

Diagnosing and Troubleshooting Meetings in Webex

Eric Embling, Technical Consulting Engineer
BRKCOL-3431

Cisco Webex App

Questions?

Use Cisco Webex App to chat with the speaker after the session

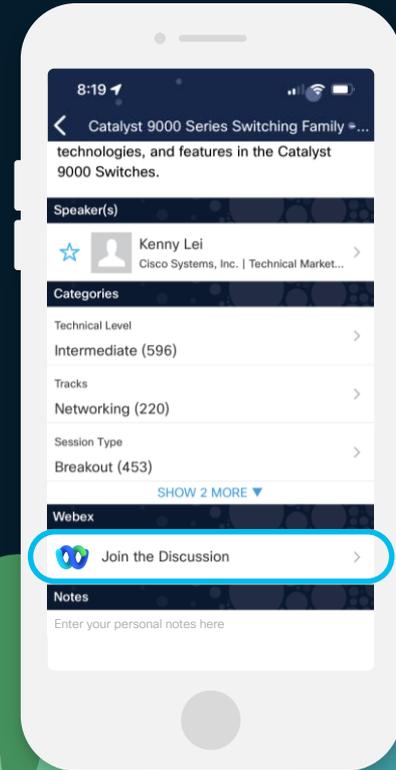
How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 7, 2024.

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<https://ciscolive.ciscoevents.com/ciscolivebot/#BRKCOL-3431>



Agenda

- High-Level Architecture
- Reviewing Webex Suite Meeting Platform
- Logging
- Troubleshooting

Joining a meeting

- Delayed join times
- Failures connecting

In-meeting experience

- Media disconnects
- Peripherals
- Audio and video quality

Control Hub Monitoring

- Troubleshooting

What is Not Covered

...and where to find the content



Webex
Administration

BRKCOL-3117

Paul Stojanovski

Troubleshooting Webex Authentication
and Provisioning



Webex Suite
Meeting Platform

BRKCOL-2077

Abdul Rahman

Get Ready for the Webex Suite Meeting Platform



Webex
Video Mesh

BRKCOL-2750

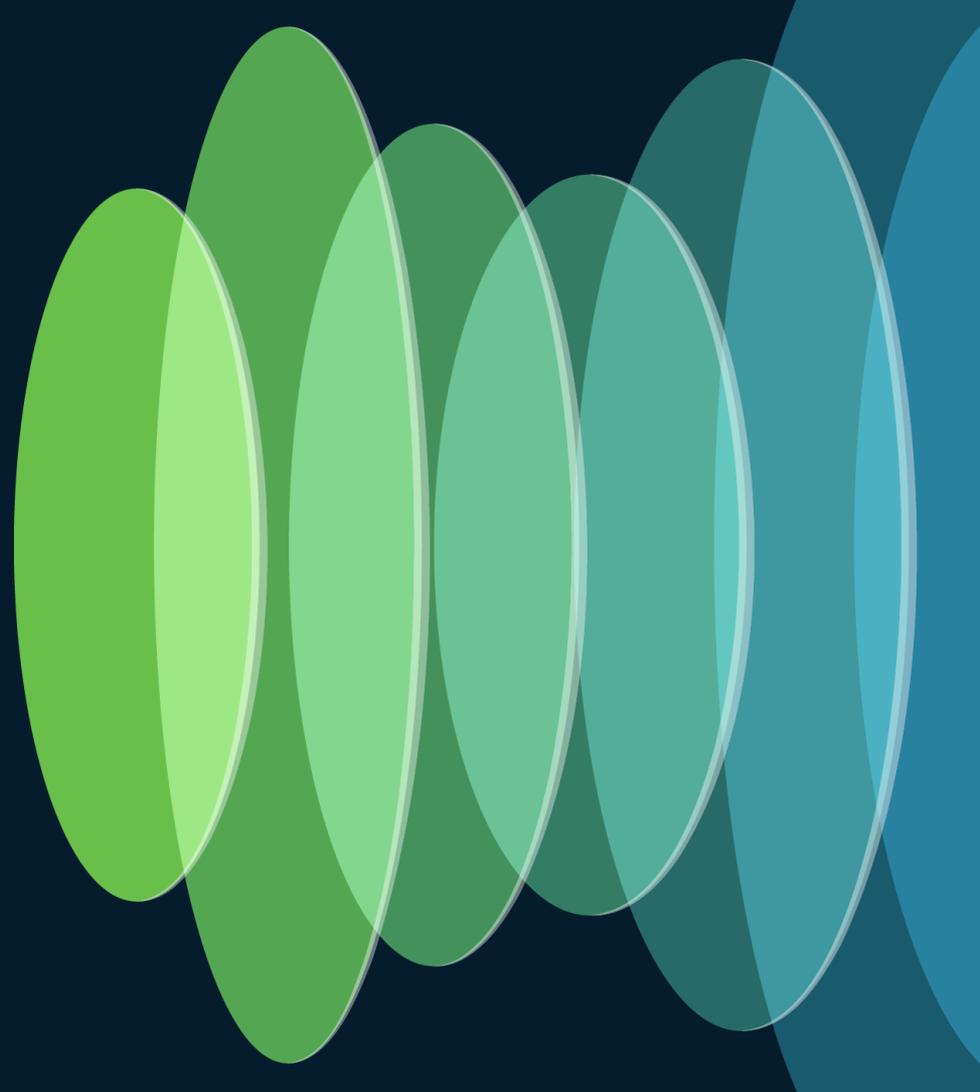
Richard Murphy

Understand call flows and new features to
successfully utilize the Video Mesh Solution



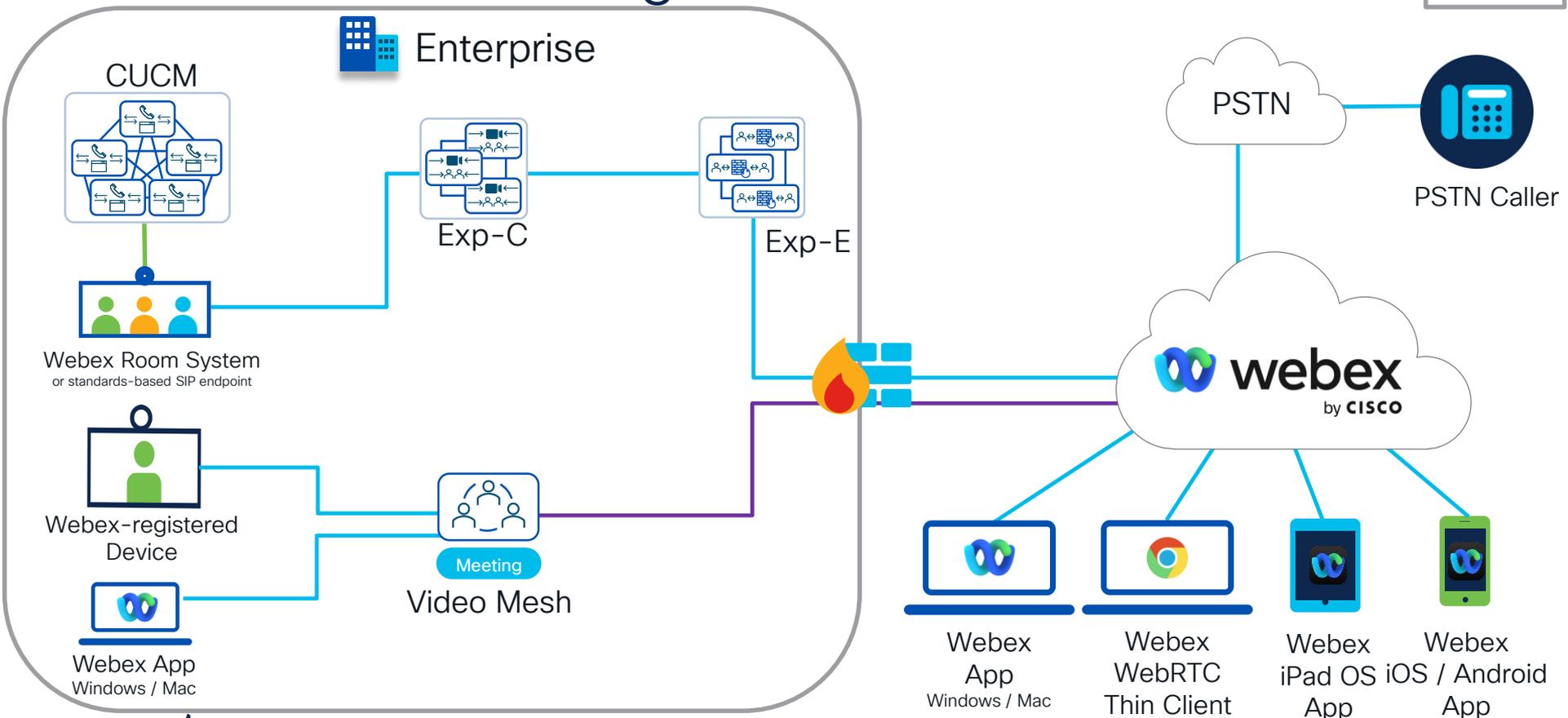
By the end of the session,
we'll reach the top of this mountain

High-Level Architecture



Cisco Webex Meetings Architecture

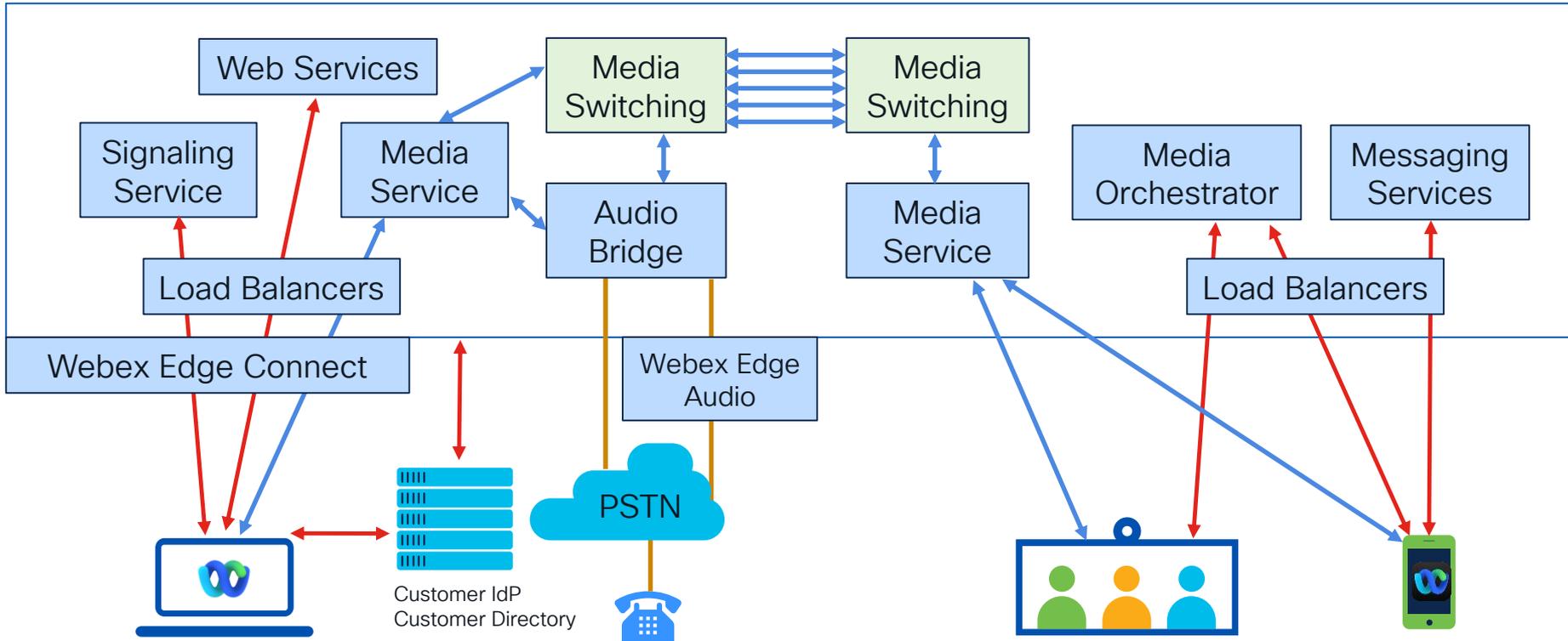
Media
Cascade



CISCO Live!

Cisco Webex Cloud

* For illustrative purposes



Webex Global Cloud



Webex services are distributed across the globe for capacity, availability, and ensuring a high-quality experience.

Webex Status - status.webex.com

Can view Incident History and Scheduled Maintenance windows / upgrades



- Webex Meetings Operational  ×
- Sign in and sign up Operational
- Access Webex URL Operational
- Start/join meetings Operational
- Video Platform Operational
- Webex Audio Operational
- Webex Assistant Operational
- Schedule meetings Operational
- Share content Operational
- Webex Scheduler Add-on Operational

Open Incidents

 Webex Calling Service Maintenance: April 22, 2024 +

Webex Meetings Operational  +	Webex App Operational  +
Webex User Hub Operational  +	Webex Control Hub Operational  +
Webex Cloud Registered Device Operational  +	Webex Calling Operational  +
Developer API Operational  +	Webex Hybrid Services Operational  +
Webex Contact Center Operational  +	UCM Cloud Operational  +
Webex for BroadWorks Operational  +	Gateway and Solutions Operational  +
Webex Events (formerly Socio) Operational  +	Slido Operational  +

Mapping Webex site to upgrades (maintenance)



Determine Webex cluster

1. Log in to Control Hub
2. Go to **Services**, and under *Meeting*, select *Sites*.
3. Choose the Webex site you want to know the cluster information for, and **Settings**
4. Under *Site Info*, select *Site Information*.

Site Type:	Enterprise Site
Administrator(s):	9 Administrators Show All
Current Desktop App Channel:	Latest Channel
Page version:	42.3.4.4
Desktop app version:	42.3.6.11
Cluster:	j



Check upgrade schedule

1. Visit the Webex Status Page
2. Click Maintenance
3. From the calendar view find your cluster and select it

Service Upgrades and Scheduled Maintenances

Check out our help articles on how to [subscribe to releases and announcements](#) and how to use the [search filter](#).

May 2022 < [Filter select type] [Filter select cluster] Search

All entries are posted in UTC. Schedules are subject to change.

Upgrade Informational Maintenance XML API Product Update Slow Channel Custom Schedule

42.5 - J, L, M, BO, AB
Fri, May 13, 2022, between 9:00 PM and 11:59 PM CST (GMT-8)

42.5 - AG
Fri, May 13, 2022, between 8:00 PM and 11:00 AM (PST/4/2022) (GMT-7)

42.2/41.6 - AG
Fri, May 13, 2022, between 8:30 PM and 11:00 AM (PST/4/2022) (GMT-7)

42.5 - W
Fri, May 13, 2022, between 7:00 PM and 11:59 PM (GMT-7)

42.2/41.6 - W
Fri, May 13, 2022, between 7:00 PM and 11:59 PM (GMT-7)

Saturday, May 14, 2022

42.2/41.6 - J, L, M, BO, AB
Fri, May 13, 2022, between 7:00 PM and 11:59 PM PDT (GMT-7)

42.5 - J, L, M, BO, AB
Fri, May 13, 2022, between 7:00 PM and 11:59 PM PDT (GMT-7)

42.5 - J, L, M, BO, AB
UTC Schedule: May 14, 2022 02:00-07:00PDT, May 13, 2022, between 7:00 PM and 11:59 PM PDT (GMT-7)
Local Time Schedule: May 14, 2022 02:00-07:00PDT, May 13, 2022, between 7:00 PM and 11:59 PM PDT (GMT-7)

Components: Cisco Webex Business Suite 42.5, Cisco Webex Desktop App 42.5, Cisco Webex Page 42.5, Cisco Webex Meetings 42.5 (Android), Cisco Webex Meetings 42.5 (iOS)
Locations: Cluster: J, L, M, BO, AB

Descriptions: 42.5 offers exciting new product functionality. For a full description of the features, please see the release notes.

42.5 Latest: <https://help.webex.com/en-us/cxwv1/What-s-New-for-the-Latest-Channel-of-Webex-Meetings>

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Review release notes

1. Visit the Webex Help Center
2. Click Help by Product
3. Click What's new in Webex Meetings

OR

1. Click the release notes URL from the Status Page

Coming Soon What's New

Coming in May 2022 (42.5)

Announcements

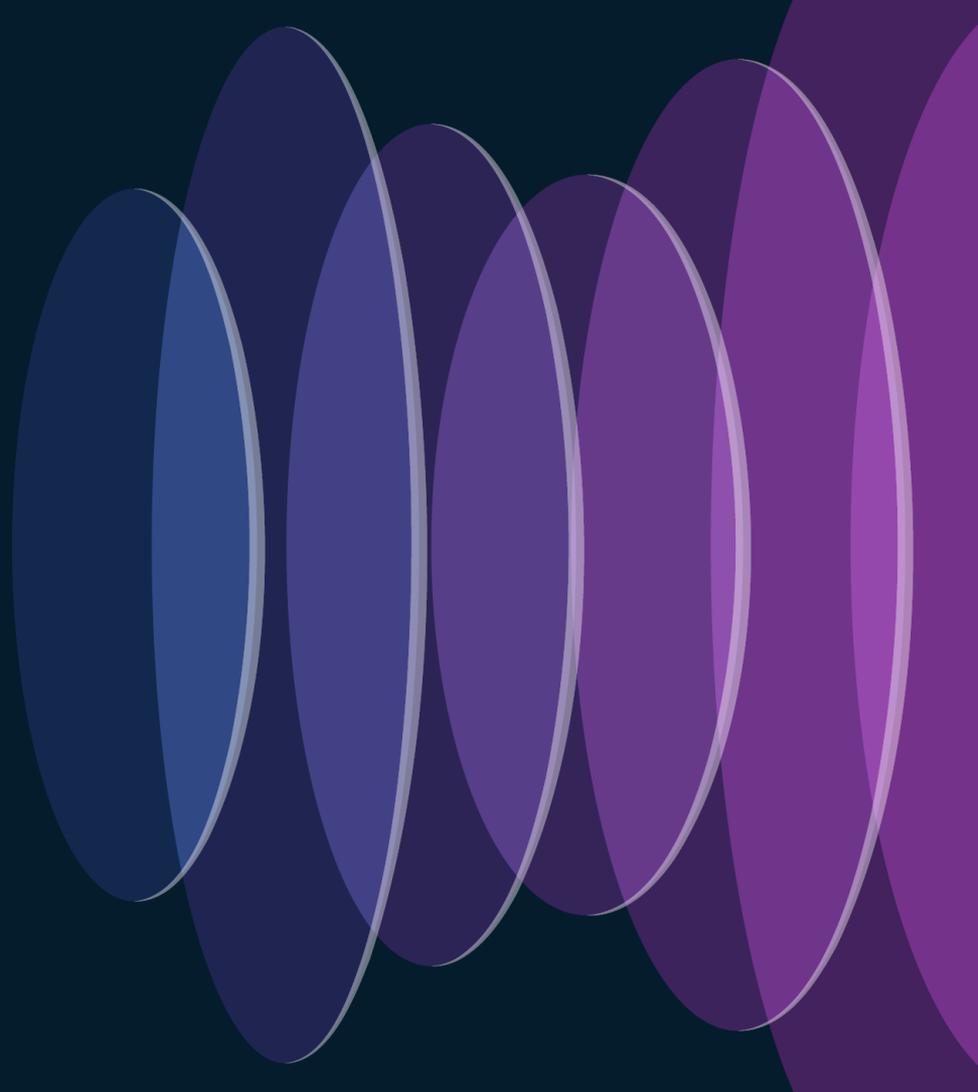
The 42.5 update has important announcements, which you can review in the [Announcements for the Cisco Webex Meetings Suite](#).

Highlighted features for this update

- French, German, and Spanish spoken language transcription available in closed captions

For meetings with Webex Assistant or closed captions, the host can now select the spoken language (transcription) of the meeting in four different languages: French, German, and Spanish, in addition to the existing English.

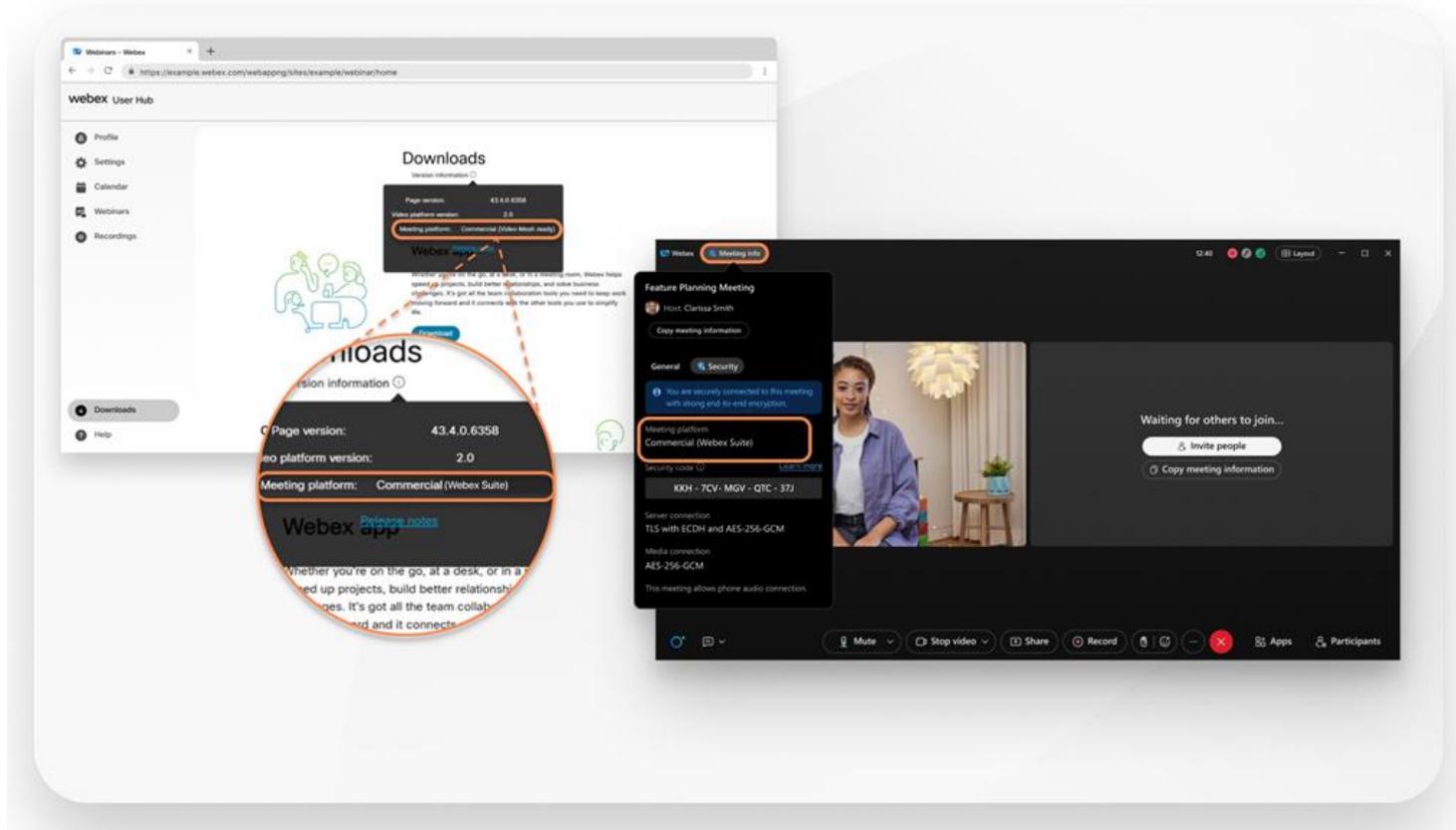
Reviewing Webex Suite Meeting Platform



Journey to a Unified Webex client experience



Webex Suite Meeting Platform (WSMP)



WSMP Ready or Not?



TROUBLESHOOTING

- After site transition you'll no longer see Webex Meetings as your Client
- You will begin to only see Webex App

Participants (4)

Search participant name, platform or client

Sort By Location

Audio Video Sharing Details Map

id	city	Client	Platform	Join From
Casey Myers		Webex Meetings 43.1.5.1	Windows 10.0.19041	Chrome 109
Cisco Live		Webex Meetings 43.1.5.1	Windows 10.0.19041	Chrome 109
Frank Smith		Webex Meetings 43.1.5.1	Windows 10.0.19041	Chrome 109
Eric Embling		Webex Meetings 43.1.5.1	Mac 13.2.0	Chrome 109

Participants

Sort By A-Z

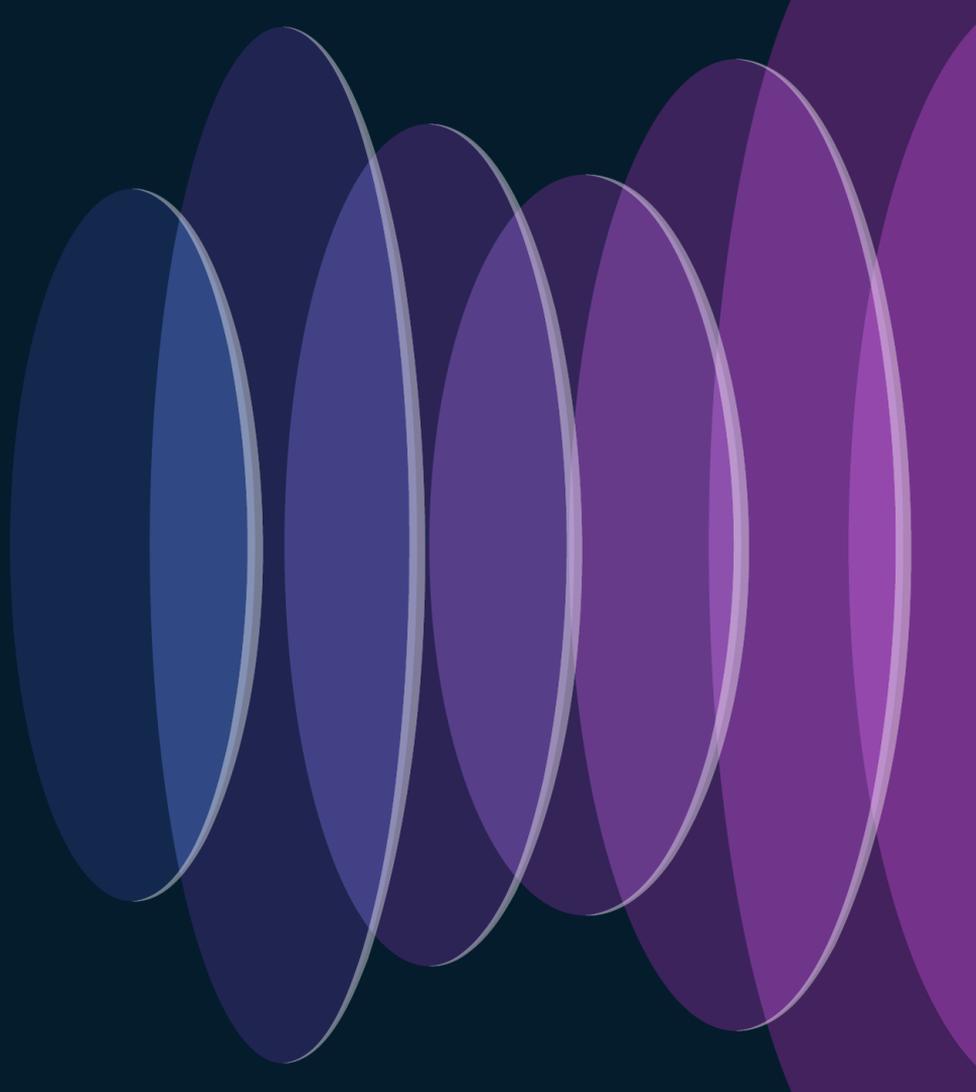
Audio Video Sharing Details Map

	Join Time	Duration	Email	Activity	Client	Platform
Cisco Live	2023-04-26 09:39:...	00:05	clice2023@gmail.com		Webex App 43.6.0.3956	iOS 16.4.1
Ned Stark	2023-04-26 09:38:...	06:24		Host	Webex App 43.4.0.25959	Windows 10.0.22000.1
Eric Embling	2023-04-26 09:38:...	06:13		Host	Webex App	Mac

Important Troubleshooting Differences

	WSMP	MC Meetings
Default media port	UDP/5004	UDP/9000
Settings	Webex App database	Registry
Meeting module required	No	Yes

Webex Suite Meeting Platform Logging



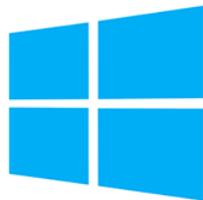
Webex Suite Meeting Platform logging differences

- Full-featured Meetings App contained a meetings folder with .wbt files
- .wbt log files will **no longer be used** with the Webex Suite Meeting Platform
- Primary logging file will be current_log.txt

Name	Date modified	Type	Size
wbxtra_11222022_101334.zip	11/29/2022 8:31 AM	Compressed (zipped) Folder	15,956 KB
wbxtra_11232022_073613.zip	11/29/2022 8:31 AM	Compressed (zipped) Folder	518 KB
wbxtra_11292022_080357.wbt	11/29/2022 8:31 AM	WBT File	204,800 KB

Name	Date modified	Type	Size
accessories	11/29/2022 8:43 AM	File folder	
callLogs	11/29/2022 8:43 AM	File folder	
logArchive	11/29/2022 8:43 AM	File folder	
mapi	11/29/2022 8:43 AM	File folder	
media	11/29/2022 8:43 AM	File folder	
meetings	11/29/2022 8:43 AM	File folder	
ulogin	11/29/2022 8:43 AM	File folder	
current_log.txt	12/1/2022 1:53 PM	TXT File	4,570 KB
last_run_current_log.txt	11/29/2022 8:31 AM	TXT File	17,587 KB
sparklauncher.txt	11/29/2022 8:31 AM	TXT File	7 KB
spark-windows-host-log.txt	11/29/2022 8:31 AM	TXT File	2 KB
spark-windows-host-log-ProcessCleaner.dll.txt	11/29/2022 8:31 AM	TXT File	2 KB
spark-windows-host-log-SparkMapiDll.dll.txt	11/29/2022 8:31 AM	TXT File	2 KB
spark-windows-host-log-SparkPrtDll.dll.txt	11/29/2022 8:31 AM	TXT File	3 KB
spark-windows-host-log-spark-windows-acces...	11/29/2022 8:31 AM	TXT File	2 KB
spark-windows-host-log-spark-windows-app-i...	11/29/2022 8:31 AM	TXT File	2 KB
spark-windows-host-log-spark-windows-media...	11/29/2022 8:31 AM	TXT File	3 KB
spark-windows-loader-log.txt	11/29/2022 8:31 AM	TXT File	1 KB

Webex App Logging



Log location:

`\Users\UserName\AppData\Local\CiscoSpark`

- accessories
- media
- ulogin
- **current_log.txt**



Log location:

`/Users/UserName/Library/Logs/SparkMacDesktop/`

- accessories
- media
- ulogin
- **current_log.txt**

Primary app logging file

On-demand log collection

webex Control Hub

Troubleshooting

Meetings & Calls | Live Meetings | Status | Video Mesh | Admin Activities | Connected UC | **Logs** | Watermark

ned.stark@thesto.com

Apr 21, 2023 to Apr 28, 2023 (GMT -04:00) America/New_York 0 records

Cancel Collect

Collect Logs?

