IGEL OS UCC Guide

Written by: <u>Lars Gloeckner</u> Version: 6.4 (October 19, 2023)

IGEL OS Firmware Base: 11.09.100, 11.09.104 IGEL UMS Version Base: UMS 12.01.110





Content

1.1.	Purpose of	f this Document	4
1.2.	Software E	Base of this Document	4
2.	General Conf	figuration for Unified Communications IGEL OS 11.07.x and later	5
2.1.	Webcam A	Audio and PCI Audio features	5
2.2.	Zoom Virtu	ual Background workaround for IGEL OS	6
2.3.	Virtual Bac	ckground (Blurring or Background Picture) for IGEL OS	7
3.	CITRIX on IGE	EL OS 11	12
3.1.	*importan	it* Citrix Configuration topics	17
3.2.	Citrix Conf	figuration for HDX Webcam redirection without plugins	19
3.3.	Citrix Conf	figuration for HDX -> Windows GPOs	21
3.4.	Cisco Web	Ex Meetings	22
3.4.1	. IGEL OS	Configuration (UMS based)	22
3.4.2	. Citrix De	esktop Configuration (XenApp and XenDesktop)	23
3.5.	Cisco Web	Ex	25
3.5.1	IGEL OS	Configuration (UMS based)	25
3.5.2	. Citrix De	esktop Configuration (XenApp and XenDesktop)	25
3.6.	Microsoft	Teams (& Skype for Business)	28
3.6.1	. IGEL OS	Configuration (UMS based)	28
3.6.2	2 Citrix De	esktop Configuration (XenApp and XenDesktop)	28
3.7.	Zoom		31
3.7.1	. IGEL OS	Configuration (UMS based)	31
3.7.2	2 Citrix De	esktop Configuration (XenApp and XenDesktop)	32
3.8	Citrix Brow	vser Content Redirection for MS Teams, GoToMeeting	34
3.8.1	IGEL OS	Configuration (UMS based)	34
3.8.2	2 Citrix De	esktop Configuration (XenApp and XenDesktop)	35
3.8.2	2.1 Confi	guration: YouTube with Citrix BCR	
3.9	Cisco JVDI	on Citrix	
3.9.1	IGEL OS	Configuration (UMS based)	
3.9.2	2 Citrix D	esktop Configuration (XenApp and XenDesktop)	
3.10	additior	hal information and Links for Troubleshooting on Citrix	40
۵. <u>ـ</u> ـد	VMware Hor	izon on IGEL OS 11	41
		ehEv Meetings	۲۲ ۱۵
4.		OS Configuration (LIMS bacod)	
4.	1.1. IGEL (ore VDI Configuration (Horizon C)	
4.	1.2. VMw	are VDI Configuration (Horizon 8.X)	43
4.	2. Cisco W	ebEx	45
4.	2.1. IGEL (OS Configuration (UMS based)	45

	4.2.2.	VMware VDI Configuration (Horizon 8.x)	45
	4.3.	Microsoft Teams	47
	4.3.1.	IGEL OS Configuration (UMS based)	47
	4.3.2.	VMware VDI Configuration (Horizon 8.x)	48
	4.4.	Zoom	50
	4.4.1.	IGEL OS Configuration (UMS based)	50
	4.4.2.	VMware VDI Configuration (Horizon 8.x)	51
	4.5.	VMware Horizon Browser Content Redirection with HTML5	53
	4.5.1.	IGEL OS Configuration (UMS based)	53
	4.5.2.	VMware VDI Configuration (Horizon 7.x and 8.x)	53
4.	6. Ci	sco JVDI on VMware Horizon	59
	4.6.1.	IGEL OS Configuration (UMS based)	59
	4.6.2.	VMware Horizon 8.x	59
5.	Azur	e Virtual Desktop (AVD) on IGEL OS 11	61
	5.1.	Cisco WebEx Meetings	61
	5.2.	Cisco WebEx Teams	61
	5.3.	Microsoft Teams	61
	5.3.1.	IGEL OS Configuration (UMS based)	61
	5.3.2.	AVD Configuration	61
	5.4.	Zoom	64
	5.4.1.	IGEL OS Configuration (UMS based)	64
	5.4.2.	AVD Configuration	65
6.	Mic	rosoft Remote Desktop (RDSH, RDP) on IGEL OS 11	67
	6.1.1.	IGEL OS Configuration (UMS based)	67
	6.1.2.	Windows 10, Windows Server 2016, 2019 and 2022	70
	6.2.	Cisco WebEx Meetings	71
	6.3.	Cisco WebEx Teams	71
	6.4.	Microsoft Teams	71
	6.5.	Zoom	71

Introduction

1.1. Purpose of this Document

The purpose of this document is to explain the configuration of Unified Communication (UC) solutions which are included in IGEL OS – in short term: UCC Guide.

Every section of the document contains the configuration for the endpoint with IGEL OS (Configuration with use of the IGEL Universal Management Suite - UMS) and the configuration for the VDI infrastructure.

At the end of some of the sections you will find also results from my tests.

The document only represents my personal experience and tests. The use of the document will be done on your own risks and without support from IGEL Technology.

The guide will cover the **last public IGEL OS build and** in addition to that **my favorite private build**. I added this new feature because many IT managers at large companies had spoken to me that their guidelines did not always allow the latest version to be used. Thus, everyone who always wants to stay up to date will find the latest version updated monthly and the valid public build version is also included in the guide and updated if necessary.

If you need additional help, you can contact me by mail at <u>lars@larsgloeckner.eu</u> or directly in the IGEL community, which is available at <u>www.igelcommunity.com</u>.

-Lars Glöckner

1.2. Software Base of this Document

I will provide the IGEL OS firmware which I have used for all my tests. All the software is official available provided by IGEL Technology.

IGEL OS:

IGEL OS 11.09.100	publicly available (download directly inside the UMS)
IGEL OS 11.09.104	please contact <u>igelcommunity@igel.com</u> for Private Builds
IGEL UMS:	
IGEL UMS 12.01.110	publicly available on <u>https://www.igel.com/software-downloads</u>

2. General Configuration for Unified Communications IGEL OS 11.07.x and later

2.1. Webcam Audio and PCI Audio features

If you need to use your webcam in different applications, there is a special registry key available which disables the audio stream from the webcam:



The new function to disable pci audio is also available:

Citrix + MS Teams + Cisco WebEx + Zoom for CWA 21.06						
Configuration	Search parameter	multimedia.disable_audio.pci				
Sessions ▼ Accessories ▼ User Interface ▼ Network ▼ Devices ▼ Security ▼ System ▲ Image: Time and Date ▲ Image:	 monitoring_agent mutimedia alsa ciscomeetings ciscoteams ciscovxme disable_audio pci webcam gstreamer mediaplayer pulseaudio zcomvdi network pcoip 	Disable pci audio, this includes internal speaker and HDMI/DP audio 2 2 7 Disable pci audio, this includes internal speaker and HDMI/DP audio				

2.2. Zoom Virtual Background workaround for IGEL OS

There is a new article on Zoom: https://support.zoom.us/hc/en-us/articles/4414459007757

I have built a workaround to make this feature possible on IGEL OS, but you need to configure that for your individual solution like this:

The main file which is every time available is this one: etc/zoomvdi/ZoomMedia.ini

The other ones are only there when the Zoom Plugin is enabled in the section of the solution for Citrix, VMware Horizon and AVD (WVD)

Zoom with Custom Partition: sed -i "s/SMARTVB=.*/SMARTVB=1/g" /etc/zoomvdi/ZoomMedia.ini

Zoom on Citrix: sed -i "s/SMARTVB=.*/SMARTVB=1/g" /etc/zoomvdi/citrix/ZoomMedia.ini

Zoom on Horizon: sed -i "s/SMARTVB=.*/SMARTVB=1/g" /etc/zoomvdi/vmware/ZoomMediaVmware.ini

Zoom on AVD or WVD: sed -i "s/SMARTVB=.*/SMARTVB=1/g" /etc/zoomvdi/wvd/

Zoom Virtual Background				
✓ Y System ► Firmware Custom	nization 🕨 Custom Commands 🕨 Desktop			
Configuration	Desktop initialization			
Sessions	▼ >			
Accessories	▼ 2 <u>∧</u>			
User Interface	▼			
Network	Refore Depiden Start			
Devices				
Security	▼			
	▲ 2 <u>A</u>			
Time and Date Update Update Cupdate Remote management Cupging Power Options Demvate Costomization Custom Application Custom Application Custom Application Custom Application Device Session Dest Sessi	Final desktop command sed -i "s/SMARTVB= "/SMARTVB=1/g" /etc/zoomvdi/ZoomMedia ini sed -i "s/SMARTVB="/SMARTVB=1/g" /etc/zoomvdi/cmware/ZoomMedia/mware ini sed -i "s/SMARTVB="/SMARTVB=1/g" /etc/zoomvdi/wwd/ZoomMedia/WVD ini			

Starting with IGEL OS 11.08.230 this feature is now integrated into the IGEL OS:

- IGEL Setup Sessions > Unified Communication > Zoom Client Selection
- Parameter Smart Virtual Background Support
- Registry multimedia.zoomvdi.smartvb

Type string

Value [Off] [Auto][Always]

2.3. Virtual Background (Blurring or Background Picture) for IGEL OS

The new great function is now available for everyone – here are the steps to integrate it:

1.) Activate it into the features



2.) Choose full or part segmentation (I recommend the option segm_full)

Configuration	Search parameter multimedia webcam virtual_background backscrub model
Configuration Sessions Configuration Contemports Configuration Contemports Configuration Contemports Configuration Contemports Conte	Search parameter. multimedia webcam withal_background backscrub model I alsa isometings I cisometings idicate and I disable_audo idicate and I disable_audo idicate and I mediaphyse idicate and I watcam idicate and
Search 🕤	Add instance Add instance Add instance Show only enabled Parameters

3.) If you choose Blurring, I recommend at least 70%

Configuration	Search parameter	multimedia.webcam.virtual_background.blur
Configuration Sessions Accessories Vasi Metrace Network Devices Security Gystem Update Remote management Remote Access Devices Remote Access Devices Remote Access Devices Remote Access Devices Remote Access Devices Remote Access Devices Remote Access Devices Remote Access Devices Remote Access Devices Remote Access Devices Devices Remote Access Devices De	Search parameter Search pa	multime dia webcam virtual_background blur Strength of background bluring 2 1 70
Search		Show only enabled Parameters

4.) You have the choice which webcam you want to use



5.) You need to activate the function with this option, otherwise it will not work at all

6.) To make the virtual webcam work in the Webcam info tool you need to enable this function too



7.) Choose the resolution which should be used for the feature

Configuration	Search parameter multimedia.webcam.virtual_background.resolution
Sessions	
	Image: A state of the state
	Ciscomeetings
Network	Ciscovanie
Devices	
Security 🗸	
System 🔺	► D pulseaudio
Time and Date	▶ 🖿 vaapi
► Dupdate	webcam Select resolution to use.
Remote management Remote Access	powerline_freque
	virtual_backgrour
Power Options	📔 background_fi
Firmware Customization	▼ 🗋 backscrub
Custom Partition	🗋 model
Custom Application End Custom Commands	li blur
▶ 🛅 Corporate Design	Choose_webc
Environment Variables	enabled Propiece video
Peatures Registry	
(Kegisu)	P type
	webcam nam
	webcam num
	Add Instance Delete Instance
Search 🛛 🔍	Show only enabled Parameters

8.) You can change between Blurring and Background Picture



9.) For Background Picture you need also to define the place where the picture is saved:

Search parameter	multimedia.webcam.virtual_background.background_file
 indisable_auddo ingstreamer ings	Background picture file to use as virtual background.

