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Contact Avaya Support
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Chapter 1: Introduction

About this Guide

This document gives an overview of the products and services that make up the Avaya Communication Manager with Survivable SIP Gateways Solution. It also contains technical specifications and requirements, product interactions, and a list of the procedures you must perform to install and configure this solution. Each procedure contains links to documents that provide detailed instructions on how to install, configure, and administer the associated product.

Intended Audience

The intended audience for this document is Avaya Services and Authorized Business Partners who install, implement, and support the Avaya Communication Manager with Survivable SIP Gateways Solution.
Introduction
Chapter 2: Solution Overview

Avaya Communication Manager with Survivable SIP Gateways is part of Avaya’s Intelligent Branch Solutions to address enterprise customer’s branch communication needs both from a telecom perspective as well as from a business user’s perspective. The virtual enterprise is a reality. Most employees now work outside the main headquarters in branch sites and are increasingly mobile between locations. An enterprise communication solution must enable all users to collaborate from anywhere, working productively with the same advanced feature sets rather than learning disparate systems. As enterprises embrace VoIP and leverage the benefit of a central call feature and management server, branch office survivability is critical to branch office operations.

Avaya Communication Manager with SIP Survivable Gateway is a SIP based solution that not only addresses the branch survivability needs but cost effectively extends Avaya Communication Manager’s feature functionality and its Unified Communication application suite to very small locations (2-10 users). Users in remote locations can avail all the unified communications feature set and remain connected to the outside world during network outages. This solution is especially more attractive to existing Avaya Communication Manager customers. They can re-use their existing Avaya Communication Manager licenses which bring down the cost of the solution even further.

Benefits
Avaya Communication Manager with SIP Survivable Gateways provides all the same benefits that come along with Avaya Communication Manager:

- **Lower operating cost:** The centralized architecture provides ease of management. IT/telecom staff can make MAC changes from a central location. Since they can now control the branch communication equipment, they can attend to any issues immediately. Re-use of Avaya Communication Manager licenses and low-cost SIP gateways keep the capex down.

- **Improved Employee Productivity:** Employees have access to all the productive enhancing Avaya Unified Communication (UC) applications such as unified messaging, unified conferencing, presence, and instant messaging (IM).

- **Branch Office Survivability:** Branches can survive WAN outages and remain connected to the outside world using the public-switched telephone network (PSTN) interface.

**Note:**
Avaya Communication Manager systems with Gxx gateways provide enhanced survivability features. The Avaya Communication Manager with Survivable SIP Gateways Solution only provides basic survivability (that is, incoming calls over analog trunks, outgoing calls over analog trunks, intra branch calling, etc.).
The following figure is a high level architecture view of the solution:

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<td>Headquarters</td>
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<td>2</td>
<td>Avaya Communication Manager</td>
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<tr>
<td>3</td>
<td>Telephone Configuration File Server – HTTP/HTTPS</td>
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<tr>
<td>4</td>
<td>Avaya Modular Messaging</td>
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<tr>
<td>5</td>
<td>Avaya Media Gateways</td>
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<td>Avaya SES</td>
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<td>Public-switched telephone network</td>
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<td>Wide area network</td>
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<td>Branch 2</td>
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<td>Branch 3</td>
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<td>11</td>
<td>Branch 1</td>
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<tr>
<td>12</td>
<td>Avaya 9600 SIP Telephones</td>
</tr>
</tbody>
</table>
Target Market
This solution targets large enterprises with hundreds of small back offices. Large enterprises that already have Avaya Communication Manager in the core will greatly benefit from this solution. Example of such enterprises includes (but is not limited to):

- FSI (claim offices of insurance)
- logistics (truck depots)
- healthcare (clinics)
- government

Positioning
Avaya Communication Manager with Survivable SIP Gateways Solution is perfect for small back-office locations of a large enterprise. Such locations have the following characteristics:

- Less than 10 users
- An aging, small private branch exchange (PBX) or Centrex infrastructure
- Voice-ready WAN to the branch
- Employees interact with their customers and colleagues using the voice communication tools. (Claims offices of a large insurance company and truck depots of shipping companies are good examples of such branches.)
- Basic survivability such as emergency calling, outgoing calls, and incoming calls. (Advanced survivability features like seamless voicemail is not required for these locations.)

⚠️ Note:
This solution does not support remote agent logins.