You're collecting ned.stark@thesto.com's latest client logs.

Please check back in few hours to see if the logs were uploaded. If not please try again or ask user to send logs from the webex client.

This user must have an active internet connection while running their Webex app. Collecting logs take extra time and bandwidth, and can impact this user's Webex connection.

Cancel Collect

NOTE

- Requires page refresh
- No log collection status indicator
- Supports up to 30 days of logs

Webex

Log upload in progress

Your administrator has requested your Webex log files. Please bear with us as your app may be a little slower while we transfer the information.

OK



7

ned.stark@thesto.com

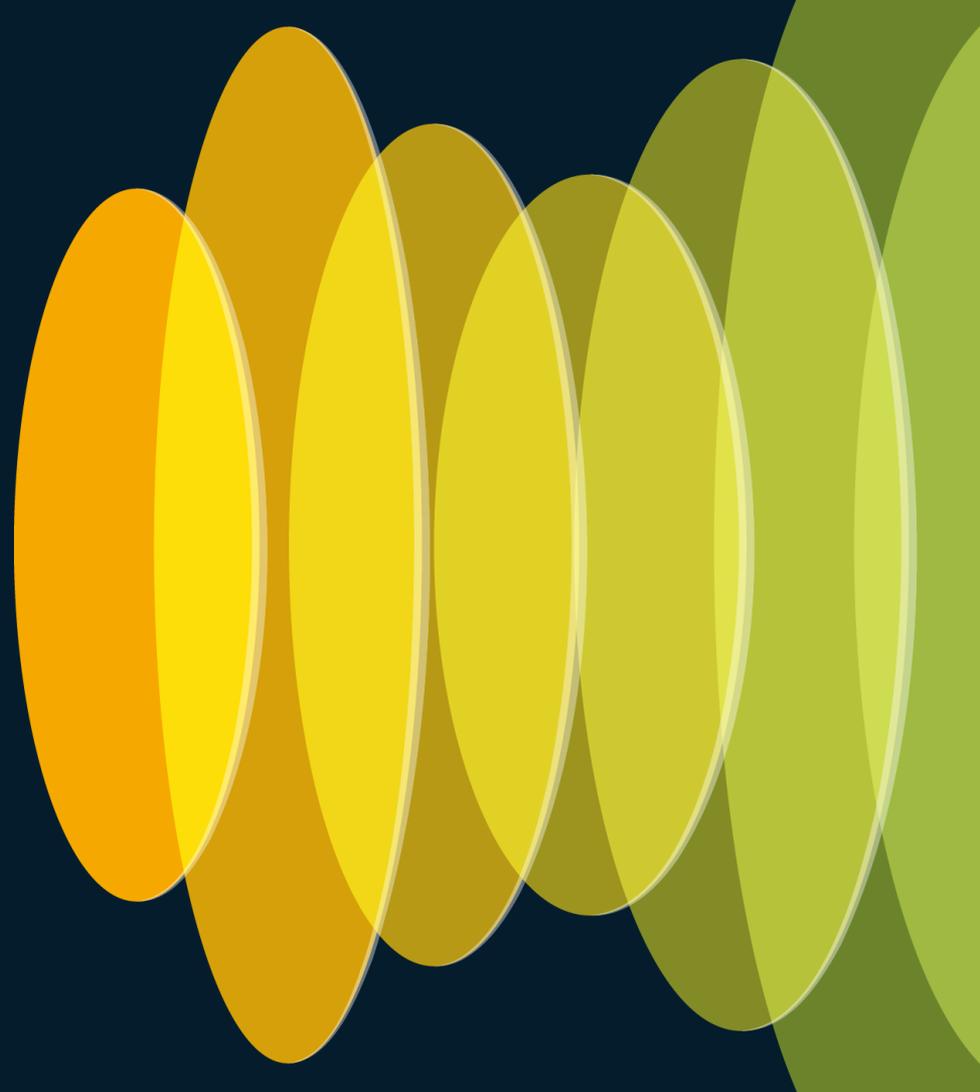
Apr 21, 2023 to Apr 28, 2023 (GMT -04:00) America/New_York 1 records

Collect logs

Date	User logs	Email Address	Call start time	Feedback ID	Correlation ID	Locus ID	User agent	Metadata
Apr 28, 2023 10:25:52 AM	Download	ned.stark@thesto.com	2023-04-26T13:44:...	d15e07ba-05bc-48f...	1a23ef21-683e-4bf...	027a79b8-d442-38...	sparkwindows/43.4...	Details

Troubleshooting Joining a meeting

1. Delayed meeting join
2. Failures connecting



Delayed “Meeting Join” trail stops

Paths to the meeting
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Software determination



Software download



Establishing media reachability

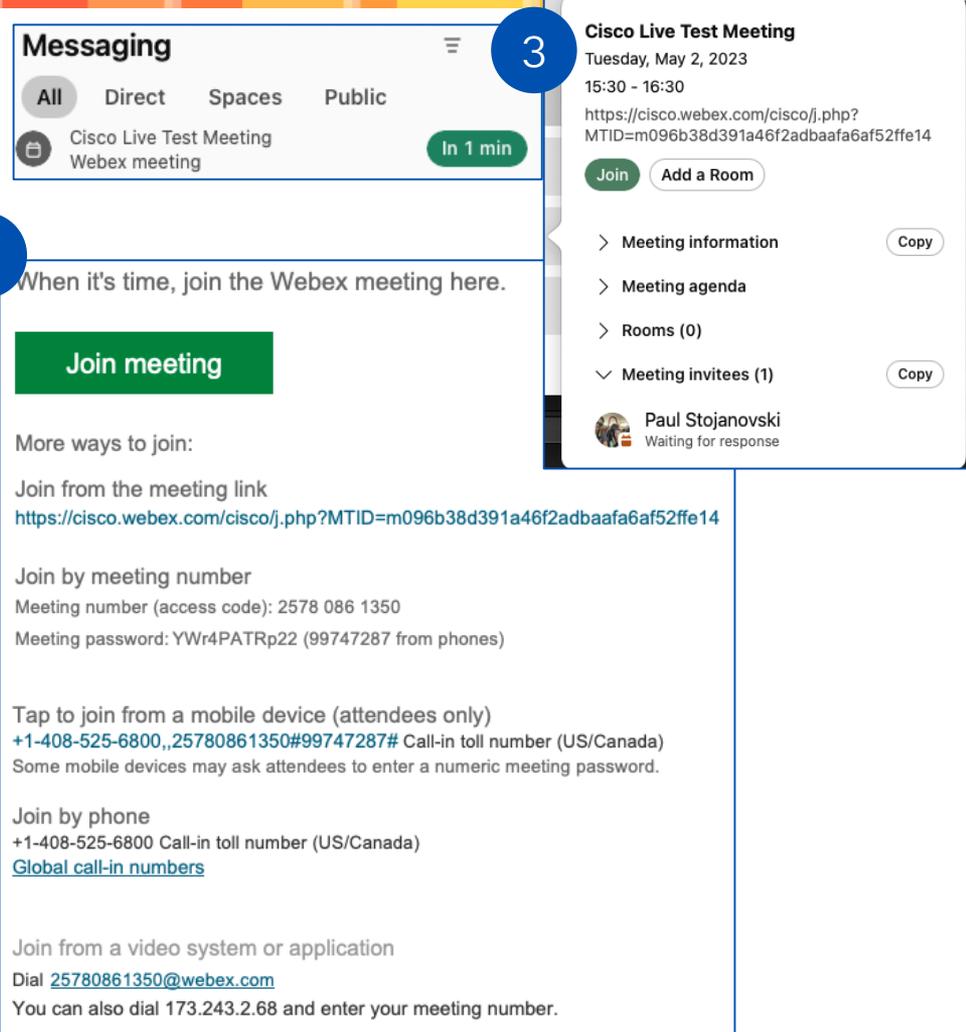
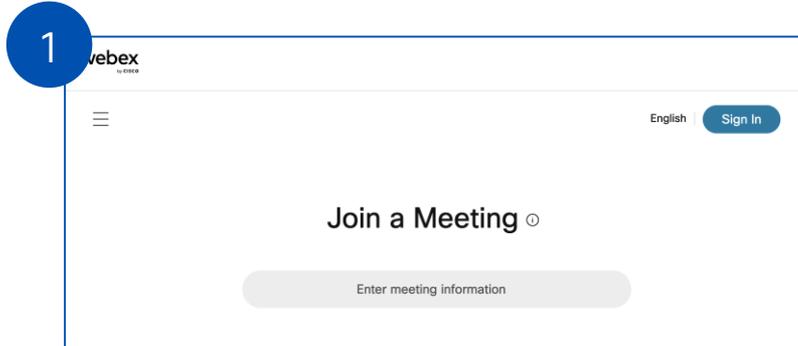


Troubleshooting meeting join delays

Paths to the Meeting

Meeting Links / Meeting ID

- Meeting join can start by:
 1. Entering an 11 digit meeting ID on Webex site
 2. Clicking a link in an email
 3. Launching the Webex App



Software determination

Has user installed the Webex App?

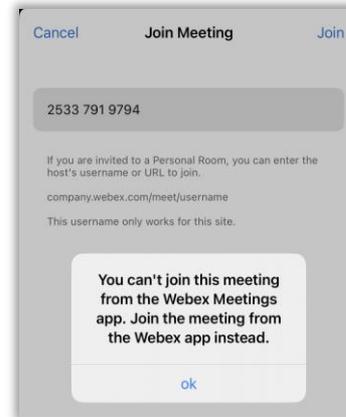
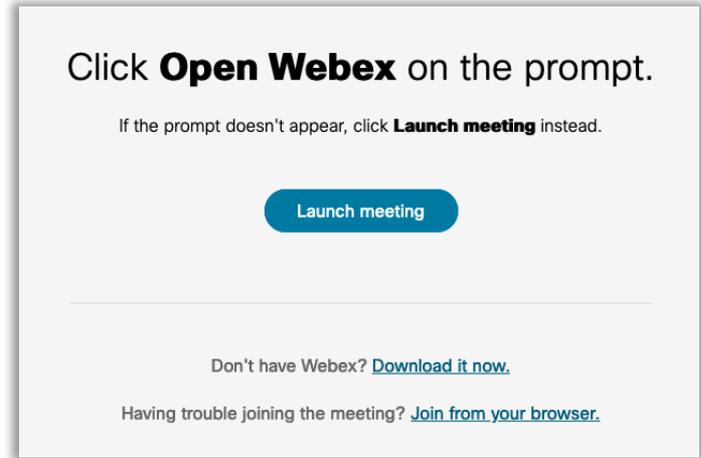
- You will get prompted to join the Meeting from your Webex App if it's already installed
- There is an option to install client or “Join from your browser”

Note: Experience slightly different depending on browser

- Mobile users should install the Webex App from the Apple App Store or Google Play Store

- Using the Webex Meetings mobile app will produce the following error

CISCO Live!

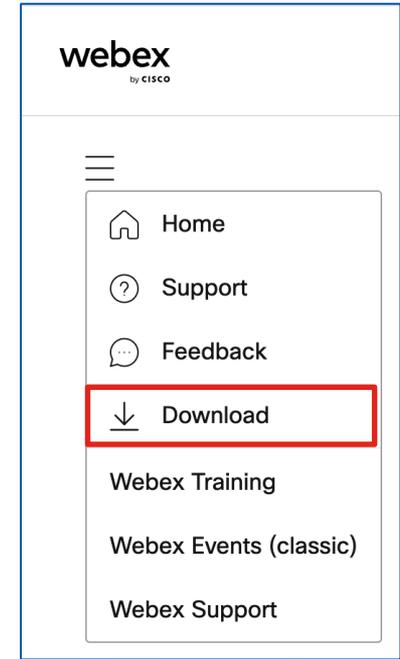


You will be redirected to the Webex App if it's already opened

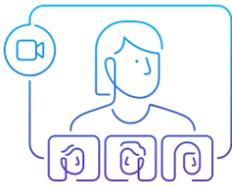
Software download

Has user installed the Webex App?

- Can be download from
 - Webex site
 - Webex.com (<https://www.webex.com/downloads.html>)
- With few exceptions, all sites should be using the Webex app, not Webex Meetings Desktop App.



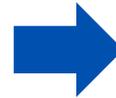
BEFORE CLIENT MIGRATION



Webex Meetings

The Webex Meetings desktop app allows you to start and join meetings quickly and easily. You can schedule, start, and join meetings from your desktop or directly from Microsoft Outlook.

Mac with Intel chip



AFTER CLIENT MIGRATION



Webex app

Whether you're on the go, at a desk, or in a meeting room, Webex helps speed up projects, build better relationships, and solve business challenges. It's got all the team collaboration tools you need to keep work moving forward and it connects with the other tools you use to simplify life.

Download

Control Hub – Webex app builds

- Automatic updates will be managed on a monthly release schedule
- Custom schedules can allow deferrals
 - Latest
 - Monthly update: up to 4 weeks for deferral
 - Slow (*only available by request*)
 - Quarterly update: up to 12 weeks for deferral
- Partners can control customer orgs from managing software.
 - If settings aren't available, check with Partner

Organizational Settings > Software updates for Webex

Download Webex app builds

New versions are available for automatic or custom scheduled updates

Click on the version to download

Release	Win32	Win64	MacOS
May-2023	43.5.0.26155	43.5.0.26155	43.5.0.26155
April-2023	43.4.0.25959	43.4.0.25959	43.4.0.25959
March-2023	43.3.0.25468	43.3.0.25468	43.3.0.25468

Dismiss

Delayed “Meeting Join” trail stops

Paths to the meeting

Software determination

Software download

Establishing media reachability

Troubleshooting meeting join delays

Establishing media reachability



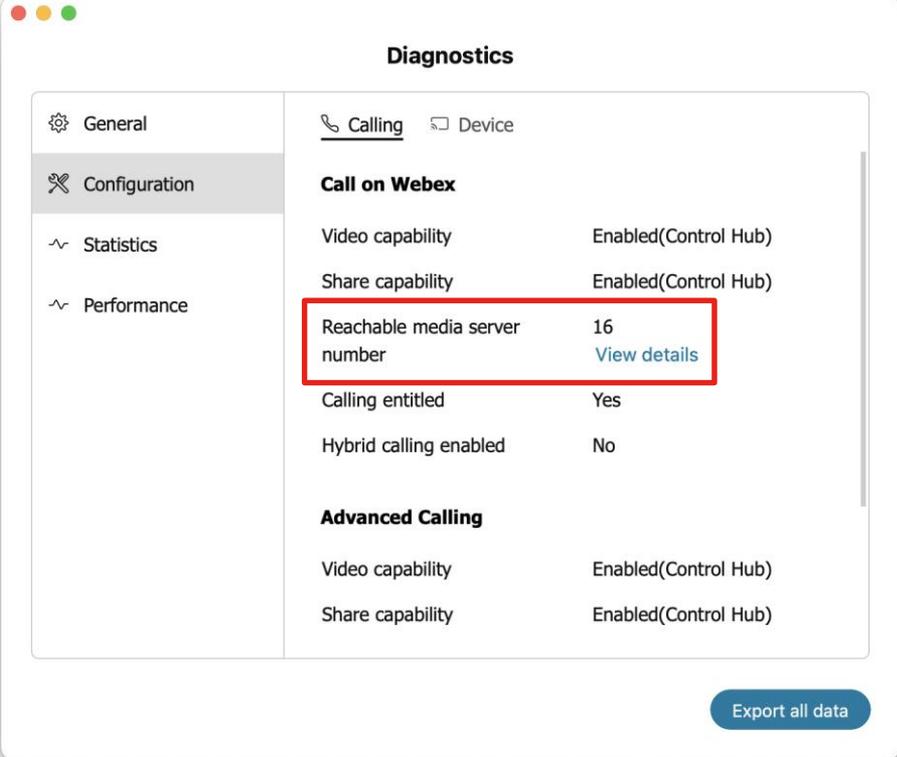
Media Server Selection

- When Webex App starts, it performs STUN connectivity checks to its list of media servers to determine server with lowest latency
- Checks occur on UDP ports 5004 and 9000, TCP 5004, and TLS 443

No.	Time	Time	Source	Src Port	Destination	Dst Port	Delta	Protocol	Length	Info
3694	15:51:53.346354	24.905792	10.132.0.57	57805	10.35.150.45	5004	0.005980	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
3699	15:51:53.352981	24.912419	10.132.0.57	51141	10.115.53.17	5004	0.001635	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
3958	15:51:53.392186	24.951624	10.132.0.57	51141	10.115.53.17	5004	0.002715	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
4139	15:51:53.412998	24.972436	10.132.0.57	51141	10.115.53.17	5004	0.000019	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
4567	15:51:53.450985	25.010423	10.132.0.57	51141	10.115.53.17	5004	0.000877	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
4586	15:51:53.453174	25.012612	10.132.0.57	63630	170.72.22.219	5004	0.000062	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
4660	15:51:53.467310	25.026748	170.72.22.219	5004	10.132.0.57	63630	0.000002	STUN	106	Binding Success Response XOR-MAPPED-ADDRESS: 83.97.13.26:63630
4763	15:51:53.473860	25.033298	10.132.0.57	51141	10.115.53.17	5004	0.000218	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
4767	15:51:53.473935	25.033373	10.132.0.57	63630	170.72.22.219	5004	0.000036	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
4957	15:51:53.489218	25.048656	170.72.22.219	5004	10.132.0.57	63630	0.000001	STUN	106	Binding Success Response XOR-MAPPED-ADDRESS: 83.97.13.26:63630
4968	15:51:53.503002	25.062440	10.132.0.57	51141	10.115.53.17	5004	0.000141	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
4969	15:51:53.503078	25.062516	10.132.0.57	63630	170.72.22.219	5004	0.000076	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
4979	15:51:53.512526	25.071964	10.132.0.57	62164	170.72.22.219	5004	0.000517	STUN	108	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
4980	15:51:53.514649	25.074087	170.72.22.219	5004	10.132.0.57	63630	0.002123	STUN	106	Binding Success Response XOR-MAPPED-ADDRESS: 83.97.13.26:63630
4997	15:51:53.522505	25.081943	170.72.22.219	5004	10.132.0.57	62164	0.000010	STUN	132	Binding Success Response XOR-MAPPED-ADDRESS: 83.97.13.26:42208
5010	15:51:53.533785	25.093223	10.132.0.57	63630	170.72.22.219	5004	0.000482	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
5011	15:51:53.533866	25.093304	10.132.0.57	62164	170.72.22.219	5004	0.000081	STUN	108	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
5020	15:51:53.544621	25.104059	170.72.22.219	5004	10.132.0.57	63630	0.000619	STUN	106	Binding Success Response XOR-MAPPED-ADDRESS: 83.97.13.26:63630
5022	15:51:53.544625	25.104063	170.72.22.219	5004	10.132.0.57	62164	0.000001	STUN	132	Binding Success Response XOR-MAPPED-ADDRESS: 83.97.13.26:42208
5032	15:51:53.567663	25.127101	10.132.0.57	63630	170.72.22.219	5004	0.009357	STUN	82	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0
5033	15:51:53.567745	25.127183	10.132.0.57	62164	170.72.22.219	5004	0.000082	STUN	108	Binding Request XOR-MAPPED-ADDRESS: 0.0.0.0:0

Media Server Selection

- Navigate to **Help > Diagnostics** in Webex App
- Number of reachable media servers is shown
- Click on “[View details](#)” to see list of servers

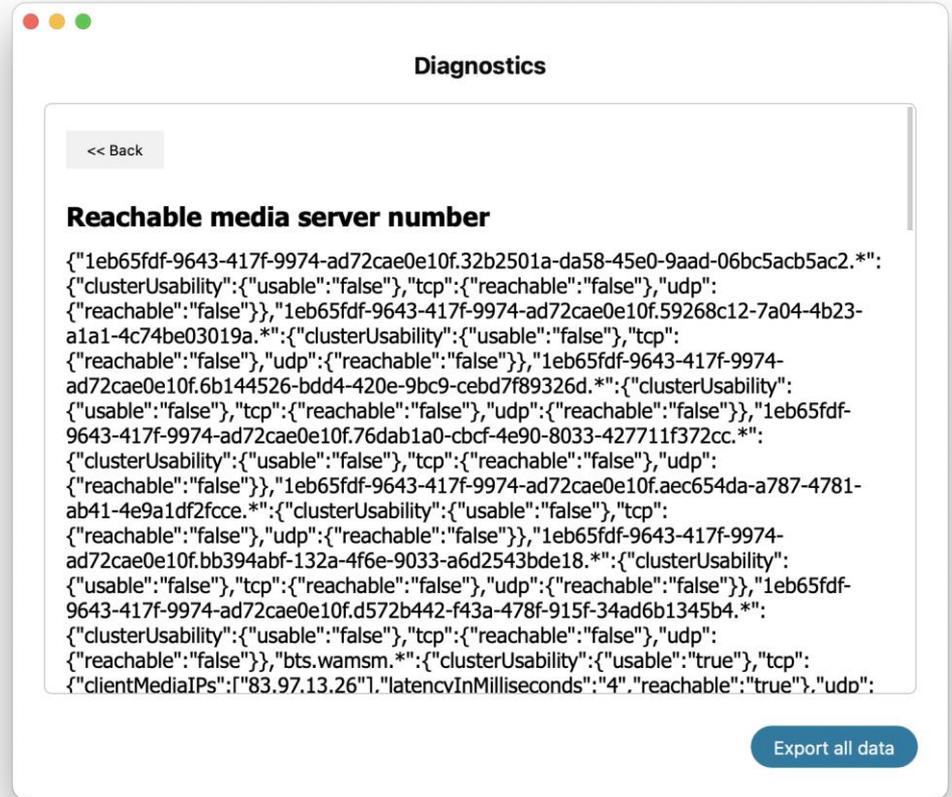


The screenshot displays the 'Diagnostics' window in the Cisco Webex application. The left sidebar contains navigation options: General, Configuration (selected), Statistics, and Performance. The main content area is titled 'Diagnostics' and has tabs for 'Calling' and 'Device'. Under the 'Calling' tab, there are two sections: 'Call on Webex' and 'Advanced Calling'. The 'Call on Webex' section lists several capabilities: Video capability (Enabled), Share capability (Enabled), Reachable media server number (16), Calling entitled (Yes), and Hybrid calling enabled (No). The 'Reachable media server number' row is highlighted with a red box, and a blue link labeled 'View details' is positioned to its right. The 'Advanced Calling' section also lists Video capability (Enabled) and Share capability (Enabled). At the bottom right of the window, there is a blue button labeled 'Export all data'.

Section	Capability	Status
Call on Webex	Video capability	Enabled(Control Hub)
	Share capability	Enabled(Control Hub)
	Reachable media server number	16 View details
	Calling entitled	Yes
	Hybrid calling enabled	No
Advanced Calling	Video capability	Enabled(Control Hub)
	Share capability	Enabled(Control Hub)

Media Server Selection

- Navigate to **Help > Diagnostics** in Webex App
- Number of reachable media servers is shown
- Click on **“View details”** to see list of servers
- **Copy the JSON text**
- **Use a JSON formatter to make it easier to read**



The screenshot shows a window titled "Diagnostics" with a "Back" button. The main content is a JSON object titled "Reachable media server number". The JSON shows a list of media servers, all of which are marked as unreachable. The "clusterUsability" object for each server has "usable": "false" and "tcp": {"reachable": "false"}, "udp": {"reachable": "false"}. The "clientMediaIPs" array contains the IP address "83.97.13.26".

```
{
  "1eb65fdf-9643-417f-9974-ad72cae0e10f.32b2501a-da58-45e0-9aad-06bc5acb5ac2.*": {
    "clusterUsability": {
      "usable": "false",
      "tcp": {
        "reachable": "false"
      },
      "udp": {
        "reachable": "false"
      }
    }
  },
  "1eb65fdf-9643-417f-9974-ad72cae0e10f.59268c12-7a04-4b23-a1a1-4c74be03019a.*": {
    "clusterUsability": {
      "usable": "false",
      "tcp": {
        "reachable": "false"
      },
      "udp": {
        "reachable": "false"
      }
    }
  },
  "1eb65fdf-9643-417f-9974-ad72cae0e10f.6b144526-bdd4-420e-9bc9-cebd7f89326d.*": {
    "clusterUsability": {
      "usable": "false",
      "tcp": {
        "reachable": "false"
      },
      "udp": {
        "reachable": "false"
      }
    }
  },
  "1eb65fdf-9643-417f-9974-ad72cae0e10f.76dab1a0-cbcf-4e90-8033-427711f372cc.*": {
    "clusterUsability": {
      "usable": "false",
      "tcp": {
        "reachable": "false"
      },
      "udp": {
        "reachable": "false"
      }
    }
  },
  "1eb65fdf-9643-417f-9974-ad72cae0e10f.aec654da-a787-4781-ab41-4e9a1df2fccc.*": {
    "clusterUsability": {
      "usable": "false",
      "tcp": {
        "reachable": "false"
      },
      "udp": {
        "reachable": "false"
      }
    }
  },
  "1eb65fdf-9643-417f-9974-ad72cae0e10f.bb394abf-132a-4f6e-9033-a6d2543bde18.*": {
    "clusterUsability": {
      "usable": "false",
      "tcp": {
        "reachable": "false"
      },
      "udp": {
        "reachable": "false"
      }
    }
  },
  "1eb65fdf-9643-417f-9974-ad72cae0e10f.d572b442-f43a-478f-915f-34ad6b1345b4.*": {
    "clusterUsability": {
      "usable": "false",
      "tcp": {
        "reachable": "false"
      },
      "udp": {
        "reachable": "false"
      }
    }
  },
  "bts.wamsm.*": {
    "clusterUsability": {
      "usable": "true",
      "tcp": {
        "reachable": "true"
      },
      "udp": {
        "reachable": "true"
      }
    }
  }
}
```

Export all data

Media Server Selection

```
"1eb65fdf-9643-417f-9974-ad72cae0e10f.32b2501a-da58-45e0-9aad-06bc5acb5ac2.*":{
  "clusterUsability":{
    "usable":"false"
  },
  "tcp":{
    "reachable":"false"
  },
  "udp":{
    "reachable":"false"
  }
},
"1eb65fdf-9643-417f-9974-ad72cae0e10f.59268c12-7a04-4b23-a1a1-4c74be03019a.*":{
  "clusterUsability":{
    "usable":"false"
  },
  "tcp":{
    "reachable":"false"
  },
  "udp":{
    "reachable":"false"
  }
},
"1eb65fdf-9643-417f-9974-ad72cae0e10f.6b144526-bdd4-420e-9bc9-cebd7f89326d.*":{
  "clusterUsability":{
    "usable":"false"
  },
  "tcp":{
    "reachable":"false"
  },
  "udp":{
    "reachable":"false"
  }
},
```

```
"wasm.wasm.*":{
  "clusterUsability":{
    "usable":"true"
  },
  "tcp":{
    "clientMediaIPs":[
      "83.97.13.26"
    ],
    "latencyInMilliseconds":"8",
    "reachable":"true"
  },
  "udp":{
    "clientMediaIPs":[
      "83.97.13.26"
    ],
    "latencyInMilliseconds":"4",
    "reachable":"true"
  },
  "xtls":{
    "clientMediaIPs":[
      "83.97.13.26"
    ],
    "latencyInMilliseconds":"3",
    "reachable":"true"
  }
},
```

```
"wbomm.wbomm.*":{
  "clusterUsability":{
    "usable":"true"
  },
  "tcp":{
    "clientMediaIPs":[
      "83.97.13.26"
    ],
    "latencyInMilliseconds":"175",
    "reachable":"true"
  },
  "udp":{
    "clientMediaIPs":[
      "83.97.13.26"
    ],
    "latencyInMilliseconds":"139",
    "reachable":"true"
  },
  "xtls":{
    "clientMediaIPs":[
      "83.97.13.26"
    ],
    "latencyInMilliseconds":"179",
    "reachable":"true"
  }
},
```

Media Server Check – Regions

Region Code	Region
lhr	Europe
ams	Europe
jfk	United States East
iad	United States East
sfo	United States West
nrt	Asia Pacific
sin	Asia Pacific
syd	Australia

Establishing media connectivity



media/current_log.txt



```
2023-04-21T19:28:18.142Z <Info> [0xf8c] WME:0 :[MediaSession] CTraceServer::StartTrace,
traceInfoList={"clusterClasses":{"hybridMedia":["8ad51c16-13ad-43e8-a390-2f653ff28e99.bb091f20-93ad-420c-8d2a-
07b6289ef299.*"],"ocpCloud":["wsjcm.wsjcm.*","wnrtm.wnrtm.*","wamsm.wamsm.*","wjfkm.wjfkm.*","wfram.wfram.*","wdfwm.wdfwm.*"]},"clusters":{"8ad5
1c16-13ad-43e8-a390-2f653ff28e99.bb091f20-93ad-420c-8d2a-
07b6289ef299.*":{"tcp":["stun:192.168.1.75:5004"],"udp":["stun:192.168.1.75:5004"],"wamsm.wamsm.*":{"tcp":["stun:170.72.40.208:5004","stun:170.
72.41.185:5004"],"udp":["stun:170.72.40.208:5004","stun:170.72.40.208:9000","stun:170.72.41.185:5004","stun:170.72.41.185:9000"],"xtls":["stun:e
xternal-media96.public.wamsm-a-2.prod.infra.webex.com:443","stun:external-media6.public.wamsm-a-
3.prod.infra.webex.com:443"]},"wdfwm.wdfwm.*":{"tcp":["stun:170.72.133.0:5004","stun:23.89.10.78:5004"],"udp":["stun:170.72.133.0:5004","stun:17
0.72.133.0:9000","stun:23.89.10.78:5004","stun:23.89.10.78:9000
```

```
2023-04-21T19:28:24.093Z <Debug> [0x24b8] WMETraceServerSink.cpp:22 WMETraceServerSink::OnTraceServerResult:OnTraceServerResult: 0 Result:
{"8ad51c16-13ad-43e8-a390-2f653ff28e99.bb091f20-93ad-420c-8d2a-
07b6289ef299.*":{"clusterUsability":{"usable":"false"},"tcp":{"reachable":"false"},"udp":{"reachable":"false"},"wsjcm.wsjcm.*":{"clusterUsabilit
y":{"usable":"true"},"tcp":{"clientMediaIPs":["64.99.212.60"],"latencyInMilliseconds":"128","reachable":"true"},"udp":{"clientMediaIPs":["64.99.
212.60"],"latencyInMilliseconds":"63","reachable":"true"},"xtls":{"clientMediaIPs":["64.99.212.60"],"latencyInMilliseconds":"119","reachable":"t
rue"}}}
```

Recapping the Journey to Join

 JMT
Phase 1!