10.) I recommend assigning the picture with the files section from UMS too

/	Files/magictree.jpg	
	Source URL	
	Classification	Undefined
	Access rights	
		Others 🗹 🔲
		Owner User
	 Assigned Firmv 	vare Customizations

After the configuration it should look like this:

[1] start the webcam tool:

~	d d		
Task Manager			
		Webcam Information	
		VirtualCam	
Webcam Information		Width 1920 • Height 1080 • Rate 1/30 •	
		Test X Close	
~			
Ű			`
9		e e e e e e e e e e e e e e e e e e e	Ż
· · · · · · · · · · · · · · · · · · ·	Webcam Informat	ion	
- <u> </u>			



If the **Printing (Internet printing protocol CUPS)** feature is disabled, then a dependent GTK Webkit will not work, and the Virtual Webcam feature will not work.

3. CITRIX on IGEL OS 11

Based on

IGEL OS 11 11.09.104.01

Citrix Base configuration (HDX optimized) for CWA 23.09

Here you get all news about the Citrix Workspace App for Linux 23.09:

https://docs.citrix.com/en-us/citrix-workspace-app-for-linux/whats-new.html#2309

Citrix client version	🖸 💉 Default	Default: 23.09.0
	make sure you have configured right the "Based on Firmware":	
Name	Citrix + MS Teams + Cisco WebEx + Zoom for CWA 23.09	
Description		

If you choose UDP on Citrix, you need to enable UDP Audio on IGEL OS too:



and you can use UDP audio through Citrix Gateway:



Here is my current recommend configuration for graphics:

Citrix + MS Teams + Cisco WebEx + Zoom for CWA 23.03				
✓ ✓ ✓ ✓ / ► Sessions ► Citrix ► Citrix Global ► Codec				
Configuration Sessions Session Summary Global Session Options Citrix Clent Selection Citrix Cleat Selection Citrix Cleat Selection Citrix Cleat Selection Citrix Cleat Selection Citrix Cleat StoreFront Login Window Keyboard Keyboard Farewall Options Native USB Redirection Fabulatech USB Redirection Fabulatech Scanner Redirection HDX Multimedia	Graphical codec Automatic Additional Parameters for H.264 Deep Compression Codec Additional Parameters for H.264 Deep Compression Codec Accelerated H.264			
► Unified Communications				

Now you can use the new Multi Monitor Feature which is great for docking devices for example



You should enable the Multiple Audio Device support:



If you want to use the HDX webcam feature, there is an automatic configuration available:

Citrix + MS Teams + Cisco WebEx + Zoom	for CWA 22.03		×
A / Sessions Citrix Citrix Citri	ix Global 🕨 HDX Multimedia		
Configuration	🖅 📩 🗹 Multimedia redirection		
Sessions	🖌 🚺 🙍 🍌 🗹 HDX RealTime Webcam redirection		
Global Session Options	🔿 🔏 🗹 Automatic HDX webcam configural	ion	
Citrix Client Selection	Resolution grade	🖸 🝌 Best	
Clirix Global StoreFront Login	HDX Webcam frame rate	2 🛦 5	
Keyboard	HDX Webcam quality		
Mapping Firewall	HDX Webcam width		
Options Native USB Redirection Eabulatech USB Redirection	HDX Webcam height		
Fabulatech Scanner Redirection	HDX Webcam delay time		
HDX Multimedia Codec Linified Communications	HDX Webcam delay type		,
Citrix StoreFront	👔 🕤 📩 🗹 HDX RealTime Media Engine		
Citrix Self-Service RDP Horizon Client	Please note: With an enabled Browser Content Redin playback) is not functional anymore. These two featur	ection in Citrix, any h.264 multimedia conten es cannot be used simultaneously.	t within Firefox (incl. video
Appliance Mode	🔹 🔝 🖄 🛄 Browser content redirection (If enabled, Firef		

There is also a new feature for H264 codec support for webcam redirection:



and you should add these parameters to allow the use of Webcams in 64-bit applications too:

1) *it's enabled by default*





Starting CWA 22.07 there are some new audio enhancements:

[1] When the audio throughput undergoes a sudden spike or is not enough for an unstable network, this value increases the output buffering value. This increase in the output buffering value provides smooth audio. However, the audio might be slightly delayed. This parameter is only valid when `AudioRedirectionV4`, and `AudioLatencyControlEnabled` is set to True.

✓ Y A / ► System ► Registry					
Configuration	Search parameter	ica.module.audiotemplatencyboostv4			
Sessions Accessories User Interface Network Devices Security Security Accessories Accesories Accessories Accessories Acc	module ackdelaythresh adownutlikitram audiobuffersizemilliseconds audiolatencycontrolenabled audiolatencycorrectioninterval audionataency				
Time and Date Time and Date Update Def Remote management Remote Access Logging Def Power Options Firmware Customization Registry	audiotemplatencyboost audiotemplatencyboost cdmhidehidenfile cdviewerscreen clientaudiousethread commandacktresh dataackthresh dataackthresh	Audio temporary latency boost New			

[2] Improved audio echo cancellation support



[3] With this enhancement, the maximum output buffering value is decreased from 200 ms to 50 ms in Citrix Workspace app. As a result, the user experience of the interactive audio application is improved. Also, the round-trip time (RTT) is decreased by 150 ms. This parameter is valid only when `AudioRedirectionV4` is set to `True`

Configuration	Search parameter	ica.module.playbackdelaythreshv4
Sessions Accessories User Interface Vetwork Security System Time and Date Update Remote management Remote Access Logging Power Options Firmware Caustomization Remoterv		Playback delay threshold New
	 Impliegin Impliegin Impliegin Impliegin 	

3.1. ***important*** Citrix Configuration topics

1)

Starting with **Citrix VDA 2109**, the default "virtual channel allow list" policy changed from "disabled" to "enabled". This occurs even if you are upgrading an existing installation where you did not change the policy. Additional steps are required to allow Zoom, WebEx, and other tools to open a virtual channel.

Required steps:

Changing the virtual channel allow list policy to "disabled":

The easiest way to ensure that Zoom, WebEx, and other tools can create and open a virtual channel to connect to the VDI plugin, is to set the policy for the virtual channel allow list to "disabled".

If the policy state was changed to "enabled" after updating to VDA release 2109, you can edit the policy to return the status to "disabled".

You will need to open Citrix Studio and navigate to the ICA policies section. The following dialog shows the virtual channel allow list policy configured for "disabled".



Change it to disabled:

add Setting	×
Virtual channel allow list	
O Enabled	
This setting will be enabled.	
 Disabled This setting will be disabled. 	
Use default value	
Applies to: Virtual Delivery Agent: 2006 Multi-session OS, 2006 Single-session OS, 2009 Multi-session OS, 2009 Single- session OS, 2012 Multi-session OS, 2012 Single-session OS, 2103 Multi-session OS, 2103 Single-session OS, 2106 Multi-session OS, 2106 Single-session OS, 2109 Multi-session OS, 2109 Single-session OS	^
Enables the use of an allow list that specifies which virtual channels are allowed to be opened in an ICA session.	
M/ban disabled all virtual channels are allowed	\sim



Enable the Citrix connection bar for Citrix sessions and you can save the monitor layout within the session (it will be stored into User profile):



3)

There was a long running Citrix ERROR which I was not possible to solve till today - it ends mostly with the message: Cannot add store (cannot validate certificate) ERROR adding store 65147.

Today I was able to resolve it. The root cause is, that Microsoft changed in 2021 the PKI provider to SHA2 - if you use Windows Server 2019 or Windows Server 2022 you need to migrate your Root CA from SHA to SHA2:

Certificate Services - Migrate form SHA1 to SHA2 (SHA256) | PeteNetLive

4)

With Citrix 1912 LTSR CU5 and 2203 LTSR CU1 some screen artefacts are occurring if you don't use the right configuration. The problem is now fixed with IGEL OS 11.08.230 but also this workaround helps to solve that:

On Citrix you need to configure these 5 policies like this:

Studio		
	(All Versions)	Search P
Settings	Settings: 5 selected	View selected on
Summary	 Allow visually lossless compression. User setting - ICA\Graphics Enabled (Default: Disabled) 	Edit Unselect
	 Desktop Composition graphics quality User setting - ICA\Desktop UI Lossless (Default: Medium) 	Edit Unselect
	 Use hardware encoding for video codec User setting - ICA\Graphics Disabled (Default: Enabled) 	Edit Unselect
	 Virtual channel allow list Computer setting - ICA Disabled (Default:) 	Edit Unselect
	 Visual quality User setting - ICA\Visual Display Build to Lossless (Default: Medium) 	Edit Unselect

3.2. Citrix Configuration for HDX Webcam redirection without plugins

If you want to use applications on Citrix which do not have any plugins inside IGEL OS, it is also possible to use Citrix Webcam Redirection. You need to follow this section to proceed an optimal configuration.

