



# Cisco TAPI Service Provider Installation and Configuration

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The following sections outline the installation of the Cisco TAPI Service Provider (TSP) and describe some of the issues you need to be aware of after installation. The topics include:

- Installing the Cisco TAPI Service Provider, page A-1
- Activating the Cisco TAPI Service Provider, page A-3
- Configuring the Cisco TAPI Service Provider, page A-4
- Uninstalling the Cisco TAPI Service Provider, page A-9
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- Verifying the Cisco TAPI Service Provider Installation, page A-14
- Setting up Client-Server Configuration, page A-16

## Installing the Cisco TAPI Service Provider

The Cisco TAPI Service Provider software is installed either directly from the Cisco CallManager CD-ROM, or by browsing to the Cisco CallManager server and installing the Cisco TSP from the Applications > Install Plugins menu.

To install the Cisco TSP from the Cisco CallManager CD-ROM, perform the following steps:

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**Procedure**

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- Step 1** Insert the Cisco CallManager CD-ROM.
  - Step 2** Double-click on **My Computer**
  - Step 3** Double-click on the CD-ROM drive.
  - Step 4** Double-click on the **Installs** folder.
  - Step 5** Double-click **Cisco TSP.exe**.
  - Step 6** Follow the online instructions.
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To install the Cisco TSP from the Cisco CallManager, perform the following steps:

**Procedure**

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- Step 1** Open a Web browser and enter the URL for Cisco CallManager Administration in the URL address text box (for example, “http://callmanager/main.asp”). Press **Enter**.
- Step 2** Click **Application > Install Plugins**.
- Step 3** Click **Cisco Telephony Service Provider**.
- Step 4** On the Cisco TSP-Welcome window, click **Continue**.
- Step 5** Follow the online instructions.

**Note**

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Once the installation is complete, you must install the Cisco Wave drivers and then restart the computer. Refer to “Installing the Wave Driver” section on page A-10 for more information.

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# Activating the Cisco TAPI Service Provider

When the Cisco TSP is installed, it is added to the set of active TAPI service providers. The Cisco TSP will be loaded by TAPI as required. If it has been removed or if some problem has occurred, it can be manually added to this set.

To manually add the Cisco TSP to the list of telephony drivers, perform the following steps:

## Procedure for Windows 2000

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- Step 1** Open the Control Panel.
- Step 2** Double-click **Phone and Modem Options**.
- Step 3** On the Phone and Modem Options dialog box, click the **Advanced** tab.



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**Note** If the Cisco TSP is either not there or you removed it previously and want to add it now, you can do so from this window.

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- Step 4** Click **Add**.
- Step 5** On the Add Provider dialog box, select **Cisco IP-PBX Service Provider**.
- Step 6** Click **Add**.

The Cisco IP PBX Service Provider is now included in the provider list on the Phone and Modem Options window.

- Step 7** At this point, you can either configure the Cisco TSP or click **Close** to complete the setup.
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## Procedure for Windows NT, Windows 98, and Windows 95

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- Step 1** Open the Control Panel.
- Step 2** Double-click **Telephony**.
- Step 3** Click the **Telephony Drivers** tab.



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**Note** If the Cisco TSP is either not there or you removed it previously and want to add it now, you can do so from this window.

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**Step 4** Click **Add**.

**Step 5** On the Add Driver dialog box, select **Cisco IP-PBX Service Provider**.

**Step 6** Click **Add**.

The provider list on the Phone and Modem Options window now includes the Cisco IP PBX Service Provider.

**Step 7** At this point, you can either configure the Cisco TSP or click **Close** to complete the setup.

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## Configuring the Cisco TAPI Service Provider

You configure the Cisco TSP by setting parameters on the Cisco IP-PBS Service Provider configuration window, as illustrated in Figure A-1.

**Figure A-1 Cisco IP-PBX Service Provider Configuration**

The screenshot shows a configuration window titled "Cisco-IP PBX Service Provider" with a close button (X) in the top right corner. The window is divided into several sections:

- Automated Voice Calls:** A text box for "Desired number of possible Automated Voice lines:" contains the value "5". Below it, a note states "(Current number of possible open Automated Voice lines is 5.)". A checkbox labeled "Enumerate only lines which support Automated Voice" is unchecked, with a note below it stating "(Currently enumerating all lines.)".
- Silence Detection:** A checkbox labeled "All phones and gateways perform silence suppression" is checked. Below it, a text box for "16 bit linear PCM energy level:" contains the value "200", with a range "(0 - 32767)" to its right.
- Security:** Three text boxes are present: "User Name:" with the value "user", "Password:" with "\*\*\*\*\*", and "Verify Password:" with "\*\*\*\*\*".
- Call Manager Location:** Three radio buttons are shown: "Local Call Manager" (selected), "Call Manager IP Address:" (with an empty text box), and "Call Manager Name:" (with an empty text box).
- Message Timeout:** A text box for "Synchronous Message Timeout:" contains the value "15000".
- New Device Detection:** A checkbox labeled "Poll For New Devices" is unchecked.

