

Integrating Cisco CallManager Version 2.4 With Avaya Octel 250TM Messaging Server

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Introduction

This document describes how to integrate Cisco CallManager Version 2.4 with Avaya Octel 250TM Messaging Server.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on these software and hardware versions:

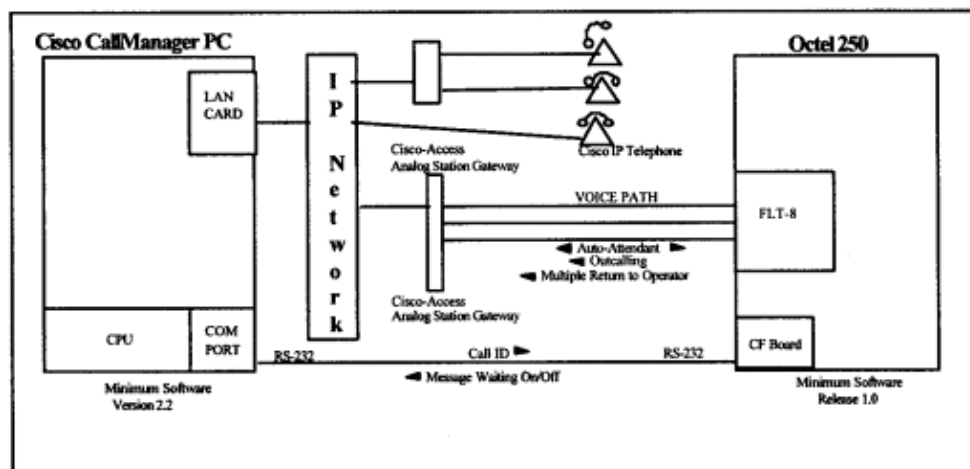
- Cisco CallManager PC with one available serial (COM) port.
- Analog station ports, one per Octel port. Analog Station ports are provided via Cisco Access Analog Station Gateway. Gateways can be purchased in 2 (AS-2), 4 (AS-4) and 8 (AS-8) port configurations.
- One analog station port for remote service access.
- Cables, 25-pair, male-amphenol, one per FLT.
- DB25-to-DB9 connector.
- Minimum Software: Version 2.4

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Background Information



With RS-232 integration, call information is transmitted over a digital link between the Cisco CallManager and the Avaya Octel 250TM. Voice communications are provided by a separate path created by a hunt group of analog stations on the CallManager that connect to FLTs within the Octel system. When the hunt group receives an incoming call, it is accompanied by a digital message in standard SMDI format from the Cisco CallManager that contains call information. The Octel 250 then answers the call on the specified port and plays the appropriate greeting. To set or cancel message-waiting notification, the Octel 250 sends a digital message over the RS-232 link to the Cisco CallManager.

Note: This document cannot anticipate every configuration possibility, given the inherent variations in all hardware and software products. Please remember that you may experience a problem that is not detailed in this document. If so, please notify Lucent or Cisco. The contact information is provided at the end of this document.

Octel 250 Ordering Information

- Fax Line TICs (FLTs), 8 ports per board.
- Disk drives.
- RS-232 integration software.

Note: Serial channels 1, 2, and 3 in the Octel 250 are configurable as either RS232 integration links or system management terminals (SMTs). When used to support an SMT these channels require a null modem cable. Channel 4 is reserved for SMT use, and does not require a null modem cable.

The following table shows the allowable combinations of integration links and SMTs:

Number of Integration Links	Number of System Management Terminals
1	Up to 3
2	Up to 2
3	Up to 1

Supported Features

This section lists the features that are supported:

- Station forward to personal greeting.

The Voice Mail system will treat all forwarded calls as if they were forwarded because of a Call-Forward-All state.

- ◆ all calls
- ◆ busy
- ◆ ring-no-answer
- Message-waiting notification
 - ◆ lights only
- Outcalling
- Automated attendant
- Multiple return-to-operator
- Direct call
- Reply to message left by subscriber in internal telephone-answering mode
- Call Sender

Cisco CallManager Integration

The Cisco CallManager allows integration to Octel 250 systems through the Cisco Messaging Interface. This interface provides an SMDI data stream to the Octel 250. Voice connectivity is achieved over analog lines from Cisco Access Analog Station Gateway ports. Complete the steps in the following sections to configure the Cisco CallManager to integrate with the Octel 250.

