DB1</td>
<td>2-60</td>
</tr>
</tbody>
</table>

- coupled bonding conductor, 3-27
- distribution in multicarrier cabinets, 3-9
- fused current drains, 3-4

- **ground wiring**
  - AC, 3-13 to 3-26
  - list of sources, 3-3
  - power supply, 3-26
  - inputs and outputs, 3-26
  - single phase, 3-2
  - sources, 3-2
  - three-phase, 3-2

- **WP-91153 power supply**, 2-59

### AC to DC power supply

- 2-6

### access endpoint

- 7-11

### access trunks

- 7-6

### ACCUNET

- 7-7

- packet service, 7-10

### ACD, see Automatic Call Distribution

### acoustic noise levels

- 10-13

### additional hardware

- 11-3

### additional ports

- 1-4

### adjuncts

- 8-25

- **administration**, 8-27
- **call record acquisition**, 8-30
- **connecting**, 8-1 to 8-44
- **links**, 6-16
- **miscellaneous adjuncts**, 8-31
- **Telemarketing adjuncts**, 8-25

### ADM, see Asynchronous Data Module

- administered connection, 7-11
- **administrable audible ringing patterns**, 11-27 to 11-28
- **administration**, 11-17, 6-1
- **database update and validation**, 6-6
- **administration adjuncts**, 8-27

### Administration without Hardware

- 6-8

### ADU, see Asynchronous Data Unit

### Advanced Private Line Trunks

- 7-8

### AHF111 terminator

- 2-13

### AIM, see Asynchronous Interface Module

### air

- **flow**, 2-7
- **pressure**, 10-12
- **purity**, 10-12
- **alarm**

### external device

- 2-54
- **panel**, 2-64

### alarm circuit pack (TN2169)

- 2-47

### alarms

- **diagnosing**, 9-1
- **logs**, 9-4
- **major**, 9-3
- **minor**, 9-3
- **temperature**, 3-30
- **terminal buttons**, 9-4 to 9-5
- **three levels**, 9-3
- **warning**, 9-3

### ALBO

- 2-51, 2-52

- allocation of buttons, 11-15 to 11-18
- **alternate voice/data**, 7-3

### Alternate Voice/Data (AVD) DS1 tie trunks

- 2-53

### altitude requirements

- 10-12

### ambient temperature

- 10-10

### American National Standards Institute, see ANSI

### analog carrier signal

- 6-25

### analog data endpoints

- 2-59

### analog line circuit pack (T)

- 2-41

### analog line circuit packs

- 2-37 to 2-41

### analog-to-analog

- **echo path delay**, 11-35
- **frequency response**, 11-32
- **intermodulation distortion**, 11-33
- **peak noise level**, 11-35
- **quantization distortion loss**, 11-34

### analog-to-digital

- **frequency response**, 11-32
- **intermodulation distortion**, 11-33
- **peak noise level**, 11-35
- **quantization distortion loss**, 11-34

### analog-to-digital coder/decoder

- 6-25

### analog-to-digital interface

- 8-2

### angel, see also microprocessor

- 6-13

### announcement

- **recorded**, 8-25

### announcement circuit packs

- TN750, 2-41
- TN750B, 2-41
- TN750C, 2-42

### ANSI

- 11-32
APLT, see Advanced Private Line Trunk
application links, 6-16
application protocols, 11-30 to 11-31
applications layer, 6-1
APS, see ACCUNET packet service
architecture, 6-1 to 6-28
architecture of system, 1-11
area required for system, 10-1 to 10-14
ASAI applications, 2-58
ASAI/BRI, 2-54
ASCII character code, 6-25
Asynchronous Data Module
connecting, 8-2
Asynchronous Data Unit, 7-9
connections, 8-3
interface, 7-16
proprietary signal, 6-25
Asynchronous Interface Module, 7-16
AT&T ACCUNET, 7-7
AT&T MEGACOM, 7-6
AT&T MEGACOM 800, 7-7
AT&T Software-Defined Network, 7-7
attendant console, 2-3, 8-57
alarm buttons, 9-4 to 9-5
indicator lamps, 11-29
maintenance, 9-2
audible ringing patterns, 11-27 to 11-28
Audio Information Exchange, see AUDIX
AUDIX, 2-58
alarm connections, 8-17
connecting, 8-8
control link connections, 8-14
Interface service, 2-62
system, 2-47
Automatic Alternate Routing, 7-7
Automatic Call Distribution, 7-2
hunt groups, 8-25
automatic emergency transfer
inhibiting, 2-64
automatic testing, 9-3
AUX connector, 2-3, 2-4, 8-57
Auxiliary Cabinet, 1-13, 2-6
auxiliary trunk circuit packs
TN417, 2-42
TN763B/C/D, 2-42
auxiliary trunks, 7-1, 7-7
AVD, see Alternate Voice/Data
AWOH, see Administration without Hardware

B
backup data, 6-6
power, 3-11
storage, 2-65
basic control cabinet (J58890L), 2-18, 2-22
batteries
48 VDC, 3-9, 3-10
battery charger, 3-9
BER, see Bit Error Rate
BER, see bit error rate
BES counters, 2-51, 2-52
bit and block error rate information, 2-56
bit compression multiplexer, 7-9
Bit Error Rate
loop back tests, 2-52
bit error rate loopback tests, 2-51
bit-oriented signaling, 2-52, 2-53, 7-8
blank faceplates, 2-7, 2-22
bootstrap image, 2-65
BOS, see bit-oriented signaling
branch cable, 5-11
BRI, see ISDN BRI
bulk data transmission, 7-7
bus buffers, 2-33
busy hour
call capacities, 11-2
impulse noise, 11-34
busystop and release, 6-9
buttons
allocation, 11-15 to 11-18
terminal alarm, 9-4 to 9-5
BX.25 protocols, 2-62
bypass access trunks, 7-6

C
Cabinet Features, 2-3
cabinets
carrier positions, 4-1 to 4-2
cracks, 2-19
configurations, 4-1 to 4-26
description, 1-11
environmental requirements, 10-1 to 10-14
fan units, 3-29 to 3-30
ground block, 3-14, 3-20
harness cabling (LCJ58890A), 5-11
multicarrier, 2-1 to 2-6
Auxiliary Cabinet (J58886N), 2-6
description, 2-2
heat dissipation, 10-3
illustration, 2-2
representative number of lines, 11-2
single point ground, 3-20
single-carrier, 2-22
compact control cabinet (J58890S), 2-29
enhanced control cabinet (J58890L), 2-23
expansion control cabinet (J58890N), 2-26
single-carrier basic control cabinet (J58890L), 2-22
single-point ground bar, 3-27
Index

- Cable
  - intraconnecting for G3r (H600-278), 5-14

- Cabling
  - between carriers in multicarrier cabinets, 5-5
  - between on- and off-premises systems, 5-46
  - between single-carrier and multicarrier cabinets, 5-45

- Branch, 5-11

- Cabinet harness (LCJ58890A), 5-11

- Control carrier G3, 5-12

- Control carrier, G3r, 5-13

- CSS-connected G3r, 5-14

- Distances, 11-19 to 11-22

- DS1 connection, 5-14

- DS1 remoting, 5-14

- DS1C public network, 5-15

- Duplicated control carrier, 5-12

- Fiber optic distances, 11-22

- Fiber-optic
  - between single-carrier and multi-carrier cabinets, 5-45
  - SN carrier, 5-14
  - T1 transmission line, 5-14

- T1 transmission line, 5-14

- Types, 5-1

- Call
  - as component of call model, 6-3
  - Capacities, 11-2
  - Connecting, 6-2
  - customizable tones, 11-25
  - Model, 5-3
  - Process, 6-4
  - Processing, 6-1, 6-2
  - Progress tones, 11-23
  - Records collecting, 8-30
  - Sequencing control, 6-3

- Call Accounting System, 8-30

- Call Classifier circuit pack (TN744), 2-43

- Call Classifier/Detector circuit pack (TN744C), 2-43

- Call Detail Recording Utility, 8-30

- Adjunct, 6-16

- Call management services call processing feature, 6-5

- Call Management System, see CMS

- Call processing, 1-11

- Call record acquisition adjuncts, 8-30

- CallVisor ASAI Host, 8-31, 8-44

- Capabilities, system, 11-1 to 11-35

- Carbon block overvoltage protection device, 10-14

- Carriers
  - Cabling
    - configurations, 4-1 to 4-26
    - DS1 cabling, 5-14
    - in multicarrier cabinets, 2-7 to 2-18
    - minimum required in PPN cabinet, 4-3
    - minimum required in two-port network multicarrier EPN cabinet, 4-4
  - Multicarrier
    - control carrier (J58890AH), 2-7
    - control carrier (J58890AP), 2-11
    - duplicated control carrier (J58890AJ), 2-9