I recommend this configuration on IGEL OS:

🕻 🗸 🖒 🗸 / 🕨 Sessions 🕨 Citrix 🕨 Citrix Global 🕨 HDX Multimedia					
Configuration	🕾 🔊 V Multimedia redirection				
Sessions	🖸 🥕 🗹 HDX RealTime Webcam redirection				
Sessions Summary Global Session Options	💁 📌 🗹 Automatic HDX webcam configuration				
Citrix Citrix Client Selection	Resolution grade		ວ 🔏 🗉	Best	•
Cifrix Global Cifrix Global StoreFront Login Uncertain	HDX Webcam frame rate				
Window Keyboard	HDX Webcam quality				
Firewall	HDX Webcam width				
Native USB Redirection Fabulatech USB Redirection	HDX Webcam height				
Fabulatech Scanner Redirection	HDX Webcam delay time				
Codec	HDX Webcam delay type				
Citrix StoreFront	🗇 💑 🗹 HDX RealTime Media Engine				
▶ ■ Citrix Seli-Service ▶ ■ RDP ▶ ■ Harizon Client	Please note: With an enabled Browser Content Redirection in These two features cannot be used simultaneously.	Citrix, any h.264 multimedia content within	Firefox (incl. v	ideo playback) is not function	ial anymore.
Appliance Mode	🕤 🛕 🔲 Browser content redirection (If enabled, Firefox will los				

Dependencies

- Webcam redirection works with and without RTME.
- Webcam redirection works for 32-bit applications. For example, Skype, GoToMeeting. Use a 32-bit browser to verify webcam redirection online. For example, <u>www.webcamtests.com</u>
- Webcam usage is exclusive to applications. For example, when Skype is running with a webcam and you launch GoToMeeting, exit Skype to use the webcam with GoToMeeting.
- Starting with CWA 21.12 Webcam redirection also works for 64-bit applications! *experimental*

Dependencies for 64-bit Webcam redirection support

Here are some additional topics which needs to be considered that the 64-bit redirection is working:

(1) Check GStreamer is working

- please check, that you have enabled the Fluendo codecs in the IGEL OS features

enabled:



- If CWA 21.09 or greater is used, you should use GStreamer 1.0 (it is mandatory if you want to use 64bit apps for Webcam redirection)

check if IGEL OS is right configured:

Search parameter	sessions.pnlogin%.gstreamer_version
pnapp9_%	
pndisconnect%	
pndisconnect0	
▼ 🗖 pnlogin%	
📄 applaunch	
📄 applaunch_path	
📄 applaunch_system	
📄 autostart	
autostartnotify	
📄 desktop	
📄 desktop_path	Preferred gstreamer version
📄 gstreamer_version	
hotkey	
hotkovmodifior	

Check if you have the right CVAD version in place

- if CWA 21.12 or greater is used, you need to use at least Windows Client oder Server VDA 21.09 or 1912 LTSR CU4 or 2203 LTSR,

unfortunately, 7.15 LTSR will not work at all

Supported and working video conferencing applications

- Adobe Connect
- GoToMeeting
- Google Hangouts and Hangouts Meet
- IBM Sametime
- BlueJeans*
- BigBlueButton*
- Jitsi*
- Microsoft Skype for Business 2015
- Microsoft Lync 2010 and 2013
- Microsoft Skype 7 or higher
- Media Foundation-based video applications on Windows 8.x or higher / Windows Server 2012 R2 or higher

*Not official supported from Citrix

3.3. Citrix Configuration for HDX -> Windows GPOs

(1) Applied Audio settings via GPO:

Computer Config > Admin Templates > Windows Components > Remote Desktop Services > Remote Desktop Session Host> **Device and Resource Redirection**

Changed Allow audio and video playback redirection from Not Configured to Enabled

Changed Allow audio recording redirection from Not Configured to Enabled

(2) Computer Config > Admin Templates > Windows Components > App Privacy

Changed Let Windows apps access the microphone from Not Configured to Enabled

Options > Default for all apps

Changed from User is in control to Force Allow

(3) Changed Let Windows apps access the camera from Not Configured to Enabled

Options > Default for all apps

Changed from User is in control to Force Allow

(4) Computer Config > Admin Templates > Windows Components > Camera

Changed Let Allow use of Camera from Not Configured to Enabled

(5)

NOTE: On Windows Server 2016 and above Logitech webcam won't redirect until you apply this GPO:

Computer Configuration > Administrative Templates > Windows Components > Remote Desktop Services > Remote Desktop Session Host - set "Do not allow supported Plug and Play device redirection" to Disabled

	Device and Resource Redirection		
	Select an item to view its description.	Setting	State
		E Do not allow video capture redirection	Not configure
		E Allow audio and video playback redirection	Enabled
		E Allow audio recording redirection	Not configure
		E Limit audio playback quality	Not configure
		E Do not allow Clipboard redirection	Not configure
		E Do not allow COM port redirection	Not configure
		E Do not allow drive redirection	Not configure
I		Do not allow LPT port redirection	Not configure
		Do not allow supported Plug and Play device redirection	Disabled
I	'	Do not allow smart card device redirection	Not configure
I		E Allow time zone redirection	Not configure
1			

(6)

The following GPOs needs to be applied on RD Session Host:

 Computer Configuration > Administrative Templates > Windows Components > Remote Desktop Services> Remote Desktop Session Host > Remote Session Environment > RemoteFX for Windows Server 2008 R2 -set "Configure RemoteFX" to Enabled



3.4. Cisco WebEx Meetings

3.4.1 IGEL OS Configuration (UMS based)

A / Sessions Citrix Ci	Slobal 🕨 HDX Multimedia		
Configuration	🔿 🔏 🗹 Multimedia redirection		
Sessions 🔺	🕈 🖸 🔏 🗹 HDX RealTime Webcam redirection		
Sessions Summary	Automatic HDX webcam configuration		
Citrix Client Selection Citrix Global	Resolution grade	2 🔏	Best
StoreFront Login	HDX Webcam frame rate		
📑 Window 🖹 Keyboard	HDX Webcam quality		
Mapping	HDY Wabcom width		
Options	HDX Webcarr wider		
Native USB Redirection Exputatect USB Redirection	HDX Webcam height		
Fabulatech Scanner Redirection	HDX Webcam delay time		
HDX Multimedia Codec	HDX Webcam delay type		1
Unified Communications			
Citrix StoreFront E Citrix Self-Service			
BRDP Horizon Client	Please note: With an enabled Browser Content Redirection in Ci These two features cannot be used simultaneously.	itrix, any h.264 multimedia content within Firefox (in	n video playback) is not functional anymore.
Appliance Mode	💿 点 🔲 Browser content redirection (If enabled, Firefox will lose		
AppliDis			
Citrix + MS Teams + Cisco WebEx + Zoo	om for CWA 22.03		
	Citrix Clobal 🕨 Unified Communications 🕨 Cisco		
Configuration	🖸 🙏 🗹 Cisco Webex Meetings VDI		
📄 Sessions Summary			
Global Session Options			
Citrix Client Selection			
▼	Audio		
StoreFront Login Window	Default volume	2 🛆 🦷	
Keyboard		~ ^	
► 🛅 Mapping	Default microphone volume	22 📥 o	
Options	Default ring volume	⊴ ▲	
Native USB Redirection		0	
Fabulatech USB Redirection Fabulatech Scanner Redirection	Internal sound card		
HDX Multimedia	Video		
Codec			
VDI Solutions	Allow default resolutions		
Skype for Business	Camera		
Cisco	Video resolution		
Citrix Self-Service			
Appliance Mode			
AppliDis	2 ▲ ✓ Allow default resolutions		
Evidian AuthMgr NoMachine NX Client	Hardware Accelerated Camera		
X Sessions	Video resolution		
Derellele Olient			

You need to choose the version you want to use (now in the GUI under Unified Communications):



3.4.2. Citrix Desktop Configuration (XenApp and XenDesktop)

(1)

Install the right software at the backend infrastructure:

In IGEL OS 11.09.100 are 3 different versions available:

[a] 42.6.11.6, please use https://akamaicdn.webex.com/client/WBXclient-42.6.11-6/webexapp.msi

[b] 42.10.8.14, please use https://akamaicdn.webex.com/client/WBXclient-42.10.8-14/webexapp.msi

[c] 43.6.0.158, not more separately available

In IGEL OS **11.09.104** are also these 3 different versions available:

[a] 42.6.11.6, please use https://akamaicdn.webex.com/client/WBXclient-42.6.11-6/webexapp.msi

[b] 42.10.8.14, please use https://akamaicdn.webex.com/client/WBXclient-42.10.8-14/webexapp.msi

[c] 43.6.0.158, not more separately available

use this document to check all what is needed for the installation:

https://help.webex.com/en-us/nfjsqzbb/Cisco-Webex-Meetings-Virtual-Desktop-Software

Citrix XenDesktop and Citrix XenApp are supported (no published app support)

(2)

add the following values under HKEY_USERS\.DEFAULT:



When you start Webex, it is only working with the redirection, if you can see the "VDI" sign here:

🖤 Cisco Webex Meetings - VDI

(4)

Check if you have the right Connection configuration:

Test your WebEx Connection Configuration: https://mediatest.webex.com/

Further known issues and solved bugs: <u>https://help.webex.com/en-us/c3r7uf/Open-and-Resolved-Bugs-for-the-Latest-Webex-Meetings-Updates</u>

(5)

Check the release notes for further information:

https://help.webex.com/en-us/article/glj57y/Release-Notes-for-Cisco-Webex-Meetings-Virtual-Desktop-Software-Release-42.x

3.5. Cisco WebEx

3.5.1. IGEL OS Configuration (UMS based)

Citrix + MS Teams + Cisco WebEx for CWA 21.06 ×				
✓ ✓ ✓ ✓ / ► Sessions ► Citrix ► Citrix Global ► HDX Multimedia				
Configuration	의 🔏 🗹 Multimedia redirection			
Sessions	💿 💉 🔲 HDX RealTime Webcam redirection			
Sessions Summary Global Session Options				
Citrix Client Selection		2 🔬 High 🔹		
StoreFront Login				
Keyboard				
Firewall				
Native USB Redirection				
Fabulatect OSe Redirection Fabulatech Scanner Redirection				
Codec		2 🛦 1		
Citrix StoreFront	🖸 🔏 🔲 HDX RealTime Media Engine			
	💁 📩 🔲 Browser content redirection			
Citrix + MS Teams + Cisco WebEx for CWA 21.06		,		
A / P Sessions P Citrix P Citrix Global A	Unified Communications 🕨 Cisco			
Configuration	🕿 🙏 🔲 Cisco Webex Meetings VDI	ł		
Sessions	🖸 🦽 🔽 Cisco WebEx VDI			
Sessions Summary Global Session Options				
Citrix Citrix Client Selection	2 📩 🔲 Cisco JVDI client			
Citrix Global StoreFront Login	Audio			
Window	Default volume	2 <u>0</u> 100		
Keybold Mapping Firewall	Default microphone volume	2 🛆 0 100 80		
Oplions Oplions	Default ring volume	2 ▲ 0 100		
Fabulatech USB Redirection Fabulatech Sengreg Bedirection	Internal sound card			
HOX Multimedia	Video			
Control Communications				
Skype for Business	Camera			

3.5.2. Citrix Desktop Configuration (XenApp and XenDesktop)

(1)

Install the right software at the backend infrastructure:

Cisco WebEx 43.6.0.26643 (for IGEL OS 11.09.100 and 11.09.104)

Only 64-bit installer: <u>https://binaries.webex.com/Webex-Desktop-Windows-x64-Combined-VDI-Gold/20230711062013/WebexBundle.msi</u>

(2)

Next, install the Host Installer package, Webex.msi, in the VDI image. You can use the following commands to do this:

Persistent VDI: msiexec /i Webex.msi ALLUSERS=1 ENABLEVDI=2 AUTOUPGRADEENABLED=0 /quiet /norestart

Non-persistent VDI: msiexec /i Webex.msi ALLUSERS=1 ENABLEVDI=2 AUTOUPGRADEENABLED=0 ROAMINGENABLED=1 /quiet /norestart

As you can see, the most important setting is ENABLEVDI=1. If you just simply double-click the MSI this option is not used, and redirection will not work.

