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#CiscoLive

Cisco Meeting Server

Design Considerations

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Agenda

- Introduction
  (*What will & won't be covered in this session*)

- WebRTC
  (*Web Bridge 3, TURN and web app*)

- Web Scheduler

- In Meeting File Sharing & Meeting Apps (*New Service*)

- Other Features in the Latest Release

- Key References

Cisco Meeting Server
In Cisco Portfolio

Team Collaboration

Webex

Meetings

Webex

Cisco Meeting Server
web app and Jabber

Cloud and Hybrid

On-premises

User Experience and Flex Licensing

Cisco Meeting Server
One Meeting Experience

Every Pocket

Every Desk

Every Room

Preserve the user experience

Cisco® Meeting Server

Unify disparate infrastructure

Video infrastructure	Audio infrastructure	Third-Party/ Skype for business infrastructure

Web Bridge 3
& TURN

Expressway vs CMS Edge

Cisco Expressway

- EXP as TURN & reverse HTTPS proxy

- WB3 needed in core even for external only participants

- SIP & web app participants both. Make sure you do the capacity planning well as the capacities are very different for SIP and web app via Expressway

- Recommended for Small & Medium CMS deployments

- Small, Medium & Large Expressway OVA supported

- Only 1 EXP cluster (web app participants) supported per CMS cluster. Multiple EXP clusters can be used for SIP participants

- Single & Dual NIC supported

- EXP 12.6+ supports WB3

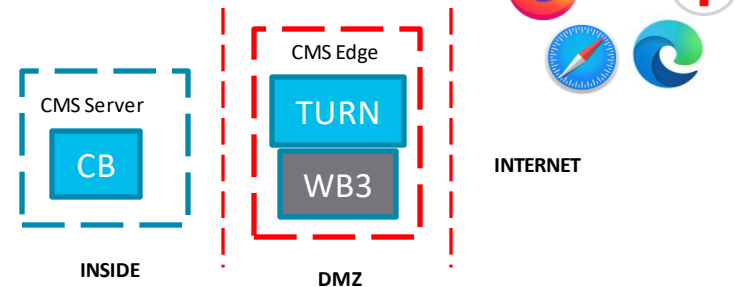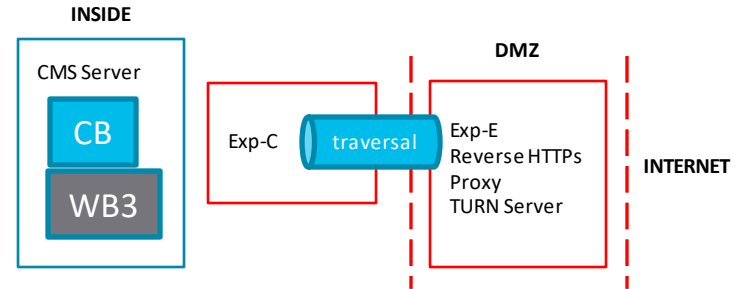- Single web app join link

- Web app CPS = 6 cps

CMS Edge

- Same CMS software but with only TURN & WB3 services enabled

- WB3 not needed in core if external only participants

- web app participants only

- Needed for Large deployments, can also be used for Small & Medium

- Small & Large CMS Edge options

- CMS TURN or WB3 don't need clusters to work. So can scale vertically till 10 TURN per CB/CBG

- Only Single NIC supported

- CMS 3.0 (& above) supports WB3

- Multiple web app join links
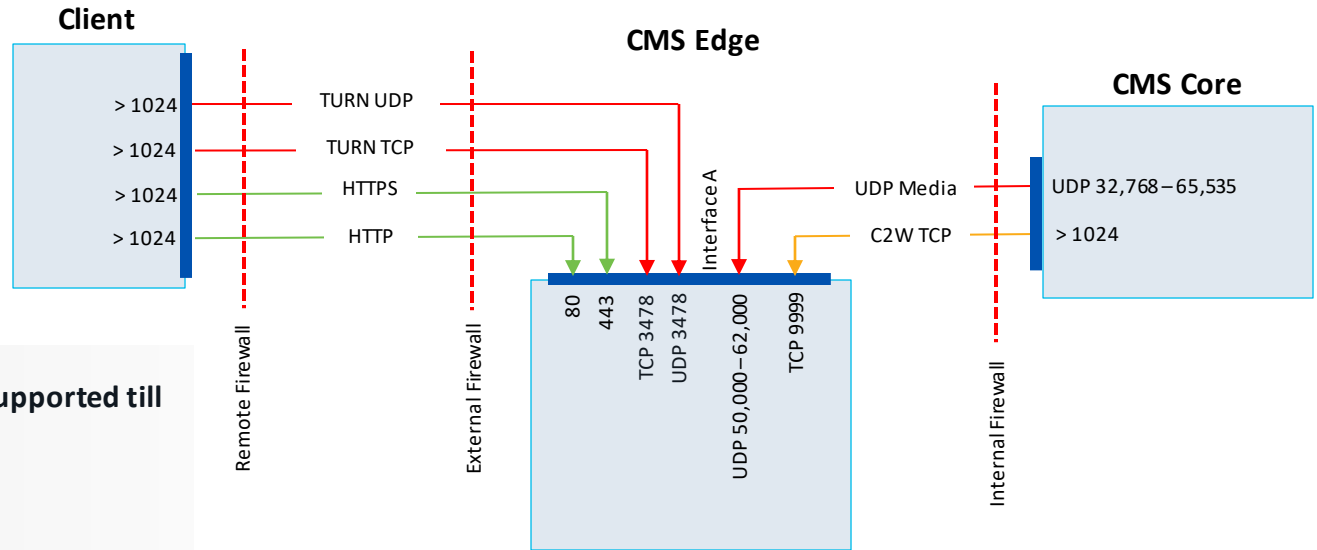
- web app CPS > 10 cps

CMS Edge & Expressway Similarities

CMS Edge & Cisco Expressway

• CB selects the TURN for the clients

• CB randomly selects max 3 TURN servers and sends the details to the client

• Client forms a TURN binding with all 3 TURN but sends media thru only one

• All TURN servers must be of same capacity for CB/CBG it is associated with

• CB doesn't know TURN capacities, so admin must do the capacity planning well

• With no XMPP service, session stickiness is not needed anymore. So LB might not be needed

