Cisco JTAPI Installation Guide for Cisco CallManager 4.1(3)

This document describes how to install and configure the Cisco Java Telephony API (JTAPI) client software for Cisco CallManager 4.1(3).

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Introduction

Cisco Java Telephony API (JTAPI) implementation comprises Java classes that reside on all client machines that run JTAPI applications. Installation of the Cisco JTAPI implementation must take place before applications function correctly. Make sure that the Cisco JTAPI classes are installed wherever JTAPI applications will run, whether on Cisco CallManager, on a separate machine, or on both. Installation requires 5 MB of local disk space.

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Note If you have upgraded to Cisco CallManager 4.0, you must upgrade the JTAPI client software on any application server or client workstation on which JTAPI applications are installed. If you do not upgrade the JTAPI client, your application will fail to initialize. If you need to upgrade, download the appropriate client from the Cisco CallManager Administration as described in the Installing the Cisco JTAPI Software section.

The upgraded JTAPI client software does not work with older releases of Cisco CallManager.

Installing the Cisco JTAPI Software

Cisco JTAPI supports multiple languages for the installation and JTAPI preferences UI.

The Cisco JTAPI installation utility installs the following items on the local disk drive:

- JTAPI java classes in %SystemRoot%\java\lib
- JTAPI Preferences in Program Files\JTAPITools
- JTAPI sample applications (makecall, jtrace) in Program Files\JTAPITools
- JTAPI documentation in Program Files\JTAPITools\doc

Note To run JTAPI applications, you need a Java 1.1-compatible environment such as the Sun JDK 1.1.x, JDK 1.2, JDK 1.3, or Microsoft Virtual Machine (bundled with Internet Explorer 4.0 and higher). Cisco JTAPI will also run on Sun JDK1.2.

To use JTPREFS with Cisco JTAPI, however, requires the JDK 1.2 or higher environment. For information on JTPrefs, see the "Configuring Cisco JTAPI Tracing" section on page 4.

If you are installing Cisco JTAPI on a Windows 2000 workstation or server, you already have a compatible version of the Microsoft Virtual Machine. On all other Microsoft platforms such as Windows 95, Windows 98, and Windows NT, verify the current version of the Microsoft Virtual Machine by running the command "java /?" and noting the version that is printed at the top of the console.

Perform the following steps to install the Cisco JTAPI software.

Procedure

Step 1 Log in to the computer where you want to install the Cisco JTAPI client software.

Step 2 Close all Windows programs.

Step 3 Open a web browser.

Step 4 Go to the Cisco CallManager Administration:

http://*Name*/CCMAdmin/main.asp

where:

Name specifies the name or IP address of the Cisco CallManager

Step 5 Choose **Application** > **Install Plugins**.

Step 6 Choose the **Cisco JTAPI** link.

Step 7 Follow the instructions in the popup windows.

Note Install Cisco JTAPI software on the default drive as directed by the installation software. When Windows NT is installed in C:\WINNT, the default directory, for example, is C:\WINNT\Java\lib.

Verifying the Installation

To verify the JTAPI installation, you can use the makecall application that allows you to place a call via JTAPI. Perform the following procedure to use the makecall application.

Procedure

Step 1 From the Windows NT command line, navigate to the directory where you installed Cisco JTAPI Tools. By default, this directory is C:\Program Files\JTAPITools.

Step 2 Execute the following command:

java CiscoJtapiVersion

Step 3 Execute the following command:

java makecall *<server name>* *<login>* *<password>* **1000** *<phone1>* *<phone2>*

where:

server name specifies the hostname or IP address of the Cisco CallManager (for example, CTISERVER).

phone1 and *phone2* designate directory numbers of IP phones or virtual phones that the user controls according to the user configuration. See the *Cisco CallManager Administration Guide* for details.

For *login* and *password*, use the user ID and password that you configured in the Cisco CallManager User Configuration window.

You can also use the JTAPI Preferences user interface utility tool to verify the installed JTAPI version:

Go to **Start** > **Programs** > **CiscoJTAPI** > **JTAPI Preferences**.

Auto Install for Upgrades

This feature provides a facility by which an application at startup can identify itself to a Cisco CallManager web server via an HTTP request, and receives a response with the version of the required JTAPI API. The application compares the version that is available on the server to the local version in the application classpath and determines whether an upgrade is necessary.

The application makes changes in the init process to instantiate an updated API to discover the server installed component and download the component as needed.