The other important setting is ROAMINGENABLED=1 for non-persistent VDI. If this argument is specified, then the roaming database (the "spark_roaming_store.db" file) is stored in the end-user's roaming directory (AppData\Roaming). Otherwise, the roaming database is stored in AppData\Local. This argument must be accompanied by ALLUSERS=1, otherwise the ROAMINGENABLED argument is ignored.

(3)

Users may be in a Citrix environment and not have the thin client installed or the virtual channel is disconnected. We support this scenario with fallback to a non-virtual Webex App installation. In this mode, the app shows a warning that the quality of video may be affected. Once the virtual channel is connected, the app can change to VDI mode.

Use this table to understand the different installation combinations and how they affect media optimization for Unified CM, Webex Calling, and calls on Webex App.

HVD VDI	Thin client	Call service-enabled User	Calls on Webex App
argument	piugin		
ENABLEVDI=0	Not installed	Media is not optimized	Media is not optimized
ENABLEVDI=0	Installed	Media is not optimized	Media is not optimized
ENABLEVDI=1 * ENABLEVDI=2 **	Installed	Supported deployment; media is optimized	Supported deployment; media is optimized
ENABLEVDI=1 * ENABLEVDI=2 **	Not installed	Fallback to non-optimized media	Fallback to non-optimized media

* This argument does not detect the VDI environment automatically.

** This argument detects the VDI environment automatically.

Testing the solution

You can verify if the redirection is working by checking the Health Checker option in the Help menu. This option must show a connected status for the Virtual Channel. If you are missing a requirement, the Virtual Channel does not have connected status, or is not there at all.

<u>Deployment Guide for Cisco Webex for Virtual Desktop Infrastructure (VDI) - Deploy Webex for VDI [Support] -</u> <u>Cisco</u>

Management and troubleshooting around Cisco WebEx:

<u>Deployment Guide for Cisco Webex for Virtual Desktop Infrastructure (VDI) - Manage and Troubleshoot Webex</u> for VDI [Support] - Cisco

Attention:

In Citrix and Windows Virtual Desktop vGPU environments, Webex is not detected as working in a VDI environment.

These Windows registry entries on the HVDs are used to detect Webex in a VDI environment: [HKEY_CURRENT_USER\Software\Cisco Systems, Inc.\CiscoVDI] "isVDIEnv" = "true", datatype:REG_EXPAND_SZ [HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Spark Native] "isVDIEnv" = "true", datatype:REG_EXPAND_SZ

WebEx only support one Webex VDI client working together with one instance of Webex. Users can start multiple Citrix or VMWare sessions, but only one connection instance works, and the other instances fall back to non-VDI mode.

Important hint:

You want to use Cisco WebEx and Cisco Jabber in parallel?

Unfortunately, it is not possible to use Cisco Jabber and Cisco WebEx in parallel with the same headset and / or webcam. But this does not mean, that you cannot use both apps for meetings. There is an easy to fulfill possibility directly mentioned by Cisco how your users can use Cisco Jabber at all (for Cisco WebEx conferences and for direct calls).

On this page you will find how you need to configure that:

https://www.cisco.com/c/dam/en/us/td/docs/solutions/PA/mcp/APPLICATION_CALLING-Webex_with_Jabber_Cross_Launch.pdf

3.6. Microsoft Teams (& Skype for Business)

3.6.1 IGEL OS Configuration (UMS based)

Citrix + MS Teams + Cisco WebEx for CWA 21	1.06	×
🕻 🗸 🖒 🔨 🔥 I 🕨 Sessions 🕨 Citrix 🕨 Citrix G	lobal ► HDX Multimedia	
Configuration	💿 🔊 🗹 Multimedia redirection	-
leastona	🔺 🥼 🖸 📩 🗹 HDX RealTime Webcam redirection	
Sessions Summary Global Session Options	 Automatic HDX webcam configuration 	
Clinx Client Selection	Resolution grade	ם 🖍 High 🔹
Citrix Global StoreFront Login	HDX Webcam frame rate	
Keyboard	HDX Webcam quality	
Firewall	HDX Webcam width	
Native USB Redirection Fabulatech USB Redirection	HDX Webcam height	
Fabulatech Scanner Redirection	HDX Webcam delay time	
Codec	HDX Webcam delay type	Ω <u>∧</u> 1
Citrix StoreFront	🖆 🚀 🗹 HDX RealTime Media Engine	
Citrix Self-Service RDP	2 🔬 🔲 Browser content redirection	

Microsoft Teams and Skype for Business optimization are enabled by default. HDX webcam parameters are listed in the Citrix general section. No further configuration is needed.

3.6.2 Citrix Desktop Configuration (XenApp and XenDesktop)

(1)

The Citrix Workspace App (formerly Receiver) has an optimization that does not even exist in Windows 10 below Build 1909 and then falls back on the standard transmission, which has high performance impacts.

https://docs.microsoft.com/en-us/windows/whats-new/whats-new-windows-10-version-1909

Please install at least Version 20H2, you can get it here: <u>https://docs.microsoft.com/en-us/windows/release-health/status-windows-10-20h2</u>

(2)

HDX Realtime Optimization Pack: <u>https://docs.citrix.com/en-us/hdx-optimization/current-release.html</u> \rightarrow that is only needed, if you want to use Skype for business

(3)

Now you must start with installation of the right components:

[1] Optimization for Microsoft Teams requires a minimum of Microsoft Teams version 1.3.00.28778. <u>https://docs.citrix.com/en-us/citrix-virtual-apps-desktops/multimedia/opt-ms-teams.html</u>

(4)

You need to open a lot of firewall ports to allow MS Teams to communicate with its cloud service:

https://docs.microsoft.com/de-de/microsoft-365/enterprise/urls-and-ip-address-ranges?view=o365-worldwide#skype-for-business-online-and-microsoft-teams

(5)

Use the Office 365 online test to check if your network fulfills all the requirements to support Skype and/or Teams:

https://connectivity.office.com/

(6)

If you need help, here are the best list on open or known problems:

Troubleshooting HDX Optimization for Microsoft Teams: <u>https://support.citrix.com/article/CTX253754</u>

(7)

Check the Citrix Channel Allow List (with VDA 21.09 and higher) and activate this:

Citrix VDA 2109 now blocks the HDX RealTime Media Engine for Microsoft Skype and Windows Media Player redirection channel by default. Here's the fix

tua	l channel allow list
	Enabled
	mis setting witt be enabled.
	CTXRMEP.C:\Program Files\Microsoft Office\root\Office16\lync.exe CTXRMEP.C:\Program Files (x86)\Microsoft Office\root\Office16\lync.exe
	CTXMM.C:\Program Files (x86)\Windows Media Player\wmplayer.exe

(8) How you can check if the Teams Optimization is working?

- 1. Select your user profile image, then select **About**.
- 2. Select Version.

If the media optimization is loaded correctly, you will see this banner:

Search or type a command	
You have Microsoft Teams Version 1.3.00.9217 (64-bit)-E.	Citrix HDX Optimized

(9)

Sometimes it is also helpful to do a connection check on the endpoint. Execute these lines inside a local terminal and you can check if the needed addresses and ports can be reached:

nc -u -v -z 13.107.64.21 3478-3481 nc -u -v -z 52.112.0.31 3478-3481 nc -u -v -z 52.120.0.41 3478-3481 nc -v -z teams.microsoft.com 80 nc -v -z teams.microsoft.com 443 nc -v -z compass-ssl.microsoft.com 443 nc -v -z mlccdnprod.azureedge.net 443 nc -v -z aka.ms 443

(10) EPOS headset configuration for Skype for Business

Configuration needed for the standard function (= pick up softphone = connect):

DW Pro 1 / DW Pro 2 = DIP 4 Autolink ON

SDW 5035 / 5065 = DIP 5 = up = Audio Quality Best SDW 5035 / 5065 = DIP 2 = down = Autolink ON

(11)

Teams Call seems to crash after 20 seconds without connection

I have done some Microsoft Teams analysis. Customer thought calls are crashing after 20 seconds. But this was not the case.

In the general Teams configuration after 20 seconds a call will be forwarded to voicemail. So, it seems that the call was crashed before the connection was established. Sometimes if you use firewall and/or proxy configuration it is possible that the connection need more than 20 seconds. You can check this with a configuration change on the Teams App configuration:

Settings			
l General	Call answering ru	les	
E Accounts	Choose how you wan	t to handle incoming calls.	
Privacy	Calls ring me	O Forward my calls	
$\ensuremath{\bigcirc}$ Notifications	If unanswered	Do nothing	\sim
₽ Devices		Do nothing	
App permissions	Voicemail	Voicemail	
C Captions and transcripts	Voicemails will show i	n	
🗅 Files	Configure voic	email	
& Calls	Dingtones		

Change "Calls ring me" --> if unanswered --> Voicemail --> after 20 Seconds to

"Do nothing"

3.7. Zoom

3.7.1 IGEL OS Configuration (UMS based)



You need to choose the version you want to use, and you can select the use of Smart Virtual Background Support:



3.7.2 Citrix Desktop Configuration (XenApp and XenDesktop)

(1)

You need at least Citrix Desktops and App 7.15 CU4 or 1912 LTSR CU2 (CU4 for virtual backgrounds).