Note: Cisco CallManager version 2.4 must already be installed before you proceed with these steps.

1. Install Cisco Messaging Interface

Complete these steps:

1. Open the Cisco CallManager Administration to install the Cisco Messaging Interface software.
2. Click **Plug-ins**.

Result: The Optional Components screen is displayed.

3. Click **Cisco Messaging Interface**, and follow the on-screen instructions to install the software.

Result: Upon completion of the installation, Cisco Messaging Interface is installed.

2. Add Analog Station Gateways

Complete these steps:

1. Open Cisco CallManager Administration. To do so, select **Start > Programs > Cisco CallManager 2.4 > CallManager Administration**.

Result: The Welcome screen is displayed.

2. Click **Configuration**.

Result: The System screen is displayed.

3. Click **Device Wizard**.

Result: The Device Wizard – New screen is displayed.

4. In the **Device Type** box, select **Analog Access**, and click **Next**.

Result: The Device Wizard – MAC Address screen is displayed.

5. In the **MAC Address** box, type the machine (MAC) address of the gateway. The MAC address is the 12-character number on the rear of the gateway. For example, 0010EB001C11.
6. In the **Description** box, type a description, such as "Gateway1" or "Voicemail." This is an optional box.
7. Click **Next**.

Result: The Device Wizard – Device Pool Configuration screen is displayed.

8. In the **Device Pool** box, select the device pool to which you want this gateway assigned. The device pool determines the Region, Date/Time Group, and CallManager Group the gateway will use.
9. Click **Next**.

Result: The Device Wizard – Location Configuration screen is displayed.

10. Select **Hub**.

11. Click **Next**.

Result: The Device Wizard – Assign Load ID screen is displayed. The default load ID is supplied for you.

12. Click **Next**.

Result: The Device Wizard – Assign Country Code screen is displayed.

13. In the box, select the country in which the gateway is located.

14. Click **Next**.

Result: The Device Wizard – Analog Access Ports Configuration screen is displayed.

15. In the **Port Selection Order** box, select the order you want the ports to be selected on the gateway. TOP_DOWN means the channels are selected in descending order from 1 to 8; BOTTOM_UP means the channels are selected in ascending order 8 to 1. If you're not sure which port order to use, choose TOP_DOWN.
16. You can configure the ports on the gateway in this screen. For each port on the gateway, click the corresponding port number box and select the port's communication protocol. For an Analog Station gateway, choose POTS port type.
17. Click **Next**.

Result: The Device Wizard – POTS Line Configuration screen is displayed.

18. Leave the **Directory Number** box empty. Do not complete any other fields like "Forward All," "Forward Busy," or "Forward No Answer."
19. Click **Next**.

Result: The Device Wizard – Confirmation screen is displayed.

20. Verify whether the device name and device type information is correct. If it is not, or if you want to change any of the values you have already chosen, click **Back**. If the information is correct, click **Finish**.

Result: The Device Wizard – Done screen is displayed, indicating the Analog Gateway has been added.

21. Click **OK**. Repeat these steps to add more Analog Gateways.

3. Configure a Voice Mail Line

Complete these steps:

1. In the top menu of Cisco CallManager Administration, click **System**.

Result: The System screen is displayed.

2. In the Cisco Messaging Interface area, click **Configure**.

Result: The Cisco Messaging Interface Configuration screen is displayed.

3. In the **Directory Number** box, type the directory number you want to use as the Octel access number. If you want to enable users to access the Octel 250 from an outside telephone, choose a directory number that is a direct inward dial (DID) number. This is the same number you entered in the **Device Pool** field of the analog ports configuration.
4. In the **COM Port Number** box, select the COM port number of the CallManager's serial COM port. This COM port will connect to the Octel 250 Async port through the Lucent/OMD–provided RS–232 cable (P/N 057–1323–000) and a customer–provided DB25–to–DB9 connector.
5. Click **Update**.

Result: The information has been saved to the database.

