



Preface

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Revision History

Date	Description
February, 2009	Corrected the DTD format in the Query Response DTD section and added correct examples in the UserQuery Operation section of the chapter, Cisco Extension Mobility Service API . Corrected the list of non-stop services in the ControlCenterServicesPort service: soapDoControlServices Operation section of the chapter, Serviceability XML Programming .
August, 2010	Updated the Cisco Web Dialer WSDL and the examples of the SOAP interfaces in Cisco Web Dialer API Programming chapter.

Purpose

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

- The Cisco Unified Communications Manager AXL implementation allows applications to modify the Cisco Unified Communications Manager system database. Be aware that AXL is not intended as a real-time API but as a provisioning and configuration API.

- Cisco Unified Communications Manager real-time information, performance counters, and database information exposure occur through the AXL Serviceability API.
- The Cisco Unified Communications Manager 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 Communications Manager Extension 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 Communications Manager 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
- The Cisco Unified Communications Manager Web Dialer application, which is installed on a Cisco Unified Communications Manager 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.

Audience

The *Cisco Unified Communications 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 Cisco Unified Communications Manager 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 Cisco Unified Communications Manager and its applications. The [“Related Documentation” section on page xi](#) lists documents for Cisco Unified Communications Manager and other related technologies.

Organization

This document is organized as follows:

Chapter	Description
Chapter 1, “Administrative XML (AXL) 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 Cisco Unified Communications Manager data by using XML and receive the data in XML form.
Chapter 2, “Serviceability XML Programming”	Describes the AXL Serviceability APIs, which are based on Java Servlets on the Apache Tomcat web server. Cisco Unified Communications Manager real-time information, performance counters, and database information exposure occurs through the AXL Serviceability APIs.
Chapter 3, “Cisco Extension Mobility Service API”	Includes 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 4, “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.
Appendix A, “Administrative XML (AXL) Operations by Release”	Lists new, changed, and deprecated Administrative XML (AXL) operations by release.
Appendix B, “Serviceability XML Operations by Release”	Lists new, changed, and deprecated serviceability XML operations by release.
Appendix C, “Cisco Extension Mobility Operations by Release”	Lists new, changed, and deprecated Extension Mobility Operations by release.
Appendix D, “Cisco Web Dialer Operations by Release”	Lists new, changed, and deprecated Web Dialer operations by release.

Related Documentation

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

- Cisco Unified Communications Manager Release 7.0—A suite of documents that relate to the installation and configuration of Cisco Unified Communications Manager. Refer to *Cisco Unified Communications Manager Documentation Guide for Release 7.0* for a list of documents about installing and configuring Cisco Unified Communications Manager 7.0, including
 - *Cisco Unified Communications Manager Administration Guide, Release 7.0.*
 - *Cisco Unified Communications Manager System Guide, Release 7.0.*
 - *Cisco Unified Communications Manager Features and Services Guide, Release 7.0.*

- *Cisco Unified IP Phones and Services*—A suite of documents that relate to the installation and configuration of Cisco Unified IP Phones.
- *Cisco DistributedDirector*—A suite of documents that relate to the installation and configuration of Cisco DistributedDirector.

Related Information

- [Simple Object Access Protocol \(SOAP\) 1.1](#)
- [Web Service Definition Language \(WSDL\) 1.1](#)
- [SOAP Tutorial](#)
- [WSDL Tutorial—Web Service Definition Language tutorial.](#)
- <http://www.soapagent.com/>—Open SOAP directory with links to articles, tutorials, and white papers.

Developer Support

The Cisco Technology Developer Program members offer complementary and compatible technologies that help Cisco and Program Members continually expand our solution offerings to customers of all sizes. The program ensures that products and technologies of members have verified interoperability, adhere to strict standards, and offer exciting new capabilities for Cisco joint customers. It ensures that members hold leadership positions in their particular market segments. Members' products showcase the innovations made possible through collaboration with Cisco.

The Developer Support Program provides formalized support for Cisco Systems interfaces to enable developers, customers, and partners in the Cisco Service Provider solutions Ecosystem and Cisco Technology Developer Partner programs to accelerate their delivery of compatible solutions. The Developer Support Engineers are an extension of the product technology engineering teams. They have direct access to the resources necessary to provide expert support in a timely manner.

For additional information about this program, refer to the Developer Support Program web site at <http://www.cisco.com/web/partners/pr46/tdp/index.html>.

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.
{ 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.

Convention	Description
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, Obtaining Support, and Security Guidelines

For information about obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and recommended aliases and general Cisco documents, 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>

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.