



Preface

Revised: February 7, 2017

This document provides design considerations and guidelines for deploying Cisco Collaboration solutions, including Cisco Unified Communications Manager 11.x, Cisco TelePresence System, and other components of Cisco Collaboration System Release 11.x.

This document has evolved from a long line of Solution Reference Network Design (SRND) guides produced by Cisco over the past decade. As Cisco's voice, video, and data communications technologies have developed and grown over time, the SRND has been revised and updated to document those technology advancements. This latest version of the SRND includes Cisco's full spectrum of collaboration technologies such as TelePresence, WebEx, and support for a wide range of end-user devices. As Cisco continues to develop and enhance collaboration technologies, this SRND will continue to evolve and be updated to provide the latest guidelines, recommendations, and best practices for designing collaboration solutions.

This document should be used in conjunction with other documentation available at the following locations:

- For other Solution Reference Network Design (SRND) guides:
<http://www.cisco.com/go/ucsrnd>
- For information about Cisco Collaboration Preferred Architectures (PAs):
<http://www.cisco.com/go/cvd/collaboration>
- For information about Cisco Collaboration Solutions:
<http://www.cisco.com/c/en/us/solutions/collaboration/index.html>
- For information about Cisco Collaboration System Releases (CSRs):
<http://www.cisco.com/go/unified-techinfo>
- For information about Cisco Unified Communications:
<http://www.cisco.com/en/US/products/sw/voicesw/index.html>
<http://www.cisco.com/en/US/products/sw/voicesw/products.html>
http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html
- For information about Cisco Video Collaboration Solutions
<http://www.cisco.com/c/en/us/solutions/collaboration/video-collaboration/index.html>
- For other Cisco design guides:
<http://www.cisco.com/go/designzone>

- For all Cisco products and documentation:
<http://www.cisco.com>

New or Changed Information for This Release



Note Unless stated otherwise, the information in this document applies to all Cisco Collaboration System 11.x releases.

Within each chapter of this guide, new and revised information is listed in a section titled *What's New in This Chapter*.

Although much of the content in this document is similar to previous releases of the *Cisco Collaboration SRND*, it has been reorganized and updated extensively to reflect more accurately the architecture of the current Cisco Collaboration System Release. Cisco recommends that you review this entire document, starting with the [Introduction, page 1-1](#), to become familiar with the technology and the system architecture.

Revision History

This document may be updated at any time without notice. You can obtain the latest version of this document online at:

<http://www.cisco.com/go/ucsrnd>

Visit the above website periodically and check for documentation updates by comparing the revision date of your copy with the revision date of the online document.

The following table lists the revision history for this document.

| Revision Date | Comments |
|------------------|---|
| February 7, 2017 | Updates and changes for Cisco Collaboration System Release (CSR) 11.6. For details, in each chapter see <i>What's New in This Chapter</i> . |
| June 14, 2016 | Updates and changes for Cisco Collaboration System Release (CSR) 11.5. For details, in each chapter see <i>What's New in This Chapter</i> . |
| January 19, 2016 | Updates and changes to various chapters. For details, in each chapter see <i>What's New in This Chapter</i> . |
| July 30, 2015 | Minor corrections and changes to various chapters. For details, in each chapter see <i>What's New in This Chapter</i> . |
| June 15, 2015 | Initial version of this document for Cisco Collaboration System Release (CSR) 11.0. |

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see [What's New in Cisco Product Documentation](#).

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the [What's New in Cisco Product Documentation RSS feed](#). The RSS feeds are a free service.

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.

Further information regarding U.S. export regulations may be found at:

http://www.access.gpo.gov/bis/ear/ear_data.html

Conventions

This document uses the following conventions:

| Convention | Indication |
|--------------------|---|
| bold font | Commands and keywords and user-entered text appear in bold font. |
| <i>italic</i> font | Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic</i> font. |
| [] | Elements in square brackets are optional. |
| {x y z } | Required 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 nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks. |
| courier font | Terminal sessions and information the system displays appear in <i>courier</i> font. |
| < > | Nonprinting characters such as passwords are in angle brackets. |
| [] | Default responses to system prompts are in square brackets. |
| !, # | An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line. |



Note

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



Tip

Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

**Caution**

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

**Timesaver**

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

**Warning****IMPORTANT SAFETY INSTRUCTIONS**

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS**Warning**

Statements using this symbol are provided for additional information and to comply with regulatory and customer requirements.
