

Overview of Centrex Switch Integration

1

Overview

Switch integration refers to the sharing of information between a voice messaging system and a switch to provide a seamless interface to callers and system users. A fully integrated voice messaging system answers each incoming telephone call with information taken directly from the switch.

Purpose

This chapter provides background information necessary to understand how a Centrex switch is integrated with the Avaya™ INTUITY™ system.

Method of Integration

Integration of the Lucent 5ESS®, Northern Telecom (Nortel) DMS-100, and Nortel SL-100 Centrex switches with the Avaya INTUITY system requires an RS-232 serial interface and auxiliary switch integration hardware. When the call is forwarded to the Avaya INTUITY system, a packet of information is sent via the serial interface that provides the integration data for the channel the call arrives on.

The Avaya INTUITY system exchanges analog voice information with the Centrex switches through analog telephone lines. Voice links connect callers from a compatible switch port to a Avaya INTUITY voice port. The switch directs internal or external callers to a hunt group of analog ports associated with the Avaya INTUITY system. These ports connect the callers to an appropriate mailbox on the Avaya system. A Avaya INTUITY system can have as many as 64 voice ports. These ports are connected to an equivalent number of analog ports on the switch and are administered as a uniform call distribution (UCD) group for DMS-100 and as a multiline hunt group for 5ESS.

Lucent 5ESS Switch Integration — Standard Configurations

To create an integrated environment between the Avaya INTUITY system and a Lucent Technologies 5ESS switch, Avaya supports the following options:

- 3A simplified message service interface (SMSI) translator
- 202T modem

⇒ NOTE:

For the 5ESS switch, a direct connection to the Avaya INTUITY system is not a supported option. Either the 3A translator or the modem must be used. Check with the local service company for the supported options.

Integration with the 3A Translator

An SMSI link provides digital call information, such as called party and calling party, to the Avaya INTUITY system. The 3A SMSI translator converts the 5ESS switch applications processor interface (API) format to SMSI format so that the Avaya INTUITY system can be used with the 5ESS switch. The 3A translator receives message service system (MSS) messages from the 5ESS switch through the D-channel of an integrated services digital network (ISDN) line and translates the message into SMSI format. The SMSI output port is RS-232-compatible (EIA-232), asynchronous, and supports baud rates up to 9600; however, Avaya recommends a baud rate setting of 1200.

The 3A translator can be connected (through an adapter) to a multi-port circuit card on any Avaya INTUITY multi-application (MAP) platform. See [Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator"](#), for details about the hardware for the interface.

Distance Requirements

The configuration for the integration with a 3A translator depends on the distance between the switch and the 3A translator. If the distance is greater than 1 km (0.62) miles, a NT1U-220, or NT1L-230 network terminator unit must be used with the 3A translator. In an upgrade of the Avaya INTUITY software with existing software, the NT1U-200 network terminator unit, which is an older version, can be used.

NOTE:

At distances of 9.7 km (6 mi) or more, the 3A translator cannot be used. A 202T modem must be used instead.

Integration with the 202T Modem

A 5ESS integration may also use a 202T modem for integration and connect into a 3002 data circuit. See [“Nortel DMS-100 and SL-100 Switch Integration — Standard Configurations”](#) below for information on the 202T modem.

Distance Requirements

At distances of 9.7 km (6 mi) or more, a modem must be used. This constraint is based on requirements for the 3002 data circuit.

Nortel DMS-100 and SL-100 Switch Integration — Standard Configurations

The INTUITY system interfaces with the DMS-100 or SL-100 switch using the simplified message desk interface (SMDI) over an RS-232 link. The SMDI interface is a Bellcore standard equivalent of the SMSI interface used for 5ESS integration. The SMDI link transfers call information, such as called party and calling party, to the Avaya INTUITY system.

NOTE:

Integration with the Avaya INTUITY system supports the SMDI interface as defined in Bellcore Technical Reference TR-TSY-000283, July 1995, and the later standard as defined in Bellcore Technical Reference TR-NWT-000283, May 1991.

Distance Requirements

The configuration for the integration depends on the distance between the switch and the Avaya INTUITY system.