At the bottom of the window are two buttons: "OK" and "Cancel". A vertical reference number "47024" is located on the right side of the dialog box.

Table A-1 contains a list of the fields that must be set and their descriptions:

**Table A-1 Cisco IP-PBX Service Provider Configuration Fields**

Field group	Description
Automated Voice Calls	<p>The number of Cisco wave devices you are using determines the number of possible automated voice lines (the default is five). You need to create the same number of CTI port devices in the Cisco CallManager. For example, if you enter “5” here, you need to create five CTI port devices in Cisco CallManager. We recommend that you use one line per device.</p> <p>If you change this number, you also need to remove and then reinstall any Cisco wave devices that you installed.</p> <p>This number is the maximum number of lines that can be simultaneously opened using both LINEMEDIAMODE_AUTOMATEDVOICE and LINEMEDIAMODE_INTERACTIVEVOICE.</p> <p>If you are not developing a third-party call control application, check the option to Enumerate only lines that support automated voice so that the Cisco TSP sees only lines associated with a CTI port device.</p>
Silence Detection	<p>If you use silence detection, this checkbox informs the wave driver which method to use to detect silence on lines that support automated voice calls using the Cisco Wave Driver. If the checkbox is checked (default), the wave driver looks for the absence of audio stream RTP packets. Because all devices on the network suppress silence and stop sending packets, this provides a very efficient method for the wave driver to detect silence.</p> <p>However, if some phones or gateways do not perform silence suppression, the wave driver must analyze the content of the media stream and at some threshold, declare that silence is in effect. This method is CPU-intensive but handles media streams from any type of device.</p> <p>If some phones or gateways on your network do not perform silence suppression, you must specify the energy level at which the wave driver declares that silence is in effect. This value of the 16-bit linear PCM energy level has a range of zero to 32767, and the default is 200. If all phones and gateways perform silence suppression, the system ignores this value.</p>

**Table A-1 Cisco IP-PBX Service Provider Configuration Fields (continued)**

Field group	Description
Security	<p>Users need to enter their user name and password in the Cisco IP PBX Service Provider configuration dialog box to access devices. The Cisco CallManager creates each user's user name and password in the administration pages, encrypts them, and stores them in the registry. Devices and lines are assigned to that user. The Cisco TSP returns these lines to the application when the Cisco TSP issues lineInitializeEx. When the Cisco TSP initializes, it reads the user name and password and sends them in the ProviderOpen request to the Cisco CallManager.</p> <p>Only one user name and password can be active at a time.</p> <p>The list of devices that the Cisco TSP receives from the Cisco CallManager is the entire list of devices the user is allowed to access regardless of whether the device is registered. If the application attempts to open an unregistered device, the Cisco TSP responds to the lineOpen request with the error LINEERR_RESOURCEUNAVAIL. The application is responsible for retrying the lineOpen until it succeeds.</p>
CallManager Location	<p>If the TSP is on the same machine as the CallManager, click the Local CallManager radio button. If the CallManager is on a different machine, click the CallManager IP Address radio button and enter the IP address or click the CallManager Name radio button and enter the host name.</p>
Message Timeout	<p>The Synchronous Message Timeout designates the time the TSP should wait to receive a response to a synchronous message. The value displays in milliseconds, and the default is 15000 ms.</p>
New Device Detection	<p>The TSP uses the CallManager directory to retrieve devices for a user. If a device is added to a user's control list from the CallManager user administration pages, no notification goes to the TSP about the new device. If dynamic device updates are required, the TSP polls the directory for new devices if this feature is enabled. To enable dynamic device updates, select the Poll for New Devices checkbox at the bottom of the configuration dialog box.</p>

Perform the following steps to configure Cisco TSP:

### Procedure for Windows 2000

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- Step 1** Open the Control Panel.
- Step 2** Double-click **Phone and Modem Options**.
- Step 3** Select **Cisco IP-PBX Service Provider**.
- Step 4** Click **Configure**.
- The system displays the Cisco IP PBX Service Provider dialog box.
- Step 5** Enter values for the fields on this dialog box. Refer to Table A-1 for field information:
- Step 6** Click **OK** to save changes.



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**Note** After the TSP is configured, you must restart the telephony service before an application can run and connect with its devices.