(2)

If you want to use a perfect Zoom experience on Citrix Desktop, you need the corresponding Zoom VDI build which fits to the plugin you have chosen in the UMS:

To be compatible, the plugin version must be equal to or less than the Zoom VDI application version. Installing a plugin with a version greater than the Zoom VDI application is not supported. Zoom always recommends updating the Zoom Plugin after updating the Zoom VDI application as many new features require an updated plugin. -> <u>https://support.zoom.us/hc/en-us/articles/360041602711-VDI-backwards-compatibility</u>

All VDI Downloads are located here: VDI releases and downloads – Zoom Support

For IGEL OS **11.09.100 and 11.09.104** you need:

[a]

5.15.2.23760, the download is here: https://zoom.us/download/vdi/5.15.2.23760/ZoomInstallerVDI.msi

[b]

5.14.10.23670, you can download here: https://zoom.us/download/vdi/5.14.10.23670/ZoomInstallerVDI.msi

[c]

5.13.10.23090, the download is here: https://zoom.us/download/vdi/5.13.10.23090/ZoomInstallerVDI.msi

(3)

For Citrix XenDesktop or Citrix XenApp installation you should use at least these parameters:

msiexec /i ZoomInstallerVDI.msi ZNoDesktopShortCut="true" ZConfig="nogoogle=1" ZRecommend="AudioAutoAdjust=1" /norestart ALLUsers=1

source: <u>https://support.zoom.us/hc/en-us/articles/201362163-Mass-Installation-and-Configuration-for-Windows</u>

Info:

Zoom VDI is supported on Citrix XenDesktop and Citrix XenApp published desktop (not with published apps)

Troubleshooting:

If Microphone and video are not working, maybe this article helps: <u>https://support.citrix.com/article/CTX275259</u>

Zoom has a list of Registry Settings that can help you troubleshoot or control the client. Here is a list of all available registry keys: <u>https://support.zoom.us/hc/en-us/articles/360032343371</u>



3.8 Citrix Browser Content Redirection for MS Teams, GoToMeeting

3.8.1 IGEL OS Configuration (UMS based)

✓ ✓ ✓ ✓ / ► Sessions ► Citrix ► Citrix Global ► HDX Multimedia					
Configuration 🖉 🔏 🗹 Multimedia redirection					
Sessions	🕈 🖸 🞊 🗹 HDX RealTime Webcam redirection				
Sessions Summary Global Session Options	 Automatic HDX webcam configuration 				
Citrix Client Selection	Resolution grade	2 📐 Normal 🔹			
Citrix Global StoreFront Login Mindow	HDX Webcam frame rate				
Keyboard	HDX Webcam quality				
► ► Mapping Firewall	HDX Webcam width				
Native USB Redirection	HDX Webcam height				
Fabulatech USB Redirection Fabulatech Scanner Redirection	HDX Webcam delay time				
Codec	HDX Webcam delay type	2 🛦 1			
Diffed Communications VDI Solutions Skype for Business	의 📩 🗹 HDX RealTime Media Engine				
📩 Cisco	💶 💦 🗹 Browser content redirection				



If you need to use Browser Content Redirection with Proxy (on the VDA), you need to activate this option too:



Client-side proxy configuration (and BCR is also possible), please follow the document below:

Proxy Configuration: https://kb.igel.com/igelos-11.06/en/proxy-49589251.html

Learn all what is needed on Citrix for BCR: <u>https://docs.citrix.com/en-us/citrix-virtual-apps-desktops-</u> service/multimedia/browser-content-redirection.html

How to configure Browser Content Redirection in Citrix? \rightarrow <u>https://support.citrix.com/article/CTX238236</u>

How to configure Browser Content Redirection Policies in Citrix? → <u>https://docs.citrix.com/en-us/citrix-virtual-apps-desktops/policies/reference/ica-policy-settings/browser-</u> <u>content-redirection-policy-settings.html</u>

How to troubleshoot Browser Content Redirection? -> https://support.citrix.com/article/CTX230052

Browser Content Redirection is not working? -> https://support.citrix.com/article/CTX275227

Please install Browser Redirection Extension v6.1: <u>https://chrome.google.com/webstore/detail/browser-redirection-exten/hdppkjifljbdpckfajcmlblbchhledln?hl=en</u>

Product Documentation:

Reference (Policy) – <u>https://docs.citrix.com/en-us/citrix-virtual-apps-desktops/policies/reference/ica-policy-settings/browser-content-redirection-policy-settings.html</u>

Reference (CVAD) – <u>https://docs.citrix.com/en-us/citrix-virtual-apps-desktops/multimedia/browser-content-redirection.html</u>

What's new in version 6.1

1) Revert to Chrome Extensions manifest v2 to circumvent a Chromium bug with manifest v3 extensions that causes high CPU utilization.

2) Supports redirection in inactive Chrome tabs (Requires CVAD 2112 or higher)

3) Supports migrating redirected tabs from one Chrome window to another (Requires CVAD 2112 or higher)

What's new in version 5.1 (The following features require CVAD 2109 or higher)

1) Introduces an improved redirection mechanism that uses a page in the chrome extension to begin the redirection process and solves script injection timing issues

2) Solves issues with redirection of websites enforcing a Content Security Policy (CSP) policy

3) Solves issues with redirection of websites that perform JavaScript redirects to authentication page in their Single Sign On (SSO) mechanisms

- 4) Solves issues with redirection of websites that perform 302 redirects
- 5) Solves issues with acquisition of multimedia devices on the BCR overlay after webpage is redirected

What's new in version 5.0

- 1) Fixes high DPI and scaling issues on overlay and VDA
- 2) Fixes some issues with redirected Angular websites

Important information for Audio inside the Browser:

Here is a quick tip on how to correct sound issues occurring in a Citrix session running Google Chrome / Chromium or Microsoft Edge. Often when the user went to a website that had media (i.e., YouTube), the sound would be broken. No audio sound would play on the endpoint via ICA.

It seems that this is an issue with Google Chrome version 79 or later. The newest versions of Chrome have an Audio Sandbox feature enabled by default which breaks sound on Citrix Apps and Desktops.

To resolve this issue, you can do one of three workarounds:

Edit the registry on the XenApp server (or XenDesktop Desktop):

HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Google\Chrome reg:dword AudioSandboxEnabled = 0

For Chromium based Microsoft Edge users:

The same DWORD can be added to HKEY_LOCAL_MACHINE\Software\Policies\Microsoft\Edge

or editing the shortcut that launches Google Chrome to add the following arguments:

"-disable-features=AudioServiceSandbox"

or disable the feature using Group Policy. You can download the Google Chrome ADMX templates here.

Then navigate to Google -> Google Chrome -> *Allow the audio sandbox to run* setting. **Set the option to Disabled.**

These workarounds will effectively disable the Audio Sandbox for Google Chrome on the Citrix VDI or Desktops Server.

If you don't have many experiences with Citrix Browser Content redirection, I recommend to follow this guide:

https://www.jgspiers.com/citrix-browser-content-redirection/

3.8.2.1 Configuration: YouTube with Citrix BCR

Policy Setting 1	Browser Content Redirection
	Allowed
	This setting will be enabled
	This setting will be disabled
Policy Setting 2	
ronoy octaing 2	Browser Content Redirection ACL Configuration
	Values:
	https://www.youtube.com/*
	https://www.youtube.de/*
	Add
	Use default value: https://www.youtube.com/*
	 Applies to the following VDA versions Virtual Delivery Agent: 7.16 Server OS, 7.16 Desktop OS, 7.17 Server OS, 7.17 Desktop OS, 7.18 Server OS, 7.18 Desktop OS, 1808 Server OS, 1808 Desktop OS, 1811 Server OS, 1811 Desktop OS, 1903 Server OS, 1903 Desktop OS, 1906 Server OS, 1906 Desktop OS, 1909 Multi-session OS, 1909 Single-session OS, 1912 Multi-session OS, 1912 Single-session OS Description This setting allows you to configure an Access Control List (ACL) of URLs that can use Browser Content Redirection.
	OK Cancel
Policy Setting 3	Browser Content Redirection Authentication Sites Values:
	https://www.youtube.com/*
	https://www.youtube.de/*
	https://consent.youtube.com/*
	- † +
	Add
	Use default value:
	 Applies to the following VDA versions Virtual Delivery Agent: 7.18 Server OS, 7.18 Desktop OS, 1808 Server OS, 1808 Desktop OS, 1811 Server OS, 1811 Desktop OS, 1903 Server OS, 1903 Desktop OS, 1906 Server OS, 1906 Desktop OS, 1909 Multi-session OS, 1909 Single-session OS, 1912 Multi-session OS, 1912 Single-session OS Description
	This setting allows you to configure a list of URLs that sites redirected via Browser Content Redirection can use to authenticate a user.
	OK Cancel
Policy Setting 4	Browser Content Redirection Proxy Configuration
	Enabled This setting will be enabled.
	 Disabled This setting will be disabled.

3.9 Cisco JVDI on Citrix

3.9.1 IGEL OS Configuration (UMS based)

Configuration	2 📩 🔲 Cisco Webex Teams VDI		
Sessions A	2 🔏 🗹 Cisco JVDI client		
Global Session Options	Audio		
Citrix Client Selection	Default volume	2 🛦 🔒 100 50	
StoreFront Login Window	Default microphone volume	2 🛦 📊 100 80	
E Keyboard ► Mapping	Default ring volume		
Firewall Options	Internal sound card	න 🛦	
Fabulatech USB Redirection	Video		
HDX Multimedia	🖸 🧷 🗹 Allow default resolutions		
Codec			
VDI Solutions			
Skype for Business			
Citrix StoreFront			
B RDP Bargan Client	Allow default resolutions		
Appliance Mode			
Evidian AuthMgr NoMachine NX Client	Video resolution		

3.9.2 Citrix Desktop Configuration (XenApp and XenDesktop)

(1)

Install the right software at the backend infrastructure:

https://software.cisco.com/download/home/286304684/type/283802941/release/14.1(3)

How to install: Deployment and Installation Guide for Cisco Jabber Softphone for VDI Release 14.0

all clients are available on this page too: https://www.webex.com/downloads/jabber/jabber-vdi.html

Only published desktops are supported (no published app support)

(2)

IGEL OS **11.08.360 and 11.08.307** include the client software: **Cisco JVDI 14.1.3** (This is supporting LTSR 2203)

(3) Find out which Collaboration Accessories are recommended: <u>Unified Communications Endpoint and Client Accessories - Cisco</u>

Important hint:

You want to use Cisco WebEx and Cisco Jabber in parallel?