- Expansion control carrier (J58890AF), 2-14

- Port carrier (J58890B), 2-13

- Processor carrier (J58890AH), 2-11

- Switch node carrier (J58890SA), 2-17

- Types of circuit packs, 2-31

- Unused slots, 2-7

- CAS, see Call Accounting System

- CAS, see Channel Associated Signaling

- Category A coaxial interface, 8-2

- CCITT
  - recommendations for MFC signaling, 11-28

- CCMS channel, 6-20

- CDR, as DCS link, 2-59

- CDRU, see Call Detail Recording Utility

- Center stage switch, 1-4, 11-10

- Central Office, 1-4

- CEPT1, 6-25

- CFY1B current limiter, 2-16, 2-47

- Channel Associated Signaling, 2-52, 7-4

- Channel service unit, see CSU

- Characteristics, transmission, 11-32 to 11-35

- Charger, battery, 13-9

- Circuit breaker, 3-9, 3-11, 3-12

- See also circuits, 2-13, 2-16

- Tripping, 2-13, 2-16

- Circuit diagrams, typical connections, 8-58 to 8-61

- Circuit maintenance, 9-2

- Circuit packs, 2-31 to 2-67

- 122A Music-on-Hold Interface, 2-57

- 2169, 2-47

- Abbreviations used, 6-10

- Analog line, 2-37 to 2-41

- Analog line characteristics, 2-38

- AUDIX, 2-47

- Bus buffers, 2-33

- Connectors, 2-31

- CPP1 expansion memory, 2-7

- CPP1 memory, 2-57

- DEFINITY AUDIX System, 2-47

- Dimensions, 2-31

- ED-1E546, 2-47

- Expansion interface (TN570), 2-14

- Faceplates, 2-31

- Interface to TDM bus (SAKI), 2-33

- Maintenance, 2-14, 9-1, 9-2

- Maintenance/test, 9-2

- Minimum required in PPN cabinet, 4-3

- Minimum required in two-port network multicarrier EPN cabinet, 4-4

- Pins, 2-31

- Port

  - Common components, 2-32

  - Replacement and testing, 9-5

  - Size, 2-31

  - Sorted by code, 2-34

- TN1648 system access and maintenance, 2-64

- TN1650B memory, 2-11, 2-57
<table>
<thead>
<tr>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN1655 packet interface</td>
</tr>
<tr>
<td>TN1656 tape drive</td>
</tr>
<tr>
<td>TN1657 disk drive</td>
</tr>
<tr>
<td>TN2135 analog line</td>
</tr>
<tr>
<td>TN2136 digital line</td>
</tr>
<tr>
<td>TN2138 CO trunk</td>
</tr>
<tr>
<td>TN2139 DID trunk</td>
</tr>
<tr>
<td>TN2140 tie trunk</td>
</tr>
<tr>
<td>TN2144 analog line</td>
</tr>
<tr>
<td>TN2146 DID trunk</td>
</tr>
<tr>
<td>TN2147 CO trunk</td>
</tr>
<tr>
<td>TN2148 analog line</td>
</tr>
<tr>
<td>TN2149 alarm</td>
</tr>
<tr>
<td>TN2170</td>
</tr>
<tr>
<td>TN2180 analog line</td>
</tr>
<tr>
<td>TN2181 DCP interface</td>
</tr>
<tr>
<td>TN2182 tone-generator/detector/clock circuit pack</td>
</tr>
<tr>
<td>TN2183 16-port, analog line circuit pack</td>
</tr>
<tr>
<td>TN2184 DIOD trunk</td>
</tr>
<tr>
<td>TN2198 ISDN BRI 2-wire line</td>
</tr>
<tr>
<td>TN2202 ring generator circuit pack</td>
</tr>
<tr>
<td>TN417 auxiliary trunk</td>
</tr>
<tr>
<td>TN419B tone-clock</td>
</tr>
<tr>
<td>TN420C tone detector</td>
</tr>
<tr>
<td>TN429 DIOD trunk</td>
</tr>
<tr>
<td>TN433 speech synthesizer</td>
</tr>
<tr>
<td>TN436B DID trunk</td>
</tr>
<tr>
<td>TN437 tie trunk</td>
</tr>
<tr>
<td>TN438B CO trunk</td>
</tr>
<tr>
<td>TN439 tie trunk</td>
</tr>
<tr>
<td>TN447 CO trunk</td>
</tr>
<tr>
<td>TN458 tie trunk</td>
</tr>
<tr>
<td>TN459B DID trunk</td>
</tr>
<tr>
<td>TN464 DS1/E1 interface</td>
</tr>
<tr>
<td>TN464C DS1/E1 interface</td>
</tr>
<tr>
<td>TN464D DS1/E1 interface</td>
</tr>
<tr>
<td>TN465 CO trunk</td>
</tr>
<tr>
<td>TN465B CO trunk</td>
</tr>
<tr>
<td>TN468B analog line</td>
</tr>
<tr>
<td>TN479 analog line</td>
</tr>
<tr>
<td>TN497 tie trunk</td>
</tr>
<tr>
<td>TN553 packet data line</td>
</tr>
<tr>
<td>TN556 ISDN BRI line</td>
</tr>
<tr>
<td>TN566 multi-function</td>
</tr>
<tr>
<td>TN567 multi-function</td>
</tr>
<tr>
<td>TN570 expansion interface circuit pack</td>
</tr>
<tr>
<td>TN572 switch node clock circuit pack</td>
</tr>
<tr>
<td>TN573 switch node interface</td>
</tr>
<tr>
<td>TN574 DS1 converter</td>
</tr>
<tr>
<td>TN5757 speech synthesizer</td>
</tr>
<tr>
<td>TN572B data line</td>
</tr>
<tr>
<td>TN735 MET line</td>
</tr>
<tr>
<td>TN742 analog line</td>
</tr>
<tr>
<td>TN744 Call Classifier</td>
</tr>
<tr>
<td>TN744C Call Classifier/Detector</td>
</tr>
<tr>
<td>TN746 analog line</td>
</tr>
<tr>
<td>TN746B analog line</td>
</tr>
<tr>
<td>TN747B CO trunk</td>
</tr>
<tr>
<td>TN748C tone detector</td>
</tr>
<tr>
<td>TN750 announcement</td>
</tr>
<tr>
<td>TN750B announcement</td>
</tr>
<tr>
<td>TN750C integrated announcement</td>
</tr>
<tr>
<td>TN753 DID trunk</td>
</tr>
<tr>
<td>TN754 digital line</td>
</tr>
<tr>
<td>TN754B digital line</td>
</tr>
<tr>
<td>TN755B Neon power unit</td>
</tr>
<tr>
<td>TN756 tone detector</td>
</tr>
<tr>
<td>TN757B tone generator/detector</td>
</tr>
<tr>
<td>TN758 pooled modem</td>
</tr>
<tr>
<td>TN760D tie trunk</td>
</tr>
<tr>
<td>TN764B hybrid line</td>
</tr>
<tr>
<td>TN763B/C/D auxiliary trunk</td>
</tr>
<tr>
<td>TN765 processor interface</td>
</tr>
<tr>
<td>TN767B DS1 interface</td>
</tr>
<tr>
<td>TN768B tone-clock circuit pack</td>
</tr>
<tr>
<td>TN769 analog line</td>
</tr>
<tr>
<td>TN771B maintenance/test</td>
</tr>
<tr>
<td>TN772 duplication interface</td>
</tr>
<tr>
<td>TN775 maintenance</td>
</tr>
<tr>
<td>TN775B maintenance circuit pack</td>
</tr>
<tr>
<td>TN776 expansion interface circuit pack</td>
</tr>
<tr>
<td>TN777B network control</td>
</tr>
<tr>
<td>TN778 packet control</td>
</tr>
<tr>
<td>TN780 tone-clock</td>
</tr>
<tr>
<td>TN786B</td>
</tr>
<tr>
<td>TN786B processor</td>
</tr>
<tr>
<td>types in carriers</td>
</tr>
<tr>
<td>types of multicarrier slots</td>
</tr>
<tr>
<td>types of single-carrier slots</td>
</tr>
<tr>
<td>UN330 B duplication interface</td>
</tr>
<tr>
<td>UN330B duplication interface</td>
</tr>
<tr>
<td>UN332 network control</td>
</tr>
<tr>
<td>unused slots</td>
</tr>
<tr>
<td>circuits</td>
</tr>
<tr>
<td>speed control</td>
</tr>
<tr>
<td>thermal alarm</td>
</tr>
<tr>
<td>clips, for single-carrier cabinets</td>
</tr>
<tr>
<td>clock, see also tone-clock</td>
</tr>
<tr>
<td>TN572 switch node clock</td>
</tr>
<tr>
<td>cluster controller</td>
</tr>
<tr>
<td>CM, see Connection Manager</td>
</tr>
<tr>
<td>CMS</td>
</tr>
<tr>
<td>connecting</td>
</tr>
<tr>
<td>CO trunk circuit packs</td>
</tr>
<tr>
<td>TN1238</td>
</tr>
<tr>
<td>TN2147</td>
</tr>
<tr>
<td>TN438B</td>
</tr>
<tr>
<td>TN447</td>
</tr>
<tr>
<td>TN465</td>
</tr>
<tr>
<td>TN465B</td>
</tr>
<tr>
<td>TN747B</td>
</tr>
<tr>
<td>CO trunks</td>
</tr>
<tr>
<td>CO, see Central Office</td>
</tr>
<tr>
<td>CODEC</td>
</tr>
<tr>
<td>coder/decoder, analog-to-digital, see CODEC codes</td>
</tr>
</tbody>
</table>
combined AC and DC power and ground wiring in multicarrier cabinets 3-17
command execution and validation layer 6-6
compact control cabinet
J58890S 2-29
Compact Single-Carrier Cabinet 1-11
Compact Single-Carrier Cabinet — G3vs 1-15
component connections 8-1 to 8-44
components of DEFINITY G3V4 1-4
corrosive gas 10-12
dependency control, 6-6
Conference, Transfer, and Call-Forwarding Denial 6-29
cabinets 4-1 to 4-26
critical reliability
CSS-connected systems 4-23
description 4-9
directly connected systems 4-16
g3i 4-9
g3r 4-10
single PN EPN 4-11
two PN EPN 4-12
CSS-connected systems, G3r 4-17 to 4-26
DCS 7-14
description 4-5
description of main configurations 1-4
directly connected systems, G3i 4-13 to 4-17
high reliability
CSS-connected systems 4-20
directly connected systems 4-15
g3i 4-8
g3r 4-8
minimums for each version 4-3 to 4-4
representative number of lines 11-2
standard reliability 4-5
CSS-connected systems 4-17
directly connected systems 4-13
g3s 4-5