202T Modem (or Customer-Supplied Modem)

At distances greater than 15.2 m (50 ft), a 202T modem is used to complete the SMSI link. The 202T modem can be connected to a multi-port circuit card on any MAP. See [Chapter 7, “Hardware Installation for Centrex Switch Integration with the 202T Modem”](#), for details about the hardware for the interface.

Direct Connection

At distances of 15.2 m (50 ft) or less, a modem is not required, and a direct-connect configuration can be used to the multi-port serial circuit card. See [Chapter 8, "Hardware Installation for Integration with Direct Connection or Customer-Supplied Modem"](#) for details about the hardware for the interface.

Other Configurations

The 5ESS, DMS-100, and SL-100 switches can be integrated by the use of a customer-supplied modem other than the 202T modem. This book does not provide installation instructions for such configurations. However, guidelines for integrating with a nonstandard modem are provided in [Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem"](#).

Demarcation Points

Service technicians dispatched for Avaya INTUITY system installation are not responsible for making any connections directly to switches not maintained by Avaya Inc.

The demarcation point for integration of Centrex switches not maintained by Avaya depends on the configuration.

- For integrations using a Avaya-supplied modem, the point of demarcation is the equalization device (829 loopback device or equivalent) on the immediate far side of the modem.
- For integrations using a Avaya-supplied 3A translator, the point of demarcation is the connecting block on the immediate far side of the translator.
- For direct-connect integrations, and for integrations using a modem not supplied by Avaya, the point of demarcation is the adapter at the end of the modular cable that is connected to the Avaya INTUITY system (or the RS-232 mini-tester, if it remains in line after testing).

Avaya services personnel may:

- Administer the translator or modem for operation with the switch
- Connect the translator or modem to the Avaya INTUITY system

For additional information concerning the extent of the installation, see the contract between the customer and Lucent Technologies.

Joint Acceptance Testing

Joint acceptance testing is to be executed by both the customer representative and the INTUITY AUDIX® on-site installer when the installation includes Lucent Technologies products and customer-provided equipment. Acceptance testing is performed at the end of an installation to demonstrate to the customer that the installation is operational. The purpose of joint acceptance testing is to have knowledgeable people available to test and resolve issues before final completion of the service order. Joint acceptance testing is required for Centrex switch integrations.

Features and Functionality

The following features and functionality limitations apply for integrations with Centrex switches.

5ESS Switch

Avaya INTUITY system integration with the 5ESS switch does not support the following Avaya INTUITY features due to switch interface limitations:

- Leave word calling (LWC)
- High-speed digital networking
- Enhanced call transfer



NOTE:

Transfer to 0 is a blind transfer.

- Transfer into the INTUITY AUDIX system

DMS-100 and SL-100 Switches

Avaya INTUITY system integration with the DMS-100 and SL-100 switches does not support the following features due to switch interface limitations:

- Leave word calling (LWC)
- Port logins and logouts (in service/out of service)
- Day/night service change initiated by the switch
- High-speed digital networking

The Call Request Retrieval access code feature is supported. In addition to the standard procedure for retrieving mailbox messages, INTUITY AUDIX subscribers using a DMS-100 or SL-100 integration can use this feature. Some Call Request Retrieval interactions are listed below:

- Call Request Activate (CRA) — When a switch subscriber with Call Forwarding active requests CRA through a feature button or access code, the switch places a "please call" message in the Call Request Retrieval queue. The message might be from the INTUITY AUDIX system (if the system has new messages) or from another switch subscriber (if another subscriber places the CRA call).
- Call Request Retrieve (CRR) — When an entry is placed in the CRR queue, the system subscriber's message waiting indicator (MWI) is activated. To retrieve the message, the subscriber dials an access code and the switch places a call to the first entry in the queue. This is either the INTUITY AUDIX system or another switch subscriber, depending on the origination of the entry. (Multiple INTUITY AUDIX system messages create only one please call request for the INTUITY AUDIX system in the queue.) When the last CRR queue is accessed, the subscriber's MWI is turned off. If a subscriber has no entries in the queue and dials a CRR access code, the switch returns a fast-busy signal.
- Call Request Delete All (CRDA) — A subscriber can dial an access code to erase all entries in the Call Request Retrieval queue and turn the MWI off. In this case, a subscriber's MWI turns off as requested, even if the INTUITY AUDIX system has new messages for that subscriber. A new CRA message or an MWI update from the AUDIX system turns the MWI back on.