Avaya’s Intelligent Branch solutions offer a wide product range to address unique needs. For example, employees at branch locations would benefit greatly from UC tools like mobility, unified messaging, conferencing, IM, and Presence. Avaya Communication Manager with Survivable SIP Gateways Solution is a very good fit for existing Avaya Communication Manager customers who have small branches (that is, less than 10 users per branch).

Related topics:
Reference Configurations on page 10
Reference Configurations

This section provides the reference configurations that have been tested and verified for the Avaya Communication Manager with Survivable SIP Gateways Solution. This solution supports the following configurations:

• centralized trunking configuration
• distributed trunking configuration

Related topics:
- Centralized Trunking Configuration on page 11
- Distributed Trunking Configuration on page 12
Centralized Trunking Configuration

In the centralized trunking configuration, all public-switched telephone network calls (that is, inbound calls to the enterprise and outbound calls from the enterprise) are routed to/from the Avaya media gateways that are centrally located at the headquarters.

Avaya Communication Manager with Survivable SIP Gateways Solution
Centralized Trunking Configuration

1. Headquarters
2. Avaya Communication Manager
3. Telephone Configuration File Server – HTTP/HTTPS
4. Avaya Modular Messaging
5. Avaya Media Gateways
6. Avaya SES
7. Headquarters connection to public-switched telephone network
In normal mode (WAN connection to branch is “up”), the following occurs:

• All SIP call control and routing is provided by the centralized Avaya SES/Avaya Communication Manager (headquarters).
• All outbound PSTN calls from the branch are routed to a centralized Avaya G650 media gateway.
• Inbound calls from the PSTN to a branch Direct Inward Dialed (DID) number enter the enterprise network at the centralized Avaya G650 media gateway (headquarters).

In survivability mode (WAN connection to branch is “down”), the following occurs:

• All SIP call control and call routing is provided by the local branch AudioCodes gateway.
• All branch Avaya 9600 SIP telephones are transitioned and registered to the AudioCodes gateway.
• All branch outbound PSTN calls are routed to the AudioCodes gateway FXO interface.
• Inbound calls from the PSTN to a branch DID number are not supported.

---

**Distributed Trunking Configuration**

In a distributed trunking configuration, Avaya Communication Manager Location-Based Routing features route all public-switched telephone calls according to the origination location of the call. Local calls from the branch locations are routed back to the same branch location from which the calls originated and terminate on the branch gateway. This configuration has the potential benefits of saving bandwidth on the branch access network, off-loading the WAN
and centralized media gateway resources, avoiding toll charges, and reducing latency for increased call quality.

**Avaya Communication Manager with Survivable SIP Gateways Solution**

**Distributed Trunking Configuration**

1. Headquarters
2. Avaya Communication Manager
3. Telephone Configuration File Server – HTTP/HTTPS
4. Avaya Modular Messaging
5. Avaya Media Gateways
6. Avaya SES
7. Headquarters connection to public-switched telephone network
8. Public-switched telephone network
9. Wide area network
10. Wide area network connection
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Branch connection to public-switched telephone network</td>
</tr>
<tr>
<td>12</td>
<td>Branch 1</td>
</tr>
<tr>
<td>13</td>
<td>Avaya 9600 SIP Telephones</td>
</tr>
<tr>
<td>14</td>
<td>AudioCodes MP Survivable SIP Gateway</td>
</tr>
<tr>
<td>15</td>
<td>FXS analog stations</td>
</tr>
<tr>
<td>16</td>
<td>Branch 2</td>
</tr>
<tr>
<td>17</td>
<td>Branch 3</td>
</tr>
</tbody>
</table>

In normal mode (WAN connection to branch is “up”), the following occurs:

- All SIP call control and routing is provided by the centralized Avaya SES/Avaya Communication Manager.

- Outbound, local PSTN calls from the branch are routed to the local branch AudioCodes gateway FXO interface by Avaya Communication Manager location-based routing and Avaya SES host address maps.

- Outbound, long-distance PSTN calls from the branch are routed to a centralized Avaya G650 media gateway (headquarters).

- Inbound calls from the PSTN to a branch Direct Inward Dialed (DID) number enter the network at the local branch AudioCodes gateway FXO interface and are routed to the Avaya SES/Avaya Communication Manager for call treatment.

In survivability mode (WAN connection to branch is “down”), the following occurs:

- All SIP call control and call routing is provided by the local branch AudioCodes gateway.

- All branch Avaya 9600 SIP telephones are transitioned and registered to the AudioCodes gateway.

- All branch outbound PSTN calls are routed to the AudioCodes gateway FXO interface.