connecting
a call 6-2
adjuncts 8-1 to 8-44
administration adjuncts 8-27
administration terminals 8-6
ADUs 8-3
auxiliary connector 8-57
call record acquisition adjuncts 8-30
computers 8-2
concerts 8-2
CONVERSANT Voice Information System 8-9
CSU 8-4
data lines 7-9
data modules 8-2
data service unit 8-4
data stands 8-2
data terminals 8-2

dCS 8-2
digital terminal data module 8-2
DS1 8-56
DS1G 8-54 to 8-55
dTE 8-2
digital links 8-45 to 8-53
dSCS 8-4
ISDN Gateway 8-9
modems 8-4
Modular Asynchronous Data Unit 8-3
Modular Processor Data Module 8-2
music-on-hold 8-31
music-on-hold, FCC-registered 8-33, 8-34
music-on-hold, non-FCC-registered 8-33
peripherals 8-1 to 8-44
printers 8-2, 8-7
remote cabinets 3-14
terminals 8-4
typical circuit diagrams 8-58 to 8-61
connections 8-4
administered 7-11
Asynchronous Data Module 8-2
direct-to-end 7-11
fiber-optic 4-13 to 4-17, 4-17 to 4-26
manager 6-4
to INTUITY 8-18 to 8-21
connectivity
DS1 5-14
internal 6-1 to 6-28
ISDN 6-10, 6-18
rules 6-27
connector
ST 11-22
connector block, DC 2-6
connectors
-48 VDC 5-12
cabinet harness 5-12
circuit pack 2-31
DS1C port 5-15
ICCA 5-12
ICCB 5-12
cabinet basic (J58890L) 2-18
duplicated (J58890M) 2-18
power system 3-26
cable carrier
basic (J58890) 2-18
duplicated J58890AJ 2-4, 2-7
J58890AH 2-4, 2-7
J58890AP 2-4, 2-7
cable channel information 2-33
cable circuit packs 2-29, 2-31
cable slots, multicarrier 12-7
CONVERSANT Voice Inquiry Service 8-25
converter
<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC to DC</td>
<td>2-6</td>
</tr>
<tr>
<td>analog signals to digital signals</td>
<td>2-44</td>
</tr>
<tr>
<td>digital signals to analog signals</td>
<td>2-44</td>
</tr>
<tr>
<td>DS1</td>
<td>2-50, 4-3</td>
</tr>
<tr>
<td>protocols</td>
<td>8-2</td>
</tr>
<tr>
<td>copper block</td>
<td>3-20</td>
</tr>
<tr>
<td>core dump</td>
<td>2-65</td>
</tr>
<tr>
<td>corrosive gas concentrations</td>
<td>10-12</td>
</tr>
<tr>
<td>Cost Allocator</td>
<td>8-30</td>
</tr>
<tr>
<td>CO-trunk-to-digital interface frequency response</td>
<td>11-32</td>
</tr>
<tr>
<td>country code</td>
<td></td>
</tr>
<tr>
<td>tones generated</td>
<td>11-23</td>
</tr>
<tr>
<td>coupled bonding conductor</td>
<td></td>
</tr>
<tr>
<td>location in AC-powered systems</td>
<td>3-27</td>
</tr>
<tr>
<td>location in DC-powered systems</td>
<td>3-27</td>
</tr>
<tr>
<td>CP, see call process</td>
<td></td>
</tr>
<tr>
<td>CPE, see Customer Premises Equipment</td>
<td></td>
</tr>
<tr>
<td>CPP1 memory circuit pack</td>
<td>2-57</td>
</tr>
<tr>
<td>CRC-4 generation</td>
<td>2-52</td>
</tr>
<tr>
<td>Critical reliability</td>
<td>1-17</td>
</tr>
<tr>
<td>critical reliability systems</td>
<td></td>
</tr>
<tr>
<td>CSS-connected systems</td>
<td>4-23</td>
</tr>
<tr>
<td>description</td>
<td>4-9</td>
</tr>
<tr>
<td>directly connected systems</td>
<td>4-16</td>
</tr>
<tr>
<td>G3i, 4-9</td>
<td></td>
</tr>
<tr>
<td>G3r, 4-10</td>
<td></td>
</tr>
<tr>
<td>single PN EPN</td>
<td>4-11</td>
</tr>
<tr>
<td>two PN EPN</td>
<td>4-12</td>
</tr>
<tr>
<td>CSCN links</td>
<td>6-15</td>
</tr>
<tr>
<td>CSS, 1-41</td>
<td>10, 2-59, 2-63</td>
</tr>
<tr>
<td>coating</td>
<td>5-14</td>
</tr>
<tr>
<td>-connected systems</td>
<td>4-17</td>
</tr>
<tr>
<td>counters</td>
<td>2-51, 2-52</td>
</tr>
<tr>
<td>CSU</td>
<td></td>
</tr>
<tr>
<td>120A module</td>
<td>2-45, 2-46</td>
</tr>
<tr>
<td>connections</td>
<td>8-4</td>
</tr>
<tr>
<td>functions</td>
<td>7-4</td>
</tr>
<tr>
<td>current</td>
<td></td>
</tr>
<tr>
<td>fused drains</td>
<td>3-4</td>
</tr>
<tr>
<td>protection</td>
<td>3-28</td>
</tr>
<tr>
<td>current limiter</td>
<td></td>
</tr>
<tr>
<td>982LS</td>
<td>2-46</td>
</tr>
<tr>
<td>CFY1B</td>
<td>2-13, 2-16</td>
</tr>
<tr>
<td>current, fused drains</td>
<td>3-4</td>
</tr>
<tr>
<td>current-limited power</td>
<td>2-13, 2-16</td>
</tr>
<tr>
<td>Customer Premises Equipment</td>
<td></td>
</tr>
<tr>
<td>alarm activation level field</td>
<td>9-3</td>
</tr>
<tr>
<td>smart jack</td>
<td>2-45</td>
</tr>
<tr>
<td>customizable tones</td>
<td>2-65</td>
</tr>
<tr>
<td>degradation of service</td>
<td>9-3</td>
</tr>
<tr>
<td>delay, echo path</td>
<td>11-35</td>
</tr>
<tr>
<td>demand</td>
<td></td>
</tr>
</tbody>
</table>

**D**

DAC, see dial access code

access and storage layer 6-6

data communications equipment, see DCE

data line circuit pack (TN726B), 2-47

data lines connecting, 7-9

data management call processing feature, 6-5

data module connections, 8-2

data Service Unit, 8-4

data stand connections, 8-2

data terminal equipment, 2-47, 6-22, 7-9

database update and validation, 6-6

data-link layer, OSI, 6-22

DC power

644A1 power unit, 2-60
645B1 power unit, 2-60
connector block, 2-6
distribution in multicarrier cabinets, 3-8
distribution unit, 3-11
inputs and outputs, 3-5
fused current drains, 3-4
ground wiring, DC, 3-15
location of coupled bonding conductor, 3-27
power plant, 3-16
relay, 3-9
requirements, 3-4, 3-5
sources, 3-2

TN755B Neon power unit, 2-61

DCE, 6-22
connections, 8-2

D-channel, 6-22
D-channel, duplicated, 7-4

DCP, 2-49, 6-24

interface circuit pack (TN2181), 2-49

DCS, see Distributed Communications System

DDPM, see distributed digital-port multiplexer
dedicated slots, single-carrier, 2-22

DEFINITY AUDIX System, 2-47

DEFINITY Communications System G3-MT, 8-27

DEFINITY Communications System Generic 3 Management Applications (G3-MA), 8-27

DEFINITY G3V4

administration, 1-17
components, 1-4
description, 1-2
duplication, 1-17
functional components, 1-6
main configurations, 1-4
system architecture, 1-11
system comparisons, 1-18
degradation of service, 9-3
delay, echo path, 11-35
demand
Index

