cisco...

Cisco Meeting Server web app

Important Information

Version 3.6

June 23, 2023

Contents

Re	evision history	3
1	Introduction	. 1
	1.1 Important note for Expressway users	1
2	What's new in Cisco Meeting Server web app	2
	2.1 Use a virtual or blurred background in a meeting	
	2.2 Display network health and media statistics in a meeting	
	2.3 Support for Arabic language	
	2.4 Sharing files in a meeting	
	2.5 Accessibility improvements	. 5
3	Using the web app	. 6
4	Browser versions tested	. 7
	Important note for users using iOS 13 or later and macOS 10.15 or later	. 7
	Important note about screen sharing on Chrome on macOS 10.15 or later	. 8
	Important note about accessibility settings in Safari browsers	. 8
	Important note about group policy settings in Microsoft Edge	8
5	Bug search tool	. 9
	5.1 Resolved issues	. 9
	5.1.1 Issues resolved in 3.6	. 9
	5.2 Open issues	10
6	Product documentation	11
ΑĮ	opendix A: Apps feature comparison	12
Α	ccessibility Notice	17
Ci	sco Legal Information	18
	Cisco Trademark	21

Revision history

Listed below are the recent changes done to the document:

Table 1:Summary of changes

Date of revision	Change
August 23, 2022	First release of 3.6

1 Introduction

Cisco Meeting Server web app (web app) is a browser-based client for Cisco Meeting Server that lets users join meetings (audio and video) and share what is on their screen.

Cisco Meeting App for WebRTC is removed in Cisco Meeting Server version 3.0 and later. You need to use Cisco Meeting Server web app instead of Cisco Meeting App for WebRTC. For more information, refer to Release Notes for Cisco Meeting Server.

Note: Cisco Meeting App for desktop, iOS and WebRTC are no longer supported in Cisco Meeting Server since version 3.0.

This document describe the new features, changes, resolved issues, and open issues in this release of the Cisco Meeting Server web app. For more information about Cisco Meeting Server, refer to Cisco Meeting Server Release Notes.

1.1 Important note for Expressway users

Cisco Meeting Server web app version 3.0 and later is supported with Expressway version X12.6. Previous versions of Expressway are not supported.

Note: Refer to the Cisco Meeting Server Release Notes for more information about call capacities.

2 What's new in Cisco Meeting Server web app

This version of the web app software introduces the following new features and changes:

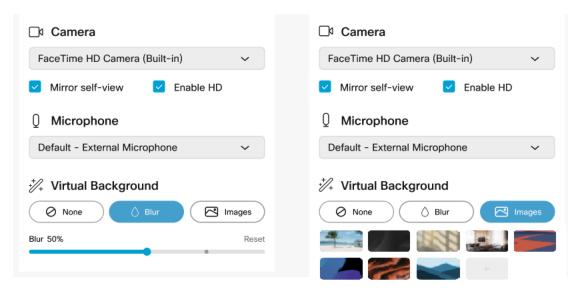
- Use a virtual or blurred background in a meeting
- Display network health and media statistics in a meeting
- Support for Arabic language
- Sharing files in a meeting
- Accessibility improvements

2.1 Use a virtual or blurred background in a meeting

The background blur feature was introduced as a beta feature in version 3.4. This feature enabled Web app participants to blur their background in a meeting. From version 3.6, background blur is a fully supported feature. Web app now allows also participants to adjust the intensity of blur using the slider. Web app also introduces virtual backgrounds that enable participants to change their background with one of the preset backgrounds during a meeting.

A new option Images has been added in the in-meeting camera settings to support virtual background. Participants can use a virtual or blurred background only after they have joined the meeting and not on the preview page.

Blur and virtual background are supported only on latest versions of Google Chrome, Mozilla Firefox on Windows and macOS. This feature is not supported on other browsers and on Android or iOS devices.



On the self-view:

- To blur your background in a meeting, click \$\sqrt{0}\$ then click **Blur** \$\sqrt{0}\$. Use the slider to adjust intensity of the blur.

 Blur slider has 4 levels of intensity: 25%, 50%, 75%, and 100%. Default blur level is set to 50%.
- To use a virtual background, select Images, select a background from the available thumbnails.
- To remove the blur or virtual background, select **None** O.