4. Set the Call Restart Timer to 1234

On each POTS port, you must set the Call Restart Timer to a value of **1234**. This setting is needed for the Analog Station Gateway to play dial tone to the Octel port upon disconnect. The Octel requires a dial tone to release its port.

Complete these steps:

1. In the top menu of Cisco CallManager Administration, click **Gateways**.

Result: The list of devices is displayed.

2. In the list of gateways, click on the icon next to the gateway you just added.

Result: The Gateway device information is displayed.

3. In the Port Parameters area, click **Configure**.

Result: The Analog Access Port Parameters screen is displayed.

4. Click **Advanced**.

Result: Additional parameters are displayed.

5. In the **Call Restart Timer** field, type **1234** and click **Update**.

Result: The parameter has been updated.

6. Click **Continue**.

Result: The Device Information for this gateway is displayed.

7. If there are additional ports that need to be updated, click the icon for each port in the list on the left, and repeat Steps 3 through 7 for each POTS port.

5. Route Points/Route Groups

Note: The current release of Cisco CallManager allows a maximum of 49 ports per route group and 30 route groups per route point. Some voice mail implementations may require more than one route point.

Complete these steps:

1. When you configure a route group for the ports on a Cisco Access Analog Station Gateway, do not select the **All** option to assign all ports to the route group at once. Instead, assign each port individually to the route group.
2. You must assign a unique order number to each port in a route group and to each route group in a route point. There is a one-to-one relationship between ports in the route group and ports on the voice mail system. Port 1 on the voice mail system must correspond with the first port selected in the appropriate route group and route point combination, port 2 on the voice mail system must correspond with the second port selected, and so on. For example, assume that you have three Cisco Access Analog Station Gateways with eight ports each. You could assign those ports to route groups and to a route point as shown in the following table.

Route Groups Assigned To a Route Point (Assigned Order Number)	Gateway Ports Assigned To a Route Group (Assigned Order Number)	Corresponding Voice Mail Ports
1	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
2	1	9
	2	10
	3	11
	4	12
	5	13
	6	14
	7	15
	8	16
3	1	17
	2	18
	3	19
	4	20
	5	21
	6	22
	7	23
	8	24

Table 1: Example of assigning gateway ports and route groups for voice mail

6. Start Cisco Messaging Interface

Complete these steps:

1. Open Cisco Process Control (click **Start > Programs > Cisco CallManager 2.4 > Cisco Process Control**), or verify whether it is already running. If Cisco Process Control is running, double-click its icon in the system tray. The Cisco Process Control icon looks like a lightning bolt. The system tray is in the lower right corner of your monitor and displays icons of applications that are running.
2. In Cisco Process Control, select **Cisco Messaging Interface** and click **Start**.

Result: The Cisco Messaging Interface starts running and sends and receives ten digit input and output strings. If your voice mail system requires something other than ten digit input and output strings, you must adjust the registry values for Cisco Messaging Interface to reflect this. See the following section, Cisco Messaging Interface Integration, for more details.

Note: If you stop Cisco Messaging Interface, your voice mail system will not be able to identify calling stations or operate the Message Waiting Indicator.

7. Add the Message Waiting Button to Users' Keypad Template

Complete these steps:

1. The Cisco IP Phone uses a keypad template to determine the buttons that appear on a user's phone. Ensure that the keypad template used by the phones includes a **Message Waiting** button. This is required so that users can determine when they have a voice mail message. In the top menu of Cisco CallManager Administration, click **System**.

Result: The System screen is displayed.

2. In the Keypad Templates area, click **Configure**.

Result: The Keypad Templates screen is displayed.

3. If you do not already have a keypad template configured for your users, see the Cisco CallManager System Guide for the procedure to add or customize a keypad template. Be sure to include a **Message Waiting** button when you configure the template. If you already have a keypad template configured and assigned to users' phones, click that template in the Keypad Template list.

Result: The Keypad Template Configuration screen is displayed.

4. Choose the button location where you would like to assign the Message Waiting button. In that drop down list box, select **Message Waiting**.
5. In the **Feature Index** box for the **Message Waiting** button, select **1**. You must have only one instance of a **Message Waiting** button. Therefore, the Feature Index is 1.
6. Click **Update**.