- maintenance tests, 9-3
- testing, 6-6, 6-9
- detector, call, see Call Classifier
- device alarming, external, 2-54
- diagnostics, 2-51, 2-52
  - facility, 8-27
  - TN771D, 2-56
  - troubleshooting, 9-1 to 9-5
- dial access code, 7-5
- dial-plan manager, 6-4
- DID trunk circuit packs
  - TN2139, 2-49
  - TN2146, 2-49
  - TN436B, 2-48
  - TN599B, 2-48
  - TN753, 2-48
- DID trunks, 7-2
  - Multifrequency-Compelled signaling, 11-28
- differences between DEFINITY systems, 1-1, 1-18
- digital announcement equipment, 8-31
- Digital Communications Protocol, see DCP
- digital data endpoints (data modules), 2-59
- digital interface, 2-33, 7-9
- digital line circuit packs
  - TN2136, 2-50
  - TN754, 2-49
  - TN754B, 2-49
- digital loop-around, 2-67
- digital multiplexed interface, 6-25
- digital multiplexed interface trunks, 7-8
- digital port insertion loss, 11-33
- digital signal level-1, 7-3
- digital signal level-1, also see DS1
- Digital Terminal Data Module
  - connections, 8-2
- digital transmission services
  - terrestrial, 7-7
- Digital-Multiplexed Interface, see DMI
- digital-to-analog
  - peak noise level, 11-35
  - quantization distortion loss, 11-34
- digital-to-digital, 8-2
  - echo path delay, 11-35
- interface, 8-2
- dimensions
  - circuit pack, 2-31
  - multicarrier cabinets, 10-1
  - single-carrier cabinets, 2-22, 10-2
- DIOD
  - trunks, 7-3
- DIOD trunk circuit packs
  - TN2184, 2-50
  - TN429, 2-49
- Direct Inward Dialing, see DID
- Direct Inward-Outward Dialing, see DIOD
- Direct Outward Dialing, see DOD
- directly connected systems, 4-13 to 4-17
- Disconnect Supervision, 6-28
- disk drive, 2-48
- disk drive circuit pack (TN1657), 2-50
- distances
  - cabling, 11-19 to 11-22
  - DS1 remoting transmission, 11-23
  - fiber optic cabling, 11-22
- distortion
  - intermodulation, 11-33
  - quantization loss, 11-34
- Distributed Communications System
  - configurations, 2-62, 7-14
  - description, 7-6
  - ISDN PRI DCS cluster, 7-14
  - link connections, 8-45 to 8-53
  - links, 2-59
  - distributed digital-port multiplexer, 6-8
  - distribution cables, 3-6
  - distribution of power, 3-6
  - distribution unit, power, 3-11
- DMI, 2-53, 2-59, 7-3
- DMI, see digital multiplexed interface
- DMI-BOS 24th channel signaling protocol, 2-52
- documentation
  - cross-connect hardware, 10-9
  - maintenance, 9-5
  - printers, 10-9
- DOD trunks, 7-3
- Multifrequency-Compelled signaling, 11-28
- DPM, see dial-plan manager
- driver layer, 6-4
- drivers, 6-1
- DS1
  - Alternate Voice/Data, 7-3
  - connecting tie trunks to data links, 2-62
  - connections, 8-56
  - CSU module, 2-45
  - definition, 6-25
  - DMI, 7-3
  - DSX1 level physical interface, 2-52
  - facilities, 7-3
  - facility tests, 2-51, 2-52
  - loopback control signals, 2-46
  - remoting, 5-14
  - remoting transmission distance, 11-23
- DS1 cabling
  - carrier, 5-14
  - public network, 5-15
- DS1 converter circuit pack
  - TN4574, 4-3
  - TN574, 2-50
- DS1 interface circuit pack
  - TN767B, 2-51
- DS1 tie trunk circuit pack (TN722B), 2-53
- DS1/E1
  - voice grade, 7-3
  - wideband switching, 7-9
- DS1/E1 interface circuit packs
  - TN464C, 2-52
Index

TN464D, 2-52
DS1C connections, 8-54 to 8-55
DSLAC, see Dual Subscriber Line Audio Processing Circuit
DSO frequency response, 11-32
DSU, see Data Service Unit
DSX1 level physical interface, 2-52
DTDM, see Digital Terminal Data Module
dual tone multi-frequency receiver, 8-54 to 8-55
dual tone multi-frequency receiver (DSLAC), 2-44
duplication interface, 2-53
duplication interface circuit packs
TN772, 2-53
UN330B, 2-53, 5-13
duplication interface circuits packs
TN776, 2-14, 2-54
options, 1-17
DUPN INTFC slot, 2-24

E
E&M signaling, 2-65, 2-66
EAA, see expansion archangel
EAL links, 6-13
earthquake, 10-7
EBCDIC character code, 6-25
echo canceller, 7-9
echo path delay, 11-35
Echo-Return Loss, 11-35
ED-1ES46, 8-31
ED-1ES46, TN2170 circuit pack, 2-47
EL, see expansion interface
EIA, 8-2, 11-32
port, 2-47
electrical components in power distribution unit, 3-9
electromagnetic interference filter, 3-9, 3-10
Electronic Industries Association, see EIA
electronic tandem network, 7-5, 7-12
emergency transfer
control, 2-64
logic, 2-13, 2-16
panels, 2-3, 8-57
EMI filter, 3-9, 3-10
emulation package, 8-2
endpoints
growth data, 7-11
end-to-end connection, 7-11
enhanced control cabinet (JS8890L), 2-23
environmental requirements
acoustic noise levels, 10-13
air purity, 10-12
altitude and air pressure, 10-12
floor loading, 10-10
multicarrier cabinets, 10-10
floor plans, 10-3 to 10-7
Main Distribution Frame wall area, 10-9
RF noise, 10-13
temperature table area, 10-8
temperature humidity, 10-13
wall area, 10-9
EPN cabinet, 1-4, 1-13, 2-5
EPN maintenance circuit packs, 4-3
equipment, 2-31 to 2-67
982LS current limiter, 2-46
cabling for remote, 5-46
CFY1B current limiter, 2-16, 2-47
connecting, 8-2
data terminal connections, 8-2
digital announcement, 8-31
loudspeaker paging, 8-31
Malicious Call Trace, 8-31
music-on-hold, 8-31
recorded announcement, 8-31
TN1656 tape drive, 2-65
ERL, see Echo-Return Loss
error analysis, 6-9
crashes, 6-22
logs, 9-4
error injection capability, 2-51, 2-52
ES counters, 2-51, 2-52
ETN, see Electronic Tandem Network
ETN/SDN hybrid network, 7-14
European conference of postal and telecommunications
rate 1, see CEPT1
expansion archangels, 2-59, 2-61
control cabinet (JS8890N), 2-18, 2-26
control carrier (JS8890AP), 2-5, 2-7
cell phone, 2-14
interface, 4-3
memory (CPP), 2-7
neighbor, 6-18
port network, 1-4
expansion interface circuit packs
TN570, 2-14, 2-54
TN776, 2-14, 2-54
external device alarming, 2-54
<table>
<thead>
<tr>
<th>Queue-status indicator lamp</th>
<th>8-25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synchronization clock (Stratum 3)</td>
<td>8-31</td>
</tr>
<tr>
<td>External trunks</td>
<td>5-46</td>
</tr>
</tbody>
</table>

### F

**Faceplates**
- Blank | 2-7, 2-22
- Circuit pack | 2-31
- Facility diagnostics | 8-27
- Facility Interface Code | 11-36
- Fan power | 3-11
- Fan units | 3-29 to 3-30
- Maintenance | 9-1
- FCC | 11-36
- Feature capacities | 11-1 to 11-35
- Features | 11-3
- Required hardware | 11-3 to 11-15
- Federal Communications Commission, see FCC
- Feeder, power | 3-2
- Fiber optic cabling | 2-14
- Fiber-optic
  - 9823B lightwave transceiver | 11-22
  - Cabling | 5-2
  - Cabling between multicarrier cabinets | 5-16
  - Cabling between single-carrier and multicarrier cabinets | 5-45
  - Connections | 4-13 to 4-17
  - Expansion interface | 2-54
  - Maximum number of links in CSS system | 4-26
- FIC, see Facility Interface Code
- Five-conductor power distribution cables | 3-6
- Flash-ROM | 2-23, 2-24
- Floor area
  - Multicarrier cabinets | 10-1
  - Single-carrier cabinets | 10-2
- Floor loading requirements | 10-10
- Floor plans | 10-3 to 10-7
- Flow control | 6-22
- Foreign exchange trunks | 7-2
- Form transactions | 6-6
- Formatted reports of hourly traffic data | 6-6
- Frequency response | 11-32
- Analog-to-digital adapter | 11-32
- Functional components of DEFINITY G3V4 | 1-6
- Functions of call management | 6-3
- Fuse panel
  - (J58889AB) | 2-6
  - Sneak | 3-28
- Fused current drains | 3-4
- Fuses | 3-9
- FX, see foreign exchange

### G

G3-MA administration adjunct | 8-27
G3-MT
- Administration adjunct | 8-27
- Table area required | 10-9
- Terminal | 9-2
- Gas tube overvoltage protection device | 10-14
- General purpose tone detector | 2-67
- Generated tones | 11-23 to 11-27
- Generator, ring, see ring generator
- Global
  - Power requirements | 3-5
- SDN
- GM, see group manager
- GPTD, see general purpose tone detector
- Graphics equipment connections | 8-2
- Ground
  - Bar | 3-27
  - Intracabinets | 3-19
  - Plate | 2-19
- Grounding
  - Procedures | 3-1
- Group component of call model | 6-3
- Group manager | 6-4