To preview your video before applying a virtual or a blur background, disable the video then apply **Blur** O or the preset image. The preview is displayed on the self-view. Your video with a virtual or a blur background is visible to other participants only when you turn on your video.

If backgroundBlurAllowed API is set to true in Meeting Server, participants can use virtual or blurred background during the meeting. For more information, refer to Meeting Server API Guide.

Note:

- Background Blur works best with systems having Graphics Processing Unit (GPU).
- The following minimum system configuration is required to use the Background blur feature:
 - For Windows systems: Memory 8 GB and 4 core CPU
 - For Mac systems: Memory 8 GB and 4 core CPU

2.2 Display network health and media statistics in a meeting

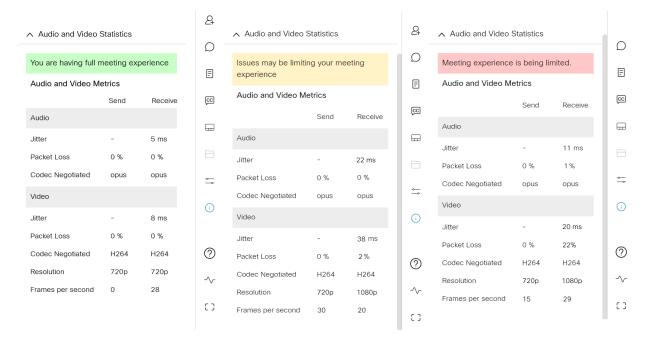
From version 3.6, web app displays network health and media statistics in a meeting. This feature allows participants to view various diagnostic information during a meeting. It allows participants to gauge whether they are experiencing a network, audio, or video issue during the meeting and take required actions like turn off the video when the network connectivity is poor.

Note: Network health indicator and media statistics are visible to web app participants only. SIP participants cannot view this.

A new network health indicator icon is added on the center-left of the video pane, which enables the web app participants to see their network health status. The network health indicator is always visible to the web app participant during the meeting. The network health status messages are displayed in Call information and as notification on bottom right corner based on the participant's network during a meeting.

Statistics icon	Health	Health messages / Notifications
	Good	You are having the full meeting experience.
	Poor	Issues may be limiting your meeting experience.
1	Bad	Meeting experience is being limited.

The audio and video statistics of an ongoing meeting is displayed in Call information > Audio and Video Statistics.



2.3 Support for Arabic language

In previous versions web app supported in 21 languages. From version 3.6, web app also supports Arabic language. Users can now select Arabic [AR(SA)] from the list of languages on the web app.

2.4 Sharing files in a meeting

The file share feature was introduced as a beta feature in version 3.5. This feature enables the web app participants to share files during a web app meeting. From version 3.6, file sharing will be a fully supported feature.

If file sharing is allowed for the meeting, a signed-in web app user can download the files. Only a signed-in user with appropriate permissions can share files in a meeting. A new file sharing icon is added as an in-meeting menu option, which enables the participants to share files.

Note:

- The file sharing icon is not visible if the Meeting Server administrator has disabled the feature for the meeting.
- File share feature is not supported for web app participants joining as guest or participants joining through SIP endpoints, Lync, or Skype.

When a file is shared, participants can download the shared file using download icon $\underline{\lor}$ beside the shared file in **File Sharing** pane. The shared file is available for download only during the meeting. Participants joining after a meeting has started can only view or download the files that are shared after they joined the meeting.

File sharing supports a maximum of 5 files at a time, with a size limit of 10MB per share. If the participant tries to upload more than 5 files at a time or if the file size exceeds 10MB per share, the file share fails and web app displays an error message.

Participants can share all types of files except for the following file extensions:

.exe, .bat, .bin, .com, .cmd, .inf, .ipa, .osx, .pif, .run, .wsh, .pkg, .dmg, .apk, .sh, .html, .asp, .js, .vbs, .wsf, .php, .scpt

Web app prompts with an error message if the participant tries to upload an unsupported file type.