Click **Open Webex** on the prompt.

If the prompt doesn't appear, click **Launch meeting** instead.

Launch meeting

Don't have Webex? [Download it now.](#)

Want to join without downloading? [Join from your browser.](#)

Start ▾ **Join** **Schedule** ▾

[Help article](#)

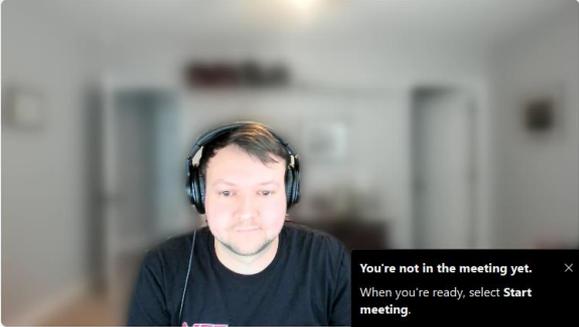
 JMT
Phase 2!

Join meeting time (JMT)

The JMT for each client is captured with the exception of calls using PSTN. JMT is calculated in seconds as (the time from clicking the meeting link to loading the preview window) + (the time from clicking the **Join Now** button in the preview window to connecting into the meeting).

Get ready to join Connect to a device

Eric Embling's Personal Room



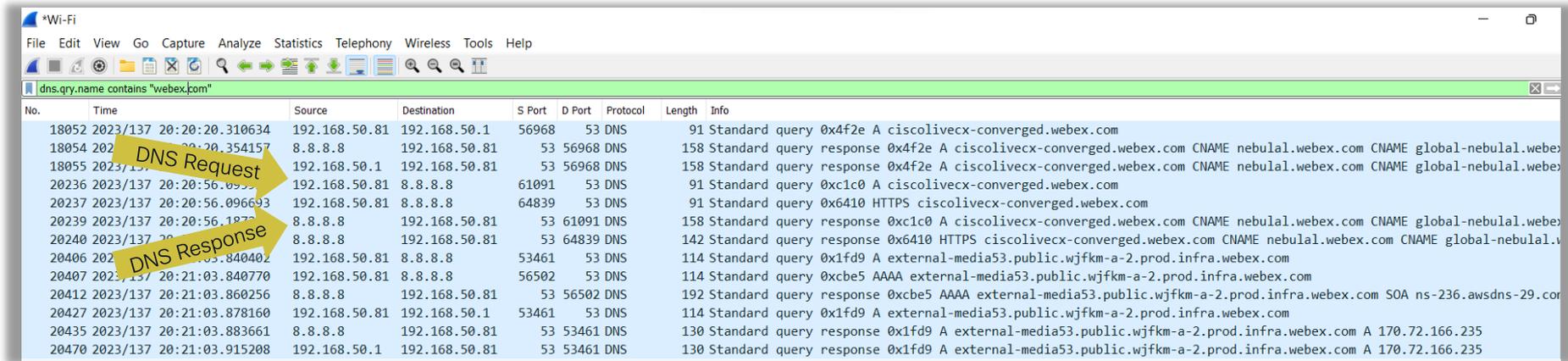
You're not in the meeting yet.
When you're ready, select **Start meeting**.

Ready? **Start meeting**



Looking under the Join/Start button

1. Determining server destinations
2. Negotiating media
3. Establishing media connectivity (through STUN)



The screenshot shows a Wireshark capture of network traffic. The filter is set to 'dns.qry.name contains "webex.com"'. The table below represents the captured packets, with two yellow arrows pointing to a 'DNS Request' and a 'DNS Response'.

No.	Time	Source	Destination	S Port	D Port	Protocol	Length	Info
18052	2023/137 20:20:20.310634	192.168.50.81	192.168.50.1	56968	53	DNS	91	Standard query 0x4f2e A ciscolivecx-converged.webex.com
18054	2023/137 20:20:20.354157	8.8.8.8	192.168.50.81	53	56968	DNS	158	Standard query response 0x4f2e A ciscolivecx-converged.webex.com CNAME nebulal.webex.com CNAME global-nebulal.webex.com
18055	2023/137 20:20:20.354157	192.168.50.1	192.168.50.81	53	56968	DNS	158	Standard query response 0x4f2e A ciscolivecx-converged.webex.com CNAME nebulal.webex.com CNAME global-nebulal.webex.com
20236	2023/137 20:20:56.095555	192.168.50.81	8.8.8.8	61091	53	DNS	91	Standard query 0xc1c0 A ciscolivecx-converged.webex.com
20237	2023/137 20:20:56.096693	192.168.50.81	8.8.8.8	64839	53	DNS	91	Standard query 0x6410 HTTPS ciscolivecx-converged.webex.com
20239	2023/137 20:20:56.187777	8.8.8.8	192.168.50.81	53	61091	DNS	158	Standard query response 0xc1c0 A ciscolivecx-converged.webex.com CNAME nebulal.webex.com CNAME global-nebulal.webex.com
20240	2023/137 20:20:56.187777	8.8.8.8	192.168.50.81	53	64839	DNS	142	Standard query response 0x6410 HTTPS ciscolivecx-converged.webex.com CNAME nebulal.webex.com CNAME global-nebulal.webex.com
20406	2023/137 20:21:03.840401	192.168.50.81	8.8.8.8	53461	53	DNS	114	Standard query 0x1fd9 A external-media53.public.wjfk-a-2.prod.infra.webex.com
20407	2023/137 20:21:03.840770	192.168.50.81	8.8.8.8	56502	53	DNS	114	Standard query 0xcbe5 AAAA external-media53.public.wjfk-a-2.prod.infra.webex.com
20412	2023/137 20:21:03.860256	8.8.8.8	192.168.50.81	53	56502	DNS	192	Standard query response 0xcbe5 AAAA external-media53.public.wjfk-a-2.prod.infra.webex.com SOA ns-236.awsdns-29.com
20427	2023/137 20:21:03.878160	192.168.50.81	192.168.50.1	53461	53	DNS	114	Standard query 0x1fd9 A external-media53.public.wjfk-a-2.prod.infra.webex.com
20435	2023/137 20:21:03.883661	8.8.8.8	192.168.50.81	53	53461	DNS	130	Standard query response 0x1fd9 A external-media53.public.wjfk-a-2.prod.infra.webex.com A 170.72.166.235
20470	2023/137 20:21:03.915208	192.168.50.1	192.168.50.81	53	53461	DNS	130	Standard query response 0x1fd9 A external-media53.public.wjfk-a-2.prod.infra.webex.com A 170.72.166.235

Troubleshooting Meeting Join Times

Troubleshooting > Meetings & Calls

Participants (3)

Search participant name, platform or client

Sort By A-Z

Audio

Video

Sharing

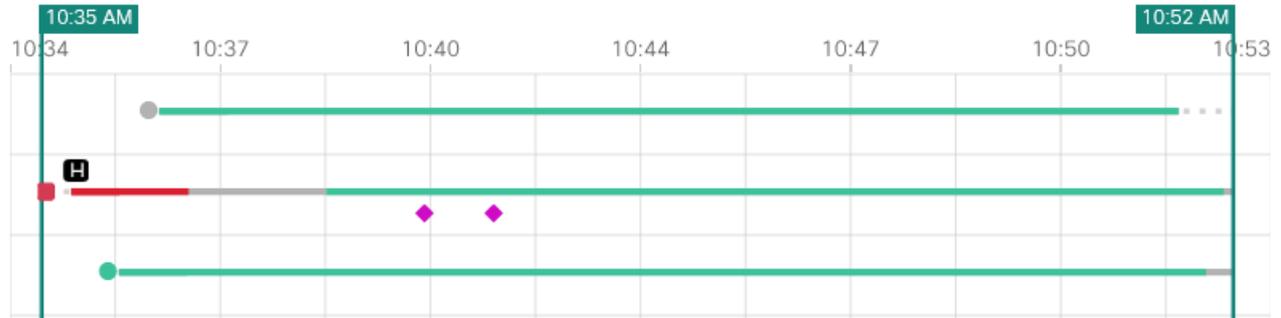
Details

Map

Ned Stark

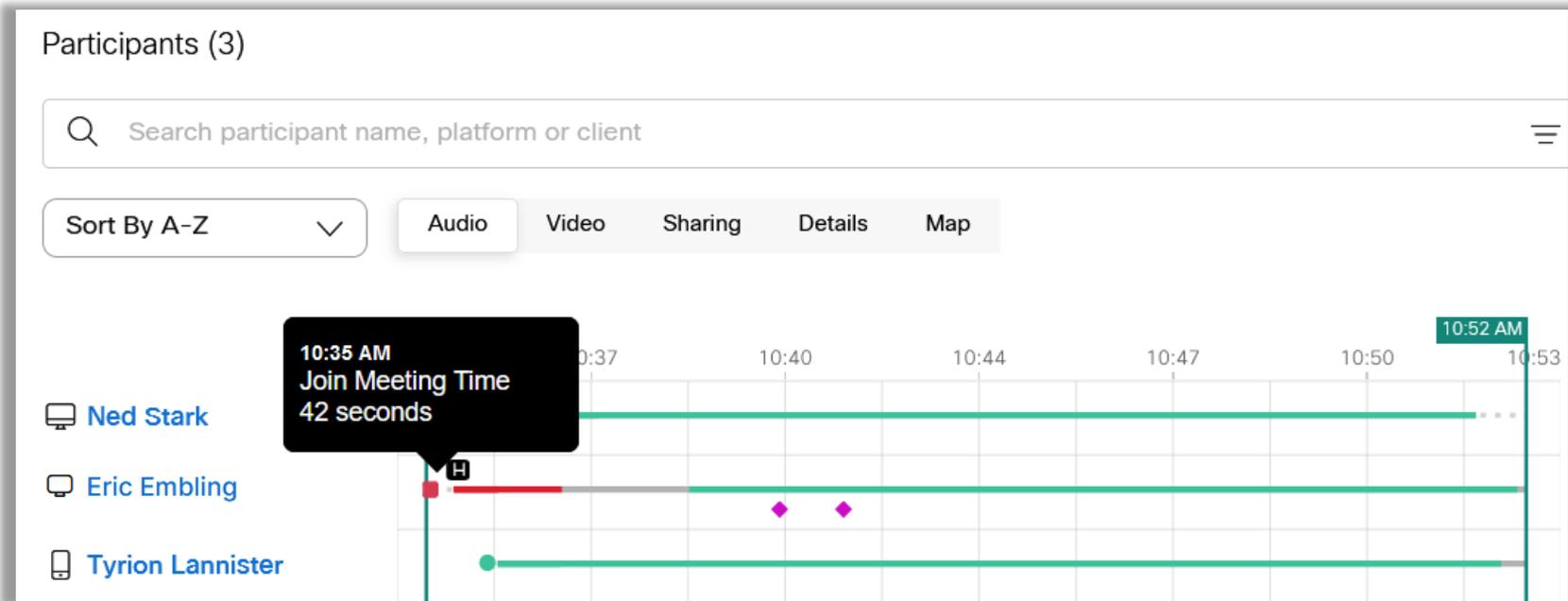
Eric Embling

Tyrion Lannister

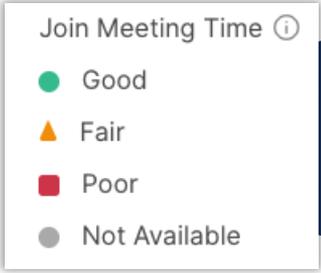


Troubleshooting Meeting Join Times

Troubleshooting > Meetings & Calls



Drilling into Join meeting delay



Join Meeting Time ⓘ

- Good
- ▲ Fair
- Poor
- Not Available



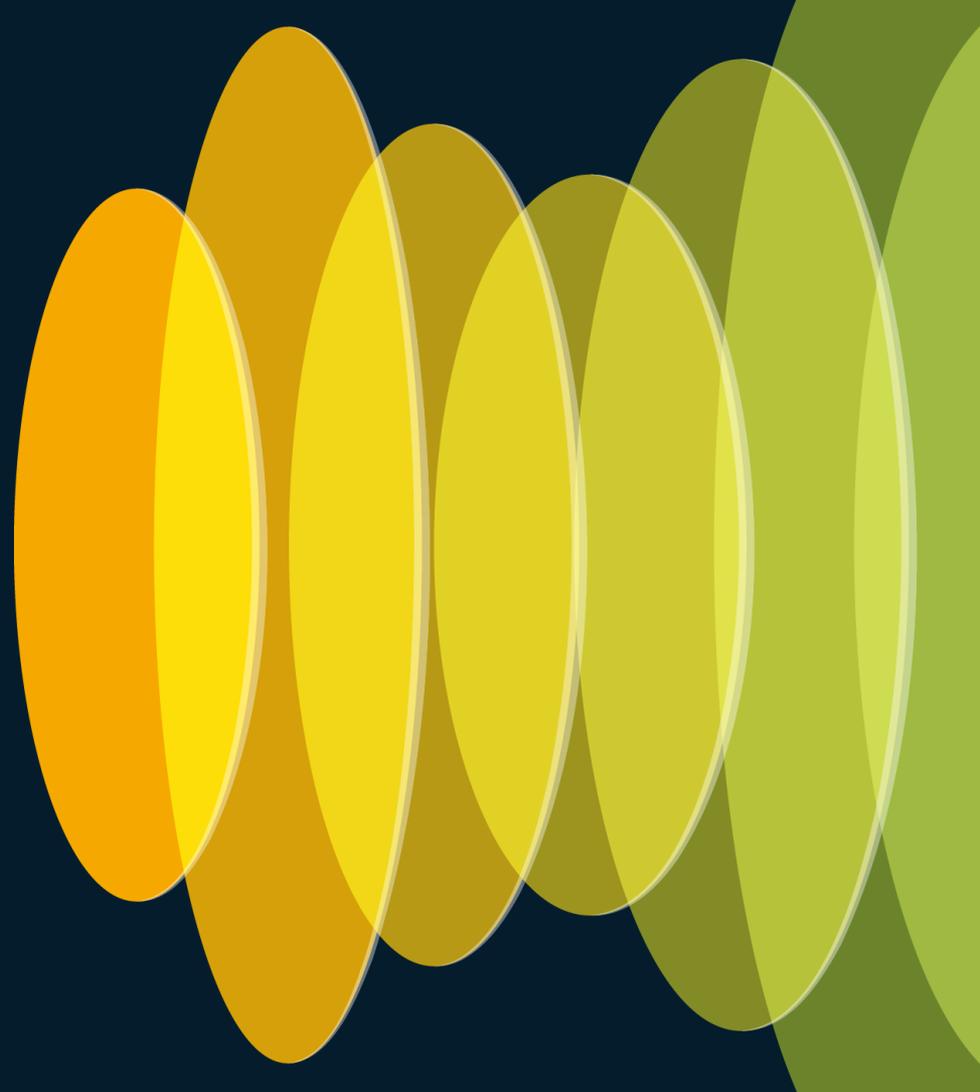
- = less than 10 seconds
- ▲ = between 10 and 20 seconds
- = over 20 seconds



- Network impairments such as jitter and delay (*weak Wi-Fi connection*)
- VPN or Proxy configurations introduce delay or sub-optimal routing
- Antivirus or Anti-Malware software scanning
- Desktop management software
- Meeting module software download time (for Full-Featured Meetings)

Troubleshooting Joining a meeting

1. Delayed meeting join
2. Failures connecting

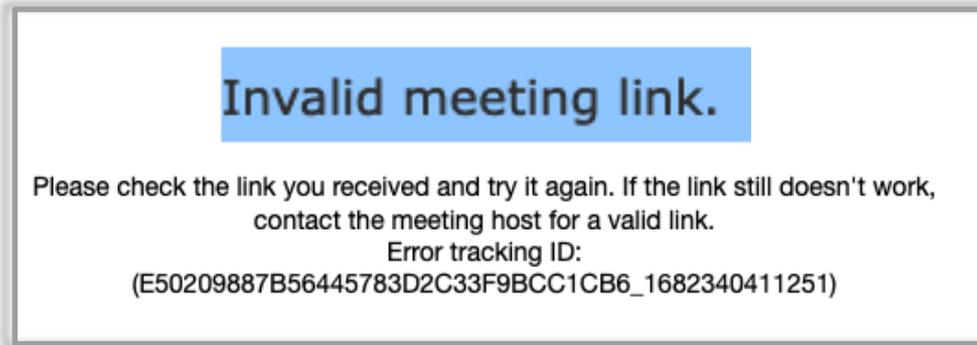


Common Join Meeting Failures

- 1 Invalid meeting link
- 2 Network-related issue (proxy, firewall, etc)
- 3 Site or meeting configured to block non-attendees from joining
 - Possibly only configured for Personal Room Meetings
-  4 Host role removed after scheduling
-  5 Another meeting is in progress
- 6 Site configuration is restricting access to other Webex sites

1 Invalid meeting link

BROWSER



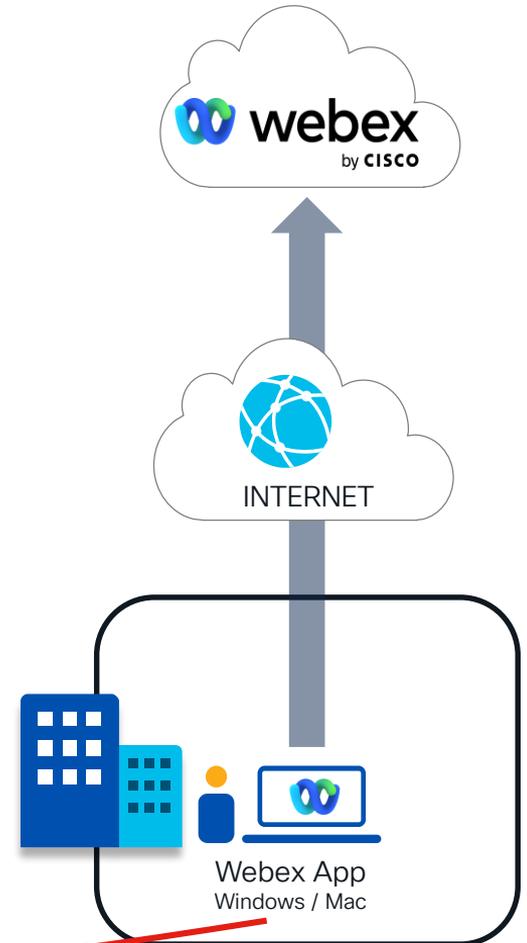
WEBEX APP



- Indicates a meeting has been cancelled or meeting link has been modified
- Check to ensure no extra characters have been added to the meeting link because of email forwarding mistakes or a copy and paste.
- If email link doesn't work, try entering meeting ID manually
 - Webex Chat Assistant can auto-generate a meeting link for a user

2 Network induced error conditions

- Webex App will first attempt to resolve DNS and connect to our media orchestrator
- Client attempts to use UDP port **5004** or **9000** to connect media using STUN packets
- Fallback will attempt TCP **5004** or TLS using **443**

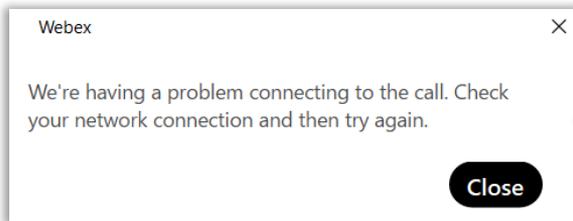
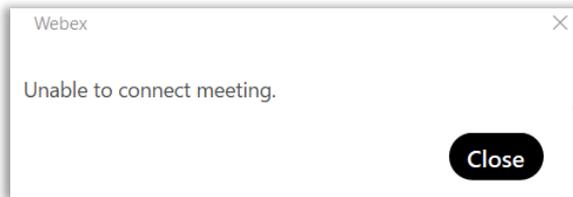


2 Network induced error conditions

Exam time, match the correct answer!

Possible causes

Webex App errors



Unable to resolve Webex site name

Unable to connect to Webex media services

Unable to create WebSocket to Webex

2 Network induced error conditions

DNS failure



Webex App
Windows / Mac
current_log.txt

```
{  
  "id": "Failed to create HTTP request",  
  "uri": "https://ciscolivecx-converged.webex.com",  
  "method": "POST",  
  "action": "/wbxappapi/v1/meetingInfo",  
  "defaultUrl": "https://ciscolivecx-converged.webex.com",  
  "currentUrl": "https://ciscolivecx-converged.webex.com",  
  "retryable": true,  
  "trackingId": "CLIENT_0a9a3f58-e0bd-4bf3-b5f3-9d43966d1a1d",  
  "cancellationId": "f2fc56f4-4add-4acb-a875-eea08f25c677",  
  "requestRetryCount": 0,  
  "clientRetryCount": 4,  
  "visitedUrls": [  
    "https://ciscolivecx-converged.webex.com",  
  ]  
}  
"exception": "WinHttpSendRequest: 12007: The server name or address could not be resolved"
```

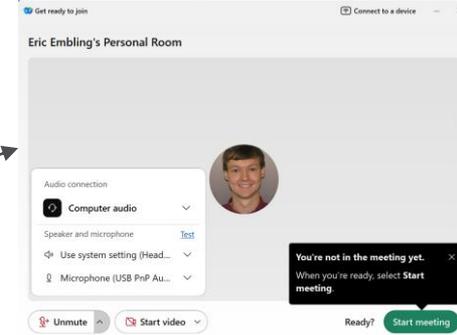
2 Network induced error conditions

WebSocket timeout



Webex App
Windows / Mac
current_log.txt

```
2023-05-10T20:15:03.602Z <Debug> [0x6510] CallingInterstitialPageViewModel.cpp:577
commonHead::viewModels::CallingInterstitialPageViewModel::joinMeeting:Attempting to join call
2023-05-10T20:15:03.602Z <Debug> [0x6510] TelephonyService.cpp:1190
TelephonyService::createJoinRequest:callId:7c2bedc7-bf8f-4dde-ad6f-9850aae7dc3e,
mediaType:[Audio|Video|Share|ShareAudio], isSipCall:0
2023-05-10T20:15:03.605Z <Info> [0x92b8] MercuryNetworkConnection.cpp:178
network::MercuryNetworkConnection::connectToMercury: [#1/MainConnection/#11/Connection]: Begin
Connect....
2023-05-10T20:15:03.607Z <Warn> [0x92b8] MercuryNetworkConnection.cpp:208
network::MercuryNetworkConnection::connectToMercury:<lambda_19>::operator ():
[#1/MainConnection/#11/Connection]: Websocket exception during connect:
websocketpp.transport.asio:3, reason: set_fail_handler: 3: Underlying Transport Error.
HttpStatusCode: 0
2023-05-10T20:15:03.607Z <Warn> [0x8be0] BaseMercuryConnectionManager.cpp:1439
network::BaseMercuryConnectionManager::_onFailedToCreateConnection: [#1/MainConnection]:
Failed to create Mercury connection, error code: 3, explanation: set_fail_handler: 3:
Underlying Transport Error, did cert pinning fail: 0. HttpStatusCode: 0
```



2 Network induced error conditions

Media connection failure



Webex App
Windows / Mac
current_log.txt

```
2023-05-10T21:57:41.873Z <Debug> [0x1240] TelephonyService.cpp:6748  
TelephonyService::mediaConnectionStateChanged:ConnectionState: IceFailure  
  
2023-05-10T21:57:41.873Z <Error> [0x1240] TelephonyService.cpp:6785  
TelephonyService::mediaConnectionStateChanged:Failed to connect call, reason =  
ConnectionState::IceFailure. CallId = [e14e92ff-db97-4ffe-9558-651017e163af]  
LocusId = [10c67938-5756-37a9-a73c-94ad016cc200]  
  
2023-05-10T21:57:41.873Z <Debug> [0x1240] TelephonyService.cpp:7841  
TelephonyService::onMediaError:fatal: 1, notifyFailure: 1, failureReason:  
IceFailure, requestType: 1  
  
2023-05-10T21:57:41.880Z <Error> [0x1240] TelephonyService.cpp:7930  
TelephonyService::onMediaError:Notifying UI of call failure due to media error
```

2 Network induced error conditions

Remediation resources

Network Requirements for Webex Services

Summary of device types and protocols supported by Webex	▼
Transport protocols and encryption ciphers for cloud registered Webex apps and devices	▼
Webex Services – Port Numbers and Protocols	▼
IP subnets for Webex media services	▼
Domains and URLs that need to be accessed for Webex Services	▼
Additional URLs for Webex Hybrid Services	▼
Proxy Features	▼
802.1X – Port based Network Access control	▼
Network requirements for SIP based Webex services	▼
Network Requirements for Webex Edge Audio	▼
A summary of other Webex Hybrid Services and documentation	▼
Webex Calling - Network Requirements	▼
Webex Services for FedRAMP customers	▼
Document Revision History - Network Requirements for Webex Services	▼

IP subnets for media services	
4.152.214.0/24*	66.114.160.0/20
4.158.208.0/24*	66.163.32.0/19
4.175.120.0/24*	69.26.160.0/19
20.50.235.0/24*	114.29.192.0/19
20.53.87.0/24*	144.196.0.0/16
20.57.87.0/24*	150.253.128.0/17
20.68.154.0/24*	163.129.0.0/16
20.76.127.0/24*	170.72.0.0/16
20.108.99.0/24*	170.133.128.0/18
20.120.238.0/23*	173.39.224.0/19
23.89.0.0/16	173.243.0.0/20
40.119.234.0/24*	207.182.160.0/19
44.234.52.192/26	209.197.192.0/19
52.232.210.0/24*	210.4.192.0/20
62.109.192.0/18	216.151.128.0/19
64.68.96.0/19	

5004 and 9000	SRTP over UDP	Encrypted audio, video, and content sharing on the Webex App and Webex Room devices For a list of destination IP subnets refer to the section " <i>IP subnets for Webex media services</i> ".	Webex App Webex Room Devices Video Mesh Nodes
---------------	---------------	--	---

4 Host restricted meeting to only invited guests

- Scheduled meetings allow for an Auto admit behavior
- Hosts can choose to restrict the meeting to only invited participants

Security

* Meeting password

Exclude password Exclude password from email invitation

Auto admit ⓘ All invited users can join the meeting.

Choose what happens for people who aren't on the invite:

They wait in the lobby until the host lets them in

They can't join the meeting

Don't worry,
I'll forward you the invite



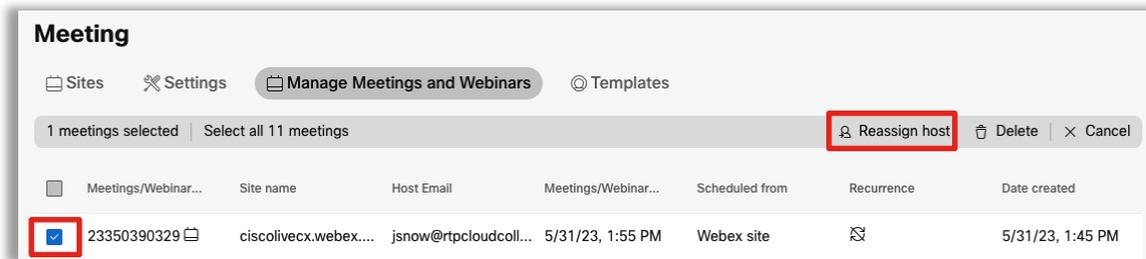
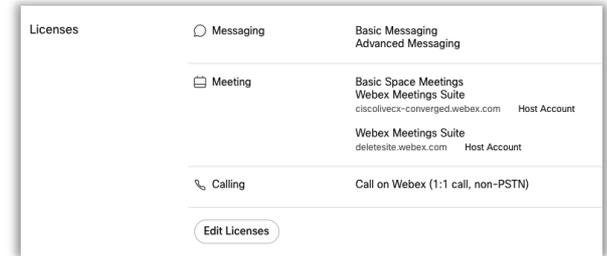
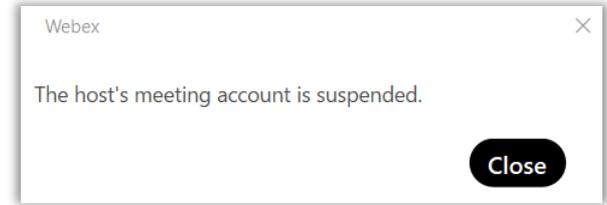
Webex

Only invited users can attend this meeting. If you received the invitation at a different email address, switch to your account with that email address before joining the meeting.