Unfortunately, it is not possible to use Cisco Jabber and Cisco WebEx in parallel with the same headset and / or webcam. But this does not mean, that you cannot use both apps for meetings. There is an easy to fulfill possibility directly mentioned by Cisco how your users can use Cisco Jabber at all (for Cisco WebEx conferences and for direct calls).

On this page you will find how you need to configure that: <u>https://www.cisco.com/c/dam/en/us/td/docs/solutions/PA/mcp/APPLICATION_CALLING-Webex_with_Jabber_Cross_Launch.pdf</u>

Important note

Cisco is merging Jabber into WebEx

Here is the Deployment Guide for this merge:

https://www.cisco.com/c/dam/en/us/td/docs/solutions/PA/mcp/DEPLOYMENT_CLIENTS_Jabber_to_Webex.pd f

There is also another document which describes how you merge all your contacts and configurations from Jabber to WebEx:

https://help.webex.com/en-us/article/nyxlcde/Configure-Users-to-Move-Jabber-Contacts-and-Common-Settings-to-Webex-App

3.10. additional information and Links for Troubleshooting on Citrix

Information on Webcams in Citrix Virtual Apps and Desktops: Microphone not working in session on Server 2019 VDA Delivering Softphones with Virtual Apps and Desktops Citrix Webcam x64 is not supported with Citrix 7.16 or older Troubleshooting DTLS and EDT on Citrix Gateway

https://support.citrix.com/article/CTX132764 https://support.citrix.com/article/CTX272452 https://support.citrix.com/article/CTX133024 https://support.citrix.com/article/CTX223199 https://support.citrix.com/article/CTX226385

PoC Guide: Microsoft Teams optimization:

PoC Guide: Microsoft Teams optimization in Citrix Virtual Apps and Desktops environments

How to Enable H.264 Hardware Encoding on 7.15 LTSR:

How to Enable H.264 Hardware Encoding with Intel Iris Pro GPU on 7.15 LTSR (citrix.com)

Troubleshooting Citrix Workspace App for Linux:

https://docs.citrix.com/en-us/citrix-workspace-app-for-linux/troubleshooting.html

Tech Paper: Communications Ports Used by Citrix Technologies:

https://docs.citrix.com/en-us/tech-zone/build/tech-papers/citrix-communication-ports.html

Reference Architecture: Optimizing Unified Communications Solutions:

https://docs.citrix.com/en-us/tech-zone/design/reference-architectures/optimizing-unified-communicationssolutions.html

4. VMware Horizon on IGEL OS 11

VMware Base configuration (RTAV optimized)



if you need USB Redirection, please make sure, it is right configured:

✓ ✓ ✓ ✓ / ► Sessions ► Horizon Client ► Horizon Client Global ► USB Redirection					
Configuration	USB Redirection			2 🖄 on	•
Sessions Sessions Summary Global Session Options	🖉 🖄 🗹 Automat	ically connect at startup			
 ► Citrix ► RDP ▼ □ Horizon Client 	Default rule	ically connect when inserted		ע 🖍 Deny	•
Control Client Global Server Options Local Logon	🖸 🖄 🗹 Automat	ic splitting of composite USE	devices		
Window USB Redirection	Class Rules				+ 🖻 🖍 🗋
 Fabulatech USB Redirection Fabulatech Scanner Redirection Serial Port Redirection Drive Mapping Multimode 	Rule Allow Allow Allow		Family Smartcard Imaging Physical	Name Policy Rule Policy Rule Policy Rule	
Performance Smartcard	Device Rules				+ 🖬 🖍 🗋
Imitied Communications Horizon Client Sessions	Split	Vendor ID 0911	Product ID 0c1c	0 1 2 3	Name Speechmike Premium

< 🗸 🔪 🔥 / 🕨 Sessions 🍷 Horizon Client 🕨 Horizon Client Global 🍷 Multimedia				
Configuration	VMware Multimedia Redirection	12 📐 of		
Contrained Colored Co	Real Time Audio Video (RTAV)	2 🔬 on		

4.1. Cisco WebEx Meetings

4.1.1. IGEL OS Configuration (UMS based)



You need to choose the version you want to use:

Citrix + MS Teams + Cisco WebEx + Zoom for CWA 22.07						
X Y X I Sessions Vulfied Communications Cisco WebEx Meetings VDI Selection						
Configuration	Cisco Webex Meetings client version	2 🔏 42.6.8.5	•			
Appliance Mode	A >					
AppliDis						
Evidian AutnMgr						
Parallels Client						
PowerTerm Terminal Emulation						
IBM iAccess Client						
► 🛅 ThinLinc						
SSH SSH						
VNC Viewer						
 Firefox Browser Characterizer Draws and 						
Media Player						
VolP Client						
HP Anyware PCoIP Client	J.					
► 🖿 AVD						
► 🛅 Amazon						
► 🛅 deskMate						
V D Unified Communications						
Zoom Client Selection						
Cisco WebEx Meetings VDI Selection						

4.1.2. VMware VDI Configuration (Horizon 8.x)

(1)

Install the right software at the backend infrastructure:

- In IGEL OS 11.09.100 are 3 different versions available:
- [a] 42.6.11.6, please use https://akamaicdn.webex.com/client/WBXclient-42.6.11-6/webexapp.msi
- [b] 42.10.8.14, please use https://akamaicdn.webex.com/client/WBXclient-42.10.8-14/webexapp.msi
- [c] 43.6.0.158, not more separately available

In IGEL OS 11.09.104 are also these 3 different versions available:

[a] 42.6.11.6, please use https://akamaicdn.webex.com/client/WBXclient-42.6.11-6/webexapp.msi

[b] 42.10.8.14, please use https://akamaicdn.webex.com/client/WBXclient-42.10.8-14/webexapp.msi

[c] 43.6.0.158, not more separately available

use this document to check all what is needed for the installation:

https://help.webex.com/en-us/nfjsqzbb/Cisco-Webex-Meetings-Virtual-Desktop-Software

Citrix XenDesktop and Citrix XenApp are supported (no published app support)

(2)

add the following values under HKEY_USERS\.DEFAULT:



When you start Webex, it is only working with the redirection, if you can see the "VDI" sign here:



(4)

Check if your site administrator allows to use Cisco WebEx for VDI

https://help.webex.com/en-us/pyham7/Enable-Webex-Meetings-Virtual-Desktop-Software

(5)

Check if you have the right Connection configuration:

Test your WebEx Connection Configuration: <u>https://mediatest.webex.com/</u>

Further known issues and solved bugs: <u>https://help.webex.com/en-us/c3r7uf/Open-and-Resolved-Bugs-for-the-Latest-Webex-Meetings-Updates</u>

4.2. Cisco WebEx

4.2.1. IGEL OS Configuration (UMS based)

	orizon Client Global 🔸 Unified Communications 🕨 Ci	ISC0	
Configuration	💁 📐 🔲 Cisco Webex Meetings VDI		4
	2 🔏 🗹 Cisco WebEx VDI		
Claco VDI Solutions Horizon Client Sessions Appliance Mode	Audio Default volume	≏▲ .	100 80
Evidian AuthMgr NoMachine NX Client X Sessions	Default microphone volume	2▲ 0	0 80 100 400

4.2.2. VMware VDI Configuration (Horizon 8.x)

(1)

Install the right software at the backend infrastructure:

Cisco WebEx 43.6.0.26643 (for IGEL OS 11.09.100 and 11.09.104)

Only 64-bit installer: <u>https://binaries.webex.com/Webex-Desktop-Windows-x64-Combined-VDI-Gold/20230711062013/WebexBundle.msi</u>

(2)

Next, install the Host Installer package, Webex.msi, in the VDI image. You can use the following commands to do this:

Persistent VDI: msiexec /i Webex.msi ALLUSERS=1 ENABLEVDI=2 AUTOUPGRADEENABLED=0 /quiet /norestart

Non-persistent VDI: msiexec /i Webex.msi ALLUSERS=1 ENABLEVDI=2 AUTOUPGRADEENABLED=0 ROAMINGENABLED=1 /quiet /norestart

As you can see, the most important setting is ENABLEVDI=2. If you just simply double-click the MSI this option is not used, and redirection will not work.

Use this table to understand the different installation combinations and how they affect media optimization for Unified CM, Webex Calling, and calls on Webex App.

HVD VDI	Thin client	Call service-enabled User	Calls on Webex App
argument	plugin		
ENABLEVDI=0	Not installed	Media is not optimized	Media is not optimized
ENABLEVDI=0	Installed	Media is not optimized	Media is not optimized
ENABLEVDI=1 * ENABLEVDI=2 **	Installed	Supported deployment; media is optimized	Supported deployment; media is optimized
ENABLEVDI=1 *	Not installed	Fallback to non-optimized media	Fallback to non-optimized media
ENABLEVDI=2 **			

Use this table to understand the different installation combinations and how they affect media optimization for

The other important setting is ROAMINGENABLED=1 for non-persistent VDI. If this argument is specified, then the roaming database (the "spark_roaming_store.db" file) is stored in the end-user's roaming directory (AppData\Roaming). Otherwise, the roaming database is stored in AppData\Local. This argument must be accompanied by ALLUSERS=1, otherwise the ROAMINGENABLED argument is ignored.

Testing the solution

You can verify if the redirection is working by checking the Health Checker option in the Help menu. This option must show a connected status for the Virtual Channel. If you are missing a requirement, the Virtual Channel does not have connected status, or is not there at all.

During my tests I was using a 2vCPU, 4GB memory Windows 10 virtual desktop and I was testing with one other colleague in the WebEx Teams session.

With VDI redirection enabled, we noticed the video was presented in a higher resolution and the sound was much clearer as opposed to not using redirection.

I also noticed the CPU and memory usage dropped by 10% and 200MB when using redirection, this was of course because the video content was offloaded/redirected to the endpoint device.

<u>Deployment Guide for Cisco Webex for Virtual Desktop Infrastructure (VDI) - Deploy Webex for VDI [Support] -</u> <u>Cisco</u>

Attention:

In VMware and Windows Virtual Desktop vGPU environments, Webex is not detected as working in a VDI environment.