2.5 Accessibility improvements

In version 3.6, web app supports the following accessibility improvements:

- On the Join meeting page, screen reader now announces all the options available in More ways to joindrop-down list.
- The following elements in the web app have meaningful descriptions to help participants using screen reader:
 - In-meeting options such as turn or/off video, mute/unmute, pin/unpin buttons, copy link in Meeting information.
 - All notification messages appearing on the screen.
- All the options on the web app home page are now accessible through keyboard.
- On the Create a space dialog box, screen reader now announces all the available Space Templates.

3 Using the web app

Web app allows you to join meetings with audio and video in a space. You can also share a screen or presentation in your meeting.

You can add or remove members to a space. You can also invite people both inside and outside of your organization to meetings.

Note: A space is a persistent virtual meeting room that a group of users can use at any time for a meeting. For more details refer to the Online Help or User Guide for web app.

You can use the web app on desktop, mobile or tablet from any of the supported browsers . See <u>list of browsers</u> for details.

Refer to the online help or User Guide for Cisco Meeting Serverweb app for detailed instructions on how to use the web app.

You can choose from the following options based on what you want to do:

- Sign in to the web app You can sign in to web app, join meetings, view a list of all spaces
 you are a member of and view joining methods and copy the invitation details to invite
 someone to your meeting. You can create a space using pre-configured templates, edit
 or delete a space if you have appropriate permissions.
- Join a meeting Use this option if you have been invited to a meeting. The invitation should include some details such as a meeting ID, passcode (optional), or a video address (URI).
- Schedule a meeting To schedule a meeting, click Schedule meeting on the home page.
 Type a name and the select the space you want to use for the meeting. The meeting can
 be scheduled for one instance or to recur daily, weekly or monthly. You can add all the
 members of the selected space or add selected participants and configure their roles for
 the meeting.

4 Browser versions tested

Table 1 lists the browsers tested for web app at the time of release of a specific version of web app.

We always recommend using the latest version of browsers.

Note: Please note certain browsers such as Google Chrome and Mozilla Firefox automatically update to the latest version. The following table shows the version of browsers tested at the time of the official release of a version of Cisco Meeting Server. This means we have not tested this particular release with previous versions of those browsers.

We endeavor to test the latest maintenance release of each major release of Cisco Meeting Server against the latest public versions of all the browsers to keep them compatible and if we detect any issues we will endeavor to fix them as soon as possible.

Table 2:Cisco Meeting Server web app tested on browsers and versions

Browsers	Versions
Google Chrome (Windows, macOS, and Android)	102.0.5005.115
Mozilla Firefox (Windows)	103.0.1
Chromium-based Microsoft Edge (Windows)	103.0.1264.77
Apple Safari for macOS	15.5
Apple Safari for iOS	15.5
Yandex (Windows)	22.7.3.713 beta

Note: Web app is not supported on the legacy Microsoft Edge.

Note: Web app is not supported on virtual machines (VMs) running these supported browsers.

Important note for users using iOS 13 or later and macOS 10.15 or later

In order for users to be able to use web app on Safari on iOS 13 or later and macOS 10.15 or later, webbridge3 needs to be properly configured to comply with requirements stated here: https://support.apple.com/en-us/HT210176.

Users will not be able to open the app on Safari if these requirements are not met.

Important note about screen sharing on Chrome on macOS 10.15 or later

From macOS version 10.15 (Catalina) or later, to share the screen or application from the apprunning on Chrome, users need to enable permissions. Follow these steps:

- 1. From the Apple menu, open System Preferences.
- 2. Click on Security & Privacy.
- 3. Click on the **Privacy** tab at the top.
- 4. In the column on the left hand side, scroll down and click on Screen Recording.
- 5. Make sure Chrome is selected. Restart Chrome.

Important note about accessibility settings in Safari browsers

By default, Safari browsers do not allow navigation of UI elements via the 'Tab' key but via Option + Tab instead. This can be configured in Safari's Preferences as follows:

From your Safari browser menu, go to Safari > Preferences > Advanced > Accessibility > Press Tab to highlight each item on a web page to change your preference.

Important note about group policy settings in Microsoft Edge

If webrtclocalhostipHandling - Restrict exposure of local IP address by WebRTC group policy is applied to Microsoft Edge browser, make sure to only use one of the following policy options:

- AllowAllInterfaces (default) or
- AllowPublicAndPrivateInterfaces (default_public_and_private_interfaces)

Any other option could cause connection issues.