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### Procedure for Windows NT, Windows 98, and Windows 95

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- Step 1** Open the Control Panel.
- Step 2** Double-click **Telephony**.
- Step 3** Select **Cisco IP-PBX Service Provider**.
- Step 4** Click **Configure**.
- The system displays the Cisco IP PBX Service Provider dialog box.
- Step 5** Enter values for the fields on this dialog box. Refer to Table A-1 for field information:
- Step 6** Click **OK** to save changes.

**Note**

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After configuring the TSP, the telephony service must be restarted before an application can run and connect with its devices.

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## Uninstalling the Cisco TAPI Service Provider

This process uninstalls Cisco TAPI Service Provider and removes it from the provider list. To make these changes, perform the following steps:

### Procedure for Windows 2000

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- Step 1** Open the Control Panel.
  - Step 2** Double-click the **Phone and Modem** icon.
  - Step 3** Click the **Advanced** tab.
  - Step 4** Highlight the Cisco IP-PBX Service provider.
  - Step 5** Click **Remove** to delete the Cisco TSP from the list.
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### Procedure for Windows NT, Windows 98, and Windows 95

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- Step 1** Open the Control Panel.
  - Step 2** Double-click the **Telephony** icon.
  - Step 3** Click the **Advanced** tab.
  - Step 4** Highlight the Cisco IP-PBX Service provider.
  - Step 5** Click **Remove** to delete the Cisco TSP from the list.
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# Installing the Wave Driver

Cisco wave driver is available for Windows 2000 and Windows NT only. Windows 98 and Windows 95 do not support it.

You should install Cisco wave driver if you plan to use first-party call control. (Do this even if you are performing your own media termination.)

**Caution**

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Due to a restriction in Windows NT, the software may overwrite or remove existing wave drivers from the system when you install or remove the Cisco wave driver on a Windows NT system. The procedures in this section for installing and uninstalling the Cisco wave driver on Windows NT include instructions on how to prevent existing wave drivers from being overwritten or removed.

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To install the Cisco wave driver, perform the following steps.

**Procedure for Windows 2000**

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- Step 1** Open the Control Panel.
  - Step 2** Double-click **Add/Remove Hardware**.
  - Step 3** Click **Next**.
  - Step 4** Click **Add/Troubleshoot a Device** and click **Next**.
  - Step 5** Click **Add a New Device** and click **Next**.
  - Step 6** Click **No, I want to select the hardware from a list**.
  - Step 7** Select **Sound, video and game controllers** and click **Next**.
  - Step 8** Click **Have Disk**.
  - Step 9** Click **Browse** and change to the Wave Drivers folder in the folder where the Cisco TSP is installed.
  - Step 10** Select **OEMSETUP.INF** and click **Open**.
  - Step 11** Click **OK** in the Install From Disk window.
  - Step 12** The Cisco TAPI Wave Driver displays on the screen. Click **Next**.
  - Step 13** Click **Next**.

- Step 14** Click **Yes**.
  - Step 15** Click **Finish**.
  - Step 16** Click **Yes** to restart.
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### Procedure for Windows NT

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- Step 1** Before you add the Cisco wave driver, you must save the wave driver information from the registry in a separate file. To do this, perform the following steps:
  - a.** Click **Start > Run**.
  - b.** Enter **regedit** in the text box.
  - c.** Click **OK**.
  - d.** Select the Drivers32 key located in the following path:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows NT\  
CurrentVersion
  - e.** Select **Registry > Export Registry File**.
  - f.** Enter a filename and select the location to save. Click **Save**. The file is given a .reg extension.
- Step 2** After the registry information is saved, open the Control Panel.
- Step 3** Double-click **Multimedia**.
- Step 4** Click **Next**.
- Step 5** Click **Add**.
- Step 6** Click **Unlisted** or **Updated Driver**.
- Step 7** Click **OK**.
- Step 8** Click **Browse** and change to the Wave Drivers folder in the folder where the Cisco TSP is installed.
- Step 9** Click **OK**. Follow the on-screen instruction, but *do not restart the system when prompted*.
- Step 10** Examine the contents of the registry to verify the new driver was installed and the old drivers still exist. To do this, perform the following steps:
  - a.** Click **Start > Run**.