### H

- Hardware | 2-31 to 2-67
- 982LS current limiter | 2-46
- Additional | 11-3
- Also see equipment
- Background testing | 6-8
- CFY1B current limiter | 2-16, 2-47
- Maintenance | 9-1
- Required for specific features | 11-3 to 11-15
- Heat dissipation
  - Multicarrier cabinets | 10-3
  - Single-carrier cabinets | 2-22
- High reliability | 1-17
- CSS-connected | 4-20
- Directly connected systems | 4-20
- G3i | 4-8
- G3r | 4-8
- Holdover batteries | 3-11, 3-21
- Holdover circuit | 3-21 to 3-26
- Hospitality services call processing feature | 6-5
- Host access trunks | 7-8
- Humidity requirements | 10-10
- Hunt groups, ACD | 8-25
- Hybrid line circuit pack (TN762B) | 2-55
IBM 3270 cluster controller 8-2
ICM, see Incoming Call Management
IDF 5-46
idle trunk 7-1
IG, see ISDN Gateway
immediate-start DID trunk 2-48
impedances
   loop in 11-35
   termination 11-35
impulse noise 11-34
IMT, see inter-machine trunk
In a DCS environment 6-29
Incoming Call Management 8-31
indicator lamps 11-29
information system network 7-16
initialization and recovery 11-18
initialization of each software or hardware component 6-8
Input/output (I/O) circuits 1-8
inputs and outputs, distribution unit 3-5
insertion loss 11-33
installing carriers
   sequence 4-1 to 4-2
integrated announcement circuit pack (TN750C) 2-42
integrated announcement circuit packs
   TN750C 2-42
Integrated CSU 120A 2-52
integrating public network into private network 7-14
interchanger, time-slot 1-3
inter-exchange carrier 7-1
interface
   ADU 7-16
   analog-to-digital 8-2
   Category A coaxial 8-2
   data line circuit pack 7-9
   DCP 2-49
   digital 7-9
   digital multiplexed trunk 7-8
   digital-to-digital 8-2
   DS1 2-51
   DS1/E1 2-52
   duplication 2-53
   EIA 7-9
   expansion 2-54
   ITU 8-2
   LAN Gateway 2-48
   Modular Processor Data Module 7-16
   music-on-hold (122A) 2-57
   packet communications 2-59
   PGATE circuit pack 6-16
   physical 6-24
   SAKI 2-33
   sanity and control 2-33
   smart jack 2-46
TN573 switch node 2-63
   to system network 6-1
   wideband switching ports 7-9
inter-machine trunks 7-6
Intermediate Distribution Frame, see IDF
intermodulation distortion 11-33
internal connectivity 6-9 to 6-28
international power requirements 3-4, 3-5
International Telecommunications Union, see ITU
intertandem tie trunk 7-12
intervening switching systems 6-27
intracabinet grounding 3-19
INTUTY
   connections 8-18 to 8-21
INWATS trunks 7-2
ISDN
   applications 2-62
   BRI 2-wire line circuit pack (TN2198) 2-55
   BRI cabling distances 11-22
   BRI definition 6-24
   BRI line circuit pack (TN556) 2-55
   BRI signaling links 2-59
   connectivity 6-10, 6-18
   D-channel 7-14
   D-channel signaling 2-58
   D-channel treatment 6-22
   Gateway connections 8-9
   LAPD protocols 2-62
   PACCON 6-18
   PRI definition 6-25
   PRI interface (TN464C/D) 2-52
   PRI links 7-14
   PRI signaling 2-51, 7-3
   PRI signaling links 2-59
   signaling 6-18
ISDN-BRI Two-Wire Voice Terminal Cabling Distances 11-22
ISDN-PRI 7-4
ISN, see information system network
isolating the system 8-2
Isolator
   G3i V1 and G3i-Global Multicarrier 3-22
   ITU interface 8-2
IXC, see inter-exchange carrier

J

JS8886N multicarrier Auxiliary Cabinet 2-6
JS8889AB fuse panel 2-6
JS8890AF expansion control carrier 2-5, 2-7
JS8890AF multicarrier expansion control carrier 2-14
JS8890AH control carrier 2-4, 2-7
JS8890AH multicarrier
   control carrier 2-7
   processor carrier 2-11
<table>
<thead>
<tr>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>J58890AJ duplicated control carrier</td>
</tr>
<tr>
<td>J58890AJ multicarrier duplicated control carrier</td>
</tr>
<tr>
<td>J58890AP control carrier</td>
</tr>
<tr>
<td>J58890AP multicarrier control carrier</td>
</tr>
<tr>
<td>J58890AP processor carrier</td>
</tr>
<tr>
<td>J58890BB multicarrier port carrier</td>
</tr>
<tr>
<td>J58890BB port carrier</td>
</tr>
<tr>
<td>J58890H port cabinet</td>
</tr>
<tr>
<td>J58890L basic control cabinet</td>
</tr>
<tr>
<td>J58890L single-carrier basic control cabinet</td>
</tr>
<tr>
<td>J58890L single-carrier enhanced control cabinet</td>
</tr>
<tr>
<td>J58890M duplicated control cabinet</td>
</tr>
<tr>
<td>J58890N expansion control cabinet</td>
</tr>
<tr>
<td>J58890N single-carrier expansion control cabinet</td>
</tr>
<tr>
<td>J58890S single-carrier compact control cabinet</td>
</tr>
<tr>
<td>J58890SA switch node carrier</td>
</tr>
<tr>
<td>jacks, network</td>
</tr>
</tbody>
</table>

**K**

| KS21906, to connect music-on-hold | 8-35 |
| KS23395, to connect music-on-hold | 8-34 |

**L**

| lamp signals | 11-29 |
| LAN |
| ED-15E546 assembly | 2-48 |
| LAN Gateway |
| LAN Gateway ED15E546 assembly | 2-48 |
| LAPD | 2-54, 2-56, 2-58, 2-59, 2-62 |
| LAPD link | 2-50 |
| layered software architecture | 6-6 |
| layers, protocol | 6-24 |
| LBO | 2-51, 2-52 |
| LCJ58890A cabinet harness | 5-11 |
| LDN, see listed directory number |
| LEC, see local exchange company |
| lighting | 10-12 |
| lightning protection | 10-14 |
| lightwave transceiver | 9823A lightwave transceiver 11-22 |
| lightwave transceiver 9823B lightwave transceiver | 11-22 |
| lines for each configuration | 11-2 |
| link access procedure on D-channel, see LAPD link |
| adjunct | 6-16 |
| application | 6-16 |
| connecting DCS | 8-45 to 8-53 |
| CSCP | 6-15 |
| EAL | 6-13 |
| LAPD | 6-20 |

**M**

| MADU, see Modular Asynchronous Data Unit |
| main configurations of DEFINTITY G3V4 | 1-4 |
| Main Distribution Frame | 5-46, 10-9 |
| main switch | 7-5 |
| Main-Satellite/Tributary network | 7-5, 7-11 |
| maintenance | 2-51, 2-52, 9-1 to 9-5 |
| alarm levels | 9-3 |
| alarms | 9-2 |
| attendant console | 9-2 |
| call processing | 6-1 |
| circuit | 9-2 |
| circuit pack driver | 6-4 |
| circuit packs | 9-2 |
| command execution | 6-6 |
| demand tests | 9-3 |
| fault detection | 1-11 |
| interface | 1-8 |
| local | 9-5 |
| periodic tests | 9-3 |
| procedures | 9-3 |
Index

connecting FCC-registered [8-33] [8-34]
connecting non-FCC-registered [8-33]
Music-on-Hold Interface circuit pack (122A) [2-57]

N

Neon power unit (TN755B) [2-61]
NET CONT slot [2-29]
network
  DS1 cabling [5-15]
  ETN [7-12]
  ETN/SDN [7-14]
  information system [7-16]
  inward dialing [7-13]
  jacks [11-36]
  MS/T [7-11]
  private [7-11]
  processing element [2-33] [2-67]
  reconfigurator [8-27]
  STARLAN [7-17]
network control circuit packs
  TN777B [2-29] [2-58]
  UN332 [2-57]
network interface smart jack [2-46]
Network Management [6-6]
network office code
  private [7-13]
  public [7-13]
network services call processing feature [6-5]
NI smart jack [2-46]
NID, see network inward dialing
NM, see Network Management
nodal services [7-6]
noise
  acoustic [10-13]
  impulse [11-34]
  peak level [11-35]
  RF [10-13]
non-US power requirements [3-4] [3-5]
NPE, see network processing element
NXX, see public network office code

O

OCM, see outgoing call management
office application servers [8-31]
office code
  private network [7-13]
  public network [7-13]
off-premises PBX users [7-8]
Open System Interconnect model [6-22]
data-link layer [6-22]
physical layer [6-22]
operating system, Oryx/Pecos [1-11] [6-1]
operation support systems [8-27]
Operations Support System Interface [6-7]
Oryx/Pecos [6-1]
Oryx/Pecos operating system [1-11]
OSI, see Open System Interconnect model
OSS, see operation support system
OSSI, see Operation Support System Interface
outgoing
  call management [2-43]
  PBX trunks [7-8]
over-temperature condition [2-13] [2-16]
overview of DEFINITY G3V4 [1-1] [1-19]
overvoltage protection devices [10-14]

P

PACCON [6-18]
packet
  ACCUNET service [7-10]
  assembler/disassembler [7-10]
  control driver [6-4]
  controller [7-16]
  packet bus [1-8] [6-16]
  loop-around testing [2-58]
  monitoring [2-58]
  signaling [2-58]
  packet control circuit pack (TN778) [2-58]
  packet data line circuit pack (TN553) [2-47] [2-58]
  packet gateway circuit pack (TN577) [2-59]
  packet interface circuit pack (TN1655) [2-11] [2-59]
  packet-switched local area network
  packet-switched public data network [7-10]
  PAD, see packet assembler/disassembler
  PBX standard RS-464A (SP-1378A) [RS-464A standard [11-32]
  PC connections [8-2]
  PC/PBX 3270 emulation package [8-2]
  PCM-encoded analog signal [6-25] [6-28]
  peak noise level [11-35]
  performance [11-1] [11-35]
  echo-return loss [11-35]
  report messages [2-51] [2-52]
  response times [11-3]
  single-frequency return loss [11-35]
  periodic maintenance tests [9-3]
  peripheral connections [8-1] [8-44]
  PGATE interface circuit pack [6-16]

physical
  interface [6-24]
  DSX1 [2-52]
  layer, OSI [6-22]
  links [6-9]
  pins
    circuit pack [2-31]
  PKTINT circuit pack [6-13]
  plug
Index