5 Bug search tool

You can now use the Cisco Bug Search Tool to find information on open and resolved issues for the Cisco Meeting Server, including descriptions of the problems and available workarounds. The identifiers listed in these release notes will take you directly to a description of each issue.

- 1. Using a web browser, go to the Bug Search Tool.
- 2. Sign in with a cisco.com registered username and password.

To look for information about a specific problem mentioned in this document:

1. Enter the bug identifier in the **Search** field and click **Search**.

5.1 Resolved issues

Listed below are issues resolved in web app.

5.1.1 Issues resolved in 3.6

The table below lists issues seen in previous versions that are fixed in 3.6

Table 3:Resolved issues in 3.6

Cisco Identifier	Summary
CSCvz09305	When a participant joins a web app call for the first time in a browser, the participant is not able to disable the video. Participant must disconnect from the meeting and join again with their video disabled.
CSCvy72577	While adding participants to a Space by searching the participant's name, if there is a space in between the name, the search fails, and the participant cannot be added.
CSCvz76478	When the participants use Safari 15.0 (iOS 15) to join a web app meeting, they are unable hear audio and view video in the meeting.
	Note: A fix has been introduced in version 3.4 to resolve this issue in iOS 15.0 and iOS 15.2. The issue still persists in iOS 15.1.
CSCvz93413	When the participant is editing the notes and another participant publishes a note, the Go to draft option appears along with Load new and Keep mine options.
CSCvx88487	The tool tips text for zoom icons "+" and "-" are interchanged. However, they function as expected with the "+" icon zooming in and the "-" icon zooming out.

5.2 Open issues

Table 4:List of open issues

Cisco Identifier	Summary
CSCwc23841	In a web app meeting, if a participant whose video is on and has applied blurred background, turns off the camera and switches it on later, a black background is displayed in place of the virtual background intermittently.
CSCwc76769	In Google Chrome browser, when a participant applies blur to their video and leaves the web app meeting, the camera is still on and does not close.
CSCwc76768	In a web app meeting, Audio and Video Statistics shows incorrect video frame rate in Firefox browser.

6 Product documentation

The end-user guides such as User Guide, and visual 'How to' guides for web app are available in the following location:

https://www.cisco.com/c/en/us/support/conferencing/cisco-meeting-app/products-user-guide-list.html

Appendix A: Apps feature comparison

Feature comparison between Cisco Meeting Server web app and Cisco Meeting App for WebRTC.

Table 5:Feature comparison between Cisco Meeting Server web app and Cisco Meeting App for WebRTC

Feature	Web app 3.6	Web app 3.5	Web app 3.4	Web app 3.3	Web app 3.2	Web app 3.1	Web app 3.0			
General	General									
Cisco Meeting Server version	3.6	3.5	3.4	3.3	3.2	3.1	3.0			
Managing access for members	Yes	Yes	Yes	Yes	Yes	No	No			
User-level per- missions (e.g. can create space)	Yes									
Support for loc- alization	Yes	Yes	Yes	Yes	Yes	Yes	No			
Branding	Yes									
Online help	Yes									
Encryption	Yes									
Single sign on	Yes	Yes	Yes	Yes	Yes	Yes	No			
Arabic language support	Yes	No	No	No	No	No	No			
Join using video address (URI)	Yes									
Schedule a meeting	g					•				
View list of sched- uled meeting	Yes	Yes	Yes	Yes	No	No	No			
Schedule a meet- ing	Yes	Yes	Yes	Yes	No	No	No			
Modify a sched- uled meeting	Yes	Yes	Yes	Yes	No	No	No			
Delete a sched- uled meeting	Yes	Yes	Yes	Yes	No	No	No			