- Inbound calls from the PSTN to a branch DID number enter the network at the local branch AudioCodes gateway FXO interface. The AudioCodes gateway routes the call to an Avaya 9600 SIP telephone assigned to the DID.
Chapter 3: Services

Avaya and its partners have more than 20 years of experience servicing multi-vendor voice and data networks, supporting hundreds of products and collaborating with other experts in the field. The Avaya Intelligent Branch solution is backed by a comprehensive set of service offers from Avaya Global Services. Services include:

- **Assessment**: Avaya’s collaborative consultation begins with developing an understanding of your current business strategy and ends with a report highlighting the financial and operational impacts of a program at your organization. Output includes a technology, demographic, security, and business continuity assessment; ranked change opportunities; business plan; implementation strategies; and performance metrics. The demographic assessment includes worker profiles and recommendations for configuring and using the applications that best suit each worker profile. Opportunities for change are ranked by complexity and impact. This service is currently only available in North America.

- **Installation and configuration**: Implementation of your solution is made easy with knowledgeable technical and professional services associates available to help deploy your applications — freeing your critical IT resources to remain focused on supporting your core operations. These experts also provide an opportunity for knowledge sharing — avoiding costly project over-runs and achieving timely implementation through standard delivery best practices.

- **Diagnostics and monitoring**: Diagnostic and monitoring services ensure uptime to prevent work flow disruptions and give you peace of mind as the system grows with your company.

- **Support**: 24/7 support means help from the right expert is always near. Based on your business requirements, support can include technical guidance (for implementation, administration, features, and applications); product support; moves, adds, and changes (MACS); remote backup administration to ensure data availability; and system/network performance management. The Avaya InSite Knowledge Management search engine provides a robust search capability and access to the Avaya knowledge base, which is used by Avaya Global Service Delivery engineers. This capability is accessible, at no additional cost, at [http://support.avaya.com](http://support.avaya.com) to customers with support contracts and authorized BusinessPartners who enter their Single Sign On (SSO) authentication.

**Note:**

For this solution, Avaya Global Services offers maintenance, including remote Tier 3 support and CMO hardware replacement for the AudioCodes gateways.
To deliver a complete range of solutions for its customers, Avaya has assembled a strong network of partners that offer best-of-breed technology. With each enterprise taking a unique approach to its program, Avaya’s partners ensure the right technology is always available for your company.

Industry leading vendors are selected by Avaya for their expertise in applications, hardware and services. From secure networking, to vertical specific applications, to quality-of-service solutions, as Avaya DevConnect members, partners’ technology integrates smoothly with Avaya’s portfolio. Technologies include:

- Security gateways
- Routers
- Collaboration applications
- Networking
- SIP service providers
- Quality-of-service (QoS) solutions and more

For more information about Avaya DevConnect, go to DevConnect at [www.avaya.com/devconnect](http://www.avaya.com/devconnect).

⚠️ **Note:**

Avaya does NOT implement, troubleshoot, or maintain the third party/DevConnect components of the solution.
Chapter 5: Hardware and Software Components

This topic lists all of the hardware and software components that are available in the Avaya Communication Manager with Survivable SIP Gateways solution.

- Avaya Communication Manager Release 5.1 running on S8300, S85xx, or S87xx servers with G350, G450, G650, or G700 media gateways
- Avaya SIP Enablement Services (SES) Release 5.1 running on an S85xx server
- Avaya Application Enablement Services (AES) Release 3.1 or Release 4.1, depending on the third-party components you are using

- Telephones:
  - Avaya 9620 one-X Deskphones using Avaya 96xx R2.4 SIP firmware
  - Avaya 9630G one-X Deskphones using Avaya 96xx R2.4 SIP firmware
  - Avaya 9640G one-X Deskphones using Avaya 96xx R2.4 SIP firmware

- AudioCodes SIP media gateways:
  - MediaPack™ 114 (2 FXO 2 FXS) with firmware version 5.6
  - MediaPack 118 (4 FXO 4 FXS) with firmware version 5.6
  - MediaPack 118 (FXO) with firmware version 5.6
Hardware and Software Components
Chapter 6: Installation Checklist

Before setting up this solution, make sure you have the information listed in the following table.