Close

5 Meeting Join Issue: Host role removed

- Webex App will produce an error when joining a meeting where the host account was removed
- Host accounts are allocated/restored in Control Hub under *Management > Users*
- If the host is no longer with the organization, you can [Reassign the host](#) account in Control Hub



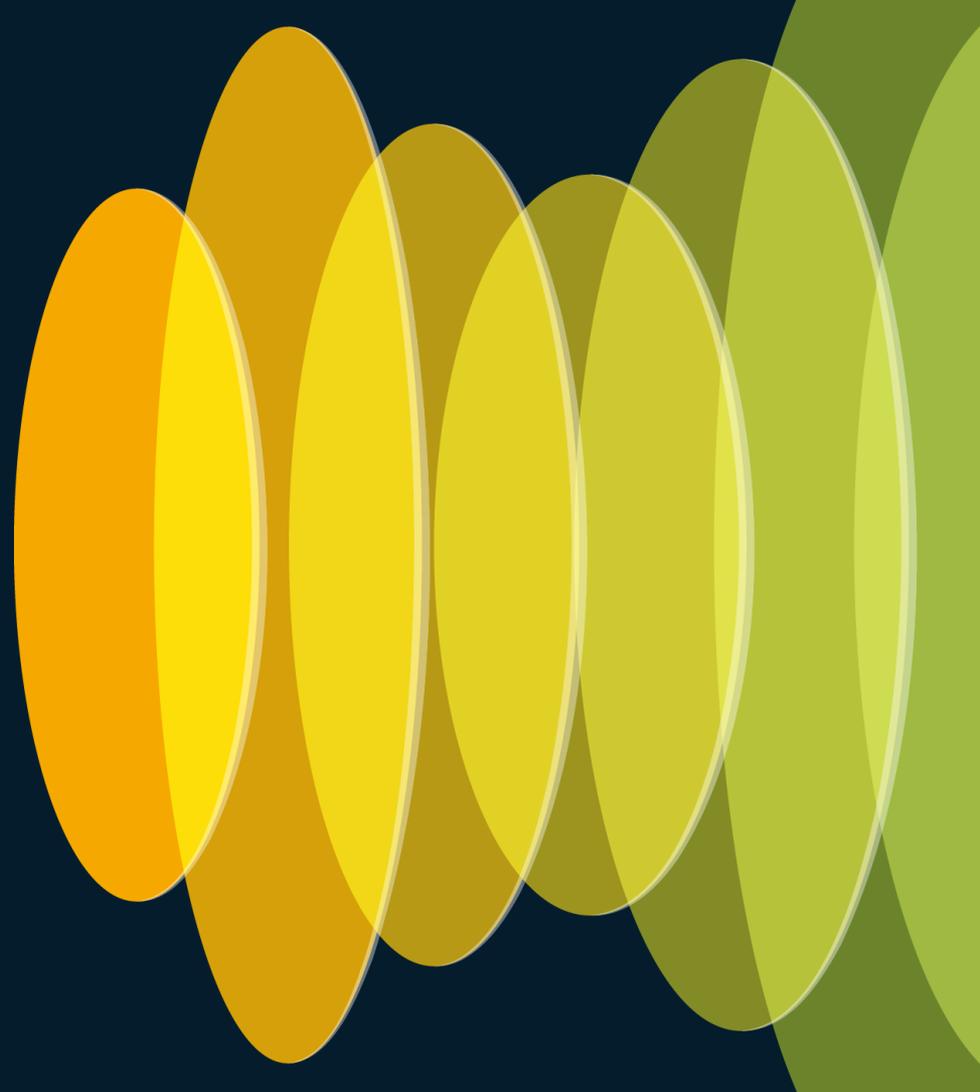
General Start or Join Issue Consideration

Clearing Browser Cache / Cookies

- Close all open web browsers, open a new browser, and try to start/join the meeting again.
- Try Incognito / Private Mode in the browser
- If you are still not able to start/join the meeting, clear cache and cookies in your web browser
- Windows: Download CiscoWebexMeetingsRemoveTool.exe and then re-download client. (*Only applies to Webex Full-featured Meetings*)

Full-featured Webex App

aka Meetings module for Webex App



Start or Join issues

Clearing old Meeting module software

- Windows: Run CiscoWebexMeetingsRemoveTool.exe available here: <https://collaborationhelp.cisco.com/en-us/article/WBX000026378/Meeting-Services-Removal-Tool>
- Delete C:\Users\\AppData\Local\Webex if it exists
- Delete C:\Users\\AppData\Roaming\Webex if it exists

Start or Join issues

Clearing old Meeting module software

- Mac: delete contents of ~/Library/Application Support/WebEx Folder

```
> ls -asl
total 0
0 drwxr-xr-x   11 pgiralt  staff   352 Feb  2 23:56 .
0 drwx-----+ 218 pgiralt  staff  6976 Feb  7 15:30 ..
0 drwxr-xr-x@   5 pgiralt  staff   160 May 29  2022 64_500
0 drwxr-xr-x@   4 pgiralt  staff   128 Feb  2 23:26 Add-ons
0 drwxr-xr-x@   6 pgiralt  staff   192 Apr 19  2022 T33_64EC_42.4.4.7
0 drwxr-xr-x@   6 pgiralt  staff   192 May 19  2022 T33_64EC_42.5.3.9
0 drwxr-xr-x    6 pgiralt  staff   192 Jun 11  2022 T33_64UMC_42.6.3.10
0 drwxr-xr-x    6 pgiralt  staff   192 Feb  7 14:47 T33_64UMC_43.1.5.1
0 drwxr-xr-x    6 pgiralt  staff   192 Feb  2 03:59 T33_64UMC_43.2.1.18
0 drwxr-xr-x    6 pgiralt  staff   192 Feb  7 09:34 T33_64UMC_43.2.2.1
0 drwxr-xr-x    5 pgiralt  staff   160 Feb  2 23:26 T33_64UMC_43.3.0.144
```

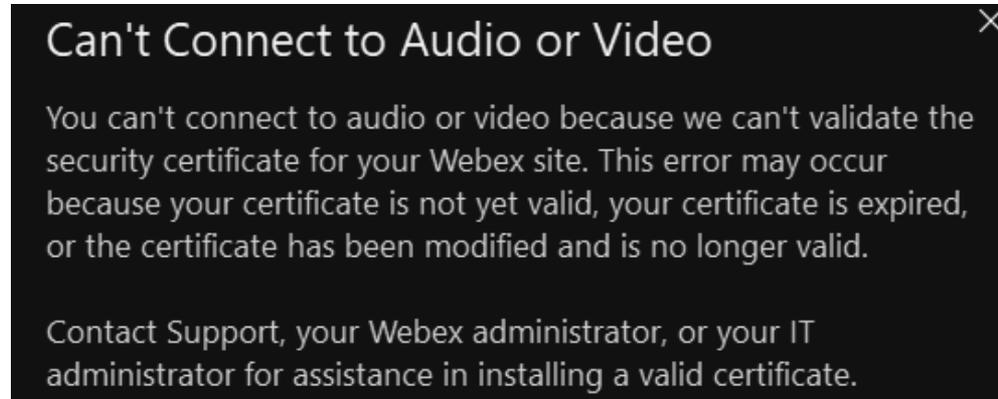
- If that doesn't help, uninstall/reinstall Webex App

Join meeting fails to connect audio or video

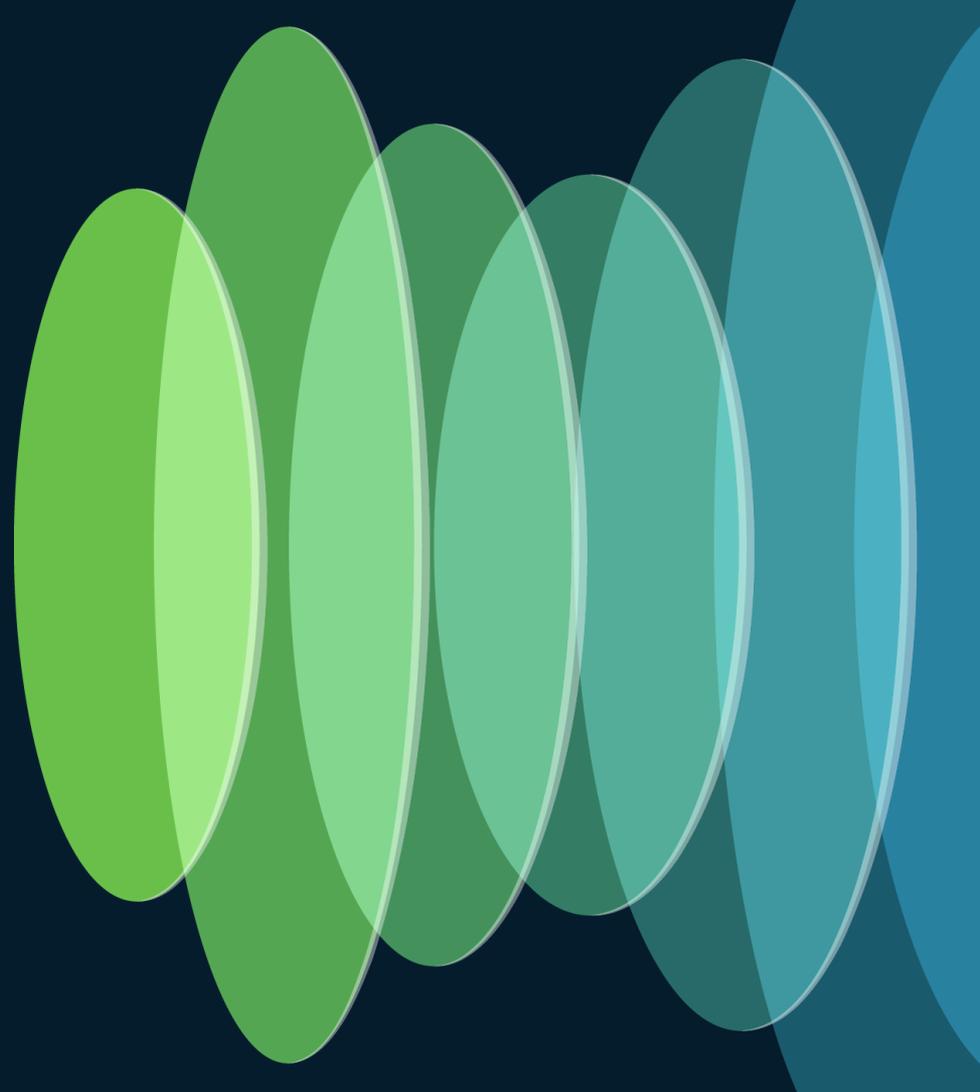
Webex Meetings Full Featured Meetings only

When attempting to Join a meeting you may encounter an error indicating

This issue is observed when the Webex meetings plug-in attempts to connect to <http://crl.quovadisglobal.com/hydrantidsslacag3.crl> and **the domain is blocked**



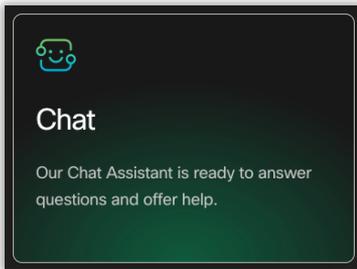
Leveraging TAC Intelligence



Webex Chat Assistant

<https://help.webex.com/contact>

- Helps end-users and administrators solve common Webex issues
 - Login
 - Meeting Join
 - Audio / Video



Do you need help with a meeting you are in or are trying to join right now?

Yes, I need immediate help with a meeting

No, but I still need help

- can't make password
- I can't migrate a user.
- I can't hear other participants
- I can't access my account
- I can't screenshots anymore.
- I can't

Webex Chat Assistant Sign In

Got it! What kind of help do you need?

Joining a meeting

Clearing your browser cookies and cache or opening the meeting link in a private or incognito window can help resolve most problems related to joining or starting a meeting.

Meeting passwords can be found in the calendar or email invites. If no password is available, please contact the host or meeting organizer for more information.

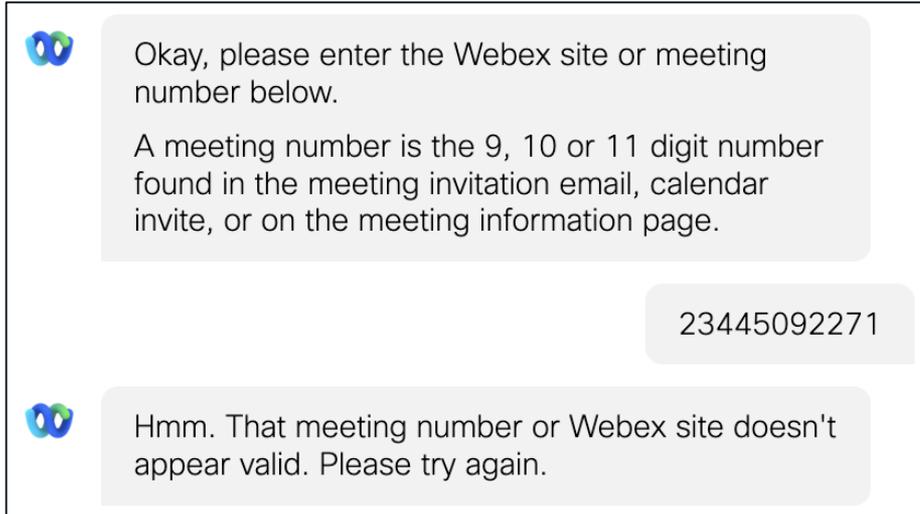
Please select the message below that you are seeing:

- You can't join this meeting because the host has restricted access
- You can join the meeting after the host admits you
- Meeting is not started
- Meeting has ended
- Another meeting is in progress
- Something else

Webex Chat Assistant

<https://help.webex.com/contact>

- Chat assistant has intelligence to detect valid meetings

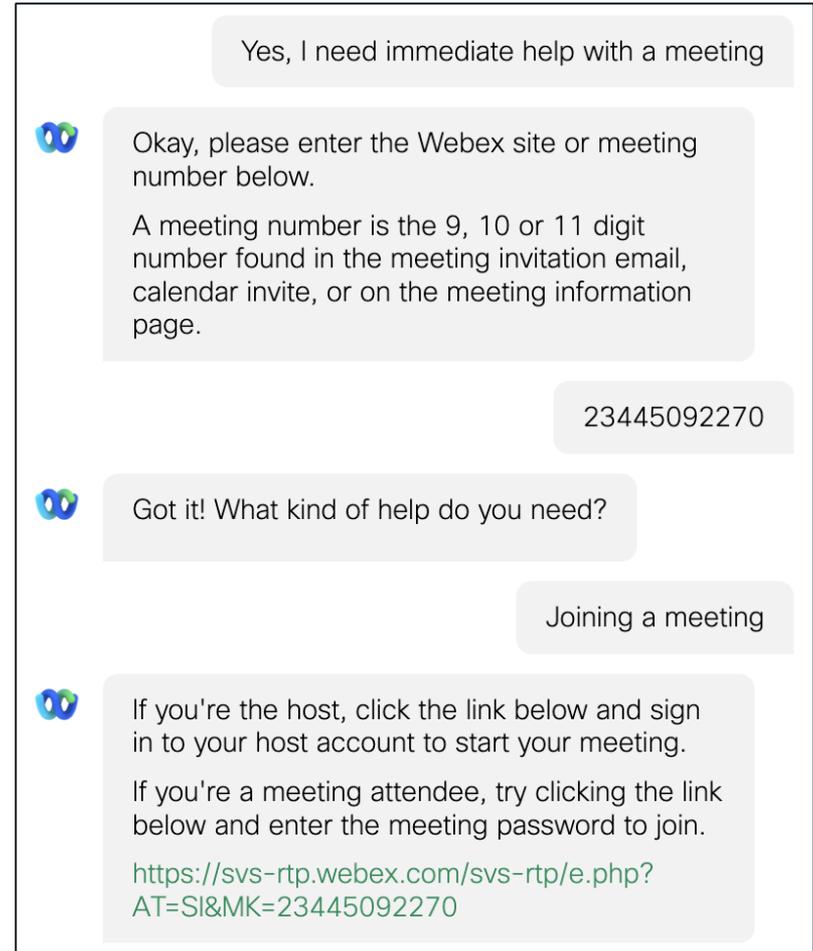


 Okay, please enter the Webex site or meeting number below.

A meeting number is the 9, 10 or 11 digit number found in the meeting invitation email, calendar invite, or on the meeting information page.

23445092271

 Hmm. That meeting number or Webex site doesn't appear valid. Please try again.



Yes, I need immediate help with a meeting

 Okay, please enter the Webex site or meeting number below.

A meeting number is the 9, 10 or 11 digit number found in the meeting invitation email, calendar invite, or on the meeting information page.

23445092270

 Got it! What kind of help do you need?

Joining a meeting

 If you're the host, click the link below and sign in to your host account to start your meeting.

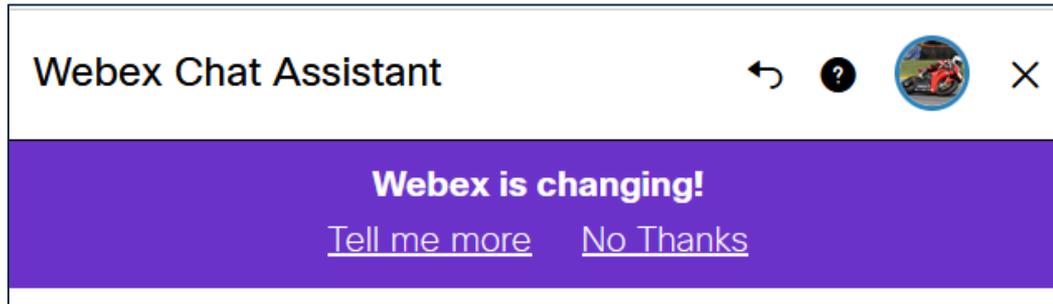
If you're a meeting attendee, try clicking the link below and enter the meeting password to join.

<https://svs-rtp.webex.com/svs-rtp/e.php?AT=SI&MK=23445092270>

Webex Chat Assistant

<https://help.webex.com/contact>

- Chat assistance has intelligence around the Webex Suite Meeting Platform



Over the next few months, Webex meetings will start to run on our Webex Suite meeting platform. This platform allows for improved and simplified experiences for hybrid work across the entire Webex Suite, with common architecture, administration, and integrations.

[Learn more →](#)

The Webex Suite meeting platform converges the meeting experience across Webex applications and devices. This unlocks the potential for continuous collaboration before and after a meeting, with rich real-time experiences. Here are some of the key changes:

- Menu bar options missing
- Move a meeting to another desktop or mobile device
- Polling and Q&A
- Access messages after the meeting ends
- Send messages without joining a meeting
- Sharing content in a meeting
- Sharing content in a breakout session
- Sharing your desktop

For a full list of features and where they can be found in a meeting, see [Webex App | About the Webex Suite meeting platform - Key Features](#).

Troubleshooting In-meeting experience

1. Media disconnects
2. Peripherals (video camera, microphone)
3. Audio/video quality

Common Meeting Disconnect Reasons



- 1 Meeting disconnect after 30-40 minutes
- 2 Host or co-host ended the meeting accidentally
- 3 Network timeout
- 4 Complete packet loss on the media stream
- 5 On premise devices failing 15-minute SIP re-invite

1 The End user perception mystery

I'm in a meeting and it suddenly ended. Help as I'm worried it will happen again

Meeting is ending every 30 to 40 minutes

Why did my meeting end unexpectedly?

Why am I getting a notification that my meeting will end in 5 minutes?

WHAT

HOW

Real-life Webex support cases

Next slide

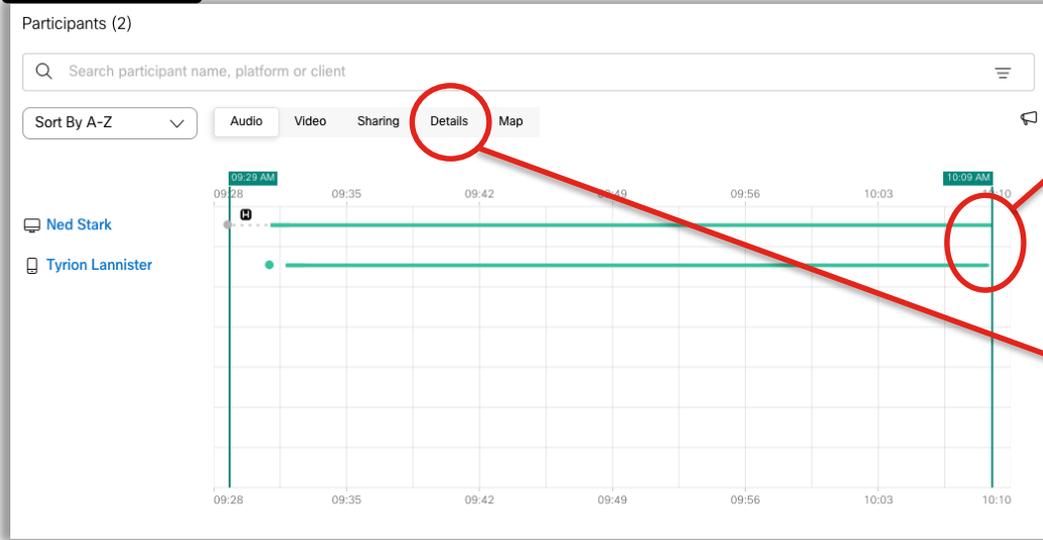


1 Webex admin experience



webex Control Hub

Troubleshooting > Meetings & Calls



No observed Abnormal disconnects

Exit Meeting ⓘ

- Normal
- Abnormal

Participants (2)

Search participant name, platform or client

Sort By A-Z

Audio Video Sharing Details **Map**

	System Code	Phone
Ned Stark	Host Hung Up	
Tyrion Lannister	Leave Waiting Room	
	Host Hung Up	

Leave reasons do not point to any suspicious [disconnect reason](#)

1 Webex end-user experience

13:29:16 GMT

Host joins the meeting

14:09:17 GMT

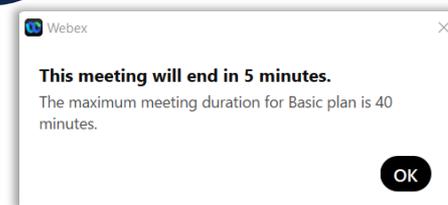
Webex App disconnect

```
2023-05-08T14:09:17.996Z <Debug> [0x4280]
NotificationSoundManager.cpp:337
commonHead::viewModels::NotificationSoundManager::processCallParticipantsChanged:isUserType: 1,
shouldHideInRoster: 0, isResourceRoom: 0,
reason: CALL_MAX_DURATION
```

14:04:17 GMT

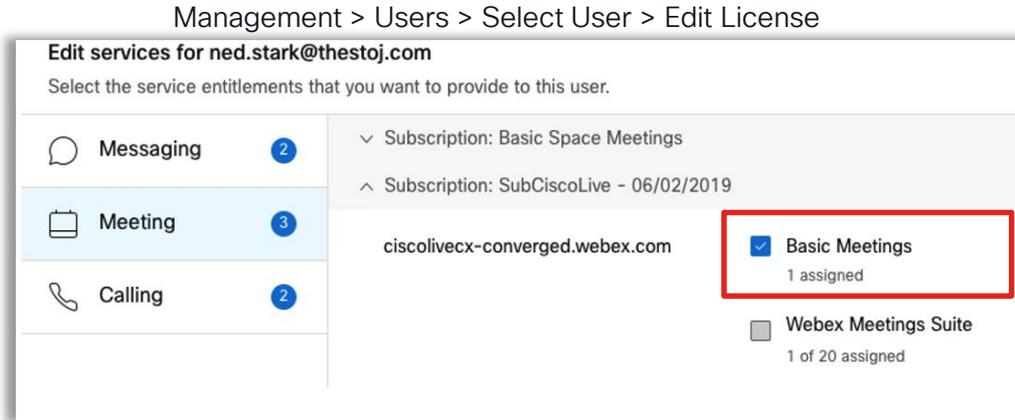
Meeting Disconnect Notification

```
2023-05-08T14:04:17.402Z <Debug> [0x4280] CallViewModel.cpp:2390
commonHead::viewModels::CallViewModel::onCallEvent: callId: efba9aa9-76c2-477e-aaf6-1f1fd38443c9,
conversationId: 00000000-0000-0000-0000-000000000000, eventType: CallMaxDurationWarning
2023-05-08T14:04:17.412Z <Debug> [0x4280] CallViewModel.cpp:9109
commonHead::viewModels::CallViewModel::processCallMaxDurationWarning:Meeting max duration warning,
remaining time: 5
```



Meeting disconnect cause: Basic Meetings

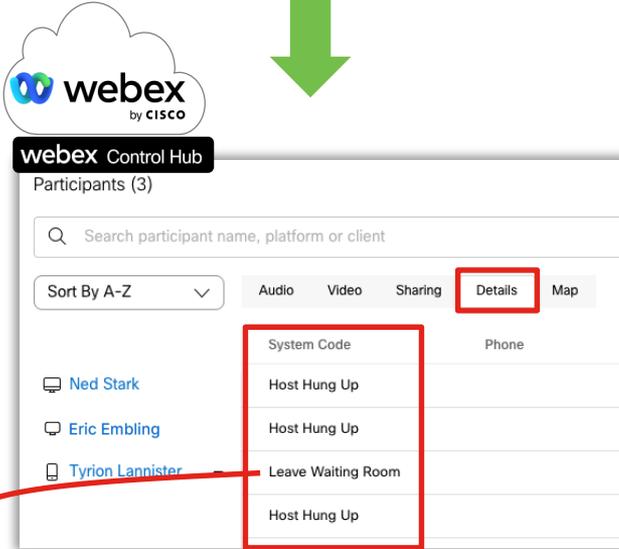
- Enterprise customers can assign Basic Meetings licenses
- Basic Meetings licenses are limited to 40 minutes



Note: If you have an end users associated to a Free Webex subscription, they will have a similar experience. Free Webex URLs will be formatted as **meet<N>.webex.com**. Follow the [user claim process](#) to add these users to your Enterprise Webex organization.

2 Determining Disconnect Cause

Control Hub Troubleshooting provides you the **visibility** into the reason a meeting ended

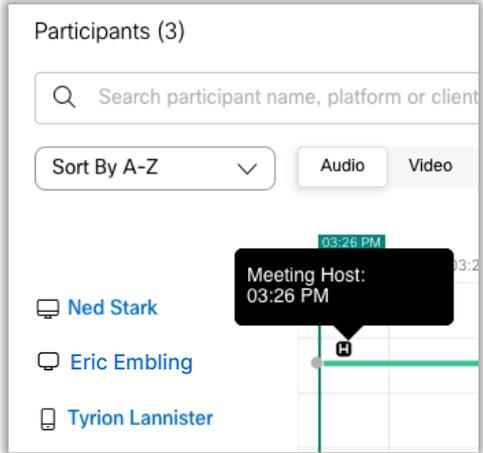


The screenshot shows the 'webex Control Hub' interface. At the top, there is a search bar and a 'Sort By A-Z' dropdown. Below these are tabs for 'Audio', 'Video', 'Sharing', 'Details', and 'Map'. The 'Details' tab is selected and highlighted with a red box. A table lists participants with their system codes and disconnect causes:

	System Code	Phone
Ned Stark	Host Hung Up	
Eric Embling	Host Hung Up	
Tyrion Lannister	Leave Waiting Room	
	Host Hung Up	

A red arrow points from the 'Tyrion Lannister' row to the text below.