The feature aims are allowing applications to refresh the jtapi.jar component to match the Cisco CallManager, and also a way to centrally deploy the jtapi.jar to which applications can auto update.

The API required to perform this functionality is packaged in the form of an updater.jar. jtapi.jar and updater.jar are packaged with a standard manifest that can be used to compare versions. A application does not have to resort to instantiating a Version class as this could make the API write protected from an update.

This feature, when specified with the location and component, downloads jtapi.jar from server and copies it to local directory. The application can either copy downloaded jtapi.jar with its copy by overwriting it or change the classpath to access the new jtapi.jar.

Note Auto Install does not update JTAPI preferences, TAPITestTools, updater.jar, and javadoc components. If applications require these components, install JTAPI from the Cisco CallManager plugin pages.

Configuring Cisco JTAPI Tracing

Use the Cisco JTAPI tracing preferences application (JTAPI Preferences) to configure trace levels and trace destinations. Installation of the Cisco JTAPI Preferences into the Program Files\JTAPITools directory utility takes place by default. To open the Cisco JTAPI Preferences utility, choose **Start > Programs > Cisco JTAPI > JTAPI Preferences**.

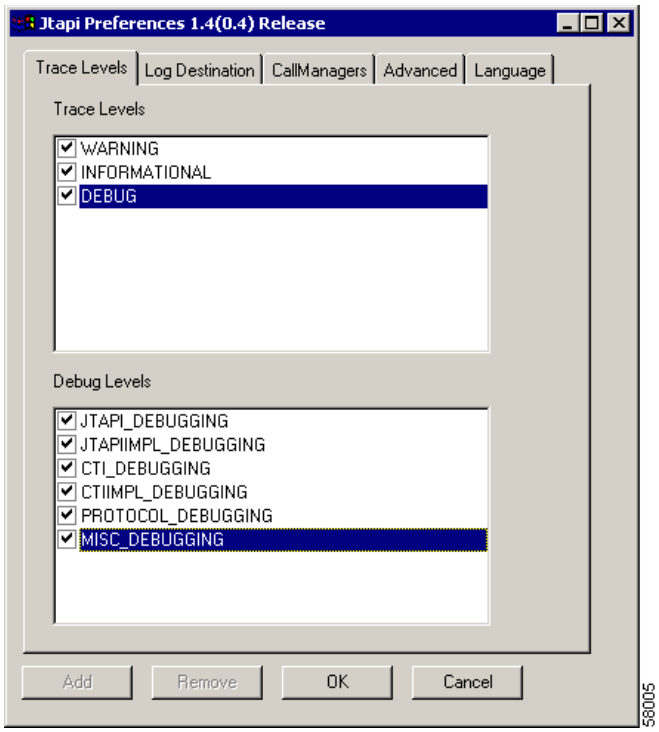
This section, which describes how to use the Cisco JTAPI preferences application, discusses the following topics:

- Trace Levels
- Log Destination
- Cisco CallManager
- Advanced

Trace Levels

Figure 1 illustrates the Trace Levels tab of the Cisco JTAPI preferences application. The window title shows the JTAPI version number.

Figure 1 Trace Levels Tab



The Trace Level tab allows you to enable or disable the following JTAPI trace levels:

- WARNING—Low-level warning events
- INFORMATIONAL—Status events
- DEBUG—Highest level debugging events

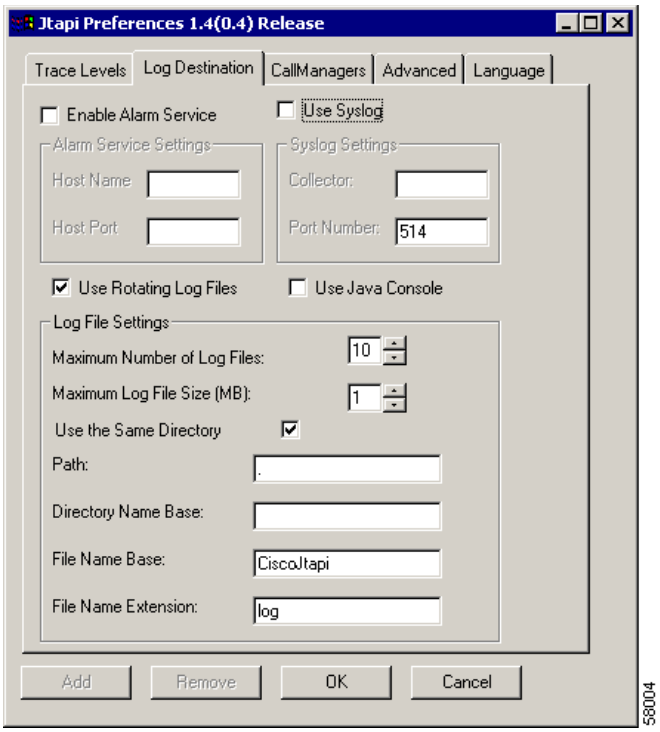
You may enable or disable additional debugging levels in the Debug Levels window, as described in the following list:

- JTAPI_DEBUGGING—JTAPI methods and events trace
- JTAPI_IMPLDEBUGGING—Internal JTAPI implementation trace
- CTI_DEBUGGING—Trace Cisco CallManager events that are sent to the JTAPI implementation
- CTIIMPL_DEBUGGING—Internal CTICLIENT implementation trace
- PROTOCOL_DEBUGGING—Full CTI protocol decoding
- MISC_DEBUGGING—Miscellaneous low-level debug trace

Log Destination

Figure 2 illustrates the Log Destination tab of the Cisco JTAPI preferences application.

Figure 2 Log Destination Tab



The Log Destination tab allows you to configure how JTAPI creates traces and how they are stored. Table 1 contains descriptions of the log destination fields.

Table 1 Log Destination Configuration Fields

Field	Description
Enable Alarm Service	When this option is enabled, JTAPI alarms go to an alarm service that is running on the specified machine. You must specify the host name and port number when enabling this option.
Use Java Console	When this option is enabled, tracing goes to the standard output or console (command) window.
Use Syslog	When this option is enabled, traces go to a UDP port as specified in the Syslog Collector and Port Number fields. Syslog collector service collects traces and directs them to the CiscoWorks2000 server.

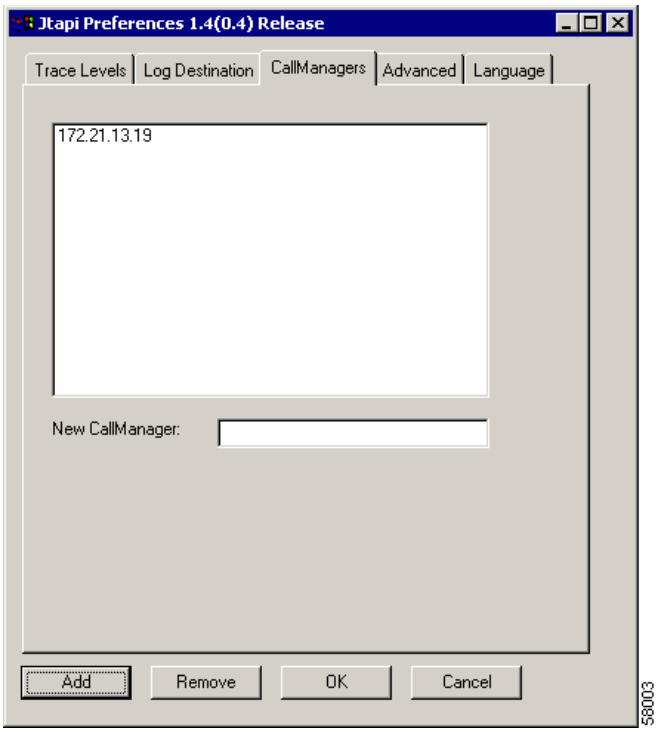
Table 1 Log Destination Configuration Fields (Continued)

Field	Description
Use Rotating Log Files	This option allows you to direct the traces to a specific path and folder in the system. No fewer than two log files and no more than 99 files can exist. Cisco JTAPI rotates through the log files in numerical order, returning to the first log file after filling the last. Log files increase in size in 1-megabyte increments.
Use the Same Directory	This option allows you to specify whether the same folder name should be used for each instance of an application. When the option is enabled, JTAPI traces the log files to the same directory. In this case, successive instances of a JTAPI application will restart the log files starting at index 01. When the option is disabled, each application instance, whether successive or simultaneous, will cause the trace files to be placed in a new folder sequential to the last folder written. Cisco JTAPI detects the last folder present in the trace path and automatically increments the numeric index.
Path	This field allows you to specify the path name to which the trace files are written. When the path is not specified, JTAPI makes the default the application path.
Directory Name Base	This field allows you to specify a folder name where the trace files will be contained.
File Name Base and File Name Extension	Use these values to create the trace file names with a numerical index that is appended to the file base name to indicate the order in which the files are created. For example, if you enter jtapiTrace in the File Name Base field and log in the File Name Extension field, the trace files would rotate between jtapiTrace01.log, jtapiTrace02.log, and jtapiTrace10.log. If the File Name Base and File Name Extension fields are left blank, Cisco JTAPI picks the trace files names as CiscoJtapi01.log, CiscoJtapi02.log, and so on.