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<thead>
<tr>
<th>#</th>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Topology map</td>
<td>Topology map for the overall solution including IP addresses</td>
</tr>
<tr>
<td>2</td>
<td>Information about headquarters</td>
<td>Avaya Communication Manager login information (admin, dadmin, craft, etc.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avaya SES login information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CLAN or Procr for SIP trunk between Avaya Communication Manager and Avaya SES</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SIP domain name</td>
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<tr>
<td></td>
<td></td>
<td>Avaya SES Edge IP address</td>
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<tr>
<td></td>
<td></td>
<td>Avaya SES Home IP address</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Desired SIP TCP ports for headquarters – branch communications</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avaya SES dial plan maps for public-switched telephone network and branch extension calls</td>
</tr>
<tr>
<td>3</td>
<td>Information about branches</td>
<td>IP/mask/DNS for the gateway</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A DHCP server for the telephones (optional, but recommended in case the telephones reboot while the WAN is “down”)</td>
</tr>
</tbody>
</table>
Chapter 7: Setting Up the Solution

This section provides information about setting up the components of the Avaya Communication Manager with Survivable SIP Gateways Solution.

Related topics:
- Setting up Headquarters on page 23
- Setting up Branches on page 24

Setting up Headquarters

Refer to the following documentation:

- Avaya Communication Manager Survivable SIP Gateway Solution using the AudioCodes MP-114 in a Centralized Trunking Configuration – Issue 1.0.
- Avaya Communication Manager Survivable SIP Gateway Solution using the AudioCodes MP-114 in a Distributed Trunking Configuration – Issue 1.0.
- Administration for Network Connectivity for Avaya Communication Manager
- Administrator Guide for Avaya Communication Manager
- Administering SIP Enablement Services on the Avaya S8300 Server
- Installing and Administering SIP Enablement Services
- SIP Enablement Services (SES) Implementation Guide
- SIP Support in Avaya Communication Manager Running on Avaya S8xxx Servers
- Avaya one-X Deskphone SIP for 9600 Series IP Telephones Installation and Maintenance Guide Release 2.2
- Avaya one-X Deskphone SIP for 9600 Series IP Telephones Administrator Guide Release 2.2

1. Verify that Communication Manager Release 5.1 or later is installed and administered properly at headquarters.

2. Verify that SES R5.1 or later is installed and administered properly at headquarters.

3. Verify that the Avaya IP phone configuration file server is administered properly. This server contains the 46xxsettings.txt file that is used by Avaya IP telephones to set the values of telephone configuration parameters. Make sure the parameters
used by the Avaya 96xx SIP telephones for survivability are configured properly in the 46xxsettings.txt file.

Setting up Branches

Refer to the following documentation:

- Avaya Communication Manager Survivable SIP Gateway Solution using the AudioCodes MP-114 in a Centralized Trunking Configuration – Issue 1.0
- Avaya Communication Manager Survivable SIP Gateway Solution using the AudioCodes MP-114 in a Distributed Trunking Configuration – Issue 1.0
- Avaya one-X Deskphone SIP for 9600 Series IP Telephones Installation and Maintenance Guide Release 2.2
- Avaya one-X Deskphone SIP for 9600 Series IP Telephones Administrator Guide Release 2.2

1. Verify that the LAN and WAN have been installed and configured properly. Make sure network has been “tuned” for voice.
2. Install and administer the Audio Codes survivable SIP gateway.
3. Install and administer the telephones.
Chapter 8: Related Documentation

Related Application Notes

You can access the following application notes from the Application Notes section of the Solution and Interoperability page on the Avaya Enterprise Portal:

- Avaya Communication Manager Survivable SIP Gateway Solution using the AudioCodes MP-114 in a Centralized Trunking Configuration – Issue 1.0
- Avaya Communication Manager Survivable SIP Gateway Solution using the AudioCodes MP-114 in a Distributed Trunking Configuration – Issue 1.0

Related Documents

Click the following links to view the documents for the products referenced in this guide and other helpful documents for each solution component.

**Avaya Communication Manager**

- Administration for Network Connectivity for Avaya Communication Manager
- Administrator Guide for Avaya Communication Manager

**Avaya SES**

- Administering SIP Enablement Services on the Avaya S8300 Server
- Installing and Administering SIP Enablement Services
- SIP Enablement Services (SES) Implementation Guide
- SIP Support in Avaya Communication Manager Running on Avaya S8xxx Servers

**Avaya 9600 Series Telephones**

- Avaya one-X Deskphone SIP for 9600 Series IP Telephones Installation and Maintenance Guide Release 2.2
- Avaya one-X Deskphone SIP for 9600 Series IP Telephones Administrator Guide Release 2.2

**AudioCodes MediaPack**

Go to [http://www.audiocodes.com/](http://www.audiocodes.com/)
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Avaya Communication Manager with Survivable SIP Gateways Solution

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