Indicates the participant transitioned from the lobby to the meeting



The screenshot shows the 'Participants (3)' interface in a meeting. It includes a search bar, a 'Sort By A-Z' dropdown, and 'Audio' and 'Video' tabs. A list of participants is shown: Ned Stark, Eric Embling, and Tyrion Lannister. A timeline at the bottom shows activity for each participant. A callout box points to a specific event on the timeline:

03:26 PM
Meeting Host: 03:26 PM

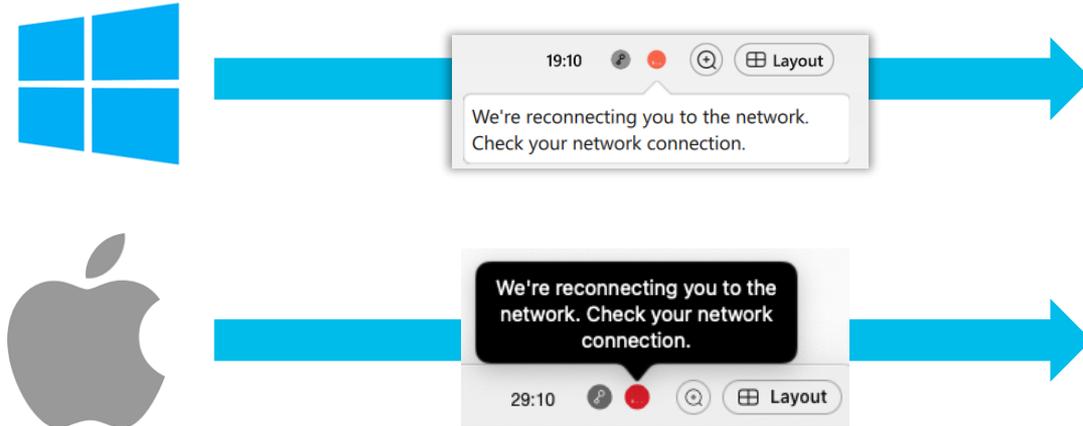
3 Network timeout disconnects

- The Webex App designed to prompt end-users when network connection is lost

2023-05-08T19:20:26.681Z <Debug> [0x676707][[]]CallingHealthCheckerViewModel.cpp:332 checkNetworkCongestion:Network Lost

2023-05-08T19:20:26.681Z <Debug> [0x676707][[]]CallingHealthCheckerViewModel.cpp:416 fireInfoChangedNotification:Fire notification to show bandwidth indicator

Occurs after ~ 10-15 seconds

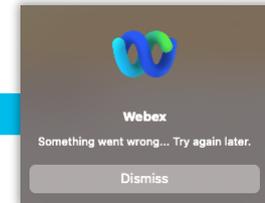
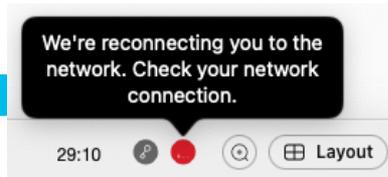
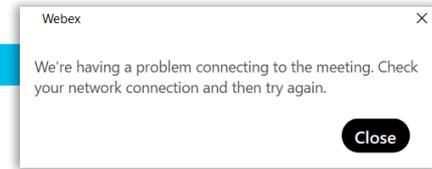
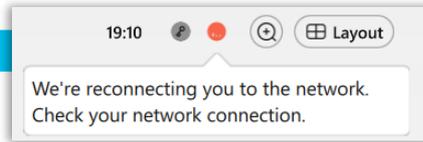


3 Network timeout disconnects

- The Webex App designed to prompt end-users when network connection is lost
2023-05-08T19:20:26.681Z <Debug> [0x676707][[]]CallingHealthCheckerViewModel.cpp:332 checkNetworkCongestion:Network Lost
2023-05-08T19:20:26.681Z <Debug> [0x676707][[]]CallingHealthCheckerViewModel.cpp:416 fireInfoChangedNotification:Fire notification to show bandwidth indicator
- The Webex App will continue to retry connection until disconnecting

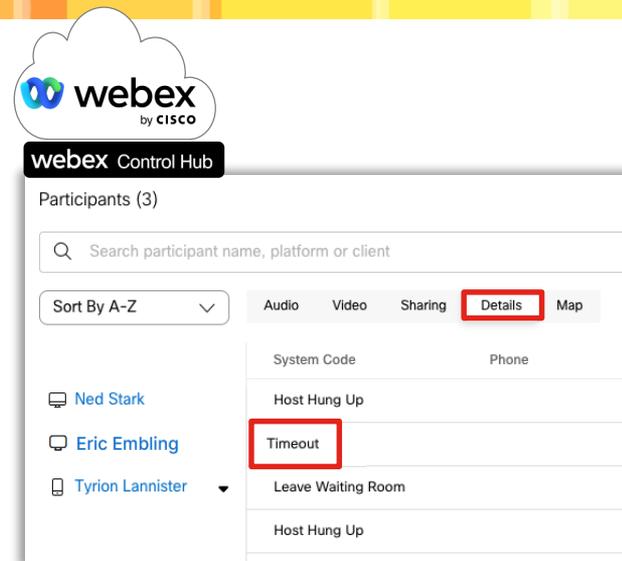
Occurs after ~ 10-15 seconds

Occurs after ~ 3 minutes



3 Network timeout disconnects

1. Review Control Hub Troubleshooting data
2. Attempt to isolate the issue to a user, site, network segment, etc.
3. Common causes include:
 - Loss of Wi-Fi connection
 - VPN connection terminated
 - Transient network failure
 - ISP outages



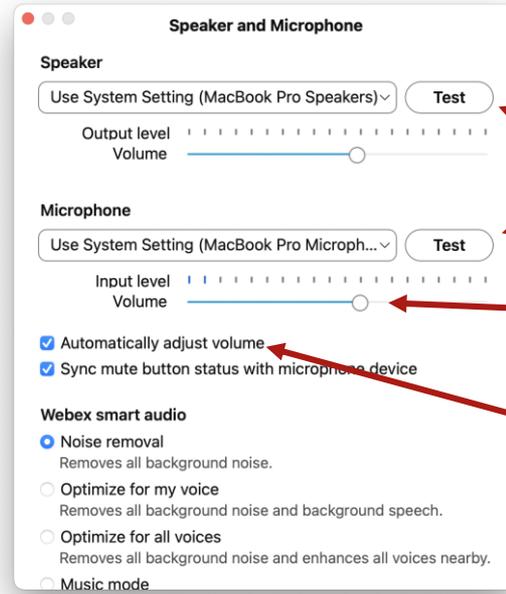
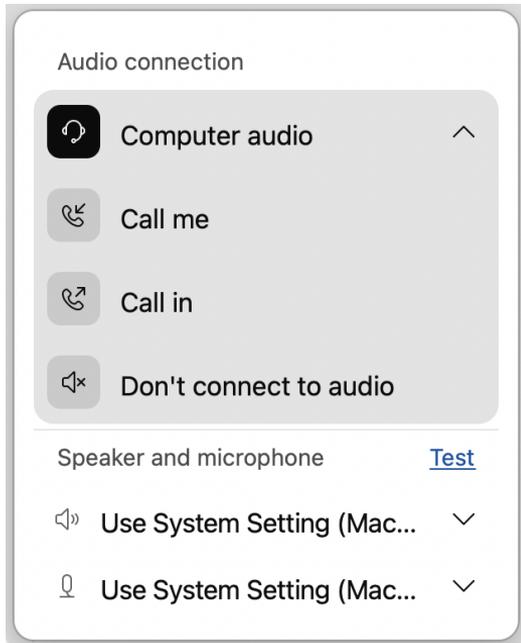
Troubleshooting In-meeting experience

1. Media disconnects
2. Peripherals (video camera, microphone)
3. Audio and video quality

No Audio – Can't hear or can't be heard

Are you connected to the meeting with audio? If so, by what mechanism?

- **Computer audio:** Do you have correct speaker and microphone selected?



Use the **Test** buttons and adjust volume levels

Check volume levels

Consider disabling if users report volume being too low

No Audio – Can't hear or can't be heard

Are you connected to the meeting with audio? If so, by what mechanism?

- Check user's microphone and speaker settings in Control Hub
- Avoid using Built-in laptop mic and speaker
- Leverage a high-quality Cisco Headset (700 series / 980)



Troubleshooting > Meetings & Calls

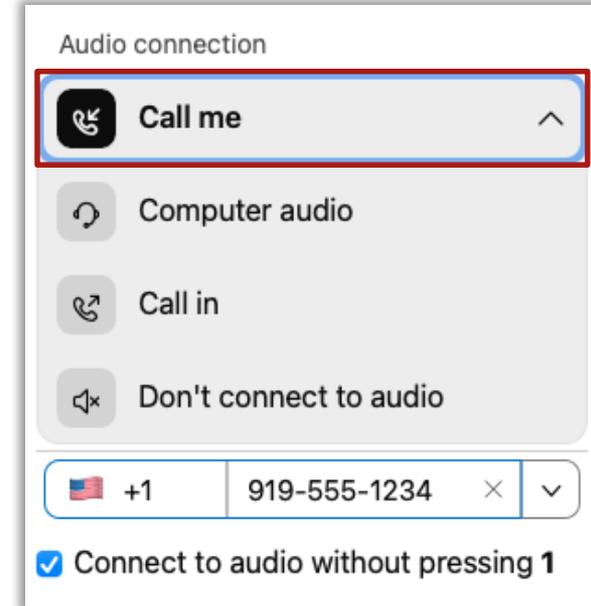
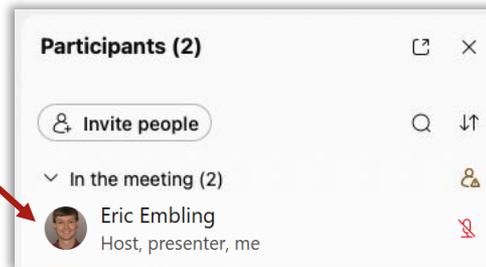
Sort By A-Z	Audio	Video	Sharing	Details	Map
	Share Codec	Microphone	Speaker	Camera	
Casey Myers ▶		Microphone Array (Intel® Smart Sound Te...	Speakers (Realtek High Definition Audio(S...	Integrated Camera	
Cisco Live ▶		Microphone Array (Intel® Smart Sound Te...	Speakers (Realtek High Definition Audio(S...	Integrated Camera	
Frank Smith ▶		Microphone Array (Intel® Smart Sound Te...	Speakers (Realtek High Definition Audio(S...	Integrated Camera	
Eric Embling ▶		MacBook Pro Microphone	MacBook Pro Speakers	FaceTime HD Camera (Built-...	

No Audio – Can't hear or can't be heard

Are you connected to the meeting with audio? If so, by what mechanism?

- **PSTN Audio** – is the call connected to PSTN?
- Check speaker / handset / headset settings on PSTN phone
- Is PSTN phone muted, double-muted?
- Check volume settings on PSTN phone

No longer shows join method



No Audio – Can't hear or can't be heard

Are you connected to the meeting with audio? If so, by what mechanism?

- PSTN dial in/out shows up as a separate participant in Control Hub



Sort By A-Z	Audio	Video	Sharing	Details
	Activity			Client
	Host			Webex Meetings 43.2.2.1
				PSTN

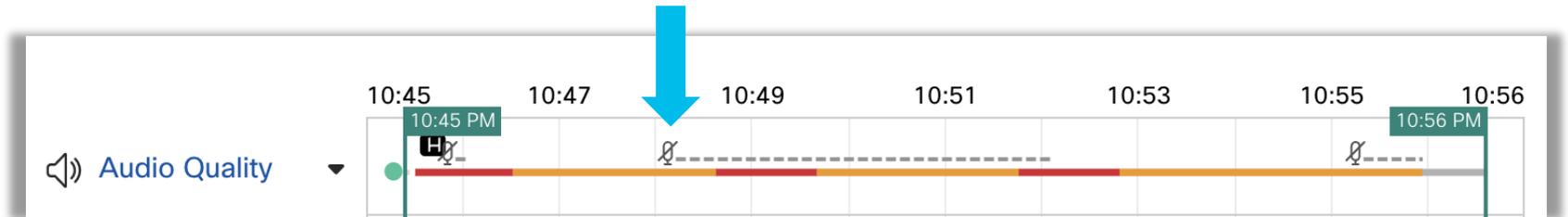
No Audio – Can't hear or can't be heard

- If others cannot hear you, are you muted?



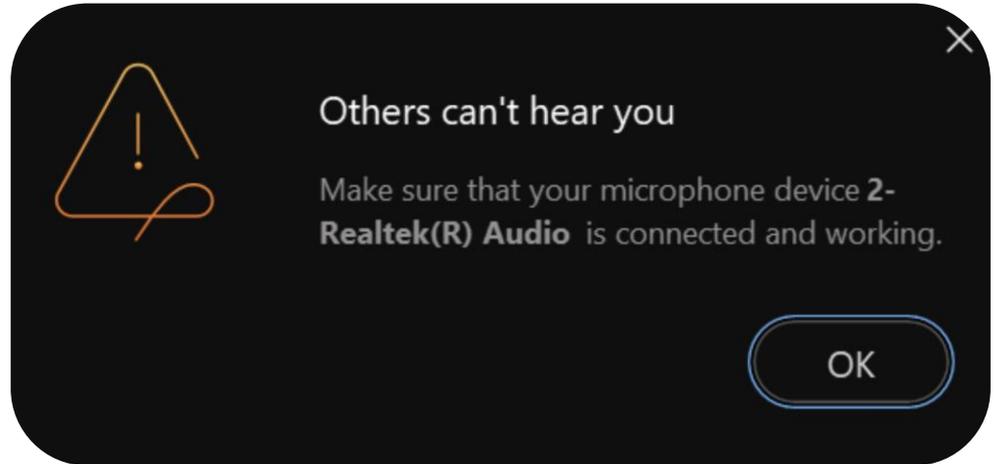
Indicates User
Is Muted

- But... I wasn't on mute
- Yes, you were!



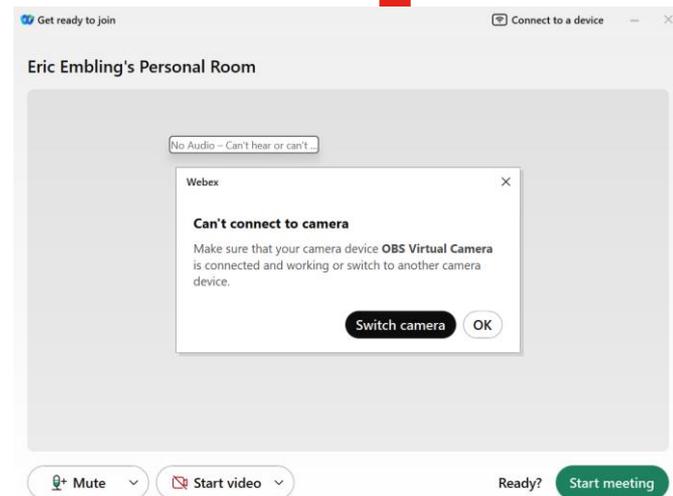
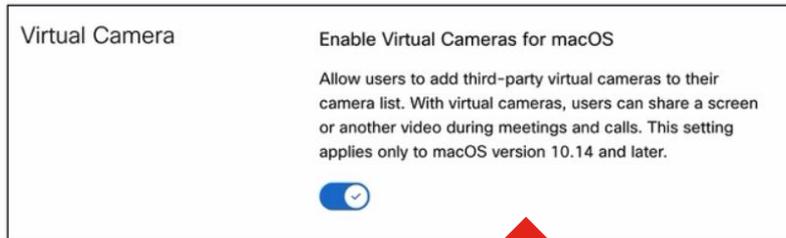
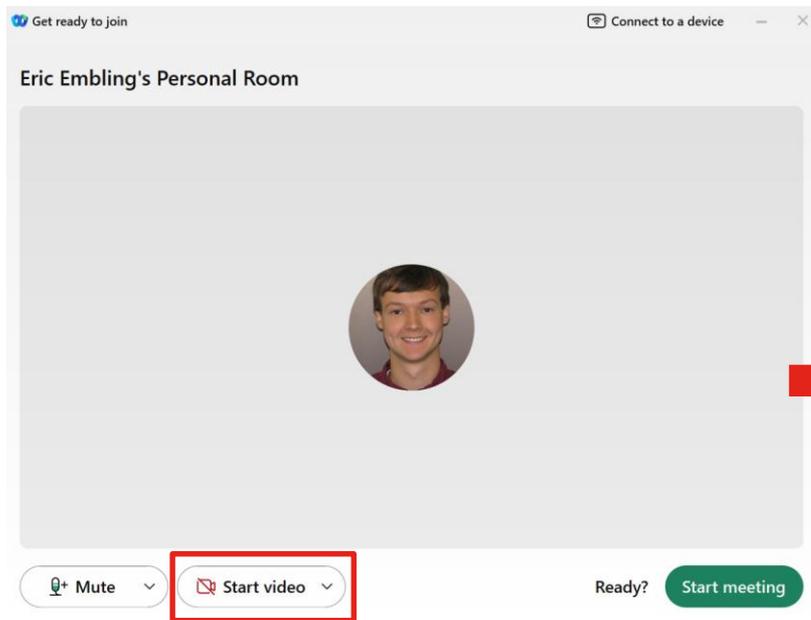
No Audio – Can't hear or can't be heard

- Error appears when the Webex app is unable to get audio from the microphone for 10 seconds.
- The Webex app will attempt to restart the microphone to recover
- Any failure to the system API when restarting the microphone could cause the Webex app to crash



No Video

- Is Video Muted?
- Is correct camera selected?



No Video

- Audio and Video device changes during a meeting are logged in Control Hub troubleshooting



Troubleshooting > Meetings & Calls

Sort By A-Z

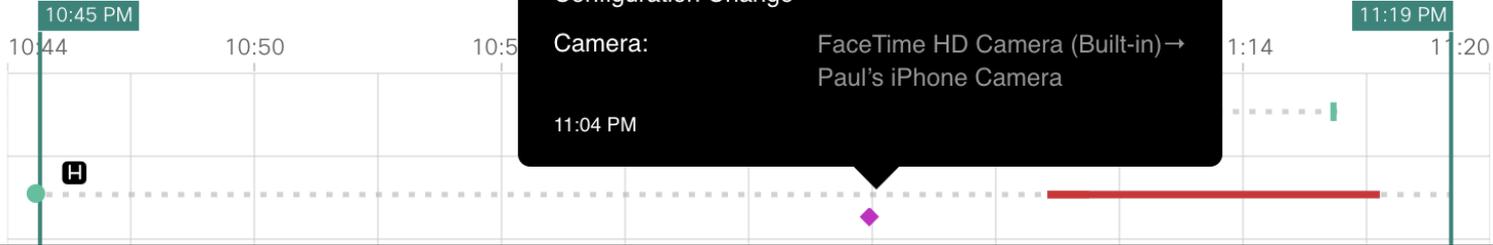
Audio

Video

Sharing

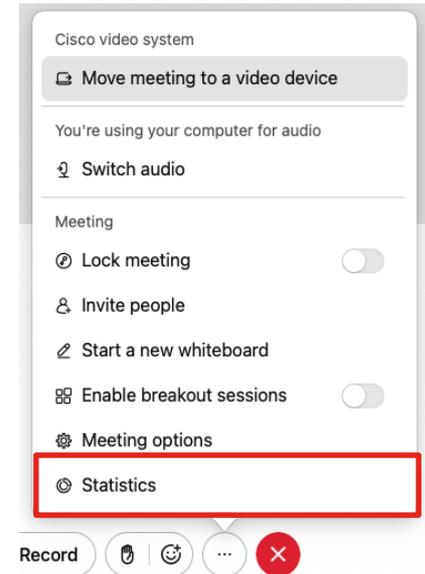
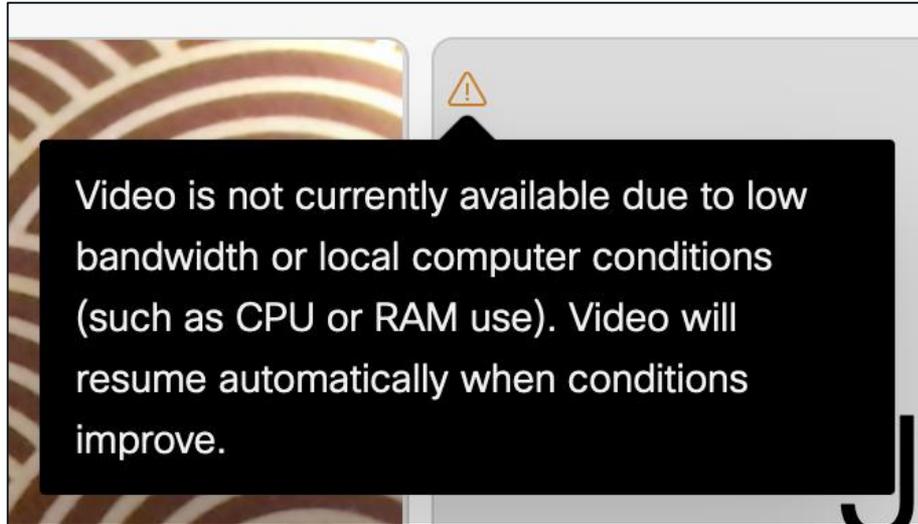
Details

Map



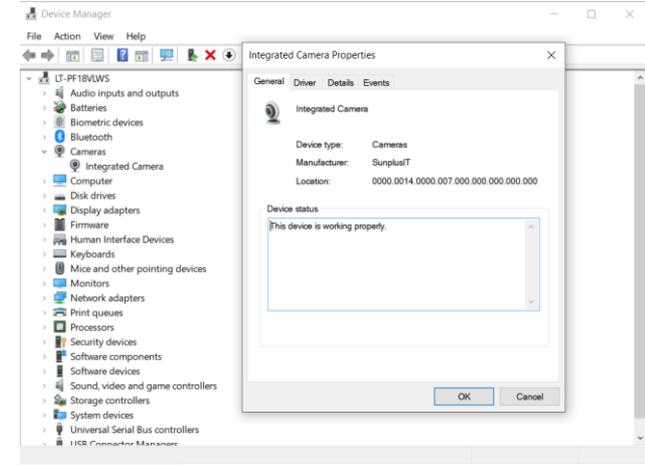
No Video

- Video may be intentionally disabled if Webex App detects poor network conditions or high CPU on PC.



No Video – Webcam does not appear

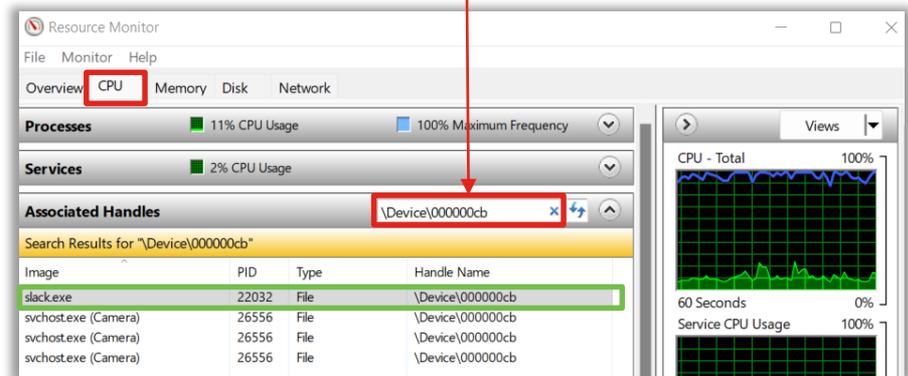
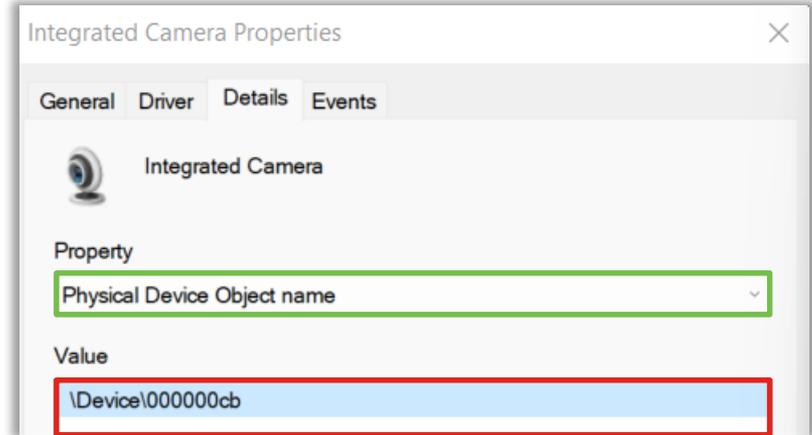
- Is webcam connected and detected by the OS?
- Check Device Manager for presence of a camera and ensure it shows it is working properly
(NOTE: “This device is working properly.” does not necessarily mean the device is “actually” working properly)
- Can other applications use the camera?
 - Camera app in Windows
 - Mac Photo Booth app
- **Are other applications using the camera?**



We can't connect to your webcam. Is the webcam installed properly or are you using it in another application?

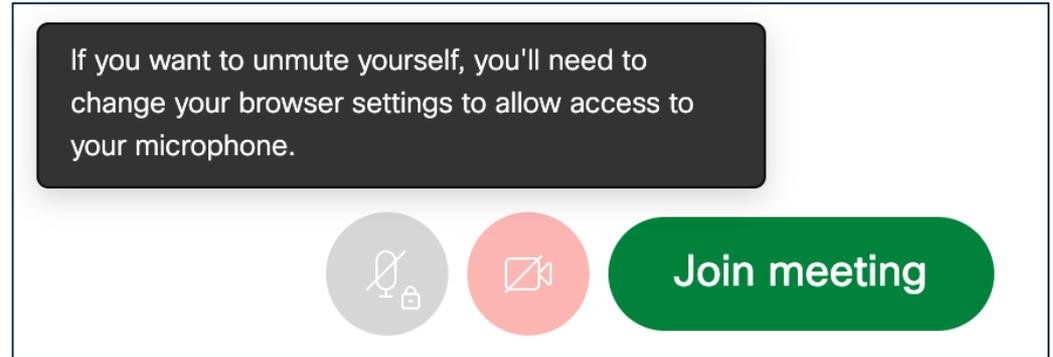
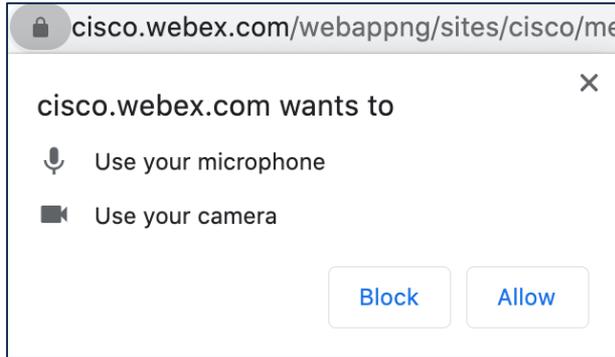
Windows: Checking for other Apps using Camera

1. Open **Device Manager**
2. Right-click devices and choose **Properties**
3. Select the **Details** tab
4. Select “**Physical Device Object Name**” then **copy the Value**
5. Open Task Manager -> Performance (Task Manager) -> Click **Open Resource Monitor** link
6. Click the **CPU** tab then copy and paste the **Device value** into the **Associated Handles**



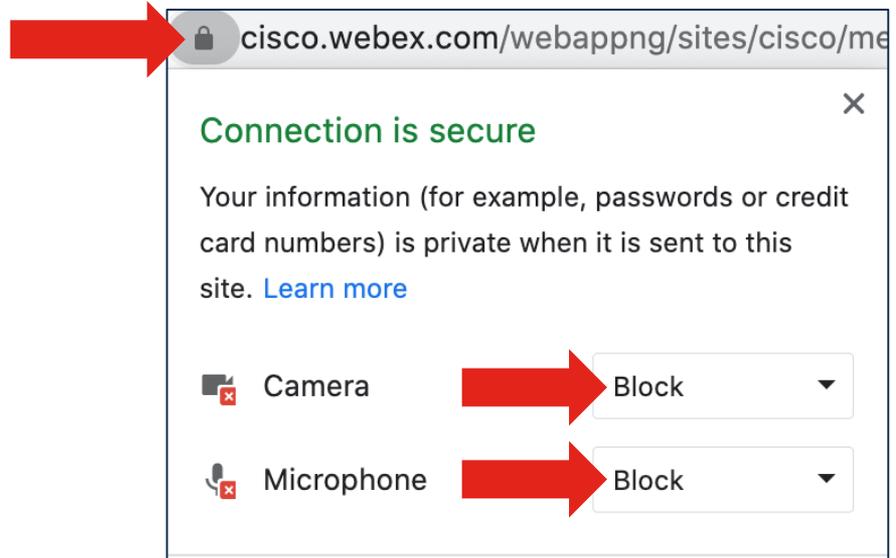
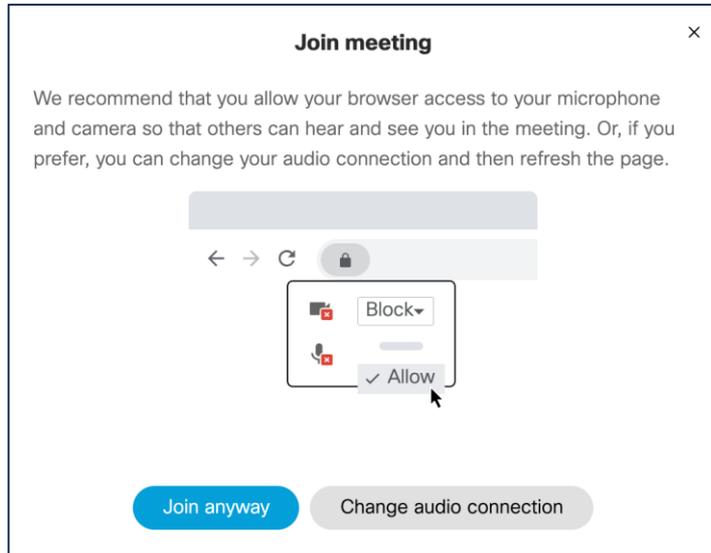
No Audio or Video on Web Client

- Does the browser have access to the Camera and Microphone?



No Audio or Video on Web Client

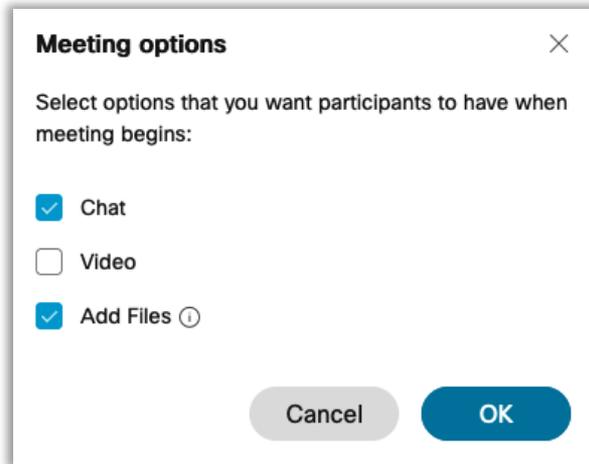
- Does the browser have access to the Camera and Microphone?



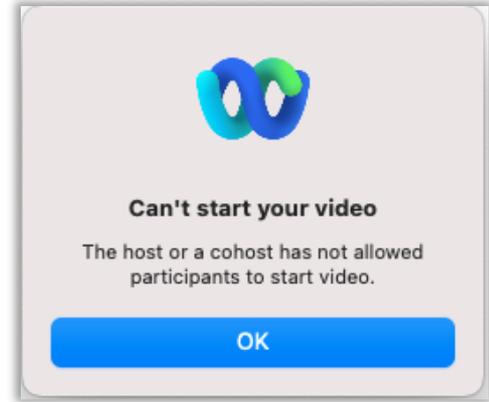
Change from **Block** to **Allow** or **Ask**

Video restricted in meeting

- When scheduling a meeting a host can choose to disable Video for all participants



Schedule meeting > Advanced Options > Meeting options



Attempting to start video while in-meeting will produce this error

Restrict Video to only Presenter

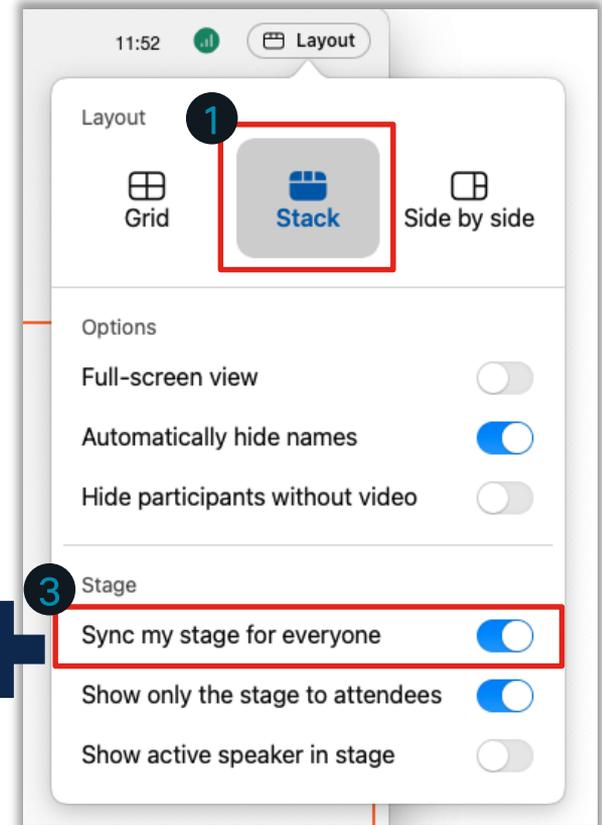
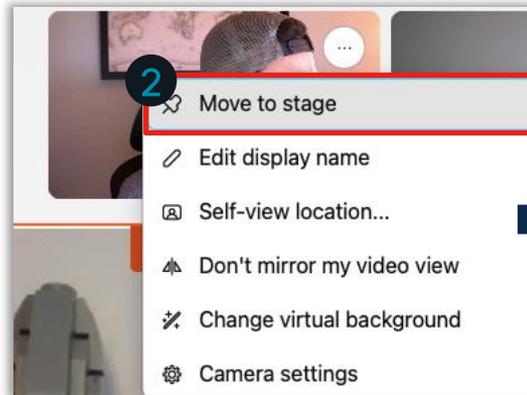
- As a host you can **enforce video for only a single presenter**
- To achieve this, follow these customizations:
 1. Enable the Stack Layout
 2. Move the presenter to Stage
 3. Sync my stage for everyone

RESULT

All attendees will now see **only the presenter's video**

Video from any other presenter **will not be visible**

CISCO Live!

