



Preface

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Purpose

This document describes the following Cisco Unified Communications Manager (Unified CM) (formerly Cisco Unified CallManager) APIs:

- Unified CM AXL implementation allows applications to modify the Unified CM system database. Be aware that AXL is not intended as a real-time API but as a provisioning and configuration API.
- Unified CM real-time information, performance counters, and database information exposure occur through the Serviceability XML API.
- Unified CM Extension Mobility Service provides a rich API, which enables extension mobility on Cisco Unified IP phones and allows application control over authentication, scheduling, and availability. It allows a device, usually a Cisco Unified IP Phone, to temporarily embody a new device profile, including lines, speed dials, and services. An application that uses the Cisco Unified CM Mobility Service represents an IP phone service that allows a user to log in by entering a userID and PIN. The architecture and implementation of the Cisco Unified CM Extension Mobility Service make many other applications possible.

Examples include:

- An application that automatically activates phones for employees when they reserve a particular desk for a particular time (the scheduling application)
- A lobby phone does not have a line appearance until a user logs in

- Unified CM Web Dialer application, which is installed on a Unified CM server, enables click-to-dial functionality by creating hyperlinked telephone numbers in a company directory. This functionality allows users to make calls from a web page by clicking the telephone number of the person that they are trying to call. The Web Dialer application, which has a SOAP interface, uses JavaScript to provide the web page functionality.
- Cisco Unified Routing Rules XML interface supports call-routing decisions for Cisco Unified Communications Manager. Cisco Unified Communication Manager 8.0(1) supports the external call control (ECC) feature, which enables an adjunct Route Server to make call-routing decisions for Cisco Unified Communications Manager by using the 8.0(1) Cisco Unified Routing Rules Interface.

Audience

The *Cisco Unified Communication Manager Developers Guide* provides information for developers who write applications that extend the functionality of the APIs that are described in this document.

This guide assumes the developer has knowledge of a high-level programming language such as C++, Java, or an equivalent language. You must also have knowledge or experience in the following areas:

- Extensible Markup Language (XML)
- Hypertext Markup Language (HTML)
- Hypertext Transport Protocol (HTTP)
- Simple Object Access Protocol (SOAP) 1.1
- Socket programming
- TCP/IP Protocol
- Web Service Definition Language (WSDL) 1.1
- Secure Sockets Layer (SSL)

In addition, users of the Unified CM APIs must have a firm grasp of XML Schema. For more information about XML Schema, refer to <http://www.w3.org/TR/xmlschema-0/>.

The developer must also have an understanding of Unified CM and its applications. The “[Related Documentation](#)” section on page xiv lists documents for Unified CM and other related technologies.

Organization

This document is organized as follows:

Part	Chapter	Description
	Chapter 1, “Overview”	Describes the Cisco Unified Communications Manager interfaces.
Part 1 Administrative XML	Chapter 2, “Administrative XML Programming”	Describes the Administrative XML Layer (AXL) API, which provides a mechanism for inserting, retrieving, updating, and removing data from the database by using an XML SOAP interface. This API lets you access Unified CM data by using XML and receive the data in XML form.
	Chapter 3, “Administrative XML Operations by Release”	Lists new, changed, and deprecated Administrative XML (AXL) operations by release.
Part 2 Serviceability XML	Chapter 4, “Serviceability XML Programming”	Describes the Serviceability XML APIs. Unified CM real-time information, performance counters, and database information exposure occurs through the Serviceability XML APIs.
	Chapter 5, “Serviceability XML Operations by Release”	Lists new, changed, and deprecated serviceability XML operations by release.
Part 3 Extension Mobility Service API	Chapter 6, “Cisco Extension Mobility Service API”	Describes high-level concepts that are important in understanding the Cisco Extension Mobility Service and provides an overview of configuring EM services, messages, message DTDs, and error codes.
	Chapter 7, “Cisco Extension Mobility Operations By Release”	Lists new, changed, and deprecated Extension Mobility Operations by release.
Part 4 Web Dialer API	Chapter 8, “Cisco Web Dialer API Programming”	Describes the Simple Object Access Protocol (SOAP) and HTML over HTTP (and HTTPS) interfaces that are used to develop JavaScript-based directory search web pages and applications for Cisco Web Dialer.
	Chapter 9, “Cisco Web Dialer Operations By Release”	Lists new, changed, and deprecated Web Dialer operations by release.
Part 5 Routing Rules API	Chapter 10, “Cisco Unified Routing Rules Interface”	Describes the Cisco Unified Policy XML interface. It explains the Access Control Markup Language (XACML) call routing requests and response, and the Call Instruction XML (CIXML) obligations used in external call control.

Related Documentation

This section lists documents and URLs that provide information on Unified CM, Cisco Unified IP Phones, and the technologies that are required to develop applications.