Centrex Switch Integration Checklist

The following checklist ([Table 1-1](#)) outlines the process of integrating the Avaya INTUITY system with a Centrex switch. It is assumed that:

- The switch integration software package is already installed on your system. (If you need to install the software, see Chapter 9 (for MAP/5P) or Chapter 8 (for all platforms), "Installing the Switch Integration Software Packages," in the maintenance book for your platform.)
- You are performing the integration as part of installation of the Avaya INTUITY system and completing the procedures as specified in the system installation book for your platform.

NOTE:

When using this checklist, be sure to complete the tasks for the appropriate type of integration (3A translator, 202T modem, direct connection, other nonstandard option).

Table 1-1. Centrex Switch Integration Checklist


| Task | Description | Reference | ✓ |
|------|--|--|---|
| 1. | Administer the switch. | Chapter 3, "Centrex Switch Requirements and Administration" . (Information in Chapter 2, "Planning for Centrex Switch Integration" is also needed. | |
| 2. | Complete Chapters 1 through 4 up to the section, "Powering Up the System" in the system installation book. | Chapters 1 through 4 in the system installation book for your platform. | |
| 3. | Integration with 202T modem only: Set the switch options on the 202T modem.  NOTE: For the Nortel DMS-100 and SL-100 switches, the 202T modem is required only if the distance between the Avaya INTUITY system and the switch is greater than 15.3 m (50 ft), per RS-232 standard. For the 5ESS switch the 202T modem is not required if the 3A translator is used, but is required in all other cases regardless of the separation distance. | Chapter 6, "Setting the 202T Modem" . | |
| 4. | Install the integration hardware. | <ul style="list-style-type: none">■ Integration with 3A translator (5ESS switch only): Chapter 4, "Hardware Installation for 5ESS Switch Integration with the 3A Translator".■ Integration with 202T modem only: Chapter 7, "Hardware Installation for Centrex Switch Integration with the 202T Modem".■ Integration with direct connection (DMS-100 and SL-100 switches only): Chapter 8, "Hardware Installation for Integration with Direct Connection or Customer- Supplied Modem".■ Integration with a modem not supplied by Avaya only: Chapter 8, "Hardware Installation for Integration with Direct Connection or Customer- Supplied Modem". | |

Table 1-1. Centrex Switch Integration Checklist — Continued — Continued

| Task | Description | Reference | ✓ |
|------|--|--|---|
| 5. | Complete the remainder of Chapter 4 in the system installation book. | Chapter 4, "Powering Up the System," in the system installation book for your platform. | |
| 6. | Complete the appropriate procedures for your switch type in Chapters 5 and 6 of the system installation book up to the section in Chapter 6 titled "Administering Channels." | Chapters 5 and 6 in the system installation book for your platform. | |
| 7. | Integration with 3A translator (5ESS switch only): Program the 3A translator. | Chapter 5, "Programming the 3A Translator" . | |
| 8. | Verify that the correct switch integration package is installed. | See information on the View Installed Software window in the maintenance book for your platform. | |
| 9. | Administer the Avaya INTUITY switch integration windows. | Chapter 9, "Lucent Intuity Administration for Centrex Switch Integration" . Information in Chapter 2, "Planning for Centrex Switch Integration" , is also needed. | |
| 10. | Ensure that the switch has been administered by the CO (central office) to perform acceptance tests for the two test subscribers. | Chapter 3, "Centrex Switch Requirements and Administration" . | |
| 11. | Return to the "Administering Channels" section in Chapter 6 of the system installation book and complete all required tasks through Chapter 16. | Chapters 6 through 16 in the system installation book for your platform. | |
| 12. | Validate and, if necessary, troubleshoot the integration. | Chapter 9, "Integration Validation and Troubleshooting" . | |
| 13. | Cut to service by notifying the CO or your project manager to change the system subscribers' call forwarding coverage path to the Avaya INTUITY system. | None. | |