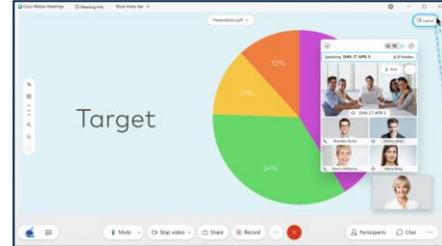


Troubleshooting In-meeting experience

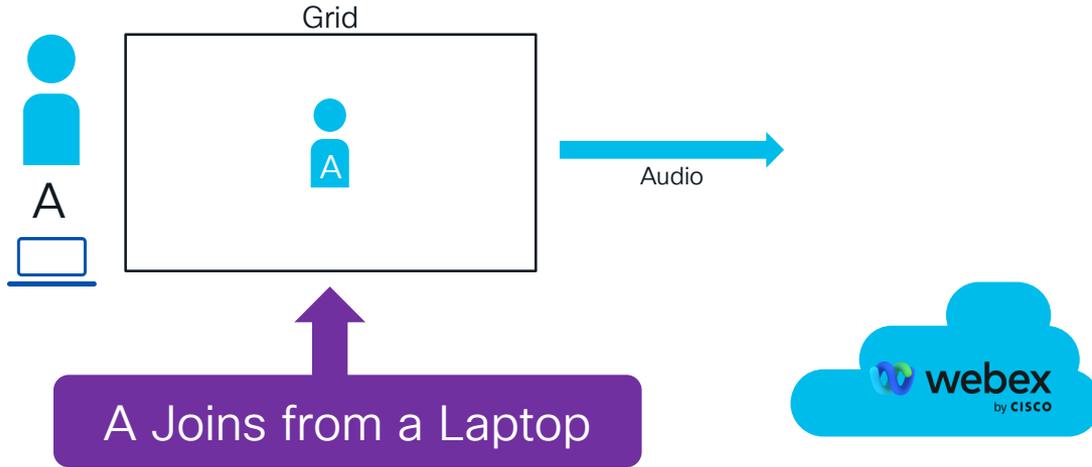
1. Media disconnects
2. Peripherals (video camera, microphone)
3. Audio and video quality

Understanding Media Streams

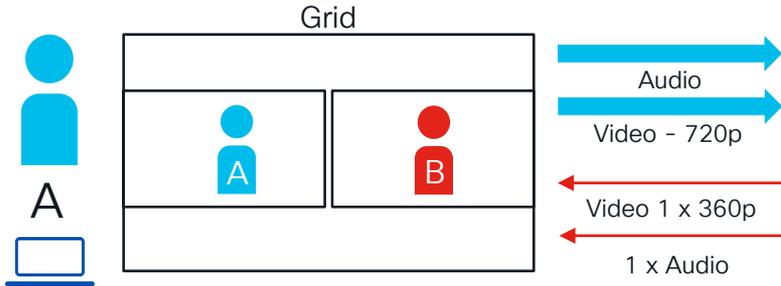
- Network Bandwidth requirements are dependent on both sender and receiver layouts
- Webex Cloud largely switches audio and video streams as-needed to fulfill requests from clients



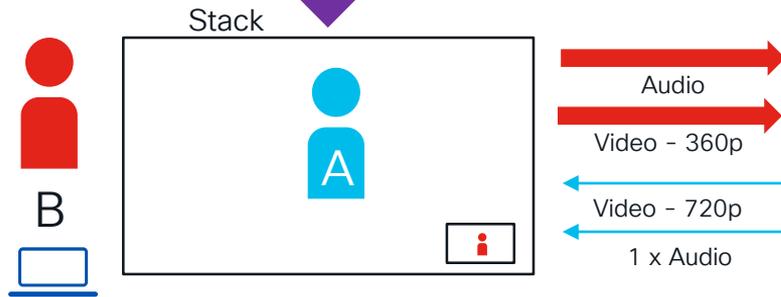
Webex Meeting Layouts & Media Streams



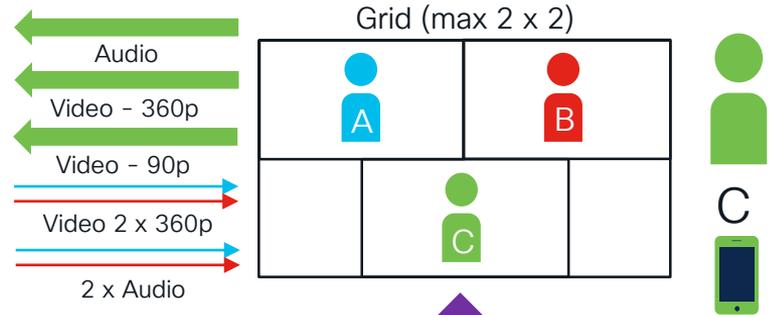
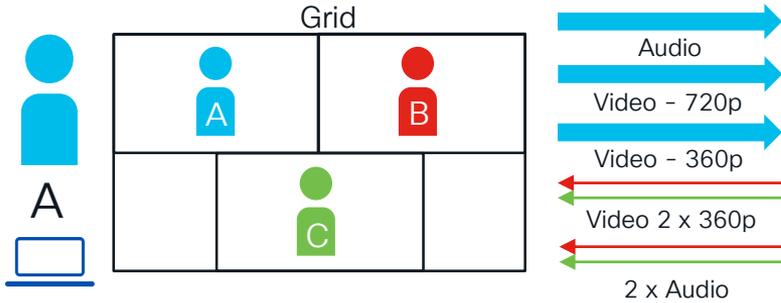
Webex Meeting Layouts & Media Streams



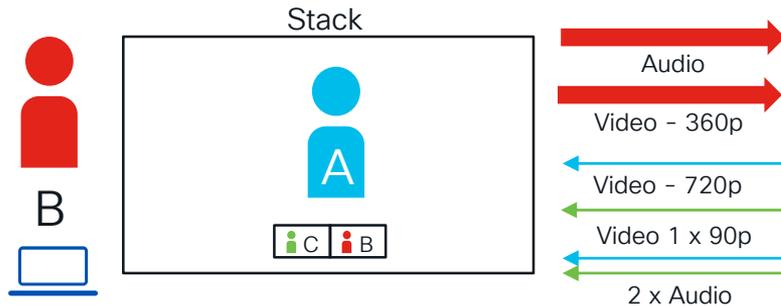
B Joins from a Laptop



Webex Meeting Layouts & Media Streams

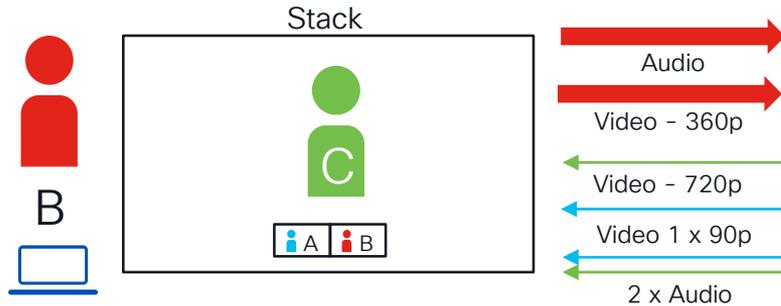
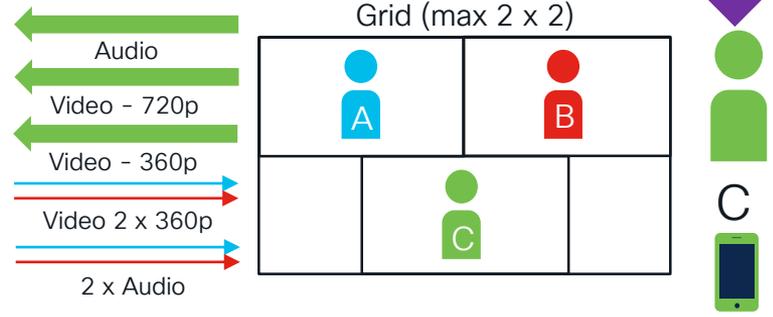
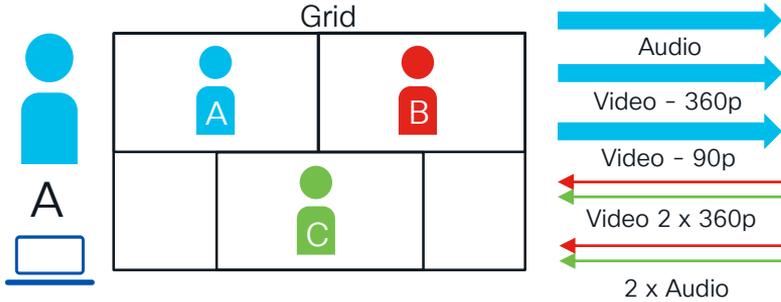


C Joins from a Mobile Device

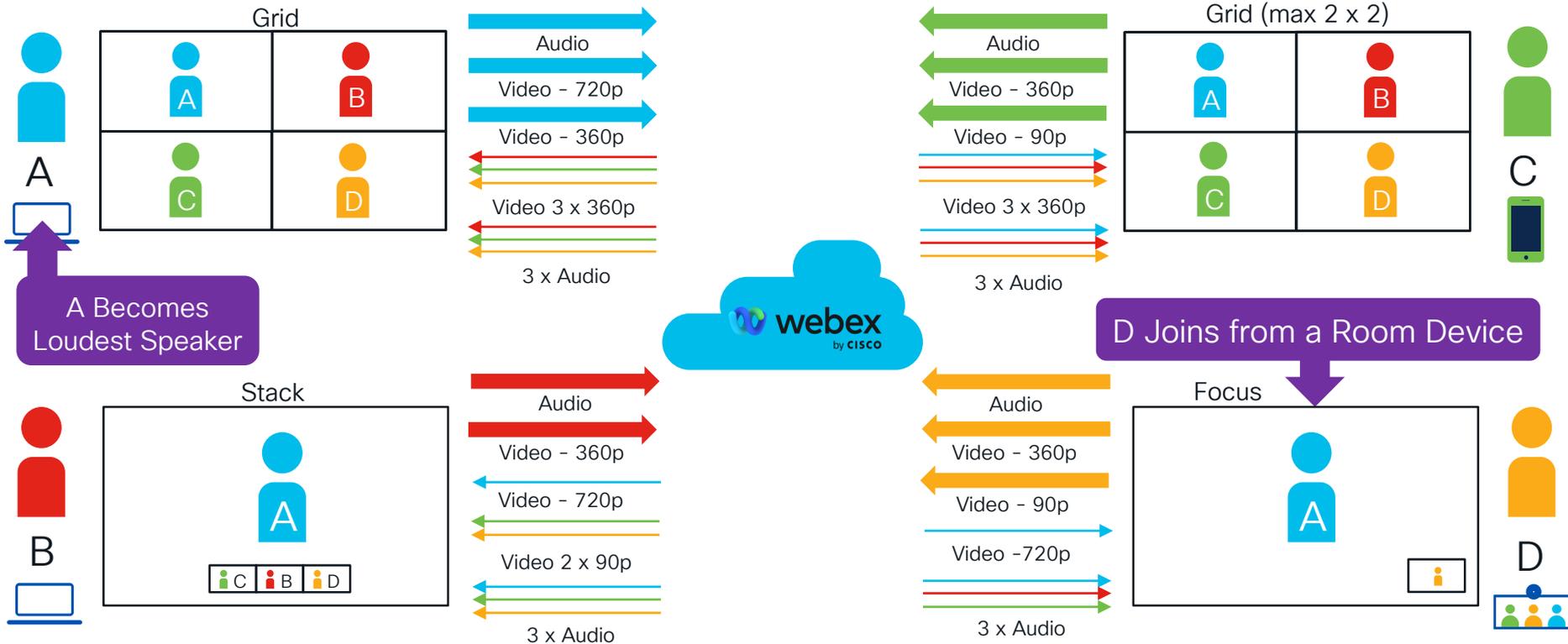


Webex Meeting Layouts & Media Streams

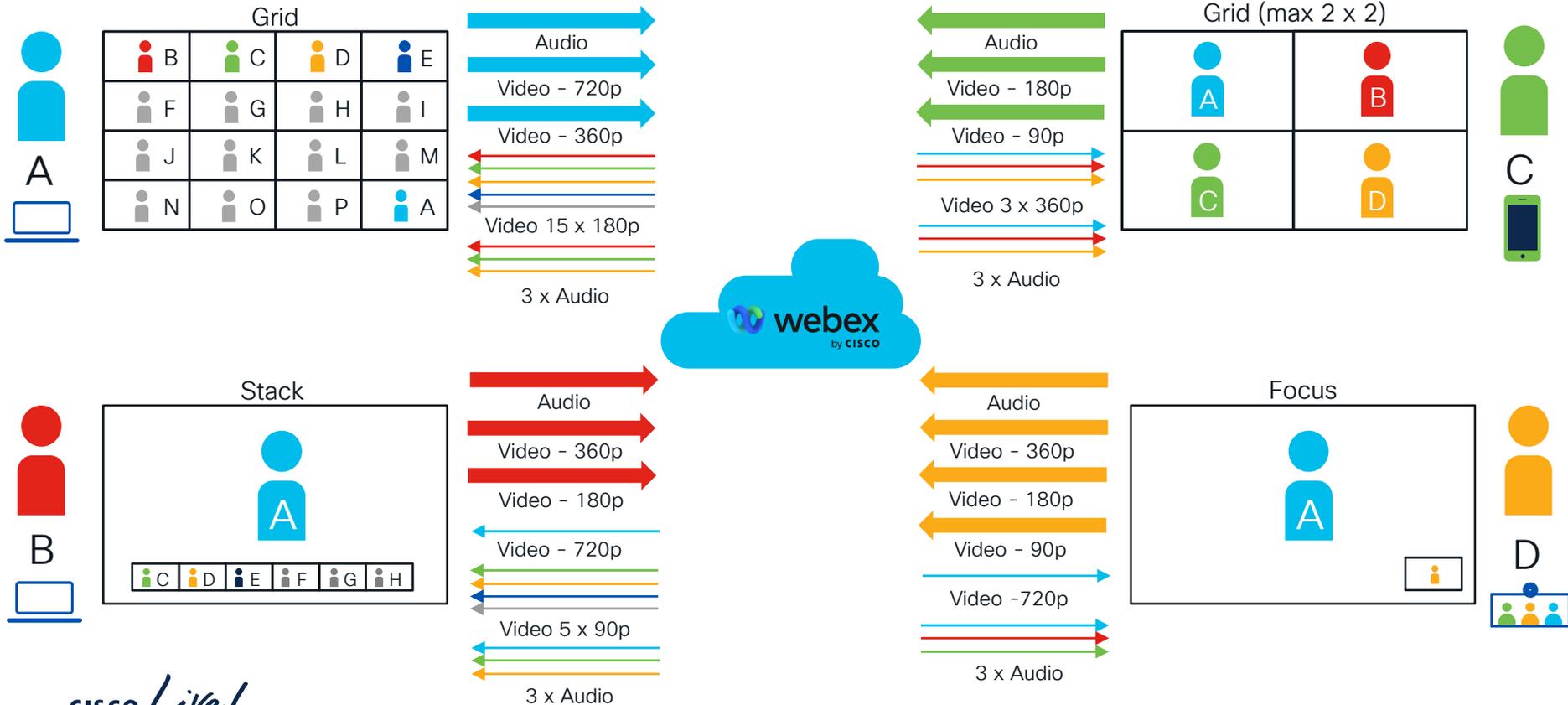
C Becomes Loudest Speaker



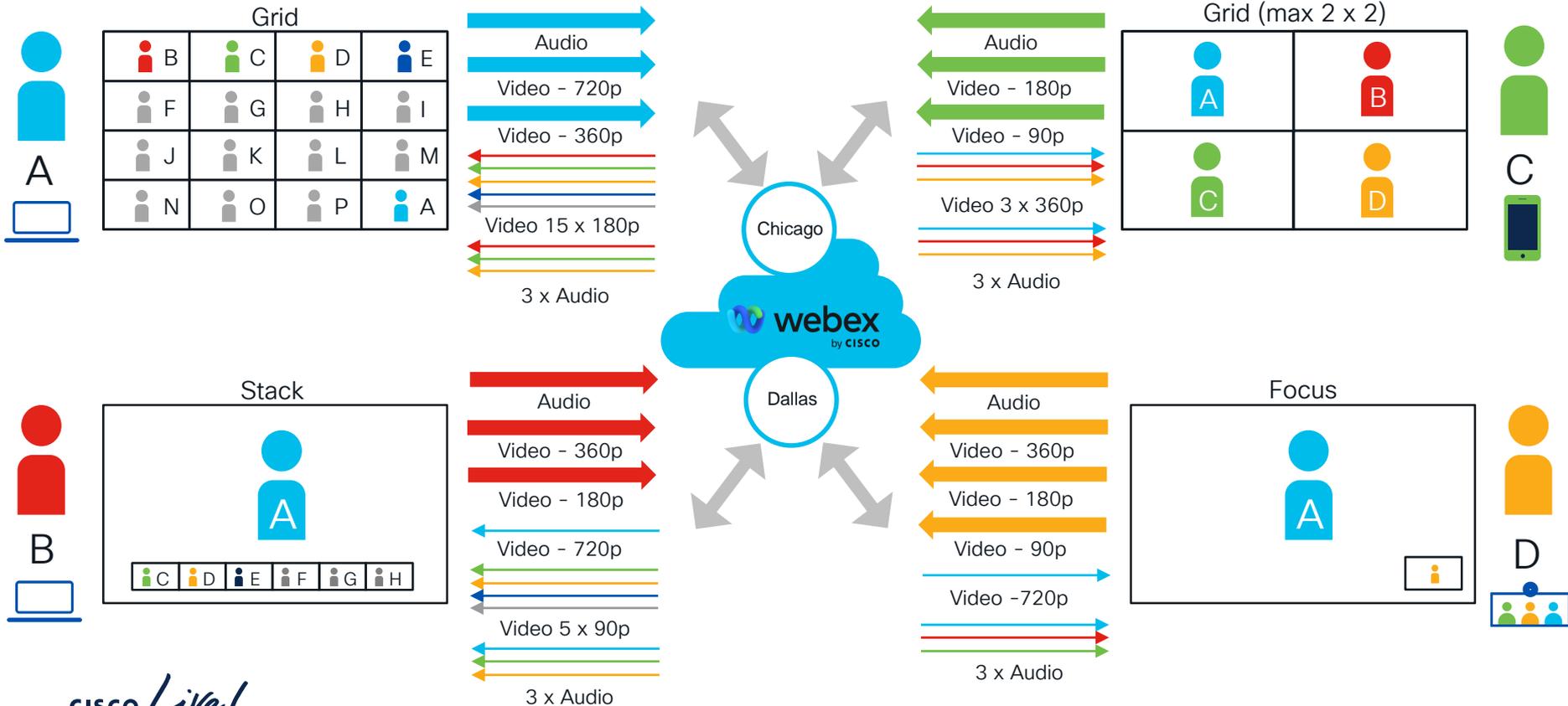
Webex Meeting Layouts & Media Streams



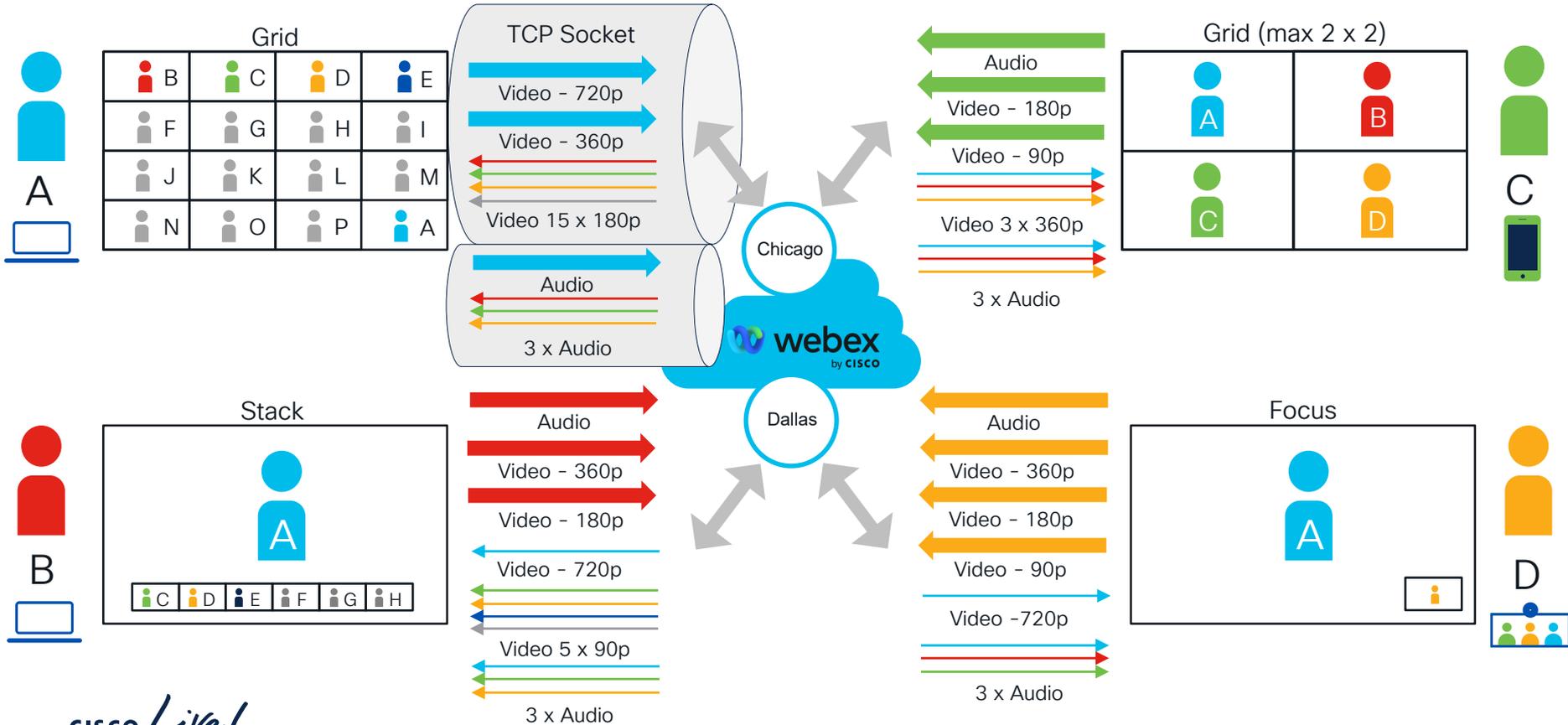
Webex Meeting Layouts & Media Streams



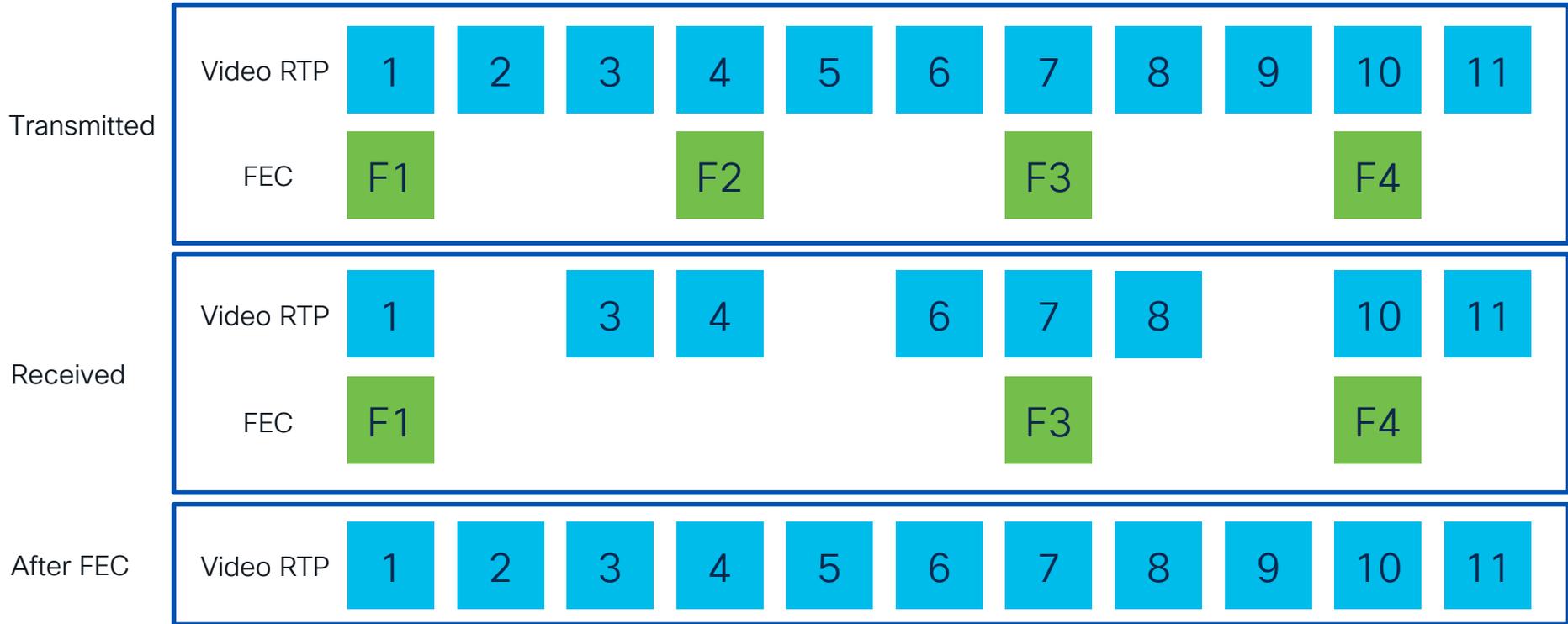
Webex Meeting Layouts & Media Streams



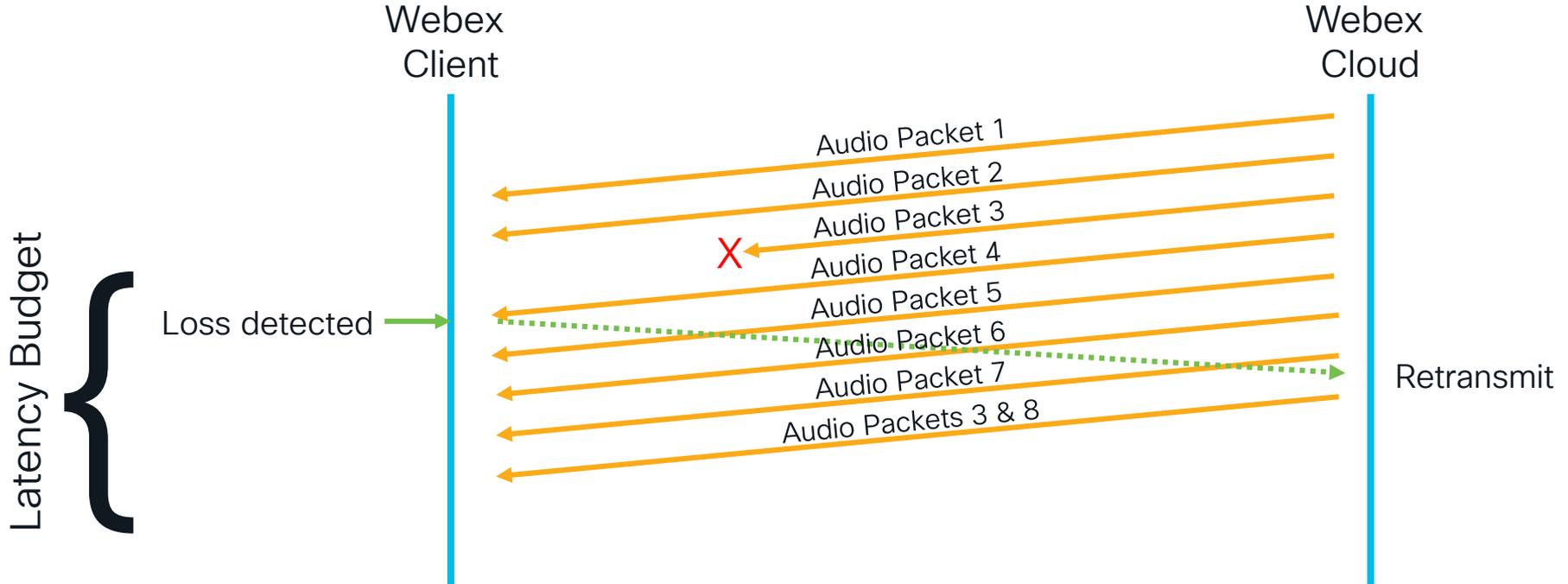
Webex Meeting Layouts & Media Streams



Forward Error Correction (FEC) and Re-Transmit (RTX)



Forward Error Correction (FEC) and Re-Transmit (RTX)



Bandwidth Consumption

Bandwidth Requirements for Webex Meetings

Source	720p	360p	180p	90p	Opus Audio
Approximate Bandwidth (kbps)	1800	650	220	100	100

- These values are approximate maximum bitrates
- Average bitrates will generally be lower

Dealing with Poor Media Quality

Does this media stream look familiar?