These Windows registry entries on the HVDs are used to detect Webex in a VDI environment:

[HKEY_CURRENT_USER\Software\Cisco Systems, Inc.\CiscoVDI] "isVDIEnv" = "true", datatype:REG_EXPAND_SZ

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Spark Native] "isVDIEnv" = "true", datatype:REG_EXPAND_SZ
```

WebEx only support one Webex VDI client working together with one instance of Webex. Users can start multiple Citrix or VMWare sessions, but only one connection instance works, and the other instances fall back to non-VDI mode.

Webex VDI detects Citrix at first and then VMware in the HVD environment. If you want to use VMware, make sure no Citrix Agent is installed.

(4) You can check if the connection is configured right:



4.3. Microsoft Teams4.3.1. IGEL OS Configuration (UMS based)



11.08.360 and 11.08.307 include the right client software:

VMware Horizon Client 2206-8.6.0-20094634 support Microsoft Teams optimization and

VMware Horizon Client 2303-8.9.0-21435420 support Microsoft Teams optimization

The newer version includes some enhancements for the Microsoft Teams Optimization:

https://docs.vmware.com/en/VMware-Horizon/2303/horizon-remote-desktop-features/GUID-F68FA7BB-B08F-4EFF-9BB1-1F9FC71F8214.html

4.3.2. VMware VDI Configuration (Horizon 8.x)

For the Horizon 8 release, Horizon Client for Linux 2106 supports Microsoft Teams Optimization when used with Horizon Agent version 2106 and later.



Please follow these steps to install Microsoft Teams for VMware Horizon:

The Optimization for Microsoft Teams configuration requires:

Microsoft Azure / 365 in backend: where the client would connect to establish the connection Microsoft Teams Client (Optimized) x32 or x64 bit

Virtual desktop and client machine (where horizon client installed) operating system should be windows 10 x64

Enough resource in virtual desktop: Minimum requirement is 2 vCPU Network with IPv4, reachability of vDesktops and Horizon client to Microsoft 365

For Microsoft Teams offloading you need at least an advanced Horizon license

The installation

To make it work it require to do configuration in 2 locations:

In vDesktops Master Image In AD Group Policy

In vDesktops Master Image:

Install Horizon Agent before you install Microsoft Teams The Media Optimization for Microsoft Teams group policy setting must be enabled to use the feature

Download the Teams MSI package:

https://teams.microsoft.com/downloads/desktopurl?env=production&plat=windows&arch=x64&managedInsta ller=true&download=true

Install the MSI to the VDI VM by running the following commands (for floating desktops)

msiexec /i <path_to_msi> /l*v <install_logfile_name> ALLUSER=1 ALLUSERS=1

Install Media Feature Pack: <u>https://www.microsoft.com/en-us/download/details.aspx?id=48231</u>

In Active Directory

Download Horizon GPO template bundle Import the bundle to AD Create a GPO and map it to vDesktops OU Go to Computer Configuration -> Policies -> Administrative Templates -> VMware View Agent Configuration -> VMware HTML5 Features -> VMware WebRTC Redirection Features

Enable the Media Optimization for Microsoft Teams setting

Additional information you will find here:

https://docs.vmware.com/en/VMware-Horizon/2106/horizon-remote-desktop-features/GUID-F68FA7BB-B08F-4EFF-9BB1-1F9FC71F8214.html

Troubleshooting

All VMware articles for Troubleshooting MS Teams Optimization you can find here: <u>https://kb.vmware.com/s/global-</u> <u>search/%40uri#q=HorizonTeamsOptimization&t=MoreContent&sort=relevancy</u>

Sometimes it is also helpful to do a connection check on the endpoint. Execute these lines inside a local terminal and you can check if the needed addresses and ports can be reached:

nc -u -v -z 13.107.64.21 3478-3481 nc -u -v -z 52.112.0.31 3478-3481 nc -u -v -z 52.120.0.41 3478-3481 nc -v -z teams.microsoft.com 80 nc -v -z teams.microsoft.com 443 nc -v -z compass-ssl.microsoft.com 443 How you can check if the Teams Optimization is working?

- 1. Select your user profile image, then select **About**.
- 2. Select Version.

If the media optimization is loaded correctly, you will see this banner:



EPOS headset configuration for Teams and Skype for Business:

Configuration needed for the standard function (= pick up softphone = connect):

DW Pro 1 / DW Pro 2 = DIP 4 Autolink ON

SDW 5035 / 5065 = DIP 5 = up = Audio Quality Best SDW 5035 / 5065 = DIP 2 = down = Autolink ON

Teams Call seems to crash after 20 seconds without connection

I have done some Microsoft Teams analysis. Customer thought calls are crashing after 20 seconds. But this was not the case.

In the general Teams configuration after 20 seconds a call will be forwarded to voicemail. So, it seems that the call was crashed before the connection was established. Sometimes if you use firewall and/or proxy configuration it is possible that the connection need more than 20 seconds. You can check this with a configuration change on the Teams App configuration:

Settings			
ۉ3 General	Call answering r	ules	
E Accounts	Choose how you wa	nt to handle incoming calls.	
Privacy	Calls ring me	O Forward my calls	
	If unanswered	Do nothing	\sim
Devices		Do nothing	
 App permissions 	Voicemail	Voicemail	
CC Captions and transcripts	Voicemails will show	in	
🕒 Files	Configure voi	cemail	
𝖏 Calls			

Change "Calls ring me" --> if unanswered --> Voicemail --> after 20 Seconds to "Do nothing"

4.4. Zoom

4.4.1. IGEL OS Configuration (UMS based)



You need to choose the version you want to use, and you can select the use of Smart Virtual Background Support:



4.4.2. VMware VDI Configuration (Horizon 8.x)

(1)

If you want to use a perfect Zoom experience on VMware Horizon, you need the corresponding Zoom VDI build which fits to the plugin you have chosen in the UMS:

To be compatible, the plugin version must be equal to or less than the Zoom VDI application version. Installing a plugin with a version greater than the Zoom VDI application is not supported. Zoom always recommends updating the Zoom Plugin after updating the Zoom VDI application as many new features require an updated plugin. -> <u>https://support.zoom.us/hc/en-us/articles/360041602711-VDI-backwards-compatibility</u>

All VDI Downloads are located here: VDI releases and downloads – Zoom Support

For IGEL OS 11.09.100 and 11.09.104 you need:

[a]

5.15.2.23760, the download is here: https://zoom.us/download/vdi/5.15.2.23760/ZoomInstallerVDI.msi

[b]

5.14.10.23670, you can download here: <u>https://zoom.us/download/vdi/5.14.10.23670/ZoomInstallerVDI.msi</u>

[c]

5.13.10.23090, the download is here: https://zoom.us/download/vdi/5.13.10.23090/ZoomInstallerVDI.msi

(2)

For VMware Horizon 7.x and 8.x installation you should use these parameters:

msiexec /i C:\yourfolder\ZoomInstallerVDI.msi ZNoDesktopShortCut="true" ZConfig="nogoogle=1" ZRecommend="AudioAutoAdjust=1" /quiet /qn /norestart ALLUsers=1

source: <u>https://support.zoom.us/hc/en-us/articles/201362163-Mass-Installation-and-Configuration-for-Windows</u>

(3)

If you have an audio problem with Zoom on VMware Horizon, here is the fix: <u>https://kb.vmware.com/s/article/78481</u>

4.5. VMware Horizon Browser Content Redirection with HTML54.5.1. IGEL OS Configuration (UMS based)



4.5.2. VMware VDI Configuration (Horizon 7.x and 8.x)

(1)

VDI or RDSH images must have at least the Horizon Agent 7.10 with HTML5 option. This option is included by default.

The HTML5 Multimedia Redirection GPO settings must be configured on the Active Directory server.

The Chrome or Edge browser must be installed in the VDI or RDSH image.

The VMware Horizon HTML5 Multimedia Redirection extension must be installed in the Chrome or Edge browser.

The BLAST (Extreme) or PCoIP protocols must be used.

(2)

Redirecting HTML5 multimedia content from a VDI or RDSH session to the local client system requires installing the HTML5 Multimedia Redirection feature and the Chrome or Edge browser within the VDI or RDSH image, enabling the HTML5 Multimedia Redirection plug-in, and specifying which websites will use this feature.

Assuming you already copied the "vdm_agent.admx" file (which is part of the VMware Horizon <u>GPO bundle</u>) in the SYSVOL folder of your Active Directory server, you can go ahead and configure the required VMware Horizon settings.

When creating the GPO, navigate to **Computer Configuration > Policies > Administrative Templates > VMware View Agent Configuration > VMware HTML5 Features**

Enable the following settings:

- Enable VMware HTML5 Multimedia Redirection
- Enable Chrome and/or Edge Browser HTML5 Multimedia Redirection

 Enable the URL list and fill in the value name, for example: <u>https://www.youtube.com/*</u> and do not fill in any value (leave this empty). It is important to include the http:// or https:// prefix in the URLs. You can use wildcards.

True SSO Configuration	A Cetting	State	Comment
Unity Touch and Hosted Apps	E Enable VMware HTMLS Multimedia Redirection	Enabled	No
View Agent Direct-Connection Configuration	Enable URL list for VMware HTML5 Multimedia Redirection.	Enabled	No
View RTAV Configuration	Enable Chrome Browser for VMware HTML5 Multimedia Redirectio	n Enabled	No
View USB Configuration VMware Client IP Transparency VMware Device Bridge VMware Device Bridge VMware HashMMR VMware HashMMR VMware HTML5 Features VMware HTML5 Features VMware HTML5 Multimedia Redirection VMware HTML5 Multimedia Redirection VMware Virtualization Pack for Skype for Busi VMware View Common Configuration VMware View Server Configuration	Enable Edge Browser for VMware HTMLS Multimedia Redirection	Not configured	No
Enable URL list for VMware Enable URL list for VMware TITL5 Multimedia Redir O Not Configured Comment: Enabled	ection. Previous Setting Next Setting irrection irrection	n i Redirection. Ultimedia Redirectio	
Options:	Help: Specifies the url list to enable the VMware HTML5 Multimedia		
Multimedia Redirection.	Redirection. Specify the url pattern in the "Value name" column, e.g "https://www.youtube.com/*". The "Value" column should be empty and it is reserved for the future use.		
	Show Contents The url list to enable the VMware HTML5 Multimedia Redirection.		
	Value name Value Https://www.youtube.com/*		
þ 📓 Domain Controllers	ОК	Cancel	

For the Chrome and Edge browsers, you can opt to automatically manage and activate the HTML5 Multimedia Redirection plug-in for the end-users by configuring the following GPO settings. For Chrome, download the **Chrome .admx** file and copy this to the **SYSVOL folder** of the Active Directory server.

When creating the GPO, go to **User or Computer** Configuration > Policies > Administrative Templates > Google > Google Chrome > Extensions

Enable the setting "Configure the list of force-installed apps and extensions" and fill in the following line:

- ljmaegmnepbgjekghdfkgegbckolmcok;<u>https://clients2.google.com/service/update2/crx</u>
- •

 Policies Software Settings Windows Settings Administrative Templates: Policy definition Application Compatibility Control Panel FSLogix Google Google Corrent Derault search provider Derault search provider Deprecated policies Extensions Google Cast Hume news 	s (ADMX files) ≣	Setting Configure algorithms in integrity checks on extension update Configure allowed app/extension types Configure extension installation blacklist Configure extension, app, and user script install sources Configure extension installation whitelist Configure extension installation whitelist Configure extension installation whitelist Configure extension management settings	State 0 Not configured Not configured Enabled Not configured Not configured Not configured
Se Configure the li	st of force-in	nstalled apps and extensions	K ion u
Configure the list of force-installed apps an O Not Configured Comment Enabled Disabled Supported on: Micros	d extensions	Previous Setting Next Setting	s s
			~
Options:	Help		
Extension/App IDs and update URLs to be silent installed Show	dy Spec with disat apps	ifies a list of apps and extensions that are installed silently, out user interaction, and which cannot be uninstalled nor oled by the user. All permissions requested by the /extensions are granted implicitly, without user interaction. Show Contents tension/App IDs and update URLs to be silently installed Value Imaegmnepbglekghdfkgegbckolmcok.https://clients2.google.	com/service/update2/crx
			DK Cancel
rter GPOs			

Note, since this can also be set on the user level, this setting can of course also be done with a User Environment Manager tool, such as **VMware Dynamic Environment Manager**.

	ADMX-based Settings	×		
ettings Conditions Con	mments			
General Settings				
Name: Google Chrome I	HTML5 Multimedia Redirection extensio	n		
Label:				
Tag:	Co	nfigure the list of force-insta	lled apps and extensions	- 🗆 X
ADMX-based Settings -	Configure the list of force-installer	d apps and extensions		
policy setting is config	Not Configured			
⊞ Google	Enabled			
Google Ovome Entensions	Disabled			
Configure t	Options		Show Contonte	- 0
	Extension/App IDs and update URLs to		Show Contents	Long Long
	Installed	Extension/App IDs and updat	e URLs to be silently installed	
	304	Value		
		 Ipraegmepbgjekghofkg- 	egbokolmook https://olents2.google.com/service.	update2/crx
		•		
a categories are selected				
			times	OK Cancel
	S WAT NAY USEANY TO			
	Supported on: Microsoft Windows 7	orlater		

To automatically enable the **Edge browser** plugin, please follow <u>these instructions</u>.

(3)

If you have met all the requirements, it is time to test if the configuration is working! Within the VDI or RDSH session, launch the Chrome or Edge browser, and look for the VMware Horizon HTML5 Redirection Extension **icon in the right-upper corner**.



Note to the following:

- The icon must be green. Only then the plug-in is active and ready for use.
- If the **icon is grey**, then you **have not met one of the requirements**. For example, the Horizon Agent install parameter or Horizon Client version.

Here is a quick tip on how to correct sound issues occurring in a VMware Horizon session running Google Chrome / Chromium or Microsoft Edge. It is possible, that inside a virtual desktop that had Google Chrome in it, when a user went to a website that had media (i.e., YouTube), the sound would be broken. No audio sound would play on the endpoint.

It seems that this is an issue with Google Chrome version 79 or later. The newest versions of Chrome have an Audio Sandbox feature enabled by default which breaks sound on VMware Horizon. To resolve this issue, you can do one of three workarounds:

Edit the registry on Horizon Desktop:

HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Google\Chrome reg:dword AudioSandboxEnabled = 0

For Chromium based Microsoft Edge users

The same DWORD can be added to HKEY_LOCAL_MACHINE\Software\Policies\Microsoft\Edge

or editing the shortcut that launches Google Chrome to add the following arguments:

"-disable-features=AudioServiceSandbox"

or disable the feature using Group Policy. You can download the Google Chrome ADMX templates here.

Then navigate to Google -> Google Chrome -> *Allow the audio sandbox to run* setting. **Set the option to Disabled.**

These workarounds will effectively disable the Audio Sandbox for Google Chrome in the VDI.

VIDEO TEST

For this test I have prepared the following VM:

- Windows 10, build 1803 VDI
- Horizon Agent 7.10
- Specs: 2vCPU, 4GB Memory

Let us first play a FULL HD (1080p) video **without** HTLM5 Redirection. We immediately see the CPU spiking to **100%**. Furthermore, the image and audio quality **are quite poor**. Bandwidth consumption is around 200Kbps and 8Mbps, using BLAST Extreme.



Let us launch the **same demo video** (also in 1080p) **with HTLM5 Redirection**. We immediately notice the plugin icon changing with the addition of the **blue "REDR" letters**. This means redirection is fully operational. We notice the image and quality levels are excellent!



When you look at the CPU resources, the CPU will stay around 20-40%.



The bandwidth consumption is the same as playing the video without HTML5 Redirection, around 200Kbps and 8Mbps using Blast Extreme.



Even when using a **1vCPU, 2GB Memory** Windows 7 VDI, we notice a great multimedia experience!! With only about **40-60%** CPU consumption.



4.6. Cisco JVDI on VMware Horizon

4.6.1. IGEL OS Configuration (UMS based)

X > X / > Sessions > Horizon Client > Horizon Client Global > Unified Communications > Cisco						
Configuration	🕾 🛕 🔲 Cisco Webex Teams VDI					
	Cisco JVDI client Audio Default volume Default ring volume Internal sound card					
Drive Mapping University Performance Performance Unified Communications Distance Stype for Business Distance Distance	Allow default resolutions Camera Video resolution	© ā ∕ Ō				
Hortzon Crient Sessions Appliance Mode Control Control Control Control Xolan Autholog Notaciante NX Client Xolassions Paralelos Client Deroverferm Terminal Emulation Die IBM Access Client	 Allow default resolutions Hardware Accelerated Camera Video resolution 					

4.6.2. VMware Horizon 8.x

(1)

Install the right software at the backend infrastructure:

https://software.cisco.com/download/home/286304684/type/283802941/release/14.1(3)

How to install: Deployment and Installation Guide for Cisco Jabber Softphone for VDI Release 14.0

all clients are available on this page too: https://www.webex.com/downloads/jabber/jabber-vdi.html

(2)

IGEL OS 11.08.360 and 11.08.307 include the client software: **Cisco JVDI 14.1.3**

(3) Find out which Collaboration Accessories are recommended: <u>Unified Communications Endpoint and Client Accessories - Cisco</u>

Important hint:

You want to use Cisco WebEx and Cisco Jabber in parallel?

Unfortunately, it is not possible to use Cisco Jabber and Cisco WebEx in parallel with the same headset and / or webcam. But this does not mean, that you cannot use both apps for meetings. There is an easy to fulfill possibility directly mentioned by Cisco how your users can use Cisco Jabber at all (for Cisco WebEx conferences and for direct calls).

On this page you will find how you need to configure that: <u>https://www.cisco.com/c/dam/en/us/td/docs/solutions/PA/mcp/APPLICATION_CALLING-Webex_with_Jabber_Cross_Launch.pdf</u>