Feature	Web app 3.6	Web app 3.5	Web app 3.4	Web app 3.3	Web app 3.2	Web app 3.1	Web app 3.0		
Space Management									
Space member roles	Yes	Yes	Yes	Yes	Yes	No	No		
Create / edit space	Yes								
Activate newly provisioned spaces	Yes	Yes	Yes	Yes	Yes	Yes	No		
Add / edit / delete space members	Yes								
Directory look up for Add Members feature	Yes								
View information for space	Yes								
Send invitation	Yes								
Audio and video									
Audio	OPUS								
Video	H.264, VP8								
Mic/camera configuration controls	Yes								
Blur your back- ground	Yes	Yes	Yes	No	No	No	No		
Virtual back- ground	Yes	No	No	No	No	No	No		
Far end camera control	Yes	Yes	Yes	No	No	No	No		
Auto prioritization of audio and video	No								
Screen share									
Content magnification	Yes	Yes	Yes	Yes	Yes	No	No		

Feature	Web app 3.6	Web app 3.5	Web app 3.4	Web app 3.3	Web app 3.2	Web app 3.1	Web app 3.0
Reset content zoom	Yes	Yes	Yes	Yes	No	No	No
View screen share	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Desktop sharing	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Application sharing	Yes	Yes	Yes	Yes	Yes	Yes	Yes
View screen share in a new window	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Re-size the video pane	Yes	Yes	Yes	Yes	No	No	No
Share content audio	Yes	Yes	No	No	No	No	No
Chat					,	,	•
Chat	Yes, in call only	No	No				
In-call							•
On-screen messages	Yes	Yes	Yes	Yes	Yes	No	No
Full-screen view	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Layout control	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Name labels	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recording	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Streaming	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Active speaker label (Beta sup- port)	Yes	Yes	Yes	Yes	No	No	No
Self-view	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pin self-view	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mirror self-view	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Move self-view	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HD/SD selection	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Feature	Web app 3.6	Web app 3.5	Web app 3.4	Web app 3.3	Web app 3.2	Web app 3.1	Web app 3.0
Pin presentation preview	Yes						
Move present- ation preview	Yes						
Meeting notes	Yes	Yes	Yes	No	No	No	No
Closed cap- tioning	Yes	Yes	Yes	No	No	No	No
Share files	Yes	Yes	No	No	No	No	No
Network health indicator and media statistics	Yes	No	No	No	No	No	No
Content share metrics	No						
Logo support	No						
Participants							•
Move participant	Yes	Yes	Yes	Yes	Yes	No	No
Add participant	Yes (SIP only)						
Remove participants	Yes						
Admit par- ticipants to a locked meeting	Yes	Yes	Yes	Yes	Yes	Yes	No
Change a par- ticipant's role	Yes	Yes	Yes	Yes	No	No	No
Make participant important	Yes						
Mute/Unmute other par- ticipants' audio and video indi- vidually	Yes						
Mute/Unmute all participants' audio and video	Yes						

Feature	Web app 3.6	Web app 3.5	Web app 3.4	Web app 3.3	Web app 3.2	Web app 3.1	Web app 3.0
Send diagnostics during a meeting	Yes						
Send invite	Yes	Yes	Yes	Yes	Yes	Yes	No
View call info	Yes	Yes	Yes	Yes	Yes	Yes	No
Mic / Camera controls during call	Yes						
Raise hand	Yes	Yes	Yes	Yes	No	No	No
Move call							
Use this device for screen share and call man- agement only (while another device is used for audio and video)	Yes						

Note: You cannot move a call to an external endpoint or move the audio to a regular phone during a call.

Accessibility Notice

Cisco is committed to designing and delivering accessible products and technologies.

The Voluntary Product Accessibility Template (VPAT) for Cisco Meeting Server web app is available here:

http://www.cisco.com/web/about/responsibility/accessibility/legal_regulatory/vpats.html#telepresence

You can find more information about accessibility here:

www.cisco.com/web/about/responsibility/accessibility/index.html

Cisco Legal Information

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at www.cisco.com/go/offices.

© 2022 Cisco Systems, Inc. All rights reserved.

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The following information is for FCC compliance of Class A devices: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case users will be required to correct the interference at their own expense.

The following information is for FCC compliance of Class B devices: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, users are encouraged to try to correct the interference by using one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Modifications to this product not authorized by Cisco could void the FCC approval and negate your authority to operate the product.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved.

Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at www.cisco.com/go/offices.

© 2022 Cisco Systems, Inc. All rights reserved.

Cisco Trademark

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)