NEMA, 3-5
PM-Bus, 2-62
PMS, see Property Management System
PN, see Port Network
point-of-presence, 7-1, 7-6
pooled modem circuit pack (TN758), 2-59
POP, see point-of-presence
port cabinet (J58890H), 2-18
port carrier (J58890BB), 2-4, 2-5, 2-7
port circuit packs, 2-31
common components, 2-32
port expansion, 1-4
Port Network, 1-8
port slots
multicarrier, 2-7
single-carrier, 2-22
port-to-port insertion loss, 11-33
positions of carriers in cabinets, 4-1 to 4-2
postal telephone and telegraph trunks, 7-3
power
AC to DC converter, 2-6
backup, 3-11
connection breakers, 3-12
connecting remote cabinets, 3-14
control cabinets, 3-26
current-limited, 2-13, 2-16
DC requirements, 3-4, 3-5
distribution, 2-3
distribution cables, 3-6
distribution in multicarrier cabinets
AC, 3-9
DC, 3-8
distribution unit, 3-11
electrical components, 3-9
fans, 3-11
feeders, 3-2
global requirements, 3-4, 3-5
list of sources, 3-3
location of coupled bonding conductor, 3-27
procedures, 3-1
receptacle strip, 2-6
single-carrier cabinets, 3-21 to 3-25
single-phase 240VAC, 3-2
supply, AC to DC converter, 2-6
wire gauges required, 3-20
power plant, DC, 3-16
power supplies
676B, 2-60
WP, 9153, 2-59
power units
397B, 3-9
397C, 3-9
631DA, 2-60
631DA, multicarrier cabinet, 2-60
631DB, 2-60
631DB, multicarrier cabinet, 2-60
644A, 2-60
644A1, multicarrier cabinet, 2-60
645B1, 2-60
645B1, multicarrier cabinet, 2-60
676B power supply, 2-60
circuit breakers, 3-12
circuit packs, 2-31
electrical components, 3-9
inputs and outputs in multicarrier cabinets, 3-5
maintenance, 9-1
TN 755B Neon, 2-61
PPN cabinet, 1-13, 2-4
circuit from auxiliary connector, 8-57
minimum required carriers and circuit packs, 4-3
PRI, 6-25
printer connections, 8-2, 8-7
printers, 10-9
private line service codes, 11-36
private network, 7-11
office code, 7-13
PROC INTFC slot, 2-29
procedures
grounding, 3-1
maintenance, 9-3
power, 3-1
processing a call, 6-3
Processor, 1-8
80286, 2-23, 2-24
80386, 2-23, 2-24
processor
TN 765 Interface, 2-62
TN 768B, 2-29
UN331B, 2-62
processor carrier
J58890AP, 2-4, 2-7
Processor circuit pack TN 768B, 2-61
processor expansion bus, 2-62
PROC R slot, 2-29
Property Management System, 6-17
connecting, 8-9
protection, 10-7
lightning, 10-14
overvoltage, 10-14
protocols
8-bit character code, 6-25
ADU, 6-25
analog, 6-25
bit-oriented signaling, 2-52
BRI, 6-24
CEPT1
Channel Associated Signaling, 2-52
conversion, 8-2
DCP, 6-24
digital multiplexed interface, 6-25
DMI-BOS, 2-52
DS1, 6-25
for applications, 11-30 to 11-31
layers, 6-24
PRI, 6-25
Robbed-Bit Signaling, 2-51
summary of states, 6-26
<table>
<thead>
<tr>
<th>Term</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>6-22</td>
</tr>
<tr>
<td>Voice-grade data</td>
<td>6-25</td>
</tr>
<tr>
<td>PSPDN, see</td>
<td>packet-switched public data network</td>
</tr>
<tr>
<td>PTT, see</td>
<td>postal telephone and telegraph</td>
</tr>
<tr>
<td>Public network office code</td>
<td>7-13</td>
</tr>
<tr>
<td>Purple slots</td>
<td></td>
</tr>
<tr>
<td>Multicarrier</td>
<td>2-7</td>
</tr>
<tr>
<td>Single-carrier</td>
<td>2-22</td>
</tr>
<tr>
<td>PX-Bus</td>
<td>2-62</td>
</tr>
<tr>
<td>Q</td>
<td></td>
</tr>
<tr>
<td>Quantization distortion loss</td>
<td>11-34</td>
</tr>
<tr>
<td>R</td>
<td></td>
</tr>
<tr>
<td>RBS, see</td>
<td>Robbed-Bit Signaling</td>
</tr>
<tr>
<td>Read/write buffer chip</td>
<td>2-62</td>
</tr>
<tr>
<td>Rear panel connector</td>
<td>11-36</td>
</tr>
<tr>
<td>Receptacle strip</td>
<td>2-6</td>
</tr>
<tr>
<td>Recommended temperature and humidity range</td>
<td>10-11</td>
</tr>
<tr>
<td>Reconfigurator, network</td>
<td>8-27</td>
</tr>
<tr>
<td>Recorded announcement</td>
<td>8-25</td>
</tr>
<tr>
<td>Recording errors and alarms</td>
<td>9-4</td>
</tr>
<tr>
<td>Records collecting for calls</td>
<td>8-30</td>
</tr>
<tr>
<td>Recovery of system</td>
<td>11-16</td>
</tr>
<tr>
<td>Related documentation</td>
<td>10-9</td>
</tr>
<tr>
<td>Cross-connect hardware</td>
<td>10-9</td>
</tr>
<tr>
<td>Maintenance</td>
<td>9-5</td>
</tr>
<tr>
<td>Relay, DC power</td>
<td>3-9, 3-10</td>
</tr>
<tr>
<td>Release Link Trunks</td>
<td>7-8</td>
</tr>
<tr>
<td>Release link trunk</td>
<td>7-1</td>
</tr>
<tr>
<td>Reliability</td>
<td></td>
</tr>
<tr>
<td>Critical</td>
<td>4-9</td>
</tr>
<tr>
<td>CSS-connected systems</td>
<td>4-23</td>
</tr>
<tr>
<td>Directly connected systems</td>
<td>4-16</td>
</tr>
<tr>
<td>G3</td>
<td>4-9</td>
</tr>
<tr>
<td>G3r</td>
<td>4-10</td>
</tr>
<tr>
<td>Single PN EPN</td>
<td>4-11</td>
</tr>
<tr>
<td>Two PN EPN</td>
<td>4-12</td>
</tr>
<tr>
<td>High</td>
<td>4-8, 4-15, 4-20</td>
</tr>
<tr>
<td>CSS-connected systems</td>
<td>4-20</td>
</tr>
<tr>
<td>Directly connected</td>
<td>4-15</td>
</tr>
<tr>
<td>G3</td>
<td>4-8</td>
</tr>
<tr>
<td>G3r</td>
<td>4-8</td>
</tr>
<tr>
<td>Standard</td>
<td>4-5</td>
</tr>
<tr>
<td>CSS-connected systems</td>
<td>4-17</td>
</tr>
<tr>
<td>Directly connected systems</td>
<td>4-13</td>
</tr>
<tr>
<td>G3</td>
<td>4-5</td>
</tr>
<tr>
<td>G3r</td>
<td>4-5</td>
</tr>
<tr>
<td>Remote access trunks</td>
<td>7-3, 7-8</td>
</tr>
<tr>
<td>DS1 transmission distance</td>
<td>11-23</td>
</tr>
<tr>
<td>Equipment cabling</td>
<td></td>
</tr>
<tr>
<td>Indirect neighbor links</td>
<td>5-46</td>
</tr>
<tr>
<td>Maintenance facility</td>
<td>6-15</td>
</tr>
<tr>
<td>Testing</td>
<td>9-1</td>
</tr>
<tr>
<td>Remote target address</td>
<td>2-51, 2-52</td>
</tr>
<tr>
<td>Removable air filter</td>
<td>3-29</td>
</tr>
<tr>
<td>REN, see</td>
<td>ringer equivalency numbers</td>
</tr>
<tr>
<td>Replacing circuit packs</td>
<td>9-5</td>
</tr>
<tr>
<td>Reporting</td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>2-51, 2-52</td>
</tr>
<tr>
<td>Representative number of lines</td>
<td>11-2</td>
</tr>
<tr>
<td>Required buttons</td>
<td>11-15 to 11-18</td>
</tr>
<tr>
<td>Requirements</td>
<td></td>
</tr>
<tr>
<td>Acoustic noise levels</td>
<td>10-13</td>
</tr>
<tr>
<td>Additional hardware</td>
<td>11-3</td>
</tr>
<tr>
<td>Altitude and air pressure</td>
<td>10-12</td>
</tr>
<tr>
<td>Environmental</td>
<td>10-1 to 10-14</td>
</tr>
<tr>
<td>Floor area</td>
<td>10-1, 10-2</td>
</tr>
<tr>
<td>Floor loading</td>
<td>10-10</td>
</tr>
<tr>
<td>Multicarrier cabinets</td>
<td></td>
</tr>
<tr>
<td>Floor loading</td>
<td>requirements 10-10</td>
</tr>
<tr>
<td>Floor plans</td>
<td>10-3 to 10-7</td>
</tr>
<tr>
<td>RF noise</td>
<td>10-13</td>
</tr>
<tr>
<td>Table area</td>
<td>10-8</td>
</tr>
<tr>
<td>Temperature and humidity</td>
<td>10-10</td>
</tr>
<tr>
<td>Wall area</td>
<td>10-9</td>
</tr>
<tr>
<td>Resetting system</td>
<td>11-18</td>
</tr>
<tr>
<td>Resource</td>
<td></td>
</tr>
<tr>
<td>Control layer</td>
<td>6-4</td>
</tr>
<tr>
<td>Management</td>
<td>6-3</td>
</tr>
<tr>
<td>Response times</td>
<td>11-3</td>
</tr>
<tr>
<td>RF noise requirements</td>
<td>10-13</td>
</tr>
<tr>
<td>Ring generator</td>
<td>3-11, 3-12</td>
</tr>
<tr>
<td>124B2 ring generator</td>
<td>3-10</td>
</tr>
<tr>
<td>Ring generator circuit pack (TN2202)</td>
<td>2-63</td>
</tr>
<tr>
<td>Ringer equivalency numbers</td>
<td>11-36</td>
</tr>
<tr>
<td>Ringing patterns, administrable</td>
<td>11-27 to 11-28</td>
</tr>
<tr>
<td>RINL, see</td>
<td>remote indirect neighbor link</td>
</tr>
<tr>
<td>RISC, see</td>
<td>remote indirect neighbor link</td>
</tr>
<tr>
<td>Riser cable</td>
<td>11-22</td>
</tr>
<tr>
<td>RLTS, see</td>
<td>release link trunk</td>
</tr>
<tr>
<td>RNX, see</td>
<td>private network office code</td>
</tr>
<tr>
<td>Robbed-Bit Signaling</td>
<td>2-51, 2-73</td>
</tr>
<tr>
<td>Rotary mechanical splice</td>
<td>11-22</td>
</tr>
<tr>
<td>Routing and termination selection</td>
<td>6-3</td>
</tr>
<tr>
<td>RS-232</td>
<td>6-24, 8-2</td>
</tr>
<tr>
<td>RS-366</td>
<td>8-2</td>
</tr>
<tr>
<td>RS-449</td>
<td>6-24, 8-2</td>
</tr>
<tr>
<td>RS-464A</td>
<td>11-32</td>
</tr>
<tr>
<td>Rules, connectivity</td>
<td>6-27</td>
</tr>
</tbody>
</table>
## Index