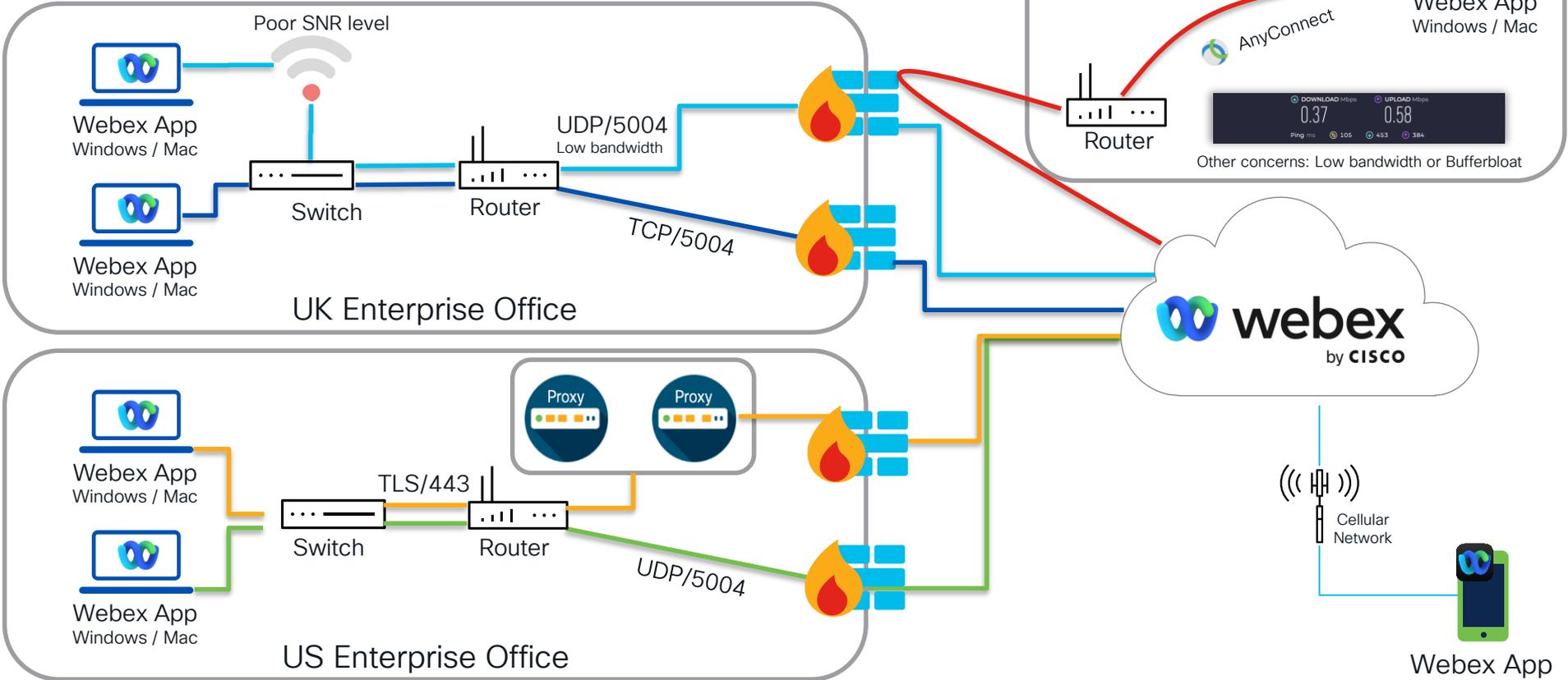
Who's been in a meeting with a person having these challenges?



Who knows how to effectively troubleshoot that meeting?

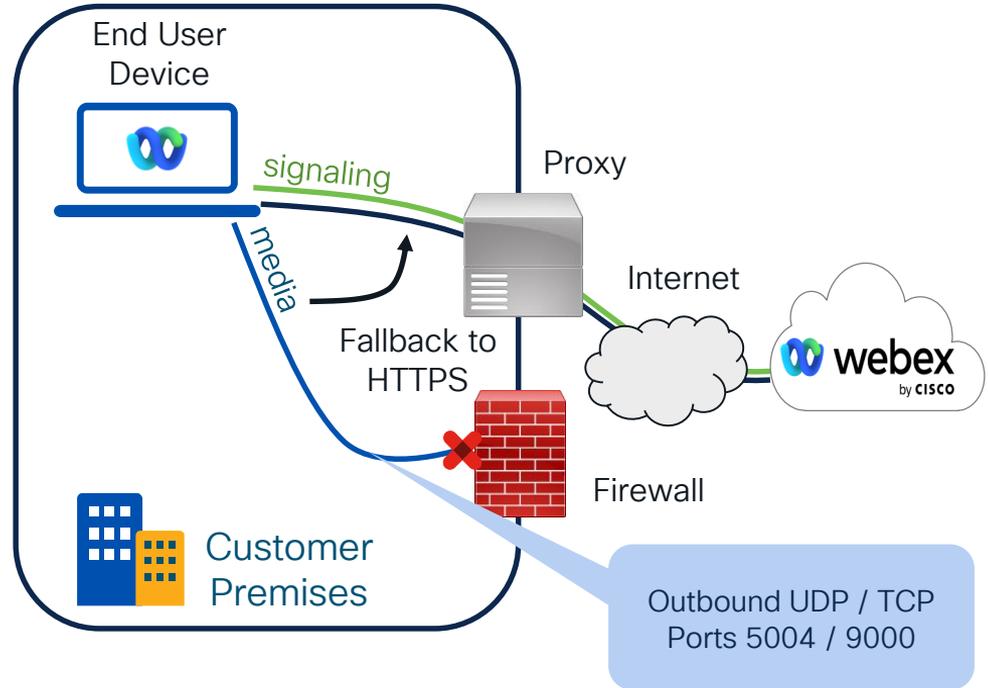


Challenges across the landscape



Webex Web Proxy Media Flows

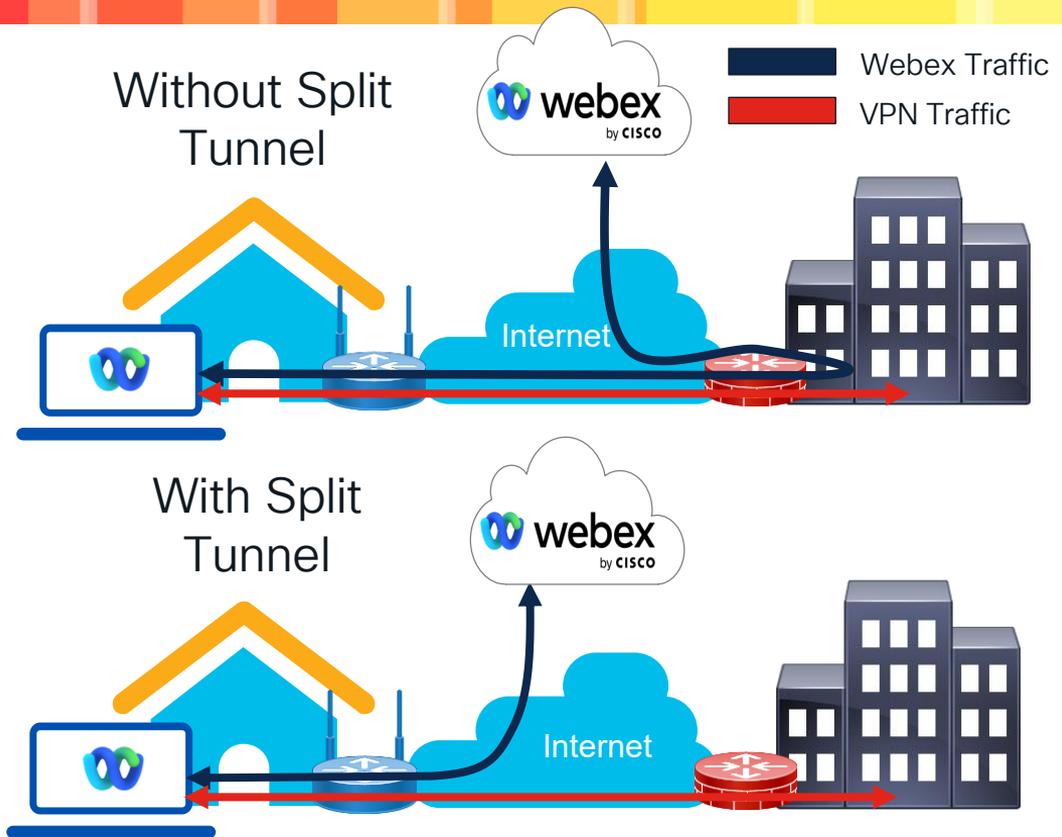
1. Try UDP port 5004 (or 9000 as fallback)
 2. Then TCP port 443 (HTTPS, likely to be via a Web Proxy)
- Proxies are not suitable for real time traffic and might be overloaded by the additional Webex traffic.



Webex Traffic Flows

Dynamic Split Tunneling (DST)

- Normally all VPN traffic is tunneled to corporate network – “full tunnel mode”
- DST allows you to send pre-defined traffic directly through Internet
- Lower latency and better regional media server selection

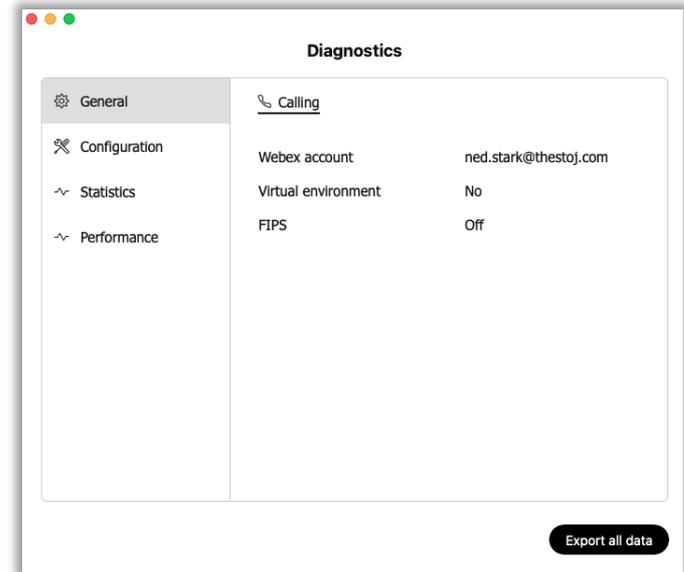


[Network Requirements for Webex Services](#)

documents required IP addresses and domains

Webex Meeting Statistics

- Available on all Webex platforms
- Accessible by:
 - Launching the Health Checker
 - Clicking  > Statistics
- Includes the following diagnostic data
 - Media server information
 - Media statistics
 - Computer performance details



Media Diagnostics

AUDIO

	Send	Receive
Codec	Opus	Opus
Bit rate	0 kbps	2 kbps
Packet loss	0 %	0 %
Latency	60 ms	-
Jitter	20 ms	16 ms
Transport	UDP	UDP

Local IP	10.26.162.240
Local port	52034
Remote IP	170.72.166.235
Remote port	5004
Direction	Sendrecv
Round-trip time (RTT) to media server	View details

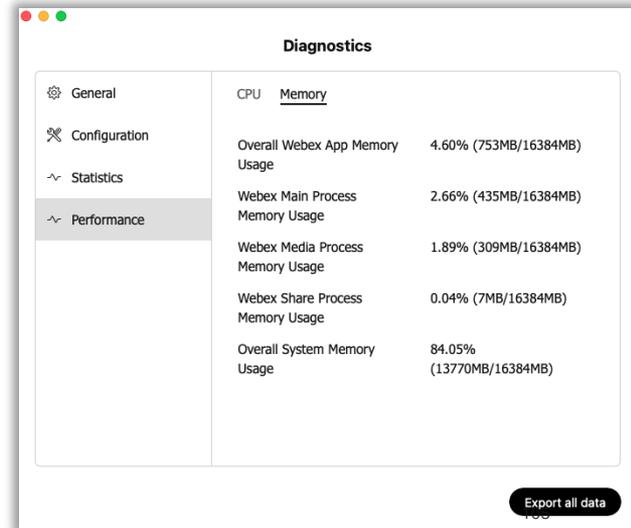
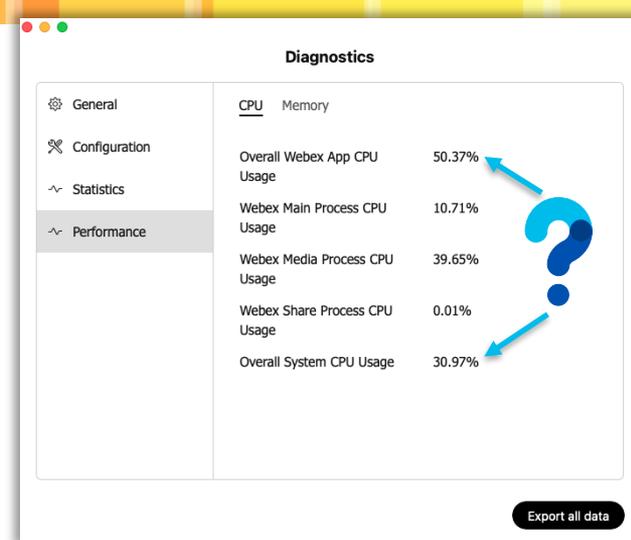
VIDEO

	Send	Receive
Resolution	640 x 360	360 x 640: 1 640 x 360: 1
Frame rate	29 fps	28 fps (max)
Bit rate	658 kbps	1249 kbps
Packet loss	0 %	0 %
Latency	50 ms	-
Jitter	11 ms	26 ms
Transport	UDP	UDP

CONNECTION DETAILS

Performance Diagnostics

- Helps identify local client/PC issues
- Provides CPU and Memory usage for:
 1. Overall Webex App (*CPU based on single core*)
 2. Webex Main Process
 3. Webex Media Process
 4. Webex Share Process
 5. Overall System (*based on all cores*)



Webex App raw media stats

Printed to the
current_log ~ every
10 seconds

2023-05-05T19:27:23.985Z <Debug> [0x53759d][c:493 logStats:

sendResolution: 640 x 360
sendScreenShareResolution: 0 x 0
sendFrameRate: 21 fps
sendFrameRate_ScreenShare: 0 fps
sendBitRate_Video: 750 kbps
sendBitRate_ScreenShare: 0 kbps
sendLossRatio_Video: 73 %
sendLossRatio_ScreenShare: 0 %
sendRTT_Video: 110 ms
sendRTT_ScreenShare: 0 ms
sendJitter_Video: 19 ms
sendJitter_ScreenShare: 0 ms
sendTransport_Video: UDP
sendTransport_ScreenShare: UDP
sendAudioCodec: Opus
sendShareAudioCodec: Opus
sendShareCodec: Unknown
sendBitRate_Audio: 0 kbps
sendBitRate_ShareAudio: 0 kbps
sendLossRatio_Audio: 82 %
sendLossRatio_ShareAudio: 0 %
sendRTT_Audio: 110 ms
sendRTT_ShareAudio: 0 ms
sendJitter_Audio: 17 ms
sendJitter_ShareAudio: 0 ms
sendTransport_Audio: UDP
sendTransport_ShareAudio: UDP

receiveResolution: 320 x 180
receiveScreenShareResolution: 0 x 0
receiveFrameRate: 16 fps
receiveFrameRate_ScreenShare: 0 fps
receiveBitRate_Video: 182 kbps
receiveBitRate_ScreenShare: 0 kbps
receiveLossRatio_Video: 0 %
receiveLossRatio_ScreenShare: 0 %
receiveJitter_Video: 23 ms
receiveJitter_ScreenShare: 0 ms
receiveAudioCodec: Opus
receiveShareAudioCodec: Unknown
receiveShareCodec: Unknown
receiveLossRatio_Audio: 0 %
receiveLossRatio_ShareAudio: 0 %
receiveBitRate_Audio: 1 kbps
receiveBitRate_ShareAudio: 0 kbps
receiveJitter_Audio: 22 ms
receiveJitter_ShareAudio: 0 ms

localVideoDowngrade: None
remoteVideoDowngrade: None
packetsSent_Audio: 2570
packetsReceived_Audio: 7522
packetsSent_ShareAudio: 0
packetsReceived_ShareAudio: 0
packetsSent_Video: 39173
packetsReceived_Video:
102670
packetsSent_Screen: 115385
packetsReceived_Screen: 0

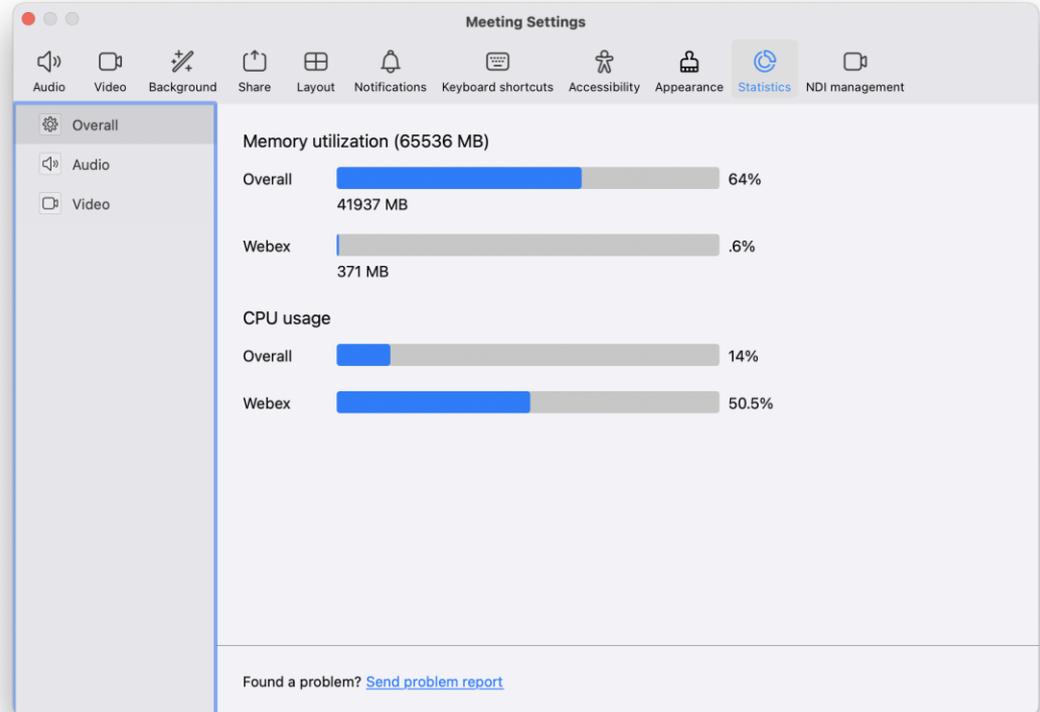
Resolving Network-related Media Problems

- Enable QoS if possible
- Ensure UDP ports 5004 and 9000 are permitted
 - Check Media is not being sent over TLS/443 or TCP/5004
- Enable split tunnel if using VPN
- Check WiFi Connectivity
- If possible, use Ethernet (at least to rule out WiFi)
- Check for routers with large buffers (dslreports.com speed test)
- Use ThousandEyes Enterprise or Endpoint Agents
- Check CPU utilization
- You may need to increase Internet service speeds for optimal experience
- Leverage Control Hub Monitoring (Troubleshooting, Reporting, and Analytics)!

Poor Audio / Video Quality – Full-featured Meetings

Help > Health Checker > Audio and Video Statistics...

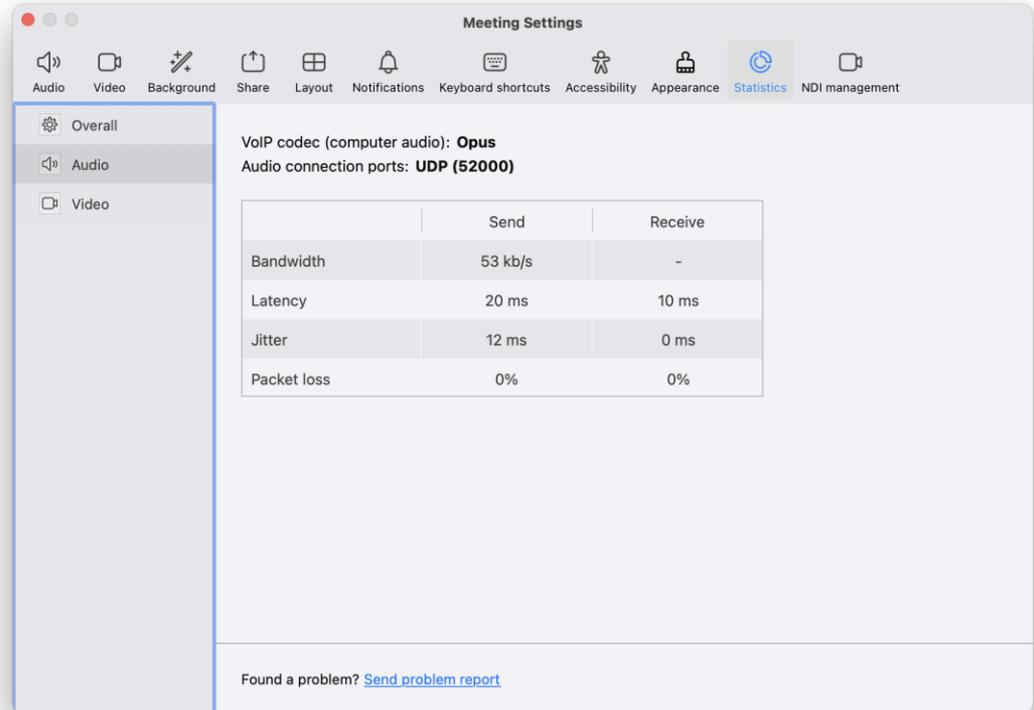
- Launch Health Checker from Webex Meetings Client
- Overall, Audio, and Video tabs



Poor Audio / Video Quality – Full-featured Meetings

Help > Health Checker > Audio and Video Statistics...

- Indicates TCP or UDP w/ Source Port
- Latency / Packet Loss / Jitter



The screenshot shows the 'Meeting Settings' window with the 'Statistics' tab selected. The left sidebar has 'Audio' selected. The main content area displays the following information:

VoIP codec (computer audio): **Opus**
Audio connection ports: **UDP (52000)**

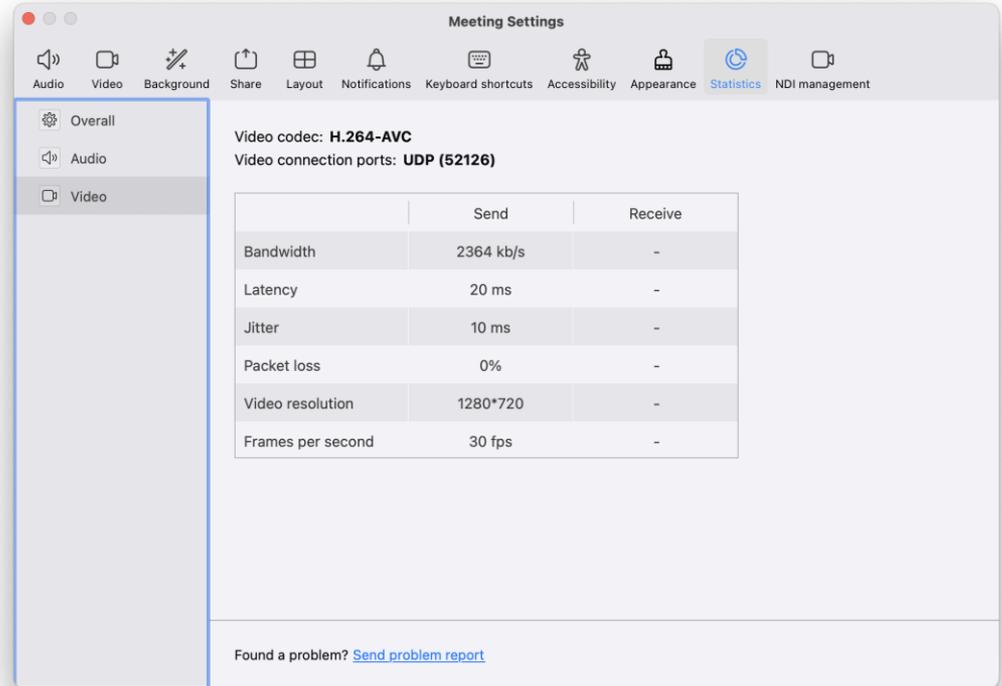
	Send	Receive
Bandwidth	53 kb/s	-
Latency	20 ms	10 ms
Jitter	12 ms	0 ms
Packet loss	0%	0%

Found a problem? [Send problem report](#)

Poor Audio / Video Quality – Full-featured Meetings

Help > Health Checker > Audio and Video Statistics...

- Indicates TCP or UDP w/ Source Port
- Video Codec
- Latency / Packet Loss / Jitter
- Current Video Resolutions (RX and TX)



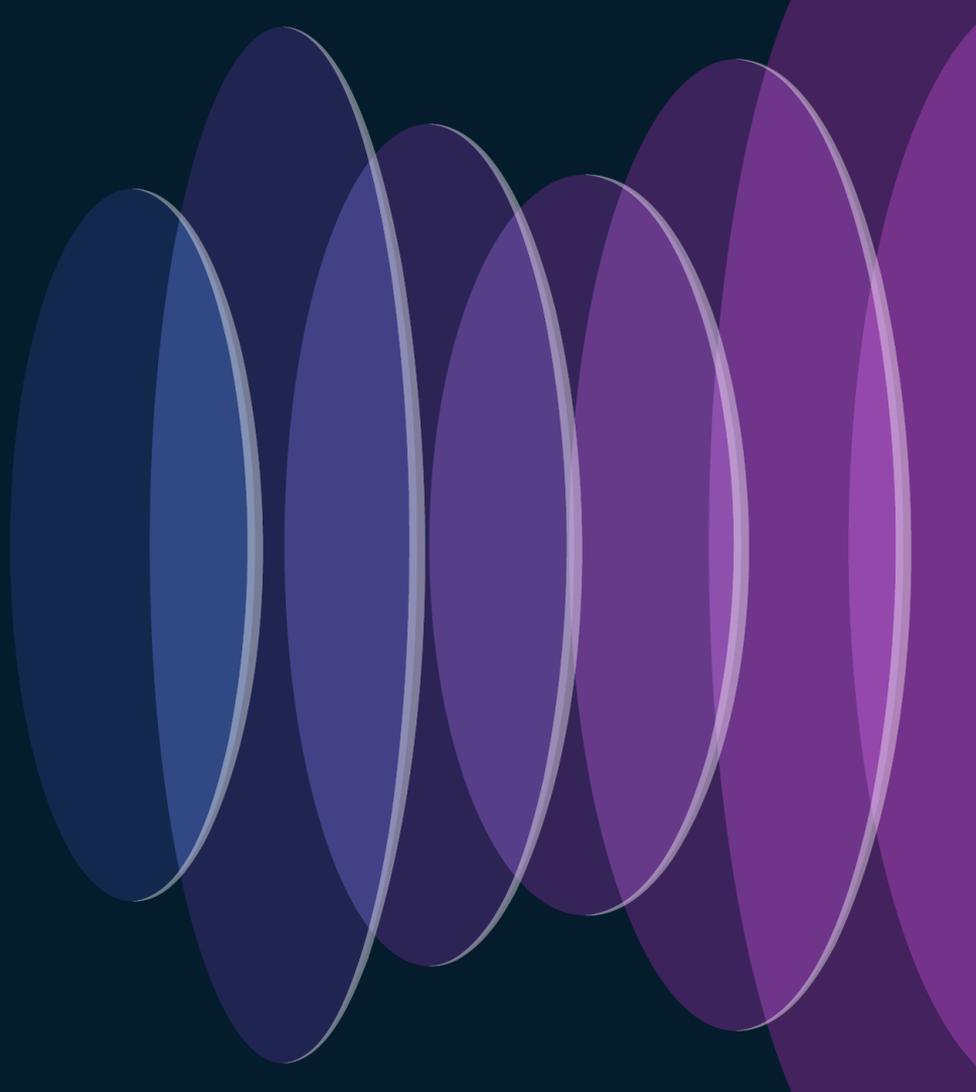
The screenshot shows the 'Meeting Settings' window with the 'Statistics' tab selected. The left sidebar has 'Overall', 'Audio', and 'Video' options. The main content area displays video connection information:

Video codec: **H.264-AVC**
Video connection ports: **UDP (52126)**

	Send	Receive
Bandwidth	2364 kb/s	-
Latency	20 ms	-
Jitter	10 ms	-
Packet loss	0%	-
Video resolution	1280*720	-
Frames per second	30 fps	-

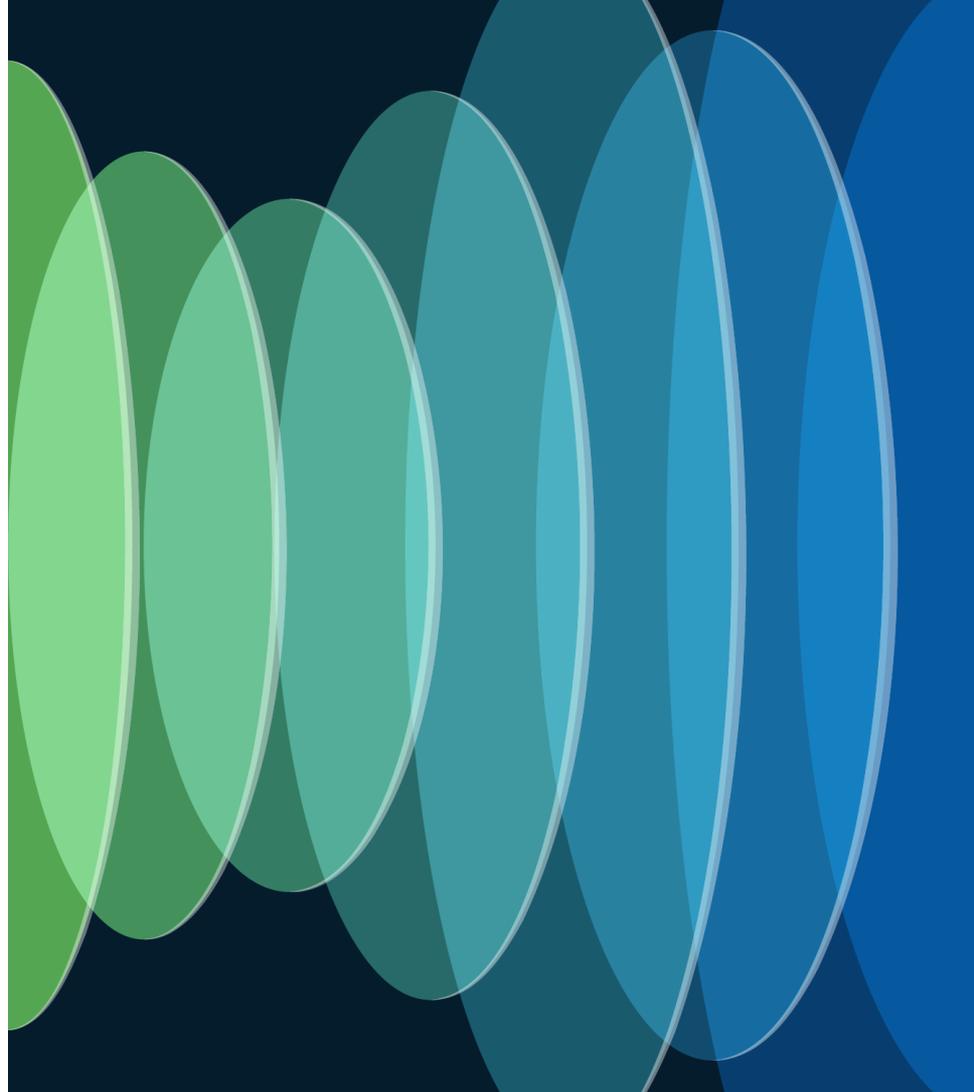
At the bottom, there is a link: 'Found a problem? [Send problem report](#)'

