

# Smooth Operator Configuration Note

For Smooth Operator Family of Products

Octel

Voice

Processing

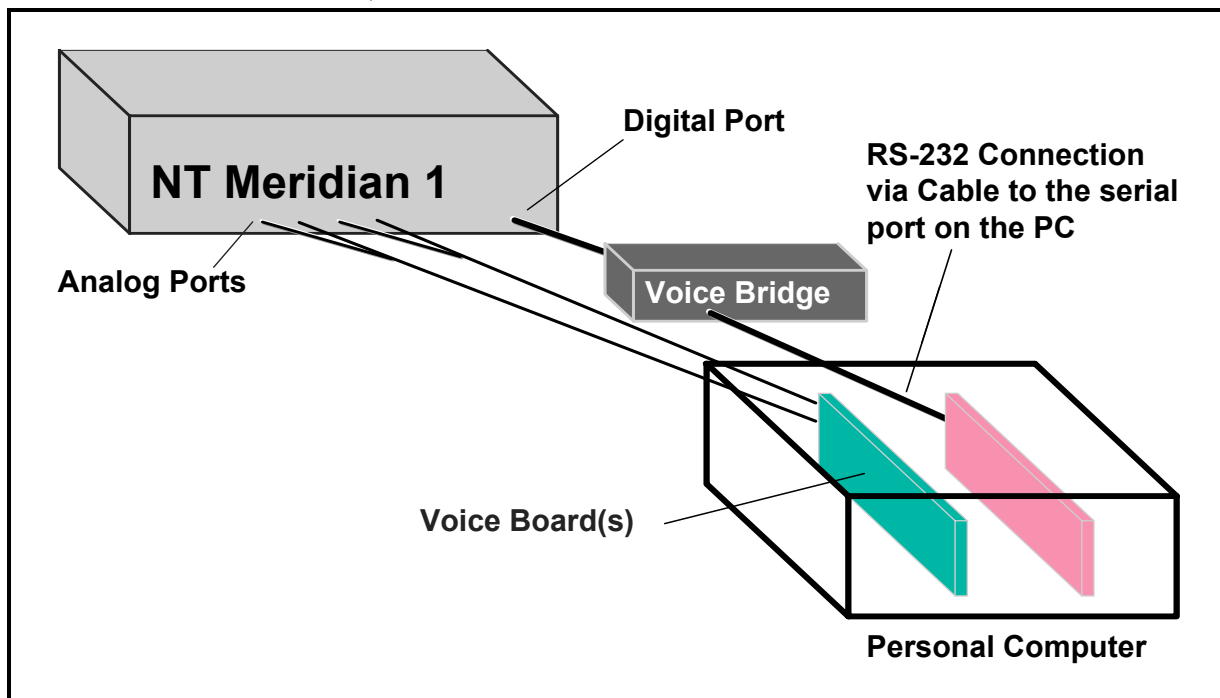
Module

Configuration Note 77185

## Northern Telecom Meridian 1 \* with VoiceBridge®

(also for Meridian SL-1\* with Meridian 2616\* Digital Station)

Revised 9/17/97



**Communications between  
the NT M-1 and the  
Smooth Operator are  
through the VoiceBridge**

### 1.0 METHOD OF INTEGRATION

RS-232/SMDI using the VoiceBridge Series II. The VoiceBridge communicates with the Northern Telecom Meridian 1 or Meridian SL-1 by emulating the 2616 Digital set. When a call is received by the VoiceBridge, the digital display provides call information. The VoiceBridge collects this data, transfers the call to an available analog voice port, and transmits the call information to the Smooth Operator through a serial port using industry standard Centrex SMDI protocol. The Smooth Operator then immediately answers the call with the appropriate greeting. Message waiting indicators are set and canceled via the VoiceBridge using the Meridian Message Waiting Center feature. A hookflash followed by the extension transfers the caller to the operator.

Disclaimer: Configuration Notes are designed to be a general guide reflecting Octel's experience configuring its systems. These notes cannot anticipate every configuration possibility given the inherent variations in all hardware and software products. Please understand that you may experience a problem not detailed in a Configuration Note. If so, please notify Sales Engineering at (408)324-3066, and if appropriate we will include it in our next revision. Octel accepts no responsibility for errors or omissions contained herein.