INSIDE

CMS Server

CB

WB3

DMZ

Exp-C

traversal

Exp-E
Reverse HTTPs
Proxy
TURN Server

INTERNET

CMS Edge

CMS Server

CB

TURN

WB3

INSIDE

DMZ

INTERNET

CMS TURN & WB3 Network Diagram (Single NIC)

Single NIC is the only deployment supported till date

C2W

- Always on connection like Expressway Traversal Link

- Unidirectional, from CB to WB3

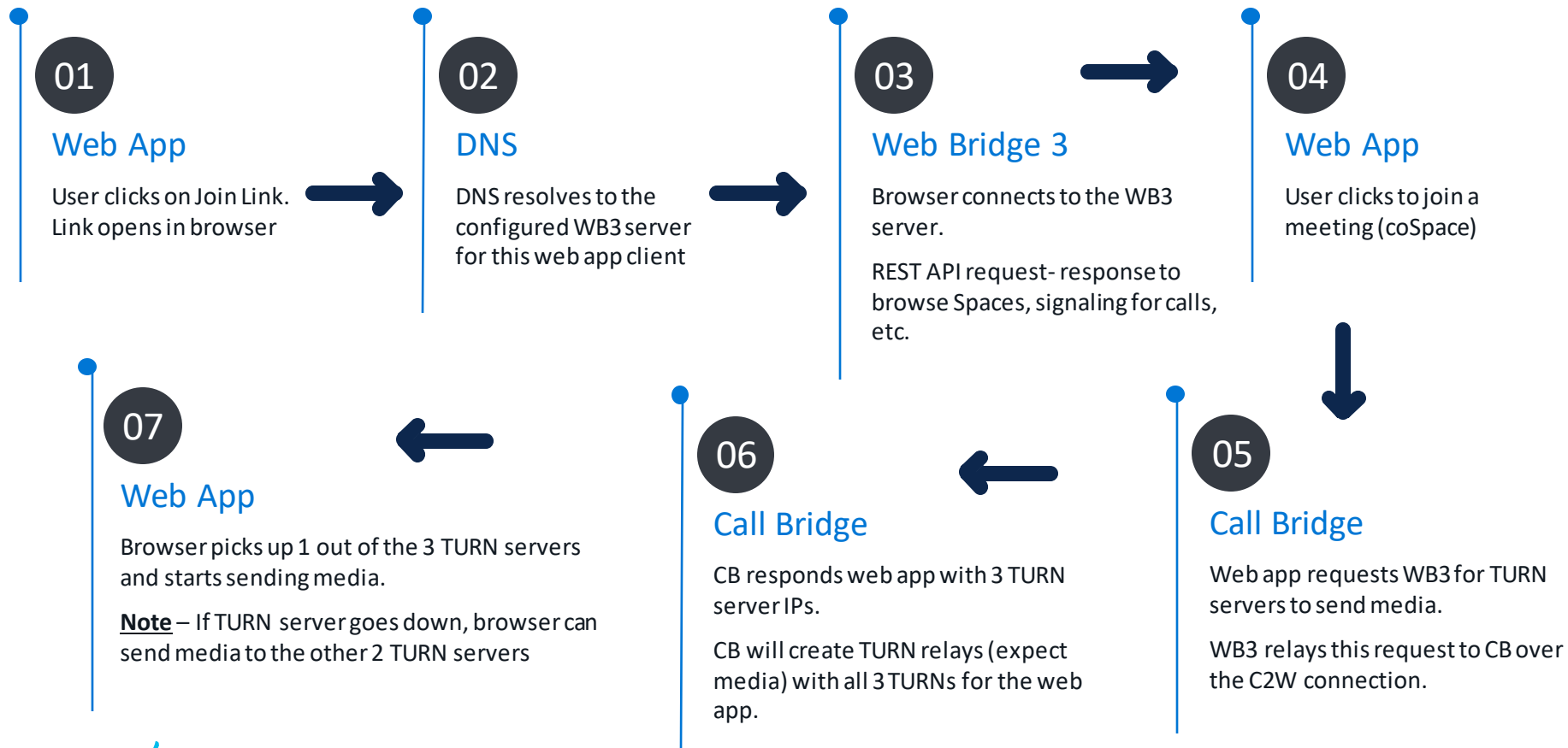# CMS Edge & Multiple Interfaces

How CMS Software Works

- CMS not designed to give hardware or process level isolation based on the interface

- CMS is not designed to connect to different networks of trust levels (e.g., DMZ & Intranet)

- CMS software is not designed to handle attacks which spans between interfaces

- Once CMS software gets compromised, access to all interfaces CMS is connected to is available

Some Points to Remember

- CMS Edge is not Expressway with Inside and Outside Interfaces

- CMS Edge must connect to only 1 network (DMZ)

- Updating CMS routing table just enables routing to two networks, it doesn't give the process level isolation expected from a DMZ device

- CMS Edge does not work the same way Expressway works in a DUAL NIC deployment

Web App Call Flow

01

Web App

User clicks on Join Link. Link opens in browser

02

DNS

DNS resolves to the configured WB3 server for this web app client

03

Web Bridge 3

Browser connects to the WB3 server.

REST API request- response to browse Spaces, signaling for calls, etc.

04

Web App

User clicks to join a meeting (coSpace)

05

Call Bridge

Web app requests WB3 for TURN servers to send media.

WB3 relays this request to CB over the C2W connection.

06

Call Bridge

CB responds web app with 3 TURN server IPs.

CB will create TURN relays (expect media) with all 3 TURNs for the web app.

07

Web App

Browser picks up 1 out of the 3 TURN servers and starts sending media.

Note – If TURN server goes down, browser can send media to the other 2 TURN servers

TURN selection with Multiple Locations and WB3-TURN pairs

Internet

1 DNS A Record (resolves to WB3 IP1) https://join.company.com

So, DNS resolution for the WB3 will lead to the TURN & CB/CBG for that WB3.

DMZ

2 WB3 & TURN can or can not be on the same server.

Server 1
WB3 (IP1)
TURN (IP1)

CBG 1

Server 5
CB 2

Server 6
CB 3

3 WB3 and TURN(s) are configured to work with one CB or CBG.

Enterprise

1 DNS A Record (resolves to WB3 IP2) https://join.company.com

So, DNS resolution for the WB3 will lead to the TURN & CB/CBG for that WB3.