Control Hub Monitoring



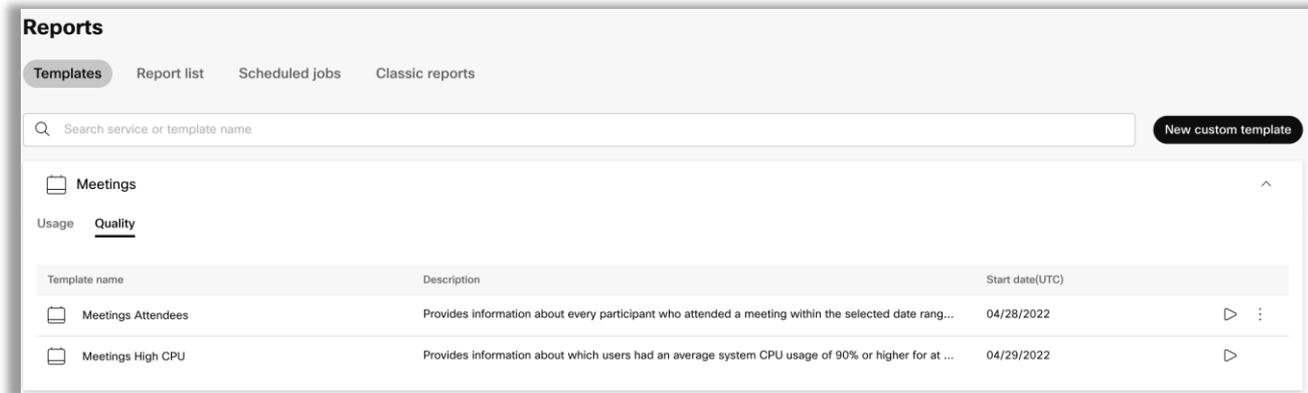
Reporting & Analytics

CISCO *Live!*



Reporting

- Meetings > Quality reporting allows you to take a proactive approach to diagnose issues end-users may never report
- **Meetings Attendees**
 - Provides network impairment (*loss, jitter, delay*) impacts for end users in a meeting
- **Meetings High CPU**
 - Provides insight into users that had **90% CPU usage** for **25%** of their video minutes



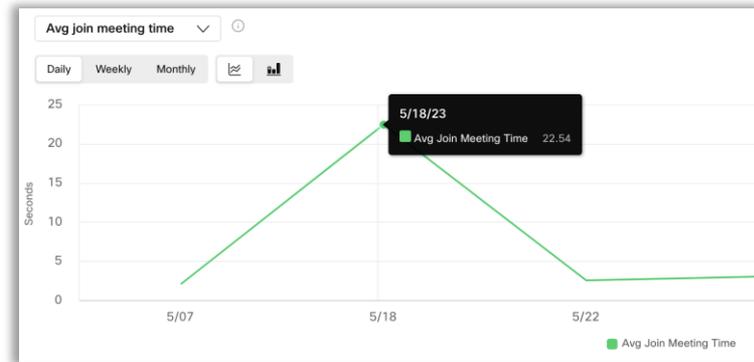
The screenshot displays the 'Reports' section of a Cisco interface. It features a navigation bar with 'Templates', 'Report list', 'Scheduled jobs', and 'Classic reports'. A search bar is present with the placeholder text 'Search service or template name' and a 'New custom template' button. Below the search bar, the 'Meetings' section is expanded, showing 'Usage' and 'Quality' tabs. A table lists two report templates:

Template name	Description	Start date(UTC)	
Meetings Attendees	Provides information about every participant who attended a meeting within the selected date rang...	04/28/2022	▶ ⋮
Meetings High CPU	Provides information about which users had an average system CPU usage of 90% or higher for at ...	04/29/2022	▶

Analytics

Join Meeting Time

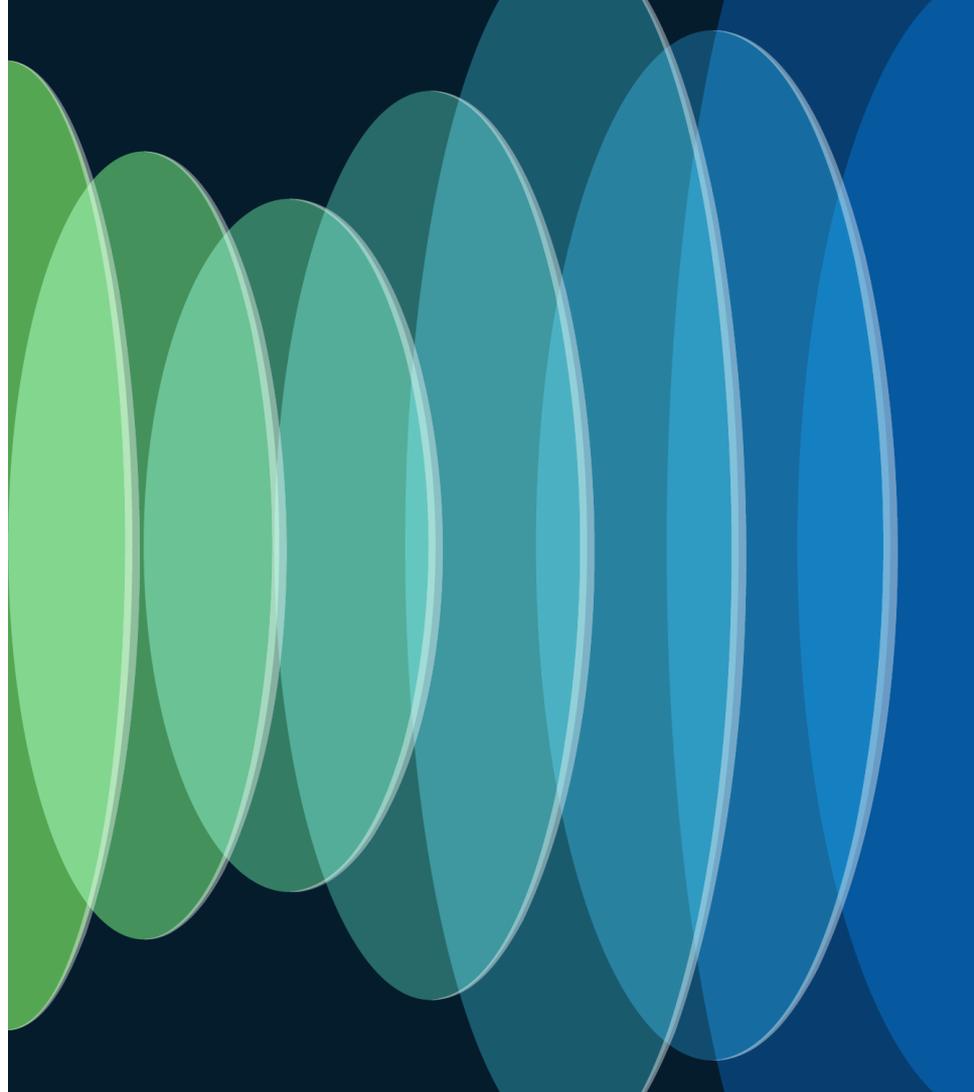
- Join meeting time analytics allow you to proactively monitor Join meeting time data
- You can determine the average join meeting time for a given day, week, or month
- By drilling into individual participants, you can see who specifically is dragging up join meeting delay averages



Participants with poor join meeting time

Participant Name	Conference ID	Email Address	Worst Join Meeting Time	Region	Location
Paul Stojanovski	260792969936802309	pstojano@thesto.com	42.802	Others	Others
Paul Stojanovski	261196068488777972	pstojano@cisco.com	4.063	North America	United States
Tyrion Lannister	261169045188939912	pstojano@cisco.com	2.651	North America	United States
Tyrion Lannister	261246856622805179	pstojano@cisco.com	2.38	Others	Others
Tyrion Lannister	260792969936802309	pstojano@cisco.com	2.273	North America	United States
Paul Stojanovski	261539602252206591	pstojano@cisco.com	2.256	North America	United States
Paul Stojanovski	261538628215280610	pstojano@cisco.com	2.174	North America	United States
Paul Stojanovski	25942656458585357	pstojano@cisco.com	2.166	North America	United States

Troubleshooting



Analyzing the reported issue

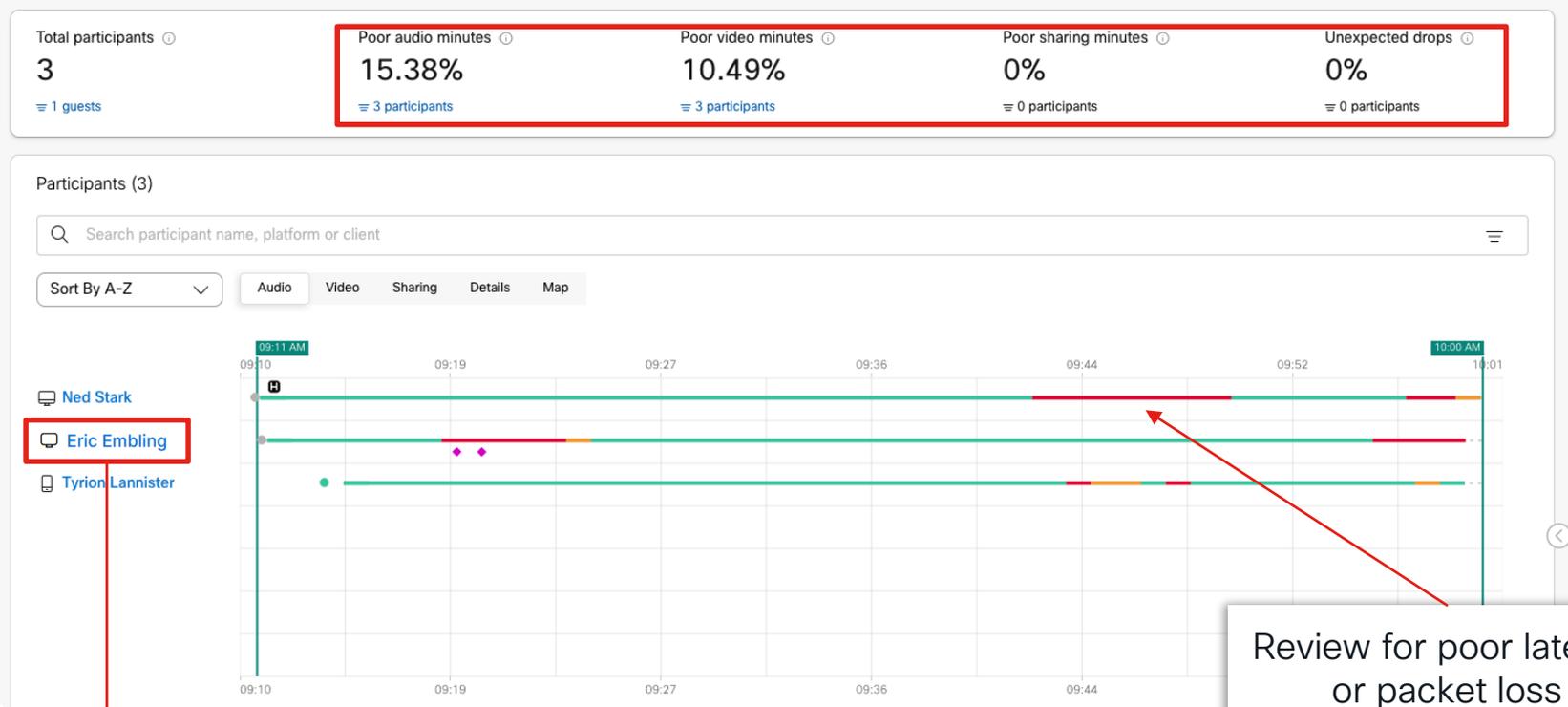
You have received the following report from an end-user

Problem Description:

Ned Stark – (ned.stark@thestoj.com) has reported that the Webex audio and video quality was **intermittently degraded** during an executive meeting on **May 30th, 2024 at 6:00am PT**. He has described the **audio as garbled** and the **video quality as bad**

Meeting number: 25323822622

Leveraging Control Hub Meetings Troubleshooting



Leveraging Control Hub Meetings Troubleshooting

The screenshot displays the Cisco Control Hub Meeting Troubleshooting interface. A central white pop-up window titled "Equipment and Networks" provides detailed technical information for a selected participant. The background interface shows meeting statistics and a participant list.

Meeting Statistics:

- Total participants: 3 (1 guest)
- Poor audio minutes: 2.06% (0 participants)
- Sharing minutes: 12%
- Unexpected drops: 0% (0 participants)

Participant List:

- Ned Stark
- Eric Embling (highlighted with a red box)
- Tyrrion Lannister

Equipment and Networks Details:

- Client: Webex App 43.6.0.26109
- Platform: Mac
- Connection: wifi
- Media Node: Dallas, USA
- Local IP: 10.26.162.240/28
- Public IP: 64.99.212.60/30
- Location: Fuquay-varina, NC, US
- Audio Transport: TCP
- Video Transport: TCP
- Share Transport: UDP
- Audio Codec: Opus (Sending), Opus (Receiving)
- Video Codec: H.264 BP (Sending), H.264 BP (Receiving)
- Share Codec: Not Available
- Microphone: MacBook Pro Microphone
- Speaker: CS-DESKPRO-2
- Camera: TANDBERG Video
- Noise Removal: 6 minutes
- Virtual Background: Off

Meeting Details:

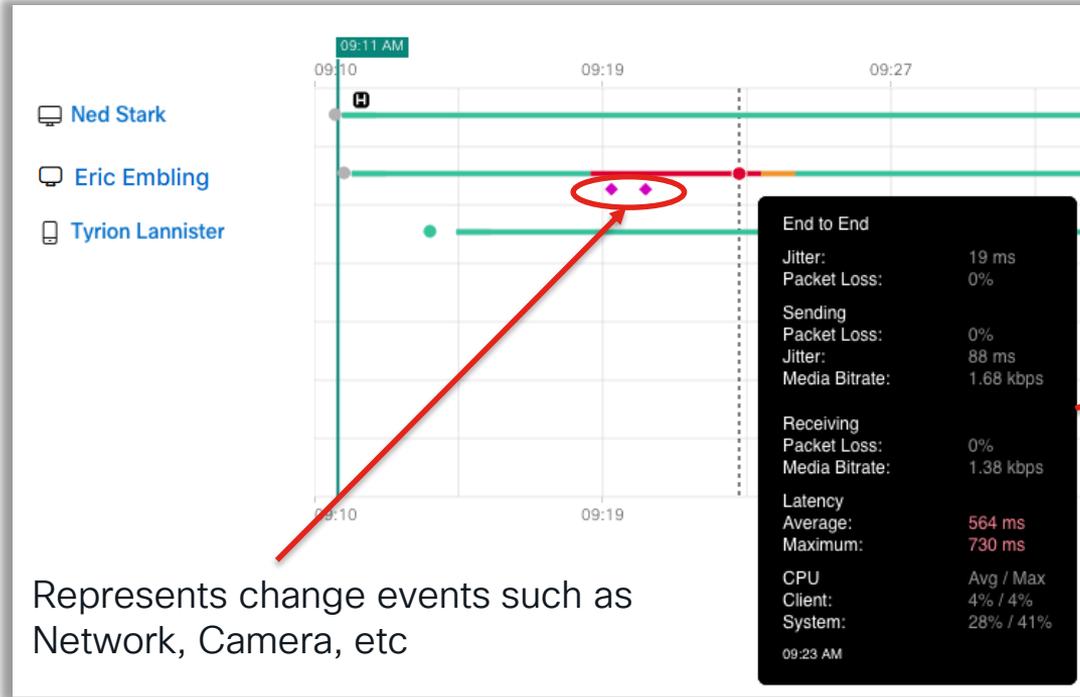
- Meeting No: 25339181399
- Conference ID: 259631941808032951
- Site Name: cisco/vecx-converged
- Meeting Date: 2023-05-05
- Meeting Time: 2:59 PM - 3:39 PM (40 Mins) (GMT -04:00) America/New_York
- Schedule Timezone: (GMT -05:00) Eastern/New York
- Meeting Type: Webex Meetings
- Host Name: ned.stark@thesto.com
- Host Email: ned.stark@thesto.com
- Audio: VoIP
- Video: Yes
- Recording: Not Used
- Screen Share: 10 minutes 22 seconds
- Apps: Not Used

Participant details can give you additional insights

Review for poor latency or packet loss

Leveraging Control Hub Meetings Troubleshooting

Determining Directionality

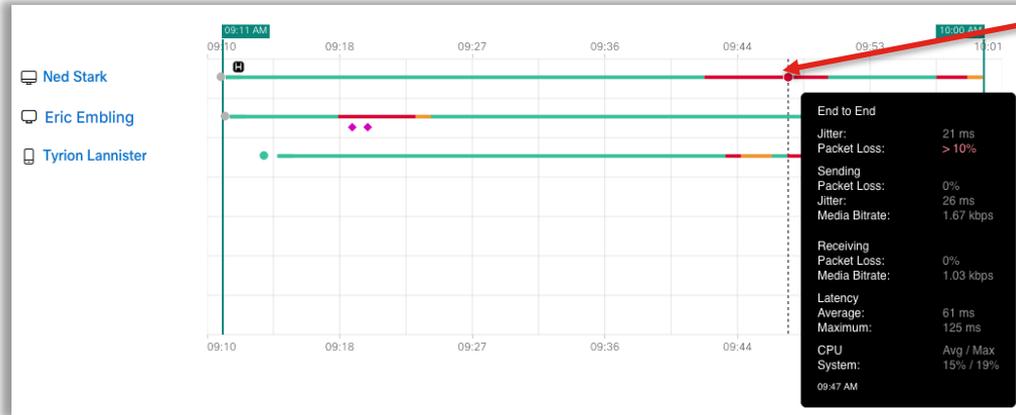


Measurements

PSTN Quality (Measured by MOS)	
Good:	4.0 - 5.0
Fair:	3.0 - 3.9
Poor:	Below 3.0
VoIP and Video Quality	
Good	
End to End Packet Loss:	Less than 3%, and
Latency:	Less than 300ms
Poor	
End to End Packet Loss:	Greater than 5%, or
Latency:	Greater than 400ms
Fair	
Neither of the above	
Signal Quality ⓘ	
Good	Green line
Fair	Orange line
Poor	Red line
Not Available	Grey line
Not Used	Dotted line

Leveraging Control Hub Meetings Troubleshooting

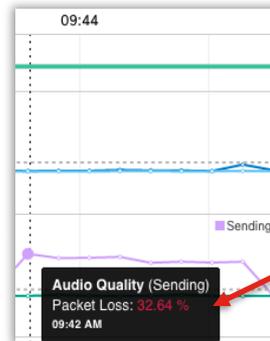
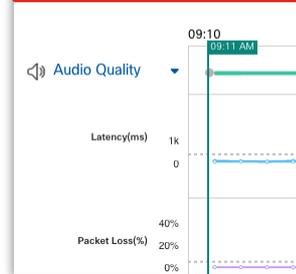
Assessing any red herring



A user with a poor-quality indicator (red) line **doesn't** mean they are the source of the issue

The Audio/Video measurement lines highlight the user's experience during that meeting

Participant Details - Eric Embling



Multiple users experiencing End-to-End packet loss at the same time could indicate an issue with one participant exhibiting Sending loss

Leveraging Control Hub Meetings Troubleshooting

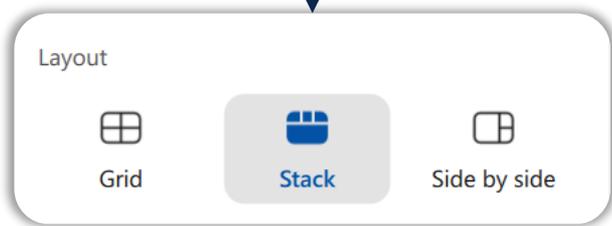
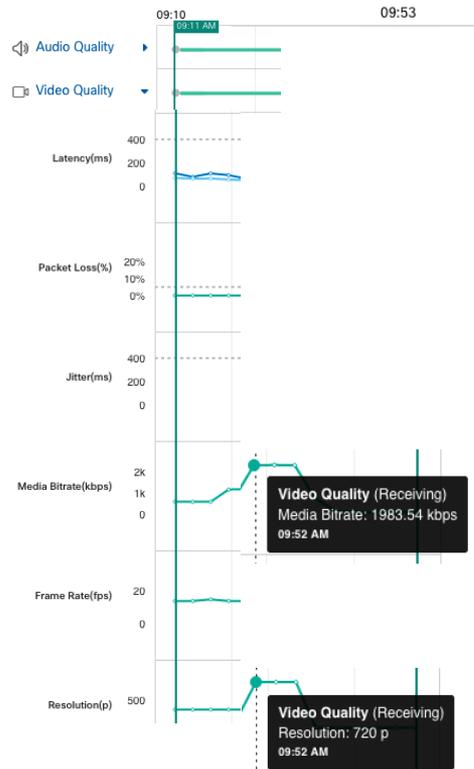
Identifying Layout Impacts to Resolution and Bitrate

Participant Details - Ned Stark



Requester

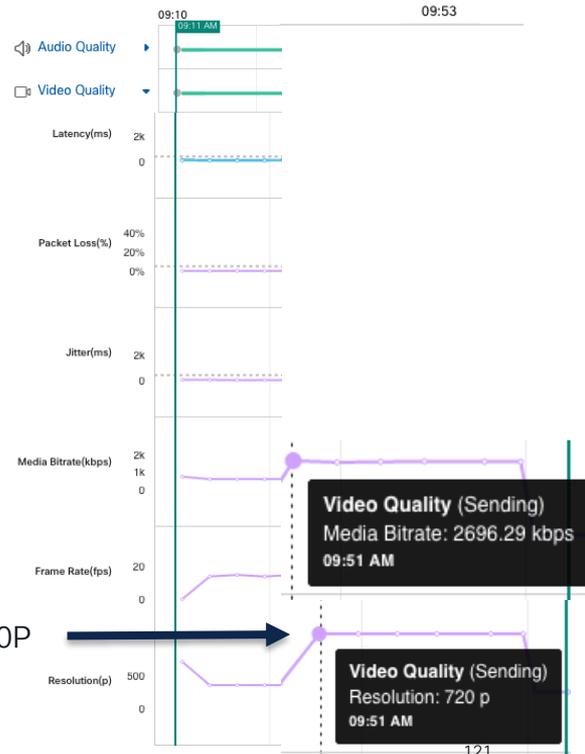
Changes Layout to a Stack view



Sender

As the Active Speaker the participant begins sending a 720P resolution stream

Participant Details - Paul Stojanovski

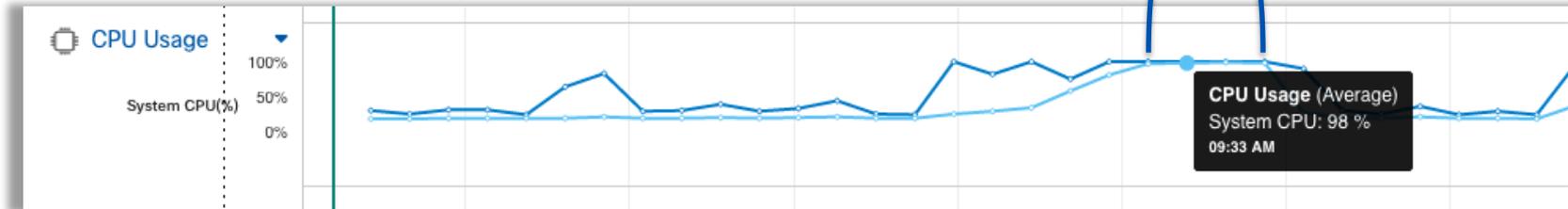
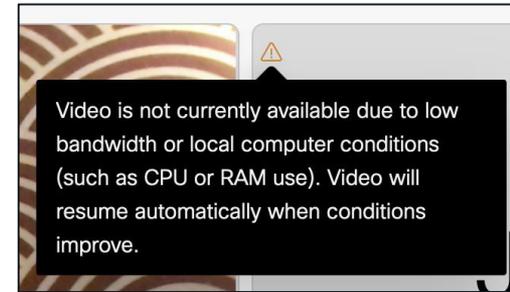


Leveraging Control Hub Meetings Troubleshooting

Identifying CPU usage spikes

Several local factors can result in high CPU or memory usage:

- Anti-virus or Anti-malware scanning
- Desktop management software
- Resource heavy applications
 - (ex: video editing software)
- CPU or memory leaks in applications



Leveraging Control Hub Meetings Troubleshooting

Bandwidth constraint environments

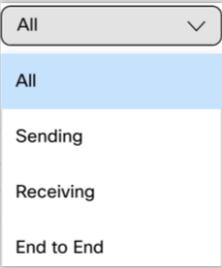
- Due to a constrained network link media bit rate is adjusted from 2659kbps to 22kbps.
- Network congestion can attribute to a reduced Media Bitrate
- Ensure Webex App traffic has proper QoS markings, and your network has been designed to support QoS



[Bandwidth Management, Preferred Architecture](#)

Understanding Control Hub Troubleshooting

Media directionality



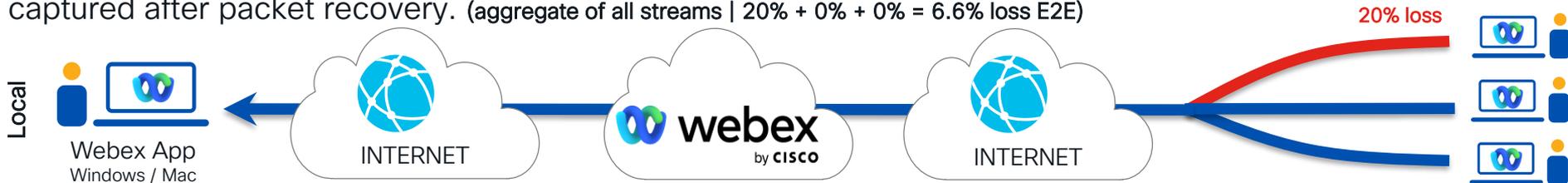
Sending: Participant's Webex app to the Webex media node.



Receiving: Webex media node to the participant's Webex app.

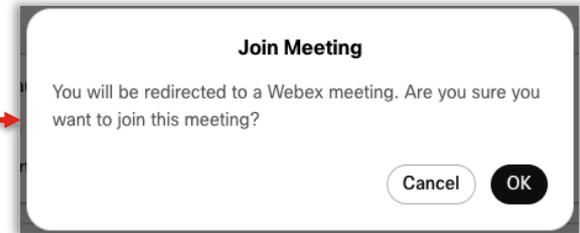
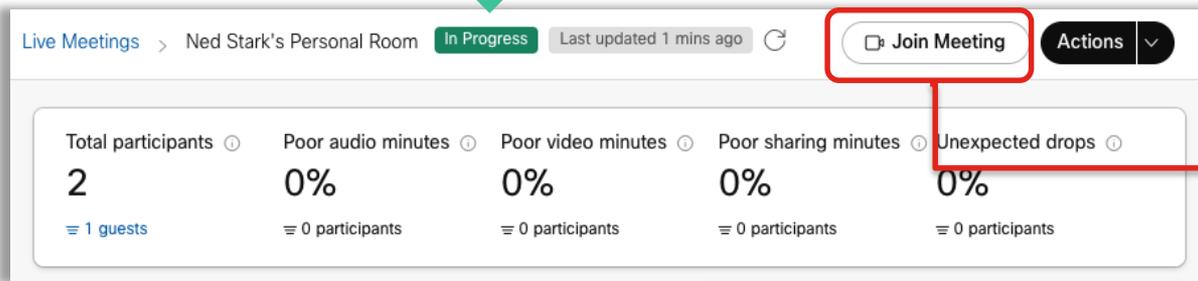
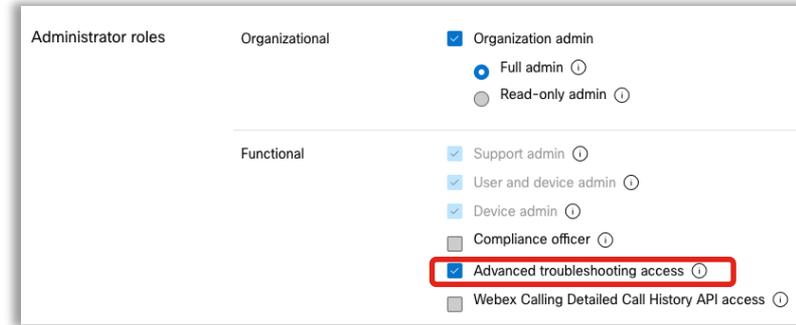


End to End: Measures the far end participant's loss and jitter, via Webex, to the local participant. This is captured after packet recovery. (aggregate of all streams | 20% + 0% + 0% = 6.6% loss E2E)



Advanced troubleshooting access

- Gives an Administrator the ability to join a Live Meeting
- Cannot be granted to yourself (requires another administrator)



Recapping our session

- ✓ High-Level Architecture
- ✓ Transitioning to a Webex Suite Meeting Platform
- ✓ Logging
- ✓ Troubleshooting



You made it to the top!

Joining a meeting

- Delayed join times
- Failures connecting

In-meeting experience

- Media disconnects
- Peripherals
- Audio and video quality

Control Hub Monitoring

- Troubleshooting

Complete Your Session Evaluations



Complete a minimum of 4 session surveys and the Overall Event Survey to be entered in a drawing to **win 1 of 5 full conference passes** to Cisco Live 2025.



Earn 100 points per survey completed and compete on the Cisco Live Challenge leaderboard.



Level up and earn **exclusive prizes!**



Complete your surveys in the **Cisco Live mobile app.**

Continue your education

- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at www.CiscoLive.com/on-demand

Contact me via Webex App:
eembling@cisco.com



The bridge to possible

Thank you

CISCO *Live!*

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