### Smooth Operator Ordering Information

## 2.0 SMOOTH OPERATOR ORDERING INFORMATION

There are many options available for both kit and turnkey versions of this product, depending on the application. Please consult with your sales representative. The M1 VoiceBridge, part number H-VTG-1323, must be included

### PBX hardware requirements

## 3.0 PBX HARDWARE REQUIREMENTS

**Note:** *This Note uses the VoiceBridge Series II for the Northern Telecom Meridian 1 which emulates the Meridian M2616 digital display phone, not the Northern Telecom SL-1 digital phone equipped with display. See Configuration Note 77186 for integration with VoiceBridge Series II for the SL-1 emulating the Northern Telecom SL-1 digital phone equipped with display. See Configuration Note 77195 for Meridian 1 and SL-1 integration with the Dialogic D42SL board.*

This Configuration note is applicable to

- The Meridian 1 Options 11, 21, 21A, 51, 61 and 71.
- Northern Telecom Meridian SL-1 L, VL, LE, VLE, A, XL, M, S, MS, N, XN, NT, XT, ST and RT.

Additional hardware requirements are

- One digital port configured as a Meridian 2616 station (set not required) QPC578 or NT8D02
- One RJ14 Jack and Meridian Modular Cable
- One analog port configured as a 2500 set for each integrated voice port QPC594 or NT8D03
- One RJ-14 jack with 4-conductor line cord for every two Smooth Operator ports
- One analog line for remote service access
- One RJ-11 Jack for above and 2-conductor modular telephone cord.
- If FaxMail is installed.
  - One analog line per FAX port.
  - One RJ-11 Jack for every Brooktrout TR-112 fax port OR one RJ-14 Jack for every two Brooktrout TR-114 fax ports, along with 4-conductor modular telephone cords.

For Message waiting lights on analog sets:

- Meridian 1's use line cards QPC789 (16 circuits), and NT8D09AB (16 circuits).

- Meridian SL-1's use line cards QPC267 (4 circuits), QPC494 (8 circuits), and QPC789 (16 circuits), with Message Waiting Power Supply QSY22.

**PBX software requirements**

**3.1 PBX SOFTWARE REQUIREMENTS**

- Minimum Software - Generic 11 Release 15, 16, 17, 18 or 19
- Software support for Digit Display (DDSP) - Option Package 19 and Message Center (MWC) - Option Package 46

**Supported integration features**

**4.0 SUPPORTED FEATURES**

[✓] Items are supported

<b>System Forward to Personal Greeting</b>		<b>Message Waiting</b>	
All Calls	[ ]	LCD Display	[ ]
Ring/no answer	[✓]	LED	[✓]
Busy	[✓]	Lamp (Msg Waiting Key)	[✓]
Busy/No Answer	[ ]	Audible / Stutter Dial Tone	[✓]
Do Not Disturb	[ ]	<b>Multiple Return to Operator</b>	[✓]
<b>Station Forward to Personal Greeting</b>		<b>Direct Call</b>	[✓]
All Calls	[✓]	<b>Auto Attendant</b>	[✓]
Ring/no answer	[ ]	<b>Outcalling</b>	[✓]
Busy	[ ]	<b>Personal Greeting of Original-Called Party</b>	
Busy/No Answer	[ ]	Multiple Call Forward	[✓]
Do Not Disturb	[ ]	Double Call Forward	[ ]
<b>Flexible Forwarding</b>		Call Coverage	[ ]
Forward to No Answer Greeting	[✓]	<b>Intercom Paging</b>	[✓]
Forward to Busy Greeting	[✓]	<b>Supervised Transfers</b>	
Intercom/CO Forwarding	[ ]	Call Screening	[✓]
		Call Queuing	[✓]
		Intercom Paging	[✓]
		<b>Record Telephone Conversation</b>	[ ]

**Disconnect Type**

**4.1 DISCONNECT TYPE**

The following provide the system with silence on disconnect:

- QPC60
- QPC452
- QPC594
- QPC192
- NT8D03AB

Generic 11 Release 17 provides dial tone on disconnect. For proper external disconnect supervision, Ground start or Supervised start CO lines are recommended.

## Programming PBX system parameters

### 5.0 CONFIGURING THE MERIDIAN

Before you begin programming, it is recommended that a hard copy of the customer database be obtained to verify existing programming.

Refer to the Programming section in the Meridian manual for information on entering, saving, and exiting database programming.

