



Preface

This section introduces the Cisco Unified Telephony Application Programmer's Interface (TAPI) for Service Providers implementation, describes the purpose of this document, and outlines the required software. The section includes the following topics:

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Introduction

The Cisco Unified Telephony Application Programmer's Interface (TAPI) comprises the set of classes and principles of operation that constitute a telephony application programming interface. The Cisco Unified TAPI implementations provide the interface between computer telephony applications and telephony services. The Cisco Unified CallManager includes a TAPI Service Provider (Cisco Unified TSP), which allows developers to create customized IP telephony applications for Cisco users; for example, voice messaging with other TAPI compliant systems, automatic call distribution (ACD), and caller ID screen popups. Cisco Unified TSP enables the Cisco Unified Communications system to understand commands from the user-level application such as Cisco SoftPhone via the operating system.

The Cisco Unified TAPI implementation uses the Microsoft TAPI v2.1 specification and supplies extension functions to support Cisco Unified Communications Solutions.

To enable a Cisco Unified TAPI-based solution, you must have the following:

- TAPI support/service that is running on the operating system
- A TAPI-based software application
- A Cisco Unified Communications phone system


Note

The system does not support using Cisco TAPI 2.1 TSP via the TAPI 3.x compatibility layer.

Purpose

This document describes the Cisco Unified TAPI implementation by detailing the functions that comprise the implementation software and illustrating how to use these functions to create applications that support the Cisco Unified Communications hardware, software, and processes. You should use this document with the Cisco Unified CallManager manuals to develop applications.

A primary goal of a standard Application Programming Interface (API) such as TAPI specifies providing an unchanging programming interface under which varied implementations may stand. Cisco's goal in implementing TAPI for the Cisco Unified CallManager platform remains to conform as closely as possible to the TAPI specification, while providing extensions that enhance TAPI and expose the advanced features of Cisco Unified CallManager to applications.

As new versions of Cisco Unified CallManager and Cisco Unified TSP are released, variances in the API should be minor and should tend in the direction of compliance. Cisco stays committed to maintaining its API extensions with the same stability and reliability, though additional extensions may be provided as new Cisco Unified CallManager features become available.

Audience

Cisco intends this document to be for use by telephony software engineers who are developing Cisco telephony applications that require TAPI. This document assumes that the engineer is familiar with both the C or C++ languages and the Microsoft TAPI specification.

Organization

Chapter	Description
Chapter 1, “Overview”	Outlines key concepts for Cisco Unified TAPI and lists all functions available in the implementation.
Chapter 2, “Cisco Unified TAPI Installation”	Provides installation procedures for Cisco Unified TAPI and Cisco Unified TSP.
Chapter 3, “Cisco Unified TAPI Implementation”	Describes the supported functions in the Cisco implementation of standard Microsoft TAPI v2.1.
Chapter 4, “Cisco Device Specific Extensions”	Describes the functions that comprise the Cisco hardware-specific implementation classes.
Chapter 5, “Cisco Unified TAPI Examples”	Provides examples illustrating the use of the Cisco Unified TAPI implementation.
Appendix A, “Cisco Unified TSP Interfaces”	List APIs that are supported or not supported.

New and Changed Information

New features and/or changes for Cisco Unified TAPI or Cisco Unified TAPI Service Provider (TSP) that are pertinent to a specified release of Cisco Unified CallManager are described in the Release Notes for that release.

This document contains the cumulative definition of the interface, not just the new information for the current release.

Related Documentation

For more information about TAPI specifications, creating an application to use TAPI, or TAPI administration, see

- Microsoft TAPI 2.1 Features:
<http://www.microsoft.com/ntserver/techresources/commnet/tele/tapi21.asp>
- Getting Started with Windows Telephony
<http://www.microsoft.com/NTServer/commserv/deployment/planguides/getstartedtele.asp>
- Windows Telephony API (TAPI)
<http://www.microsoft.com/NTServer/commserv/exec/overview/tapiabout.asp>
- Creating Next Generation Telephony Applications:
<http://www.microsoft.com/NTServer/commserv/techdetails/prodarch/tapi21wp.asp>
- The Microsoft Telephony Application Programming Interface (TAPI) Programmer's Reference
- “For the Telephony API, Press 1; For Unimodem, Press 2; or Stay on the Line” —A paper on TAPI by Hiroo Umeno a COMM and TAPI specialist at Microsoft.
- “TAPI 2.1 Microsoft TAPI Client Management”
- “TAPI 2.1 Administration Tool”

Required Software

Cisco Unified TSP requires the following software:

- Cisco Unified CallManager version 5.0 (or later) on the Cisco Unified CallManager server
- Microsoft Internet Explorer 4.01 (or later)

Conventions

This document uses the following conventions:

Convention	Description
boldface font	Commands and keywords are in boldface .
<i>italic</i> font	Arguments for which you supply values are in <i>italics</i> .
[]	Elements in square brackets are optional.

Convention	Description
{ x y z }	Alternative keywords are grouped in braces and separated by vertical bars.
[x y z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	An unquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
screen font	Terminal sessions and information that the system displays are in <code>screen font</code> .
boldface screen font	Information you must enter is in boldface screen font .
<i>italic screen font</i>	Arguments for which you supply values are in <i>italic screen font</i> .
→	This pointer highlights an important line of text in an example.
^	The symbol ^ represents the key labeled Control—for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Nonprinting characters, such as passwords are in angle brackets.

Notes use the following conventions:



Note

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.



Tip

Means *the following information might help you solve a problem*.



Timesaver

Means the *described action saves time*. You can save time by performing the action described in the paragraph.

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

This product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not imply third-party authority to import, export, distribute or use encryption. Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:

<http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>.

If you require further assistance please contact us by sending email to export@cisco.com.

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:
<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>