2 WB3 & TURN can or can not be on the same server.

Server 2
WB3 (IP2)

Server 3
TURN (IP3)

Server 4
CB 1

3 WB3 and TURN(s) are configured to work with one CB or CBG.

CMS Edge Deployment Example
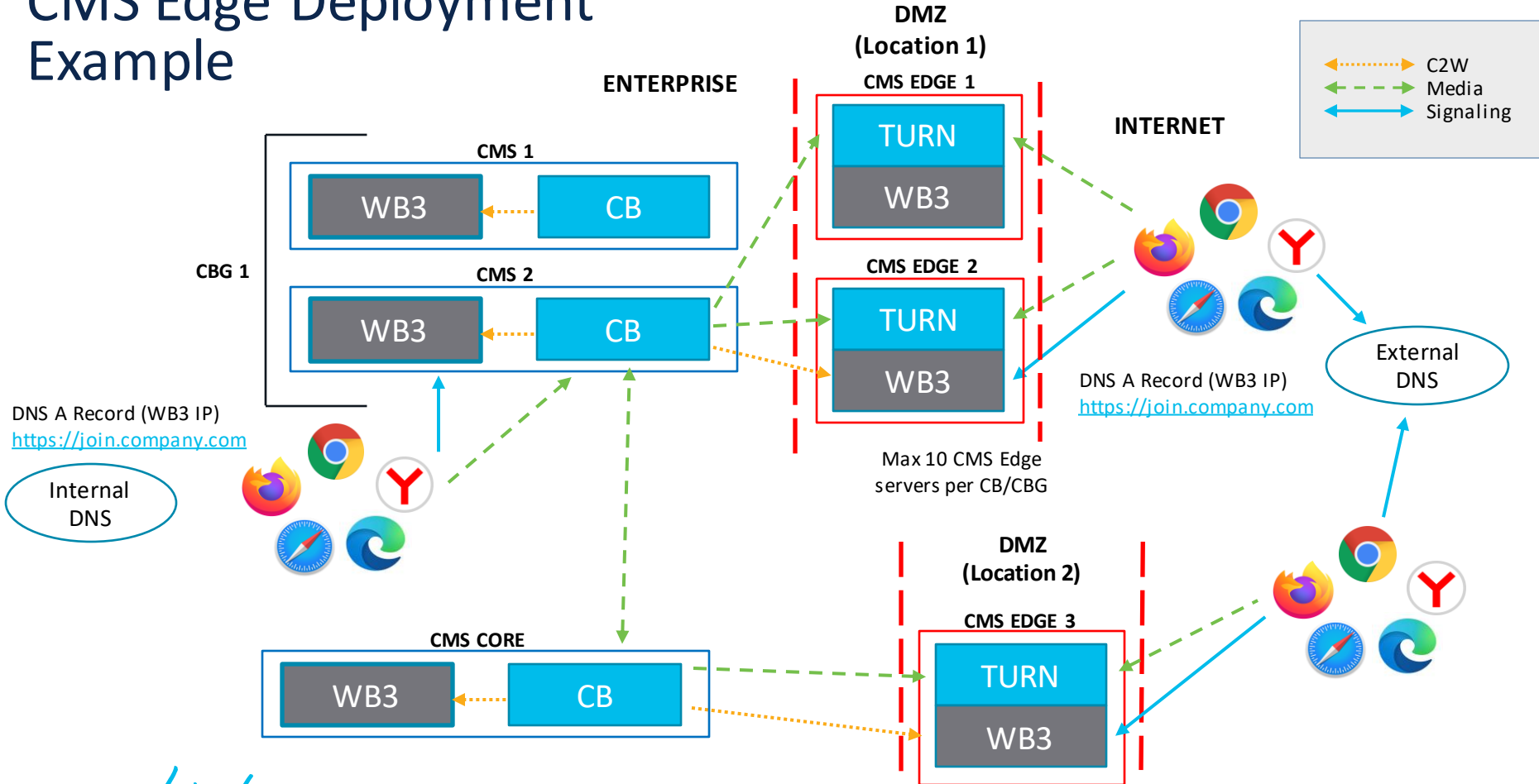
Load Balancers & CMS Edge

Expectation

• Load Balancer will equally choose the right WB3 based on location and can eventually use the TURN server of the Load Balancer's choice

Issue

• Forcing WB3 for a client will make the client use a specific CB or CBG.

• CB/CBG will randomly assign TURN servers to the client.

• If the client doesn't have a route to the TURN, call will never connect

• Sometimes the Firewalls don't allow clients from a different location to pass thru a DMZ of separate locations

Fix

• WB3 should be chosen based on DNS

• TURN should be present in same location of WB3 to handle all local client loads

• LB supported only for HTTPS traffic (Web app and WB3) and not supported for TURN Media (Web app and TURN)

Load Balancer

Location 1 DMZ

CMS Edge

TURN

WB3

Location 2 DMZ

CMS Edge

TURN

WB3
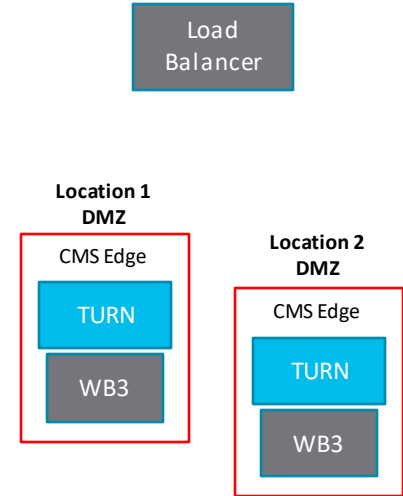
Note:
CMS does not support LBs with packet inspection

Web Bridge 3

Sessions Limiting

name	☐ Default	**- present**
resourceArchive	☐	(URL)
allowPasscodes	☐ true ◆	**- present**
allowSecrets	☐ true ◆	**- present**
userPortalEnabled	☐ true ◆	**- present**
allowUnauthenticatedGuests	☐ true ◆	**- present**
resolveCoSpaceCallIds	☐ true ◆	**- present**
resolveCoSpaceUris	☐ domainSuggestionEnabled ◆	**- present**
sessionLimit	☐ 0	**- present**
	Modify	

1 Sessions can be limited per user

2 Configured under `/webBridgeProfiles` as parameter sessionLimit

3 Note – `sessionLimit = 0`, means no limit

Web Scheduler

Scheduling Cisco Meeting Server Meetings

TMS/XE Alternatives

Start looking at alternative device management & scheduling solutions.