Result: The Message Waiting button has been assigned to the keypad template for your users.

7. You must restart Cisco CallManager for the change to take effect. Open Cisco Process Control. To do so, click **Start > Programs > Cisco CallManager 2.4 > Cisco Process Control**.

Result: Cisco Process Control is displayed.

8. In the list, select **Cisco CallManager**, and click **Stop**.

Result: Cisco CallManager stops.

9. Once the service has stopped, click **Start**.

Result: Cisco CallManager starts, and the change to the keypad template is in effect.

10. Advise your users to print new keypad templates for their phones so the updated button layout is reflected.

Cisco Messaging Interface Interface Integration

Cisco Messaging Interface for Cisco CallManager version 2.4 allows adjustable digit strings (the default is ten digits for both input and output strings). This means that if your directory numbers are seven digits, the seven-digit number is padded with leading zeroes until it reaches ten digits before it is sent to the voice mail machine on the SMDI link. For example, 1234567 becomes 0001234567.

If your Voice Mail system requires something other than the default ten digit input and output, you can modify the input and output strings in the Cisco Messaging Interface registry.

Do You Need to Perform these Steps?

If your voice mail system requires less than ten digits for input and output, you will need to use the following steps to modify Cisco Messaging Interface. Cisco Messaging Interface allows a range of one to ten input or output digits.

If your voice mail system will accept the ten digit input and output strings, you do not need to follow any instructions in this section. Skip to the Octel System Integration section.

Understand the Digit Format

By default, Cisco Messaging Interface (also known as Selsius Unified Messaging Interface) sends and receives ten digit strings. This can cause a problem with voice mail systems that are configured for a different

number of digits than the ten–digit default. Use the following as an example, but only if you need to make adjustments to fit your application.

9212345

where:

- **9212345** the voice mail system requires seven digits.
- **92** the constant prefix digits recognized by the voice mail system.
- **12345** the Cisco IP Phone's directory number.

Adjust the Digit Format

Note: Install Cisco Messaging Interface before you attempt these steps.

To change the digit format from the default ten digits to the number required by your voice mail system, complete these steps:

1. Update two values in the Registry Editor for Cisco Messaging Interface (also known as Selsius Unified Messaging Interface) to make adjustments to the format. Click **Start > Run**.

Result: The Run dialog box is displayed.

2. Type **regedit**, and click **OK**.

Result: The Registry Editor window is displayed.

3. Click **HKEY_LOCAL_MACHINE/Software/Selsius Systems Inc./Selsius Unified Message Interface**.

Result: The default information is displayed, along with a subfolder.

4. Edit the string called **OutputDnFormat**. This registry entry only affects the string that is being output from the Voice Mail system. You must know the constant prefix digit(s) expected by your voice mail system, as well as the number of digits your voice mail system expects to receive. Right–click **OutputDnFormat** and select **Modify**.

Result: The Edit String dialog box is displayed.

5. Type the constant prefix digits, followed by %, followed by a leading zero, then the number of digits in a directory number in your system, followed by s. For example, 92%05s (directory numbers are 5 digits long and prepended with 92) or 214510%04s (directory numbers are 4 digits long and prepended with 214510).
6. Click **OK**.

Result: The data you typed is displayed for OutputDnFormat.

7. Edit the DWORD called **InputDnFormat**. You must know the number of digits your voice mail system will send to Cisco CallManager in each SMDI message. Right–click over **InputDnFormat** and select **Modify**.

Result: The Edit DWORD Value dialog box is displayed.

8. In the **Value Data** box, type the number of digits your system uses for directory numbers. For example, 5 or 7.
9. In the Base area, click **Decimal**. We recommend that you use decimal numbers only.
10. Click **OK**.

Result: The data you typed is displayed for InputDnFormat.

11. Close the Registry Editor window.

12. Start Cisco Messaging Interface. (To do so, click **Start > Programs > Cisco CallManager 2.4 > Cisco Process Control**. Select **Cisco Messaging Interface** and click **Start**).

Troubleshoot

Cisco Messaging Interface provides a trace log to be used for troubleshooting purposes. The trace log reports all messages sent and received between the Voice Mail system and Cisco CallManager. We recommend turning off the trace log when not in use.