- b. Enter **regedit** in the text box.
  - c. Click **OK**.
  - d. Select the Drivers32 key located in the following path:
    - a. HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion
    - b. Make sure the driver “avaudio32.dll” displays in the data column. This is the Cisco wave driver.
    - c. Verify that the previously existing wave values appear in the data column for wave1, wave2, wave3, and so on. You can compare this registry list to the contents of the .reg file you saved in Step 1 by opening the .reg file in a text editor and viewing it and the registry window side-by-side.
    - d. If necessary, add the appropriate waveX string values for any missing wave values that should be installed on the system. For each missing wave value, select **Edit > New > String Value** and enter a value name. Then, select **Edit > Modify**, enter the value data, and click **OK**.
    - e. Close the registry by selecting **Registry > Exit**.
- Step 11** Restart the computer.
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## Uninstalling the Wave Driver

To remove the Cisco wave driver, perform the following steps:

### Procedure for Windows 2000

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- Step 1** Open the Control Panel.
- Step 2** Double-click **Add/Remove Hardware**.
- Step 3** Click **Next**.
- Step 4** Select **Uninstall/Unplug a device** and click **Next**.
- Step 5** Select **Uninstall a device** and click **Next**.
- Step 6** Select **Cisco TAPI Wave Driver** and click **Next**.

- Step 7** Select **Yes, I want to uninstall this device** and click **Next**.
- Step 8** Click **Finish**.
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### Procedure for Windows NT

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- Step 1** Before you add the Cisco wave driver, you must save the wave driver information from the registry in a separate file. To do this, perform the following steps:
- Click **Start > Run**.
  - Enter **regedit** in the text box.
  - Click **OK**.
  - In the left window, select the Drivers32 key located in the following path:  
HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows NT\  
CurrentVersion
  - Select **Registry > Export Registry File**.
  - Enter a filename and select the location to save. Click **Save**. The file is given a .reg extension.
- Step 2** After the registry information is saved, open the Control Panel.
- Step 3** Double-click **Multimedia**.
- Step 4** Click the **Devices** tab.
- Step 5** Click the '+' symbol next to Audio Devices to view all the audio devices.
- Step 6** Click **Audio** for Cisco Sound System.
- Step 7** Click **Remove**.
- Step 8** Click **Finish**. *Do not restart the system.*
- Step 9** Examine the contents of the registry to verify the Cisco wave driver was removed and the old drivers still exist. To do this, perform the following steps.
- Click **Start > Run**.
  - Enter **regedit** in the text box.
  - Click **OK**.

- d. In the left window, select the Drivers32 key located in the following path:
  - a. HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion
  - b. Make sure the Cisco wave driver “avaudio32.dll” does not appear in the data column.
  - c. Verify that the previously existing wave values appear in the data column for wave1, wave2, wave3, and so on. You can compare this registry list to the contents of the .reg file you saved in Step 1 by opening the .reg file in a text editor and viewing it and the registry window side-by-side.
  - d. If necessary, add the appropriate waveX string values for any missing wave values that should be installed on the system. For each missing wave value, select **Edit > New > String Value** and enter a value name. Then select **Edit > Modify**, enter the value data, and click **OK**.
  - e. Close the registry by selecting **Registry > Exit**.

**Step 10** Restart the computer.

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## Verifying the Cisco TAPI Service Provider Installation

You can use the Microsoft Windows Phone Dialer Application to verify that the Cisco TSP is operational. For Windows NT and Windows 2000, the dialer application is located in

C:\Program Files\Windows NT\dialer.exe

For windows 95 and Windows 98, the dialer application is located in

C:\Windows\dialer.exe

### Procedure For Windows 2000

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- Step 1** Open the Dialer application by locating it in Windows Explorer and double-clicking it.
- Step 2** Click Edit > Options.

- Step 3** Select **Phone** as the Preferred Line for Calling.
- Step 4** In the Line Used For area, select one of the Cisco Lines in the Phone Calls drop down menu.
- Step 5** Click **OK**.
- Step 6** Click **Dial**.
- Step 7** Enter a number to dial, select **Phone Call** in the Dial as box, and then click **Place Call**.
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### Procedure for Windows NT, Windows 98, and Windows 95

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- Step 1** Open the Dialer application by locating it in Windows Explorer and double-clicking it:
- A dialog box appears requesting the line and address that you want to use. If there are no lines in the **Line** drop-down list box, then there might be a problem between the Cisco TSP and the Cisco CallManager.
- Step 2** Select one of the lines from the Line drop down menu. Make sure Address is set to **Address 0**.
- Step 3** Click **OK**.
- Step 4** Enter a number to dial.
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If the call was successful, you have verified that the Cisco TSP is operational on the machine where the Cisco TSP is installed.

If you encounter problems during this procedure, or if no lines appear in the line drop-down list on the dialer application, check the following items:

- Make sure the Cisco TSP was configured properly.
- Test the network link between the Cisco TSP and the Cisco CallManager by using the ping command to check connectivity.
- Make sure the Cisco CallManager server is functioning.

# Setting up Client-Server Configuration

For information on setting up a client-server configuration in Windows 2000, refer to the Microsoft Windows Help feature. For information on client-server configuration in Windows NT, refer to Microsoft's White Papers.