No new TMS/XE Feature Development

TMS Migration Options

Premise based Solutions Plus
Synergy SKY or VQ
as alternatives to TMS managed

User Experience

Give users better scheduling experiences

Reporting & Config

Give admins new reporting and configuration tools

Web Scheduler – User Experience

Click to Schedule a meeting

Web Scheduler – User Experience

Meeting Name

Either create a new space
OR
Use an existing Space

Web Scheduler – User Experience

Web Scheduler – User Experience

Schedule a meeting

Step 3 of 3
Attendees

Organiser	Role
You	Provisioned Team Sp...

Attendee	Role	
⊕ alampara@cisco.com ⊗	Provisioned Team Space rule	Add
Saurabh Khaneja (sakhanej@cisco.com)	Provisioned Team Sp...	🗑
☐ Invite all other space member(s) as	Provisioned Team Sp...	

Add the participant and choose the role (if multiple role meeting template is configured)

Web Scheduler – User Experience

Once created you can see all details for this meeting

Web Scheduler – Points to Remember

1 Scheduler as a CMS service Scheduler service

2 Scheduling only via web app

3 Service supported on CMS1k, CMS2k & Spec based CMS

4 Spec based CMS needs additional 4GB RAM for Scheduler service

5 SMTP server configuration needed for sending emails

6 Max Scheduled meetings per cluster: 150k (CMS1k) 200k (CMS2k)

Web Scheduler –
Points to Remember

7 Scheduler uses the CMS database service

8 WB3 config changes needs a scheduler service restart. Disabling scheduler needs WB3 services restart.

9 Scheduler UI (for web app) only visible when WB3 can reach the scheduler

10 No TMS Integration with Web Scheduler

11 TMS scheduling and web Scheduler can exist in same cluster

12 Web scheduler meetings not shown in TMS/No OBTP, TMS meetings not shown in web app

13 For OBTP, Scheduler will provide SIP URI which Hybrid Calendar Service enabled devices for OBTP. Or Synergy Sky

Web Scheduler Deployment
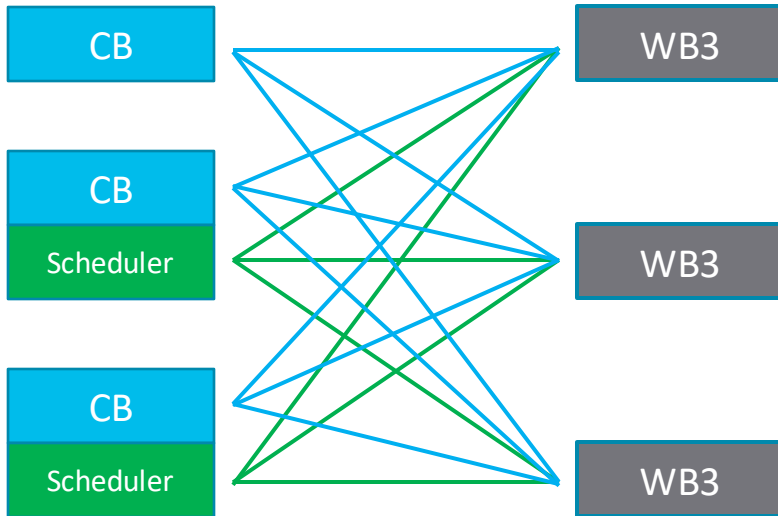
- Scheduler must be on same server as CB

- Scheduler doesn't have to be on all CB servers

- Scheduler can be either 1, 2 or 3 for resiliency. More than 3 is not supported

- Scale remains same either 1 or 3 schedulers are used

- Scheduler to WB3 is a full mesh C2W connection. So all WB3 and Schedulers should know about each other

In-Meeting File Sharing (Beta)