- **G3r**: 4-5
- **G3vs**: 4-5
- **star-based local area network**: 7-17
- **STARLAN**: 7-17
- **station service**: 6-4
- **station-to-CO trunk frequency response**: 11-32
- **station-to-digital interface frequency response**: 11-32
- **station-to-station frequency response**: 11-32
- **storage**: 2-65, 6-1
- **Stratum 3 clock**: 2-67
- **Stratum 3 external synchronization clock**: 8-31
- **Subsystems**: 6-1
- **subtending switch**: 7-5
- **summary of protocol states**: 6-26
- **supporting larger line size switches**: 6-7
- **switch transmission characteristics**: 11-32 to 11-35
- **switch node**: 1-4
- **carrier (J5890SA)**: 2-4, 2-5, 2-7
- **clock (TN572)**: 2-17
- **interface (TN773)**: 2-17
- **Switch Node carrier cabling**: 5-14
- **Switch Processing Element**: 1-8, 2-11, 2-53
- **recovery**: 6-8
- **switch-control channel driver**: 6-4
- **switching, wideband**: 7-9
- **symmetrical voltages**: 2-63
- **synchronization**: 6-22
- **system**:
  - **administration**: 1-17
  - **architecture**: 1-11
  - **comparisons of DEFINTY versions**: 1-18
  - **critical reliability**: 4-9
  - **demand testing**: 9-3
  - **description of**: 1-2
  - **duplication**: 1-17
  - **environmental requirements**: 10-1 to 10-14
  - **expanding functional components**: 1-6
  - **insertion loss**: 11-33
  - **isolation**: 8-2
  - **links**: 6-9, 6-18
  - **monitoring, see maintenance protocols**: 6-22
  - **quantization distortion loss**: 11-34
  - **resetting**: 11-18
  - **specifications**: 11-1 to 11-35
  - **standard reliability**: 4-5
  - **ventilation requirements**: 10-10
- **system access and maintenance circuit pack**: TN1648, 2-64
- **system management**:
  - **call processing feature**: 6-5
  - **internal processes**: 1-11
- **software**: 6-6
- **system network, interfacing to**: 6-1
- **system parameters maintenance screen**: 9-3
- **system-alarmed troubles**: 9-1