The following Northern Telecom Meridian programming changes are required:

- Configure the Single Line Ports for the Smooth Operator ports.
- Configure the Digital Port for VoiceBridge Series II
- Configure the Subscriber Sets analog phones
- Configure the Subscriber Sets digital phones
- Program the VoiceBridge Series II

In the following example, similar to the example in the VoiceBridge Series II Meridian Installation Guide, a four port Voice Mail system is used. Specific extension numbers are used for the VoiceBridge, Smooth Operator analog lines, and subscriber stations. Also, a sample coverage path is shown. The example assumes

- VoiceBridge pilot number is extension 500
- The Smooth Operator analog ports are extensions 501, 502, 503, and 504.
- Extensions 201 and 202 are Voice Mail Subscribers.
- Seven extensions (500 and 551-556) will be created and administered onto keys 0 - 6 on the Meridian set to create a queue for calls forwarded under ring-no-answer conditions.
- Five extensions (557-561) will be created and administered onto keys 8 - 12 on the Meridian 2616 to create a queue for calls forwarded under busy conditions.

**Note: Entries in bold italic type indicate where information must be entered.**

### 5.1 CONFIGURING THE SINGLE LINE PORTS

Create new extensions for the Smooth Operator ports.

```
>LD 10
REQ      NEW
TYPE     500
TN       0 0 5 0
CDEN     SD      (SD if QPC60, DD if QPC452, 4D if QPC594)
DES
CUST     0
DIG
DN       501
HUNT
TGAR
```

NCOS  
 RNPG  
 CLS ***DTN XFA*** (Note: The ***LDTA*** parameter is only valid for Release 17 and above. It is used to provide dial tone on disconnect.)  
 FTR

Repeat this procedure for each Smooth Operator port.

Entries in bold italic type indicate where information must be entered.

## 5.2 CONFIGURING THE DIGITAL PORT

Configuring the 2616 set is the vital link to integration. The following will set up the 2616 keys so that:

Key 0 is the primary Directory Number. Any call directed to Key 0 will hunt through keys 1 - 6, permitting a primary queue of seven appearances for calls covered because of ring-no-answer.

Additionally, calls forwarded to the secondary call queue on key 8 will hunt through keys 9 - 12, permitting five appearances for calls covered because of busy-forwarded.

Key 13 is a message indication key (MIK).

Key 14 is a message cancellation key (MCK).

Key 15 is a transfer key.

Keys 16 - 37 are programmed as line appearances of the voice mail ports. Although the VoiceBridge can support as many as 22 lines, for this example only 4 lines are used.

After programming the 2616 set, the VoiceBridge unit will handle the button setup and management automatically.

```
>LD11
REQ NEW
TYPE 2616
TN 0 0 6 2
DES
CUST 0
AOM 1
FDN
TGAR
NCOS
RNPG
SSU
CLS DDS HFD CNDD HTA
HUNT 000
LHK 12
KEY 00 SCR 500
KEY 01 SCR 551
KEY 02 SCR 552
KEY 03 SCR 553
KEY 04 SCR 554
```

Entries in bold italic type indicate where information must be entered.

KEY ***05 SCR 555***  
 KEY ***06 SCR 556***  
 KEY ***08 SCR 557***  
 KEY ***09 SCR 558***  
 KEY ***10 SCR 559***  
 KEY ***11 SCR 560***  
 KEY ***12 SCR 561***  
 KEY ***13 MIK***  
 KEY ***14 MCK***  
 KEY ***15 TRN***  
 KEY ***16 SCN 501***  
 MIX  
 KEY ***17 SCN 502***  
 MIX  
 KEY ***18 SCN 503***  
 MIX  
 KEY ***19 SCN 504***  
 MIX  
 KEY

This administration supports ring-no-answer and busy.

### 5.3 CONFIGURING THE SUBSCRIBER SETS

#### Analog Sets

***>LD 10***  
 REQ ***CHG***  
 TYPE ***500***  
 TN ***0 0 7 1***  
 CDEN  
 DES  
 CUST  
 DIG  
 DN  
 HUNT ***557***  
 TGAR  
 NCOS  
 RNPG  
 CLS ***HTA FNA MWA LPA CFTA SFA***  
 FTR ***FDN 500***  
       ***EFD 500***  
       ***EHT 557***

LPA (Lamp Allowed) is used in Class of Service when set is equipped with a neon lamp. If Meridian is equipped with Audible Message Waiting (AMW), LPD (Lamp Denied) should be programmed to allow stutter tone.

#### SL-1 Sets

Entries in bold italic type indicate where information must be entered.

```

>LD11
REQ      CHG
TYPE     SL1
TN       0 0 8 3
CDEN
DES
CUST
KLS
FDN      500
TGAR
NCOS
RNPG
SSU
CLS      HTA FNA MWA CFTA
EFD      500
HUNT     557
EHT      557
LHK
KEY      04 MWK 500

```

If the SL-1 set does not have a MWK key, it will receive stutter tone.