Turn On the Trace Log

Complete these steps:

1. Update one string value in the Registry Editor for Cisco Messaging Interface (also known as Selsius Unified Messaging Interface) to turn on the trace feature. Click **Start > Run**.

Result: The Run dialog box is displayed.

2. Type **regedit** and click **OK**.

Result: The Registry Editor window is displayed.

3. Click **HKEY_LOCAL_MACHINE/Software/Selsius Systems Inc./Selsius Unified Message Interface**.

Result: The default information is displayed, along with a subfolder.

4. Edit the string called **Trace**. Right-click **Trace**, and select **Modify**.

Result: The Edit String dialog box is displayed.

5. Type **SumiLog.txt**.
6. Click **OK**.

Result: The data you typed is displayed for Trace and the trace feature is turned on.

7. Open Windows Explorer and go to the Cisco\Bin subdirectory.
8. Double-click the file **SumiLog.txt**. Refresh the window for this file to display.

Result: The log file reports all messages sent and received between the Voice Mail system and Cisco CallManager. The following is an example of the information that may be shown in a trace file (parameters in your actual trace file will differ slightly from those shown below).

```
15:24:39.703 |Process Initalizing ()
15:24:39.703 |Read OutputDnFormat string: 92%05s
15:24:39.703 |Read InutDnSignificantDigits: 5
15:24:40.694 |Init - Dirn - 5100, Port - COM1
15:24:40.694 |Opening the com port
```

9. Review the trace log for diagnostic information or to verify that the format sent to and received from Voice Mail is as expected. Once you have completed your review, return to the Registry Editor window.
10. Edit the string called **Trace**. Right-click **Trace** and select **Modify**.

Result: The Edit String dialog box is displayed.

11. Delete **SumiLog.txt** and leave the box empty.
12. Click **OK**.

Result: Only quote marks display for Trace and the trace feature is turned off. Important: If this is not done the SumiLog will continue to grow, eventually consuming considerable disk space.

Miscellaneous Errors

This section lists some errors that may be encountered.

Problem: No **SumiTrace.txt** file in Windows Explorer.

Condition: This may occur if you failed to enter the Trace data properly.

Resolution: Repeat the steps in the Turn on the Trace Log section, and retry.

Problem: A value of "%010s" is reported for OutputDnFormat after you modified the value of this entry in the registry.

Condition: This is the default value for this string, and indicates that you either did not modify the string with a different value or the string was not modified properly. Also, be sure you stop and restart Cisco Messaging Interface after modifying the registry.

Resolution: Repeat Steps 4–6 in the Adjust the Digit Format section and check the TraceLog.txt file to confirm the proper value data has been entered.

Problem: A default value of 10 is reported for digit length after you modified the value of this entry in the registry.

Condition: This is the default value for this DWORD, and indicates that you either did not modify the DWORD with a different value or the DWORD was not modified properly. Also, be sure you stop and restart Cisco Messaging Interface after modifying the registry.

Resolution: Repeat Steps 7–10 in the Adjust the Digit Format section, and check the **TraceLog.txt** file to confirm the proper value data has been entered.

Octel System Integration

This section describes the values that you must update in each menu.

1. Update these values in Menu 1.1. (From the Main Menu, select **1**. From Menu **1**, select **1**.)

- ◆ PBX type: **3 – Centrex #1AESS full duplex.**
- ◆ Number of Digits in Extension (used for Outcalling and ECP): **set to mailbox length.**
- ◆ Number of Digits in Extension (used for Message Waiting): **10**

Note: Cisco Messaging Interface defaults to ten–digit extensions for Message Waiting Indicator. This can be adjusted by modifying the value in the Windows Registry. See the section, Cisco Messaging Interface Integration for more information.