In-Meeting File Share – Points to Remember

1 File sharing means in-meeting files can be downloaded for meeting participants

2 Enabled only at call level (via callProfiles or calls)

3 Access to File upload and File download can be given separately

4 Only signed-in web app user can download the file shared

5 File sharing not available for web app guest participants & SIP participants

6 Participants joining the meeting after the file share won't be able to see & download the file

7 Max file shared per meeting = 5, Max file size of shared file = 10 MB

8 File automatically deleted after 12 hours, Cannot be deleted manually

In-Meeting File Share – Deployment Details

1 New service "meeting apps" needed for File Sharing

2 Meeting apps must be deployed in dedicated CMS server (no other services should be running on the same server)

3 If deployment has all internal participants or VPN based external participants, deploy meeting apps in Data Center

4 CMS 2000 not supported

5 If deployment has all external participants, deploy meeting apps in DMZ (public-ally accessible IP)

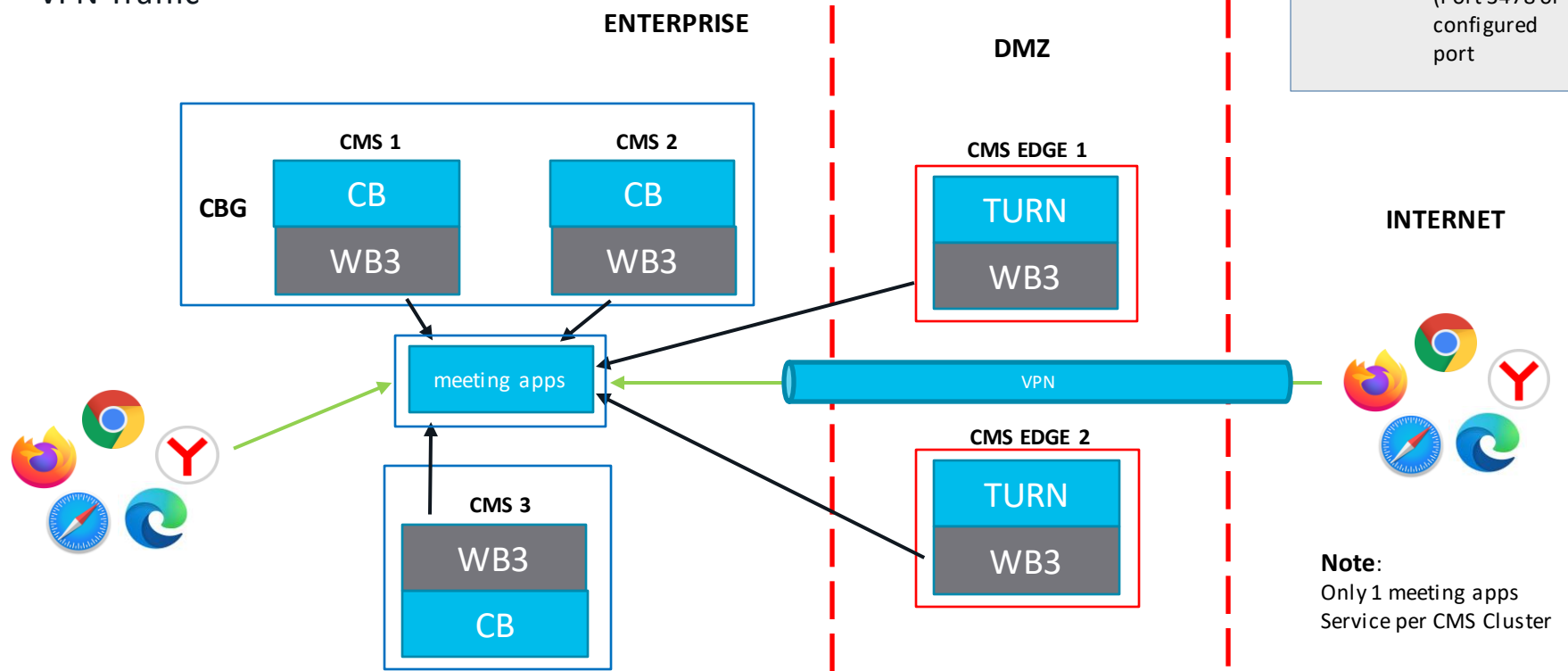**6** No Redundancy in initial release. Planned for future releases

7 All WB3 servers must be configured to talk to meeting apps server. Else participants coming from the WB3 (not configured for meeting apps) won't be able to see & download File Share

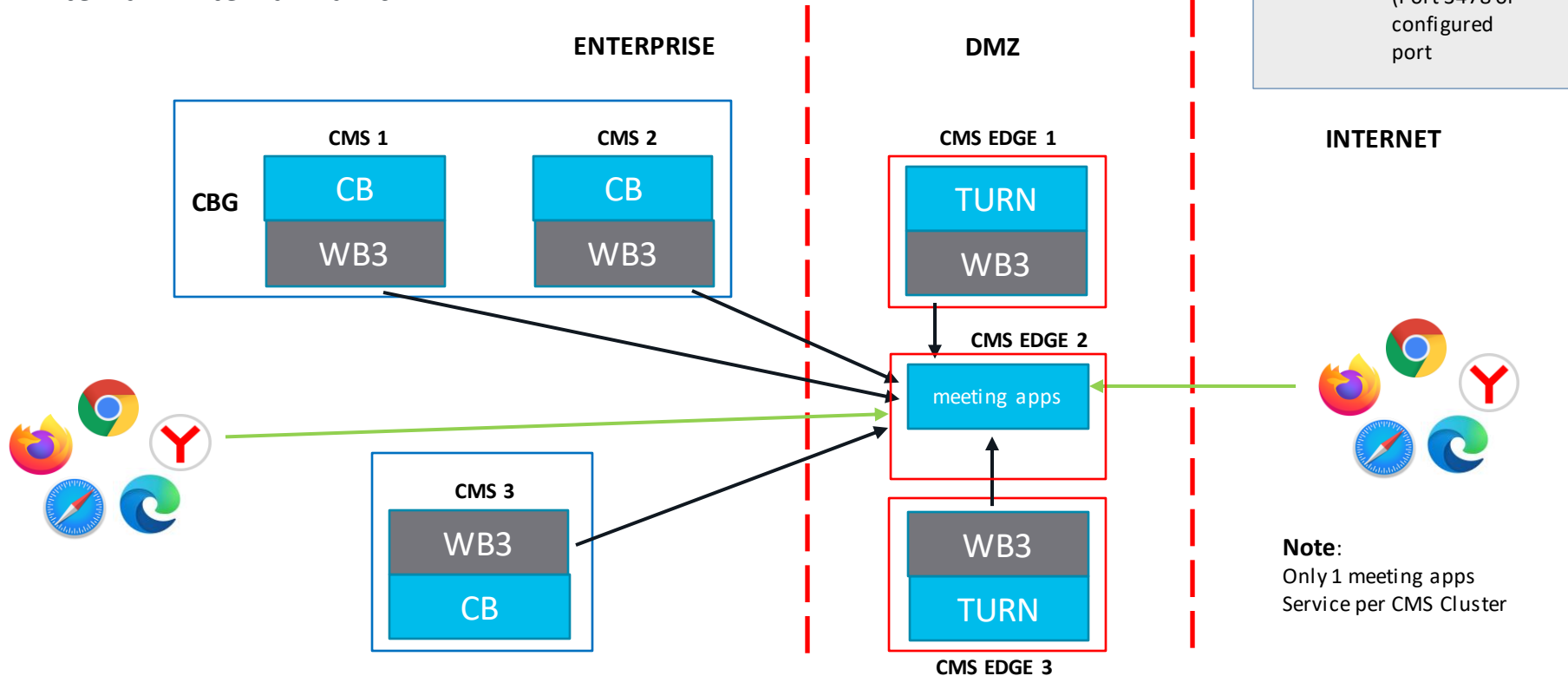**8** By default, File Sharing is disabled, have to manually enable it

Meeting Apps Deployment Diagram

Internal Only or
VPN Traffic

ENTERPRISE

DMZ

INTERNET

C2W
(Port 443)