#### **Digital Sets**

```

>LD 11
REQ      CHG
TYPE     2008
TN       0 1 8 3
ECHG
DES
FDN      500
TGAR
NCOS
RNPG
SSU
CLS      HTA FNA MWA CFTA SFA
EFD      500
HUNT     557
EHT      557
LHK

```

Entries in bold italic type indicate where information must be entered.

The digital set has a built-in LED, so programming a MWK key is not necessary.

#### **5.4 CONFIGURING THE VOICEBRIDGE**

The VoiceBridge Series II equipment provides a control path between the Meridian 1 and the Smooth Operator. It emulates a 2616 digital set on the Meridian 1 and transmits the call information to a serial port on the Smooth Operator using industry standard Centrex SMDI protocol.

The VoiceBridge Series II equipment includes a built-in 19-key keypad and a two-line 40 character LCD display which are used for programming the device. Chapter 3 of the VoiceBridge documentation, which you will receive with the unit, provides step by step configuration instructions, as well as a User Interface Tutorial and unit testing instructions. The instructions are easy to follow and a technician should be able to install the device in a few minutes using the VoiceBridge documentation.

Before configuring the VoiceBridge you must determine the following:

- Number of Voice Mail Ports

This field defaults to 22, the maximum number of ports supported by the unit. Specify the number of Smooth Operator ports on your system.

- Message Desk Number

This number must match the number assigned in Smooth Operator. The default value of 001 is usually the number of choice. The range is 001-063.

- CPID Extension Length

- CPID Pad String

VoiceBridge gets the actual extension from the switch and converts it to the SMDI protocol which uses seven digits. Therefore you must pick a seven digit string which will pad the string with 0s. For example, if your extension length is set to 3 and the pad string is set to 0000XXX, the VoiceBridge will convert an extension of 270, to SMDI caller ID information 0000270.

- MWI Extension Length

- MWI Pad String

SMDI protocol uses seven digits, therefore we are padding the string with 0s as in the previous example so that the VoiceBridge will know what digits are not required by the AT&T switch and ignore them.

- MWI Feature

If message waiting indicators are being used, set this field to Enable; if message waiting indicators are not used, Disable.

- MWI Interleave Factor

Under normal conditions the VoiceBridge will process calls before it will process MWIs. On busy systems this can cause MWI packets to back up causing a delay in sending message waiting indication. If you insert an interleave factor you can tell the VoiceBridge to process a MWI after X number of calls. The default setting is 5. If 0 appears in this field it is disabled.

- Call Sequence

Indicates order in which calls are sent to Smooth Operator. Set to Call/Data.

- Extension/ LTN Plan

Determine what LTNs (Logical Terminal Numbers) have been assigned to the Smooth Operator system and enter into VoiceBridge.



## Smooth Operator programming

### - SMDI Baud Rate

Default baud rate is 1200, range is 1200 through 9600.

### - Primary DN

This is the directory number of Key 0 on the 2616 and the target for ring-no-answer forward.

### - Secondary DN

This is the directory number of Key 8 on the 2616 and the target for busy forward.

## 6.0 CONFIGURING THE SMOOTH OPERATOR

During the installation process, run the Integrator program and choose the NT Meridian 1 with VoiceBridge switch. The Integrator will place the appropriate feature and inband codes into the Smooth Operator setup program.

The following codes should be inserted by the integrator. Four digit extensions are assumed.

Outside Line Access Code	<b>9</b>
Off Hook Delay (OFFHDLY)	<b>50</b>
Hook Flash Interval (FLINTVL)	<b>50</b>
DTMF Tone Length (TONELEN)	<b>8</b>

### Message Waiting Parameters

Permit Message Waiting Lights	<b>Enabled</b>
Use MW Data from Serial Port [COMMMWL]	<b>Enabled</b>

### Inband Parameters

Total Number of DID Digits	<b>10</b>
Seconds to Wait for First Digit	<b>1</b>
Location of Inband Signaling Code	<b>1</b>
Milliseconds to Wait for Next Digit	<b>100</b>
Code for Go to Voice Mail	<b>F</b>
Start at End of String for Go to Voice Mail	<b>Enabled</b>
Location of Mailbox Number for Go to Voice Mail	<b>4</b>
Code for Immediate Subscriber Login to Mailbox	<b>C</b>
Start at End of String for Immediate Login	<b>Enabled</b>
Location of Mailbox Number for Immediate Login	<b>4</b>
Code for Busy Extension	<b>B</b>
Start at End of String for Busy Extension	<b>Enabled</b>
Location of Mailbox Number for Busy Extension	<b>4</b>
Code for No Answer Extension	<b>N</b>
Start at End of String for No Answer Extension	<b>Enabled</b>
Location of Mailbox for No Answer Extension	<b>4</b>
Start at End of String for Default Code	<b>Enabled</b>
Location of Mailbox Number for Default Code	<b>4</b>