2. Update these values in Menu 4.1. (From the Main Menu, select **4**. From Menu **4**, select **1**.)

- ◆ Extension/Phone No.: Enter the two–digit physical link number (see table) followed by the Message Desk number , followed by the LTN (Logical Terminal Number) of each analog line that is plugged into each particular port. This field must contain a nine–digit number, with the following format:

LLGGGMMMM

LL = Physical Link Number (always 01)

GGG = Message Desk (DCC) number (always 001)

MMMM = Logical Terminal Number (0001 – 0128)

◆ Line Type: **35 Loop start**

◆ M column: **N for all ports**

3. Update these values in Menu 4.3. (From the Main Menu, select **4**. From Menu **4**, select **3**.) Special RS-232 Message Waiting: **Y**

Physical Link Number	Connector Designation
01	Async 1
02	Async 2
03	Async 3

4. Update these values in Menu 6.1. (From the Main Menu, select **6**. From Menu **6**, select **1**.)

◆ Flash On-hook time: **850 milliseconds**

◆ Pause Time: **1000 milliseconds**

◆ Dialing Sequence to Transfer a Call: **FPN**

◆ Dialing Sequence to Reconnect a Call:

Ring No Answer: **F**

Busy: **F**

Note: Verify these dialing sequences for your PBX.

5. Update these Integration Link Management values in Menu 6.5. (From the Main Menu, select **6**. From Menu **6**, select **5**.)

◆ Link Number: **(1-3)**

◆ Link Name:

Type of Switch to which the System is Integrated: **3 – 1A ESS/SMDI**

Full Duplex

Baud Rate: **3 – 9600 Baud**

Number of Data Bits: **0 – 7 Data Bits**

Number of Stop Bits: **0 – 1 Stop Bits**

Parity (None/Odd/Even): **2 – Even Parity**

XON/XOFF: **1 – Ignore XON/XOFF**

Carrier Detect: **1 – Carrier Detect Not Used**

Extension to Check SMDI Message Waiting: **Leave Blank**

Max. Msg. Waiting Operations per second: **1**

Switch Number to which this Link is Associated: **1**

SMDI link down alarm threshold counter: **1**

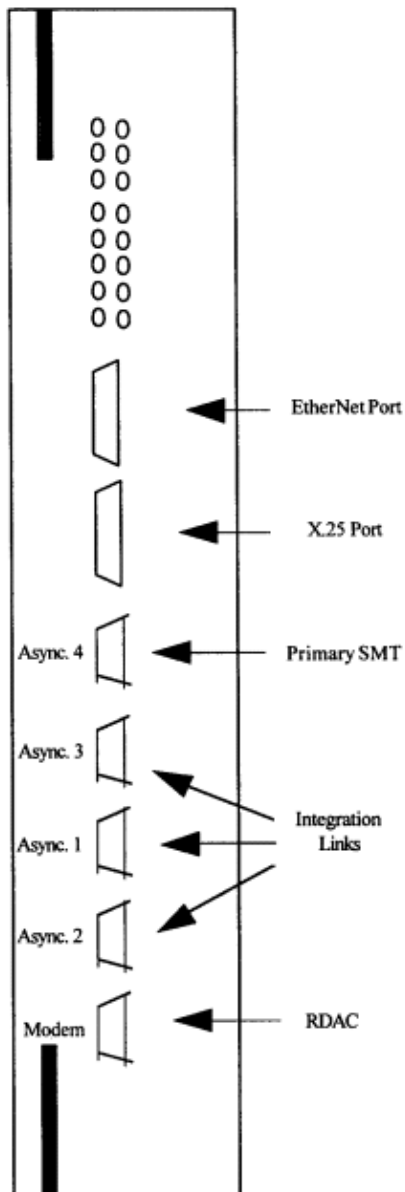
Note: After you configure the above menus, select Menu 6.5.5 to reset the integration link(s).
6. Update these values in Menu 8. (From the Main Menu, select **8**.)

◆ Subscriber's Extension Number

Note: You can configure the "Subscriber's Extension" number with leading zeros plus the mailbox number. For example, mailbox 5001 can have a subscriber's station number of 0000005001 to equal ten digits.