### T

- **T1 transmission lines**: 7-4
- **cabling**: 5-14
- **T1.403**: 2-51, 2-52
- **table area**: 10-8
- **TABS remote target address**: 2-51, 2-52
- **tandem switch**: 7-5, 7-12
- **tandem tie trunk network**: 7-5
- **tape drive**: 2-23, 2-24, 2-48
- **maintenance**: 9-1
- **TN1656 circuit pack**: 2-65
- **TCM, see Traveling Class Mark**
- **TDM, see Time Division Multiplexing**
- **technical specifications**: 11-1 to 11-35
- **telemarketing adjuncts**: 8-25
- **telephone, see voice terminal**
- **temperature**:
  - **alarm**: 3-30
  - **humidity requirements**: 10-10
  - **sensor**: 3-30
- **terminal**:
  - **alarm notification buttons**: 9-4, 9-5
  - **blocks**: 3-11, 3-12
  - **concentrator**: 7-16
  - **connections**: 8-4
  - **equipment port wiring**: 11-36
  - **handling**: 6-3
  - **Terminal Translation Initialization**: 6-8
  - **terminating endpoint**: 6-3
  - **termination impedances**: 11-35
  - **terminators (AHF111)**: 2-13
  - **terrestrial digital transmission services**: 7-7
  - **test jack**: 2-52
  - **testing**: 9-3 to 9-5
  - **circuit packs**: 9-5
  - **local**: 9-5
  - **remote**: 9-5
  - **verification**: 9-5
- **thermal alarm circuit**: 3-29
- **thermistor sensor**: 3-29
- **three-phase VAC power**: 3-2
- **tie trunk circuit packs**:
  - **TN2140**: 2-66
  - **TN437**: 2-65
  - **TN439**: 2-65
  - **TN458**: 2-65
  - **TN497**: 2-65
  - **TN760D**: 2-66
- **tie trunk, DS1**: 2-53
- **tie trunks**: 7-1, 7-5
<table>
<thead>
<tr>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Division Multiplexing</td>
</tr>
<tr>
<td>bus</td>
</tr>
<tr>
<td>LAN extension cables</td>
</tr>
<tr>
<td>timer driver</td>
</tr>
<tr>
<td>time-slot interchanger</td>
</tr>
<tr>
<td>TN1648 system access and maintenance circuit pack</td>
</tr>
<tr>
<td>TN1650B memory circuit pack</td>
</tr>
<tr>
<td>TN1655 packet interface circuit pack</td>
</tr>
<tr>
<td>TN1657 disk drive circuit pack</td>
</tr>
<tr>
<td>TN2135 analog line circuit pack</td>
</tr>
<tr>
<td>TN2136 digital line circuit pack</td>
</tr>
<tr>
<td>TN2138 CO trunk circuit pack</td>
</tr>
<tr>
<td>TN2139 DID trunk circuit pack</td>
</tr>
<tr>
<td>TN2140 tie trunk circuit pack</td>
</tr>
<tr>
<td>TN2144 analog line circuit pack</td>
</tr>
<tr>
<td>TN2146 DID trunk circuit pack</td>
</tr>
<tr>
<td>TN2147 CO trunk circuit pack</td>
</tr>
<tr>
<td>TN2149 analog line circuit pack</td>
</tr>
<tr>
<td>TN2169 alarm circuit pack</td>
</tr>
<tr>
<td>TN2180 analog line circuit pack</td>
</tr>
<tr>
<td>TN2181 DCP interface circuit pack</td>
</tr>
<tr>
<td>TN2182 tone-generator/detector/clock circuit pack</td>
</tr>
<tr>
<td>TN2183 16-port, analog line circuit pack</td>
</tr>
<tr>
<td>TN2184 DIOD trunk circuit pack</td>
</tr>
<tr>
<td>TN2198 ISDN BRI 2-wire line circuit pack</td>
</tr>
<tr>
<td>TN2202 ring generator circuit pack</td>
</tr>
<tr>
<td>TN417 auxiliary trunk circuit pack</td>
</tr>
<tr>
<td>TN419B tone-clock circuit pack</td>
</tr>
<tr>
<td>TN420C tone detector circuit pack</td>
</tr>
<tr>
<td>TN429 DIOD trunk circuit pack</td>
</tr>
<tr>
<td>TN433 speech synthesizer circuit pack</td>
</tr>
<tr>
<td>TN436B DID trunk circuit pack</td>
</tr>
<tr>
<td>TN437 tie trunk circuit pack</td>
</tr>
<tr>
<td>TN438B CO trunk circuit pack</td>
</tr>
<tr>
<td>TN439 tie trunk circuit pack</td>
</tr>
<tr>
<td>TN447 CO trunk circuit pack</td>
</tr>
<tr>
<td>TN458 tie trunk circuit pack</td>
</tr>
<tr>
<td>TN459B DID trunk circuit pack</td>
</tr>
<tr>
<td>TN464 DS1/E1 interface circuit pack</td>
</tr>
<tr>
<td>TN464C DS1/E1 interface circuit pack</td>
</tr>
<tr>
<td>TN464D DS1/E1 interface circuit pack</td>
</tr>
<tr>
<td>TN464E/F circuit pack</td>
</tr>
<tr>
<td>TN465 CO trunk circuit pack</td>
</tr>
<tr>
<td>TN465B CO trunk circuit pack</td>
</tr>
<tr>
<td>TN468B analog line circuit pack</td>
</tr>
<tr>
<td>TN479 analog line circuit pack</td>
</tr>
<tr>
<td>TN497 tie trunk circuit pack</td>
</tr>
<tr>
<td>TN553 packet data line circuit pack</td>
</tr>
<tr>
<td>TN556 ISDN BRI line circuit pack</td>
</tr>
<tr>
<td>TN556 multi-function circuit pack</td>
</tr>
<tr>
<td>TN570 expansion interface circuit pack</td>
</tr>
<tr>
<td>TN572 switch node clock circuit pack</td>
</tr>
<tr>
<td>TN573 switch node interface circuit pack</td>
</tr>
<tr>
<td>TN574 DS1 converter circuit pack</td>
</tr>
<tr>
<td>TN577 packet gateway circuit pack</td>
</tr>
<tr>
<td>TN722B DS1 tie trunk circuit pack</td>
</tr>
<tr>
<td>TN725B speech synthesizer circuit pack</td>
</tr>
<tr>
<td>TN726B data line circuit pack</td>
</tr>
<tr>
<td>TN735 MET line circuit pack</td>
</tr>
<tr>
<td>TN742 analog line circuit pack</td>
</tr>
<tr>
<td>TN744 Call Classifier circuit pack</td>
</tr>
<tr>
<td>TN746 analog line circuit pack</td>
</tr>
<tr>
<td>TN746B analog line circuit pack</td>
</tr>
<tr>
<td>TN747B CO trunk circuit pack</td>
</tr>
<tr>
<td>TN748C tone detector circuit pack</td>
</tr>
<tr>
<td>TN750 announcement circuit pack</td>
</tr>
<tr>
<td>TN750B announcement circuit pack</td>
</tr>
<tr>
<td>TN750C integrated announcement circuit pack</td>
</tr>
<tr>
<td>TN753 DID trunk circuit pack</td>
</tr>
<tr>
<td>TN754 digital line circuit pack</td>
</tr>
<tr>
<td>TN754B digital line circuit pack</td>
</tr>
<tr>
<td>TN755B Neon power unit</td>
</tr>
<tr>
<td>TN756 tone detector circuit pack</td>
</tr>
<tr>
<td>TN756 tone generator/detector circuit pack</td>
</tr>
<tr>
<td>TN758 pooled modem circuit pack</td>
</tr>
<tr>
<td>TN760D tie trunk circuit pack</td>
</tr>
<tr>
<td>TN762B hybrid line circuit pack</td>
</tr>
<tr>
<td>TN763B/C/D auxiliary trunk circuit pack</td>
</tr>
<tr>
<td>TN765 processor interface circuit pack</td>
</tr>
<tr>
<td>TN767B DS1 interface circuit pack</td>
</tr>
<tr>
<td>TN767D/ES1 circuit pack</td>
</tr>
<tr>
<td>TN768 tone-clock circuit pack</td>
</tr>
<tr>
<td>TN769 analog line circuit pack</td>
</tr>
<tr>
<td>TN771B maintenance/test circuit pack</td>
</tr>
<tr>
<td>TN772 duplication interface circuit pack</td>
</tr>
<tr>
<td>TN775 maintenance circuit pack</td>
</tr>
<tr>
<td>TN775B maintenance circuit pack</td>
</tr>
<tr>
<td>TN776 expansion interface circuit pack</td>
</tr>
<tr>
<td>TN777B network control circuit pack</td>
</tr>
<tr>
<td>TN778 packet control circuit pack</td>
</tr>
<tr>
<td>TN780 tone-clock circuit pack</td>
</tr>
<tr>
<td>TN786B processor circuit pack</td>
</tr>
<tr>
<td>TONE DET/GEN slot</td>
</tr>
<tr>
<td>tone detector circuit packs</td>
</tr>
<tr>
<td>TN420C</td>
</tr>
<tr>
<td>TN474C</td>
</tr>
<tr>
<td>TN756</td>
</tr>
<tr>
<td>tone generator/detector circuit pack (TN756)</td>
</tr>
<tr>
<td>tone-clock</td>
</tr>
<tr>
<td>tone-clock circuit packs</td>
</tr>
<tr>
<td>TN418B</td>
</tr>
<tr>
<td>TN768</td>
</tr>
<tr>
<td>TN780</td>
</tr>
<tr>
<td>tone-generator/detector/clock circuit pack (TN2182)</td>
</tr>
<tr>
<td>tones</td>
</tr>
<tr>
<td>call progress</td>
</tr>
<tr>
<td>customizable</td>
</tr>
<tr>
<td>generated</td>
</tr>
<tr>
<td>Transfer on Ringing</td>
</tr>
<tr>
<td>translation</td>
</tr>
<tr>
<td>backup on tape</td>
</tr>
<tr>
<td>customer</td>
</tr>
<tr>
<td>data backup</td>
</tr>
<tr>
<td>database management</td>
</tr>
<tr>
<td>transmission</td>
</tr>
<tr>
<td>characteristics</td>
</tr>
<tr>
<td>DS1 remoting distance</td>
</tr>
<tr>
<td>errors</td>
</tr>
</tbody>
</table>
### Index

#### Speed
- Fiber-optic: 11-22
- Stream: 6-22

#### Traveling Class Mark
- Location: 7-11
- Switch: 7-5

#### Tripping Circuit Breaker
- 2-13, 2-16

#### Trunk Speed
- 6-28

#### Trunking Facilities
- 6-27

#### Trunks
- 800-Service: 7-2
- Access: 7-6
- Advanced Private Line: 7-8
- Auxiliary: 7-1, 7-7
- Bypass Access: 7-6
- CO: 7-2
- Digital Multiplexed Interface: 7-8
- Electronic Tandem Network: 7-5
- Foreign Exchange: 7-2
- Host Access: 7-8
- Inter-Machine: 7-6
- INWATS: 7-2
- Local Exchange: 7-1
- Main-Satellite/Tributary Network: 7-5
- Miscellaneous: 7-1
- Outgoing PBX: 7-8
- Postal Telephone and Telegraph: 7-3
- Release Link: 7-1, 7-8
- Remote Access: 7-3, 7-8
- Special Access: 7-1, 7-6
- Tandem Tie Network: 7-5
- Tie Trunks: 7-1, 7-5

#### Wide Area Telecommunications Service
- 7-2

#### Terminal Translation Initialization (TTI)
- See: 7-2

#### Tandem Tie Trunk Network (TTTN)
- See: 7-2

#### Two-Port Network Multicarrier EPN Cabinet
- Minimum Required Carriers and Circuit Packs: 4-4

#### Types of Cabling
- 5-1

#### Types of Circuit Pack Slots
- Multicarrier Cabinets: 2-7
- Single-Carrier Cabinets: 2-22

#### Types of Circuit Packs
- 2-21

#### UAS Counters
- 2-41, 2-52

#### UL
- See: Underwriters Laboratories

#### UM
- See: User Manager

#### UN330B Duplication Interface Circuit Pack
- 2-53

#### UN330B Duplication Interface Circuit Pack
- 5-13

#### UN331B Processor
- 2-62

#### UN332 Network Control Circuit Pack
- 2-57

#### Underwriters Laboratories
- 10-14

#### Uniform Dialing
- 7-14

#### Uninterruptible Power Supply
- 3-11

#### Unused Circuit Pack Slots
- 2-7

#### Updating Database
- 6-6

#### UPS
- See: Uninterruptible Power Supply

#### User
- Component of Call Model: 6-3
- Interface and Control Layer: 6-6
- Manager: 6-4
- User-Reported Troubles: 9-1

#### V

#### V.35
- 6-24, 8-2

#### Valuing Database
- 6-6

#### VDN of Origin Announcements
- 2-42

#### Ventilation Requirements
- 10-10

#### Verification Tests
- 9-5

#### Video Teleconferencing
- 7-7

#### Voice Information System
- Connection Information: 8-5

#### Voice Information System, Connecting
- 8-9

#### Voice Management Call Processing Feature
- 6-5

#### Voice Terminals
- Alarm Buttons: 9-4 to 9-5
- Indicator Lamps: 11-29
- Maintenance: 9-1
- Multifunction: 9-2

#### Voice-Grade Data
- 6-25
- DSO/E1: 7-3

#### Voicemail, AUDIX System
- 2-47

#### Voltage Drop of Wire
- 3-20

#### W

#### Warning Alarms
- 9-3

#### WATS
- See: Wide Area Telecommunications Service

#### Weight
- Single-Carrier Cabinets: 2-22
- Multicarrier: 2-7
- Single-Carrier: 2-22

#### Wide Area Telecommunications Service Trunks
- 7-2

#### Wideband Switching
- 7-9

#### Wink-Start
- DID Trunk: 2-48
- Tie Trunk: 2-65

#### Wire
- Gauges Required for Power: 3-20
- Voltage Drop: 3-20

#### Wiring
- Premises: 11-36
### Index

- terminal equipment ports: 11-36
- WP-90510 AC power supply: 3-26
- WP-91153 power supply: 2-59

### X

- X.25: 7-10
- X.25 remote link: 6-6

### Y

- Yellow status LED on circuit pack: 2-31