In addition to running the Integrator, ensure the following parameters are set to their corresponding values in System Setup:

**SMDI Parameters**

Use SMDI ✓

*Note: Verify these dialing sequences for your PBX.*

**6.1 INTEGRATION CONFIGURATION PROGRAM**

When the Integration Configuration Program is run, ensure that the Serial Communication Protocol matches the VoiceBridge. The default settings on the VoiceBridge are 1200 baud, even parity, seven data bits, and one stop bit (1200, 7,E,1). Set Timeout to 30. In Port IDs, enter the Logical Terminal Number that corresponds to the Smooth Operator Port number as follows:

Smooth Operator Port	LTN
Port ID 0	1
Port ID 1	2
etc	etc

Edit the \CVR\SMDI.CFG file, adding a line that reads "Datawait 30".

**Important notes concerning this integration**

**7.0 CONSIDERATIONS/ALTERNATIVES**

The following items should be considered, below:

- Do Not Program Names to Smooth Operator Ports
- Supervised Transfers
- Configuring Dedicated Ports for Voice Mail Transfers
- Attendant Transfers and Access to Voice Mail
- VoiceBridge Overload

**7.1 DO NOT PROGRAM NAMES TO SMOOTH OPERATOR PORTS**

If names are programmed for Smooth Operator ports increasing information that must be sent from the PBX to the 2616 set, the process will slow down. Therefore, it is recommended that names not be assigned in order to optimize performance.

**7.2 SUPERVISED TRANSFERS**

If the Smooth Operator is programmed to execute a supervised transfer, Handsfree Announce must be disabled. If call forwarding is on at the station, ensure that it is for Ring/No Answer only, and that the ring timer is greater than the Maximum Rings for the mailbox.

### 7.3 CONFIGURING DEDICATED PORTS FOR VOICE MAIL TRANSFERS

This procedure will allow a subscriber to transfer a caller directly into another subscriber's mailbox without the caller having to re-enter the subscriber's mailbox number. The problem is caused by the switch's inability to perform a double transfer when the first transfer is supervised.

For example: John calls Mary, Mary and John finish their conversation, John asks Mary to transfer him into David's voice mailbox to leave him a message, she transfers the call to the voice mail pilot number (VoiceBridge's number) and stays on the line (supervising the transfer). Voice Bridge answers the call instantly and attempts to transfer it to an available voice mail port. This attempt fails unless Mary releases the call before Voice Bridge answers and tries to transfer it to voice mail. If Mary has to release the transfer, the caller will have to enter the digits required to get to David's mailbox (normally, Mary stays on the line, when voice mail answers she enters ##Mailbox then hangs up).

There are two options to overcome this limitation.

The best configuration is to provide a target hunt group to transfer callers into voice mail. You must create a dedicated hunt group that is not integrated through the VoiceBridge. This will allow the subscriber to transfer a caller directly into the main menu of the voice mail system and enter ##Mailbox number. The system will respond with "Please hang up now to transfer the caller".

The ports should be configured as standard 2500 sets and placed into a linear hunt group. When you are ordering the voice mail system, ensure you order additional ports to provide for this hunt group.

The only alternative is to transfer the caller back to the extension and allow it to forward into voice mail (this alternative only works if the extension is programmed to forward back into voice mail).

### 7.4 ATTENDANT TRANSFERS AND ACCESS TO VOICE MAIL

On the Northern Telecom Meridian 1 or Meridian SL-1 the attendant console must call into a non-integrated port (a port not programmed to the Voice Bridge hunt group) to transfer callers into voice mail and also to access voice mail to retrieve messages.

### 7.5 VOICEBRIDGE OVERLOAD

Normally, both internal and external calls are routed through the Voice-Bridge to the Smooth Operator. The VoiceBridge can only process one call at a time, so there may be times when it will become overloaded with incoming calls and callers will hear a ring no answer when calling the Smooth Operator. As the Voice-Bridge only processes internal caller information, removing the external calls from the VoiceBridge hunt group

will help eliminate the overload, thus eliminating callers getting ring no answer.

One solution is the following:

Program the Smooth Operator ports to form a hunt group. Route external calls to bypass the VoiceBridge and ring the Smooth Operator hunt group directly. Subscribers or Callers, internal or external, will not be aware of this configuration and will not notice any system performance degradation. External calls will be directed to the Voice Mail hunt group.

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