Media
(Port 3478 or
configured
port

CBG

CMS 1
CB
WB3

CMS 2
CB
WB3

CMS EDGE 1
TURN
WB3

meeting apps

VPN

CMS 3
WB3
CB

CMS EDGE 2
TURN
WB3

Note:
Only 1 meeting apps
Service per CMS Cluster

MeetingApps Deployment Diagram

External Only or
Internal + External Traffic

ENTERPRISE

DMZ

INTERNET

CMS 1

CMS 2

CB

CB

CBG

WB3

WB3

CMS EDGE 1

TURN

WB3

CMS EDGE 2

meeting apps

CMS 3

WB3

CB

WB3

TURN

CMS EDGE 3

C2W
(Port 443)

Media
(Port 3478 or
configured
port

Note:
Only 1 meeting apps
Service per CMS Cluster

Other Important Features

CMS (Share Audio Content)
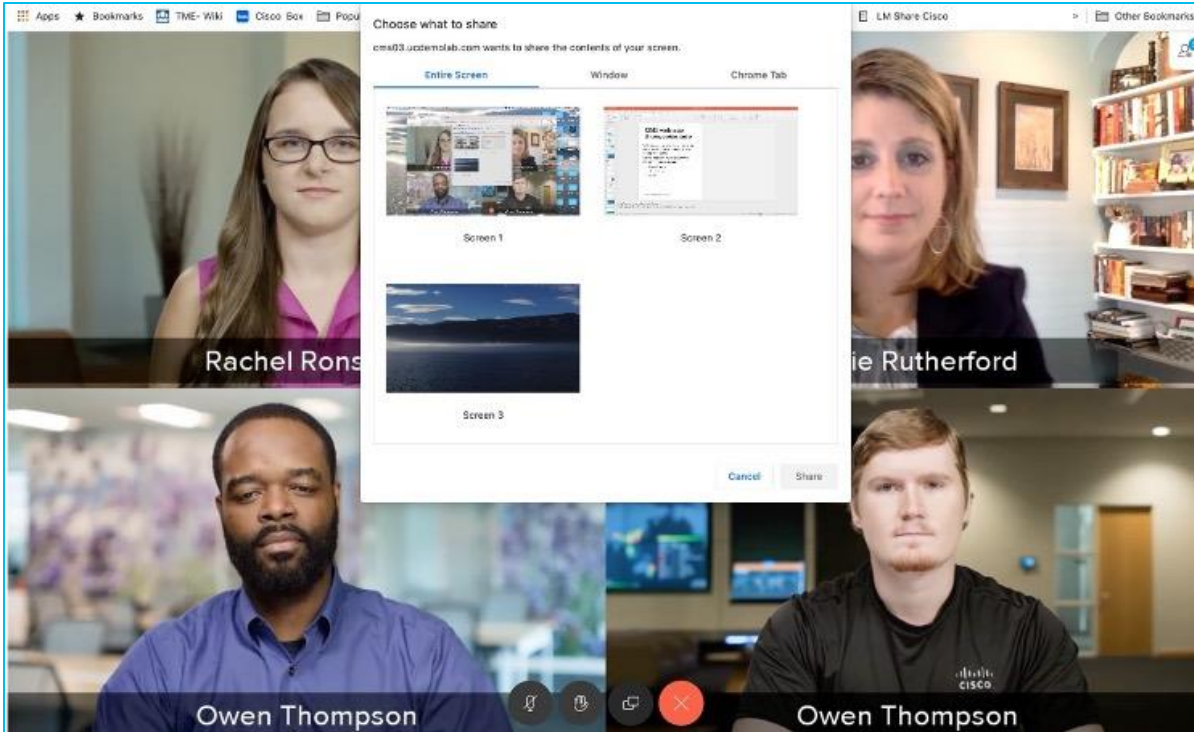
1. From 3.5 web app participant can share audio along with video

2. Browsers supported (Chrome based like Chrome, Edge & Yandex)

3. For Windows (Share Tab Audio & Share System Audio)
   For Mac (Share Tab Audio ONLY)

4. Muting the presenter remotely and then unmuting audio presenter remotely would need manual local unmuting too.
   (More details in next slide)

CMS (Share Audio Content)

1 This table shows when the Presenter's Mic and/or the content audio be audible to the remote participants joining the meeting

2 Note how remotely muting the presenting participant will have different effect on the mic vs content audio

3 Reference of this table – CMS 3.5 Release Notes, Section 2.2 (Sharing Content Audio)

Presenter	Presenter's Mic	Shared Content's Audio
Unmuted	Yes	Yes
Locally Muted / No Mic	No	Yes
Remotely Muted (by Other Participant)	No	No
Presentation Only Mode	No	Yes
Presentation Only Mode (Remotely Muted by Other Participant)	No	No

CMS (Share Audio Content)

Windows Systems

Windows Users can share content via both
- Entire screen or
- Chrome Tab.
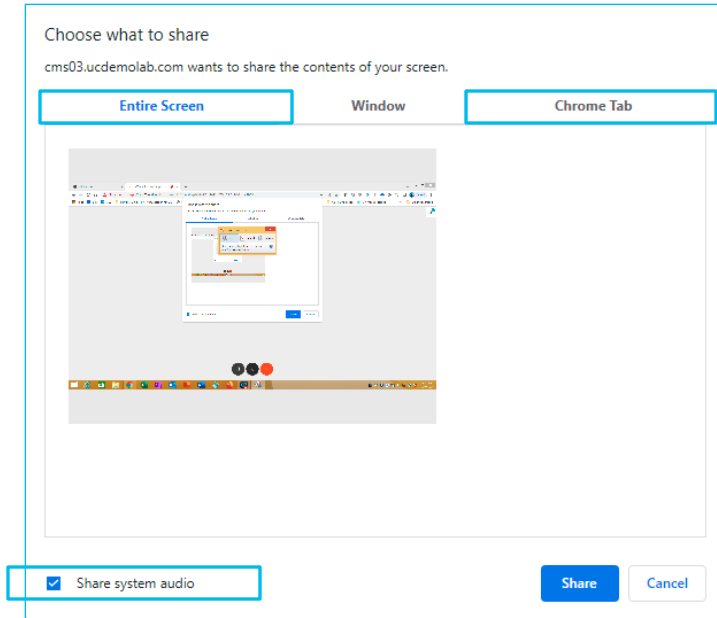
Mac Systems