Cisco CallManager

Figure 3 illustrates the Cisco CallManager tab of the Cisco JTAPI preferences application.

Figure 3 CallManager Tab

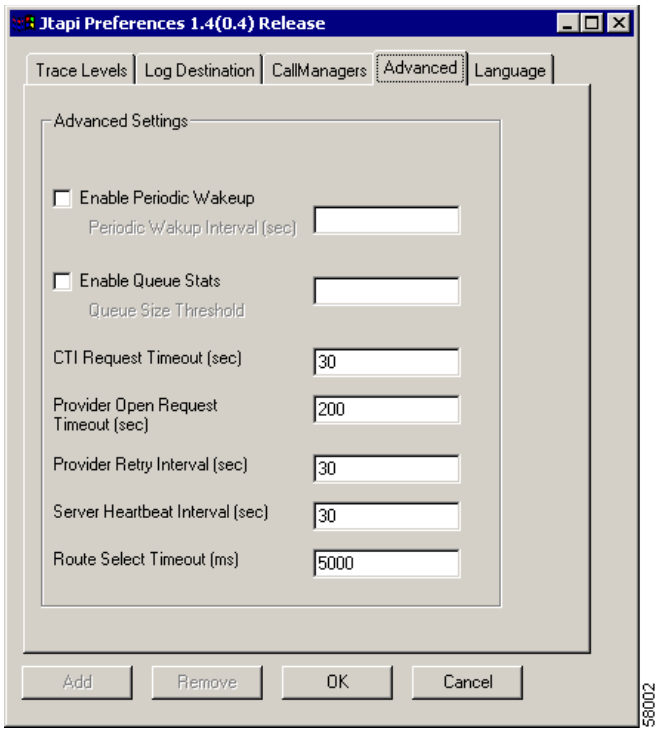


This tab allows you to define a list of Cisco CallManagers that a JTAPI application can present to the user for optional Cisco CallManager connectivity.

Advanced

Figure 4 illustrates the Advanced tab of the Cisco JTAPI preferences application.

Figure 4 Advanced Tab



You can configure the parameters in Table 2 through the Advanced tab in the JTPrefs application. You may need these low-level parameters for troubleshooting and debugging purposes only.

Note Cisco recommends that you *not* modify the parameters in Table 2 unless the Cisco Technical Assistance Center (TAC) instructs you to do so.

Table 2 Advanced Configuration Fields

Field	Description
Enable Periodic Wakeup	This setting enables a heartbeat in the internal message queue that JTAPI uses. It causes the thread to wake up if it has not received a message in the time that is defined in the PeriodicWakeupInterval and creates a log event. The default setting is disabled.
Periodic Wakeup Interval (sec)	This setting allows you to define a time of inactivity in the JTAPI internal message thread. If JTAPI has not received a message during this time, the thread wakes up and logs an event. The default is 50 seconds.

Table 2 Advanced Configuration Fields (Continued)

Field	Description
Enable Queue Stats	This setting causes JTAPI to log the max queue depth over the specified number of messages that are queued to JTAPI main event thread. In other words, for every x messages processed, JTAPI logs a DEBUGGING level trace that reports the maximum queue depth over that interval, where x is the number of messages that are specified in Queue Size Threshold. The default setting is disabled.
Queue Size Threshold	This setting allows you to specify the number of messages that define the time over which JTAPI will report the maximum queue depth. The default is 25 messages.
CTI Request Timeout (sec)	This setting specifies the time in seconds that JTAPI will wait for a response from a CTI request. The default is 15 seconds.
Provider Open Request Timeout (sec)	This setting specifies the time in seconds that JTAPI will wait for a response for the Provider Open Request. The default is 30 seconds.
Provider Retry Interval (sec)	This setting specifies the time in seconds that JTAPI will retry opening a connection to the Cisco CallManager cluster in case of system failure. The default is 30 seconds.
Server Heartbeat Interval (sec)	This setting specifies how often in seconds that the connection between JTAPI and the Cisco CallManager cluster will be verified to be alive. If JTAPI fails to receive heartbeats, it will establish a connection via the second CTIManager that is specified in the provider open request.
Route Select Timeout (ms)	This setting specifies the time in milliseconds that JTAPI will wait for the application to respond to the Route event. If the application does not respond within this time, JTAPI will end the route and send the corresponding RouteEnd event.