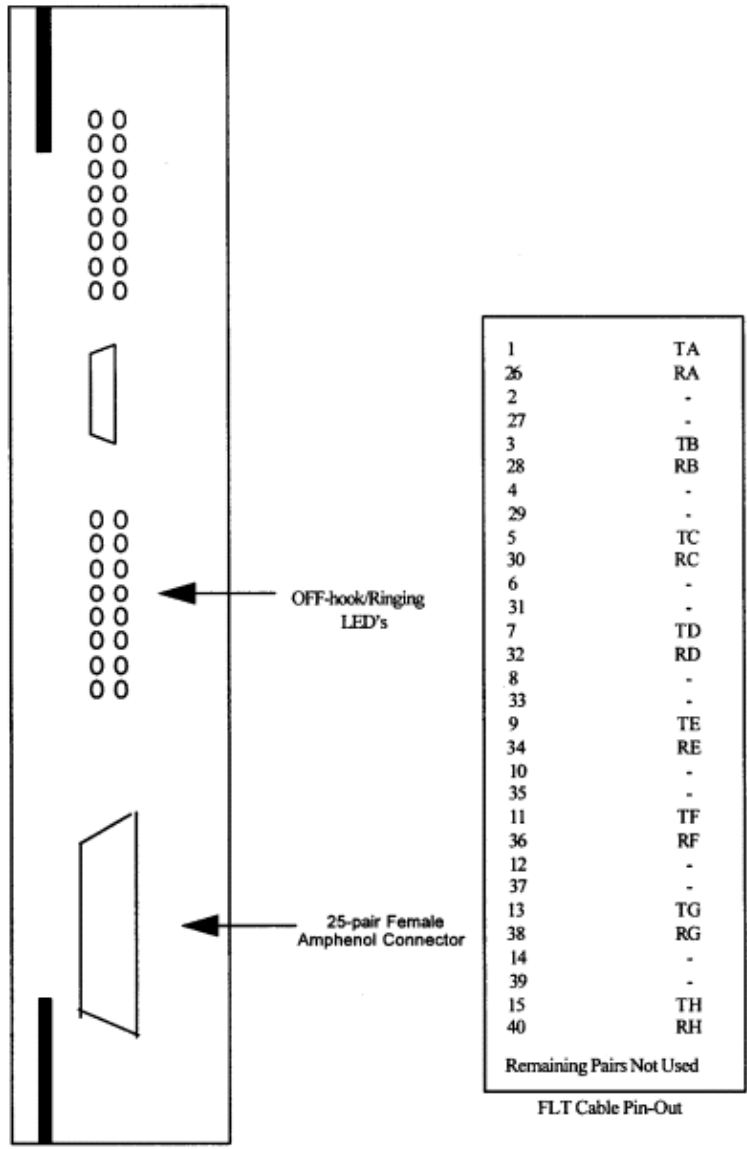
Install the RS-232 Data Link

Octel Communications provides a cable to connect from the COM port on the Cisco CallManager PC to the Octel 250. Use Cable Part Number 057-1323-000 along with a DB25-to-DB9 connector. Connect the cable to the appropriate serial port on the CF board of the Octel 250. See Figure 2.



Install the FLT Cable

Each FLT board supports up to eight analog voice ports. One 25-pair, amphenol cable is required for each FLT. Figure 3 shows the proper cable pin-out for each of the eight voice ports.



Test the Installation

Use these scenarios to test whether the integration when installation is complete:

- Create two mailboxes associated with two test extensions. Record a name and personal greeting for each mailbox.
- Call forward on Busy and No Answer the test extensions to the Octel System Access Number.
- Use one test extension to call the other test extension and let it ring. You must hear the personal greeting.
- Leave a message. Verify whether the Message Waiting indicator turns on.
- Verify that transfer to attendant works properly.
- Call the Octel 250 from a test extension. You must hear the recorded name and be asked to enter the password.

- Review the message in the mailbox. Verify that the direct reply feature works. To do so, press 8 at the end of the message.
- Delete the message. Verify that the message waiting indicator turns off.

Contact Information

Cisco Systems

Cisco Technical Assistance Center

170 West Tasman Drive San Jose, CA 95134 (408) 526-4000

Worldwide TAC Contacts

Lucent Technologies

Octel Messaging Division

1001 Murphy Ranch Road

Milpitas, CA 95035-7912

(408) 321-2000

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Related Information

- **Voice Technology Support**
- **Voice and IP Communications Product Support**
- **Recommended Reading: Troubleshooting Cisco IP Telephony**
- **Technical Support – Cisco Systems**