Mac Users can only share content via
- Chrome Tab.
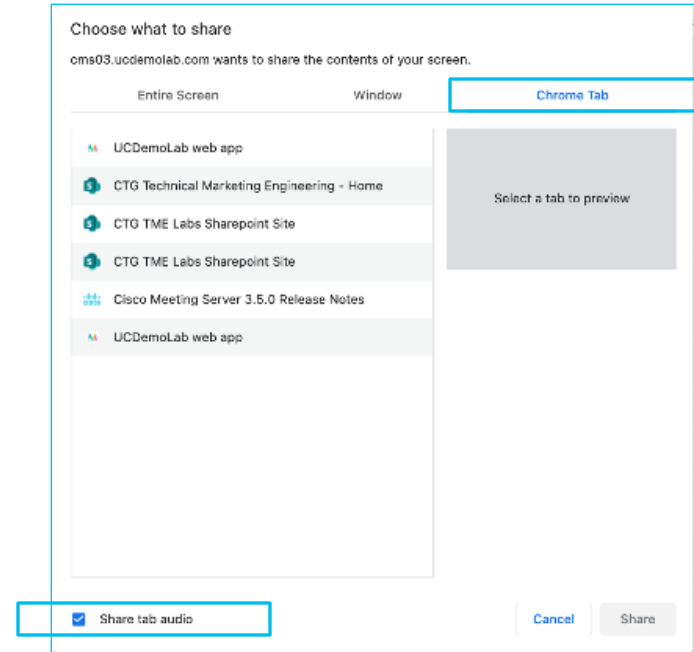
CMS Meeting Snapshots

1 For Operators to monitor meetings without joining confidential meetings (via CMM or API)

2 Needs separate license. Smart licensing mode only.

3 Currently only supported for SLR (Future support for PLR is planned)

CMS Meeting Snapshots

1 Snapshots can be either for incoming, outgoing or both
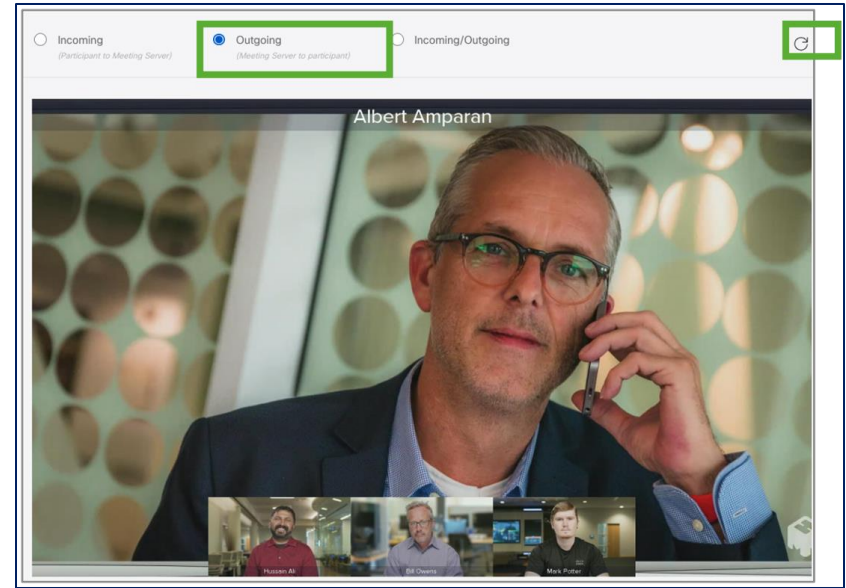
2 Snapshots can be either "Participant to CMS" or "CMS to Participant"

3 Max Snapshot resolution supported – 1280x720p, default is 96p

CMS – Background Blur (Beta)

1   Beta Feature

2   Can be enabled after joining the meeting, not at preview page

3   Blur option in Web app -> meeting camera settings

4   Enabling HD with background blur might cause video sync issues
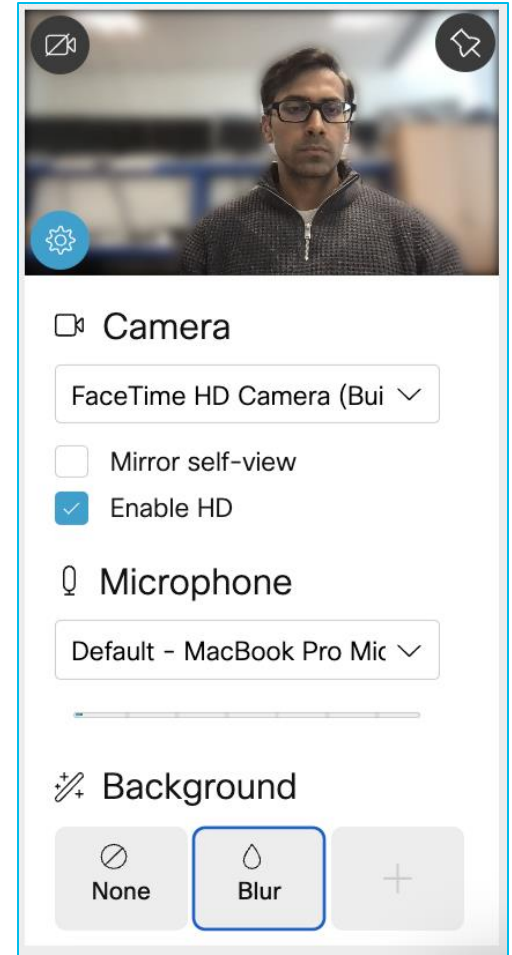
5   Works best with GPU systems

6   Min system specs: (Check updates by June)
Windows – 1.6 GHz CPU & 16 GB RAM
Mac   – 2.3 GHz CPU & 16 GB RAM

CMS 3.5
Accessibility Improvements

Web app accessibility improvements	Web app accessibility Screen Reader improvements for:	CMM accessibility improvements:	CMM accessibility Screen Reader improvements for:
• Web app home page options accessible from keyboard • Join Meeting page options can be accessed by using UP/Down keys	• Web app user interface options • Menu buttons • In meeting options • All on screen notification messages	• Licenses page and graphs are accessible from keyboard • Use Esc key to close dialogue boxes • Use the Close button (X) using keyboard	• Meetings page options • Scheduled meetings options • Licenses pages • Blast dial configuration • Meeting search criteria

Before Upgrading to CMS 3.5

Release Notes

Review the release notes

Database

Must unbound the DB cluster, update, then rebind with 3.5 due to security enhancements

Versions

If updating multiple versions, follow steps in guides for each release in steps, don't recommend 3.1 to 3.4 or 3.5 directly for example

Backup

Use MMP command to backup DB prior to each update in case need to restore

Step 1

Step 2

Step 3

Step 4

CMS – Minor Features

1 **Bi-directional Language**
Now supported for participant name labels, for example Arabic & Hebrew.
For both web app & SIP participants.