Language Tab

The Language tab allows you to select one of the installed languages to view the configuration settings in that language.

Choose a language and click **Change Language** to reload the tabs with the text in that language.

JTAPI Preferences on non-Microsoft environments

For non-Microsoft environments, you must create a jtapi.ini file manually and place it in the CLASSPATH. The following list provides the parameter names with sample values:

```
PROTOCOL_DEBUGGING=0
UseSameDirectory=1
JTAPIIMPL_DEBUGGING=0
UseSystemDotOut=0
QueueStatsEnabled=0
PeriodicWakeupInterval=50
RouteSelectTimeout=5000
UseTraceFile=0
ProviderOpenRequestTimeout=30
Directory=
DEBUG=0
DesiredServerHeartbeatInterval=30
AlarmServicePort=1444
CTI_DEBUGGING=0
SyslogCollector=
JTAPI_DEBUGGING=0
PeriodicWakeupEnabled=0
NumTraceFiles=10
AlarmServiceHostname=
MISC_DEBUGGING=0
TracePath=.
UseAlarmService=0
CTIIMPL_DEBUGGING=0
WARNING=0
Traces=WARNING;INFORMATIONAL;DEBUG
INFORMATIONAL=0
UseSyslog=0
CtiPortAutoRecovery=1
FileNameBase=CiscoJtapi
CtiRequestTimeout=15
TraceFileSize=1048576
Debugging=JTAPI_DEBUGGING;JTAPIIMPL_DEBUGGING;CTI_DEBUGGING;
    CTIIMPL_DEBUGGING;PROTOCOL_DEBUGGING;MISC_DEBUGGING
FileNameExtension=log
QueueSizeThreshold=25
ProviderRetryInterval=30
CallManagers=cm1
SyslogCollectorUDPPort=514
UseProgressAsDisconnectedDuringErrorEnabled=0
AllowNetworkEventsAfterOffered=0
```

Administering User Information for JTAPI Applications

The JTAPI application requires that users be administered in the directory and given the privilege to control one or more devices. Follow the procedures for adding a user and assigning devices to a user in the “Adding a New User” section before using the JTAPI application. The list of devices assigned to the user represents the phones that the user needs to control from the application (for example, make calls and answer calls).

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation at this URL:

http://www.cisco.com/univercd/home/home.htm

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation DVD

Cisco documentation and additional literature are available in a Documentation DVD package, which may have shipped with your product. The Documentation DVD is updated regularly and may be more current than printed documentation. The Documentation DVD package is available as a single unit.

Registered Cisco.com users (Cisco direct customers) can order a Cisco Documentation DVD (product number DOC-DOCDVD=) from the Ordering tool or Cisco Marketplace.

Cisco Ordering tool:

http://www.cisco.com/en/US/partner/ordering/

Cisco Marketplace:

http://www.cisco.com/go/marketplace/

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:

  http://www.cisco.com/en/US/partner/ordering/

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 1 800 553-NETS (6387).

Documentation Feedback

You can send comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

http://www.cisco.com/go/psirt

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies—security-alert@cisco.com
- Nonemergencies—psirt@cisco.com

Tip We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.*x* through 8.*x*.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one that has the most recent creation date in this public key server list:

http://pgp.mit.edu:11371/pks/lookup?search=psirt%40cisco.com&op=index&exact=on

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

The Cisco Technical Support Website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, 365 days a year, at this URL:

http://www.cisco.com/techsupport

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

http://tools.cisco.com/RPF/register/register.do

Note Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support Website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

http://www.cisco.com/techsupport/servicerequest

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
EMEA: +32 2 704 55 55
USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

http://www.cisco.com/techsupport/contacts

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—Your network is “down,” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

  http://www.cisco.com/go/marketplace/

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/packet

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

  http://www.cisco.com/go/iqmagazine

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

  http://www.cisco.com/ipj

- World-class networking training is available from Cisco. You can view current offerings at this URL:

  http://www.cisco.com/en/US/learning/index.html

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