<i>Release Notes for Cisco Unified Communications Manager, Release x.x.x</i>	For release notes for various releases of Cisco Unified Communication Manager.	http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_release_notes_list.html
<i>Cisco Unified Communications Manager Admin XML Interface Spec</i>	For diagrams, name spaces, attributes, code examples, and inter-relationships of all methods and handlers.	http://developer.cisco.com/web/axl/docs
<i>Cisco Unified Communications Manager Data Dictionary</i>	For information on the data stored in the primary Cisco Unified Communications Manager database.	http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_programming_reference_guides_list.html
<i>Cisco Unified Communications Manager Administration Guide</i>	For step-by-step instructions for configuring, maintaining, and administering the Cisco Unified Communications Manager voice over IP network.	http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_maintenance_guides_list.html
<i>Cisco Unified Communications Manager System Guide</i>	For conceptual information about Cisco Unified Communications Manager and its components, as well as tips for setting up features by using Cisco Unified Communications Manager Administration.	http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_maintenance_guides_list.html
<i>Cisco Unified Communications Manager Features and Services Guide</i>	For information to understand, install, configure, manage, and use Cisco Unified Communications Manager features.	http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_maintenance_guides_list.html
<i>Cisco Unified Serviceability Administration Guide</i>	For information on serviceability alarms, traces, tools, reports, and SNMP.	http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_maintenance_guides_list.html
<i>Cisco Unified IP Phones and Services</i>	A suite of documents that relate to the installation and configuration of Cisco Unified IP Phones	http://www.cisco.com/cisco/web/psa/default.html Select Voice and Unified Communications>IP Telephony>IP Phones
<i>Cisco Unified Communications Manager Documentation Guide</i>	For documentation updates in specific releases of Cisco Unified Communications Manager.	http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_documentation_roadmaps_list.html

<i>Cisco Developer Community Tech Centers</i>	<i>Administration XML (AXL) Tech Center</i> —for forums, blogs, wikis, and documentation on AXL.	http://developer.cisco.com/web/axl/home
	<i>Serviceability XML Tech Center</i> —for forums, blogs, wikis, and documentation on Serviceability XML.	http://developer.cisco.com/web/sxml/home
	<i>Extension Mobility Service Tech Center</i> —or forums, blogs, wikis, and documentation on Extension Mobility APIs.	http://developer.cisco.com/web/emapi/home
	<i>WebDialer Tech Center</i> —or forums, blogs, wikis, and documentation on WebDialer.	http://developer.cisco.com/web/webdialer
<i>Simple Object Access Protocol (SOAP) 1.1</i>	For latest SOAP versions and notes.	http://www.w3.org/TR/SOAP/
<i>Web Service Definition Language (WSDL) 1.1</i>	For more information on Web Services Description Language (WSDL) 1.1	http://www.w3.org/TR/wsdl
<i>SOAP Tutorial</i>	For tutorial on Simple Object Access Protocol.	http://www.w3schools.com/soap/default.asp
<i>WSDL Tutorial</i>	For tutorial on Web Services Description Language.	http://www.w3schools.com/wsdl/default.asp
<i>SoapAgent.com</i>	For open SOAP directory with links to articles, tutorials, and white papers.	http://www.soapagent.com/

Cisco Developer Network

The Cisco Developer Network (CDN) portal provides access to multiple Cisco technology developer interfaces and collaborative support communities. CDN also provides formalized support services for these interfaces to enable developers, customers, and partners to accelerate their development. The formalized process provides access to CDN Engineers who are an extension of the product technology engineering teams. CDN Engineers have access to the resources necessary to provide expert support in a timely manner.

The Cisco Developer Network Program is designed for businesses (IHV's and ISV's) interested in going to market with Cisco. The CDN Program enables members to develop compelling solutions that unify data, voice, video, and mobile communications on Cisco's powerful communications platform. The program also allows members to take advantage of Cisco's brand, market leadership position, and installed base to help drive positive business results for themselves and their customers.

For additional information about the CDN Program and CDN support services go to <http://developer.cisco.com/web/devservices>

Conventions

This document uses the following conventions:

Convention	Description
boldface font	Commands and keywords are in boldface .
<i>italic font</i>	Arguments for which you supply values are in <i>italics</i> .
[]	Elements in square brackets are optional.
{ 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	A non-quoted 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 the system displays are in <i>screen font</i> .
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> .
^	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.
<>	Non-printing 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.

Timesavers use the following conventions:



Timesaver

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

Tips use the following conventions:



Tip

Means *the following are useful tips*.

Cautions use the following conventions:



Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Warnings use the following conventions:

**Warning**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and familiar with standard practices for preventing accidents.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

Cisco Product Security Overview

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 e-mail to export@cisco.com.