2 **Security** – Validation of Server Identity (Hostname / IP Address) on the Database Cluster. Meeting Server and Branding server certificates must be signed by valid or same CA Server
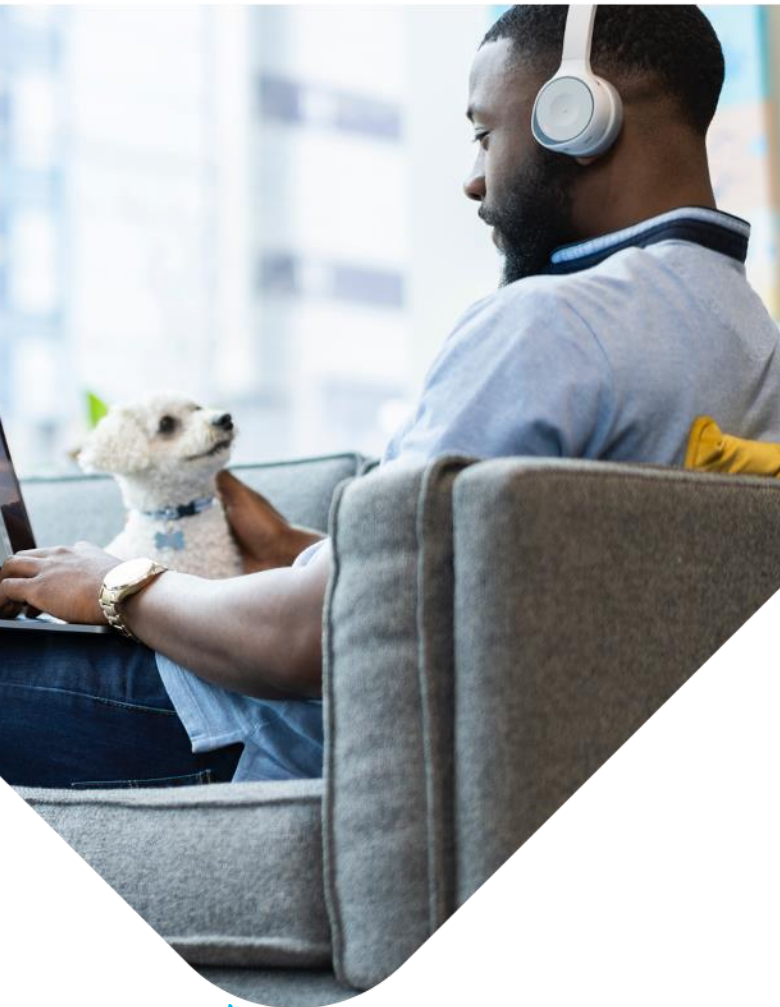
3 **User Audit Logs**
Meeting Server logs include the audit logs for the user actions:

1. Logging in or out,

2. Join or leave a meeting,
   Create a space,

3. Muting or unmuting the microphone,
   Turning on or off video,

4. Drop another participant from the meeting and so on

Key References

Important References

You can always refer to the following links for more details:

1 **Previous CMS Presentation (Cisco Live US'2020) DGTL-BRKCOL-2110**
https://www.ciscolive.com/on-demand/on-demand-library.html?search=%22Abhijit%20Dey%22#/session/163606019918300177x0

2 **TME YouTube Channel**
https://www.youtube.com/c/CiscoCollaborationTechnicalMarketing/featured

3 **CMS FAQs**
https://meeting-infohub.cisco.com/faq/

4 **CMS, CMM and Web app Documentation**
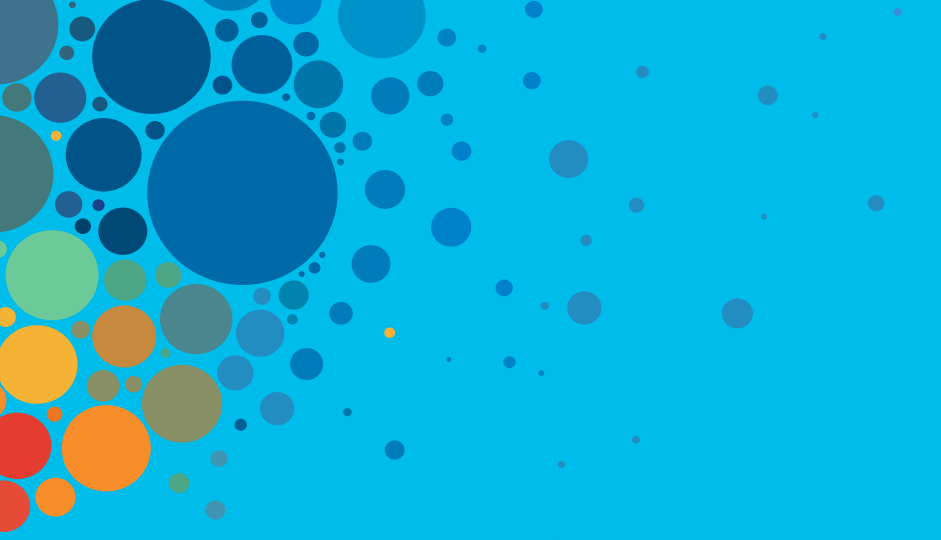https://www.cisco.com/c/en/us/support/conferencing/meeting-server/series.html#~tab-documents
https://www.cisco.com/c/en/us/support/conferencing/meeting-management/series.html
https://www.cisco.com/c/en/us/support/conferencing/cisco-meeting-app/series.html

5 **Reach out to me on Webex for any questions**
abdey@cisco.com

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