```
**Important note**
```

Cisco is merging Jabber into WebEx

Here is the Deployment Guide for this merge:

https://www.cisco.com/c/dam/en/us/td/docs/solutions/PA/mcp/DEPLOYMENT_CLIENTS_Jabber_to_Webex.pd f

There is also another document which describes how you merge all your contacts and configurations from Jabber to WebEx:

https://help.webex.com/en-us/article/nyxlcde/Configure-Users-to-Move-Jabber-Contacts-and-Common-Settings-to-Webex-App

5. Azure Virtual Desktop (AVD) on IGEL OS 11



There is a good feature included in the AVD registry I recommend using:

Learn more about that on Microsoft Learn:

https://learn.microsoft.com/en-us/azure/virtual-desktop/rdp-shortpath?tabs=managed-networks

5.1. Cisco WebEx Meetings

Unfortunately, currently no Client Plugin for IGEL OS is available

5.2. Cisco WebEx Teams

Unfortunately, currently no Client Plugin for IGEL OS is available

5.3. Microsoft Teams

5.3.1. IGEL OS Configuration (UMS based)

Teams Optimization is included. Just use a profile with AVD activated – there is no need to activate Teams optimization, it is still activated at all.

5.3.2. AVD Configuration

Before you can use Microsoft Teams on Azure Virtual Desktop, you'll need to do these things:

- <u>Prepare your network</u> for Microsoft Teams.
- Connect to a Windows 10 or 11 Multi-session or Windows 10 or 11 Enterprise virtual machine (VM).

Install the Teams desktop app

This section will show you how to install the Teams desktop app on your Windows 10 or 11 Multisession or Windows 10 or 11 Enterprise VM image. To learn more, check out <u>Install or update the</u> <u>Teams desktop app on VDI</u>.

Prepare your image for Teams

To enable media optimization for Teams, set the following registry key on the host VM:

- From the start menu, run RegEdit as an administrator. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Teams. Create the Teams key if it doesn't already exist.
- 2. Create the following value for the Teams key:

Name	Туре	Data/Value
IsWVDEnvironment	DWORD	1

Install the Teams WebSocket Service

Install the latest version of the <u>Remote Desktop WebRTC Redirector Service</u> on your VM image. If you encounter an installation error, install the <u>latest Microsoft Visual C++ Redistributable</u> and try again.

Latest WebSocket Service versions

The following table lists the latest versions of the WebSocket Service:

Version	Release date
1.17.2205.23001	06/20/2022
1.4.2111.18001	12/02/2021
1.1.2110.16001	10/15/2021
1.0.2106.14001	07/29/2021
1.0.2006.11001	07/28/2020
0.11.0	05/29/2020

Install Microsoft Teams

You can deploy the Teams desktop app using a per-machine or per-user installation. To install Microsoft Teams in your Azure Virtual Desktop environment:

1. Download the <u>Teams MSI package</u> that matches your environment. We recommend using the 64bit installer on a 64-bit operating system.



- 2. Run one of the following commands to install the MSI to the host VM:
 - Per-user installation

PowerShellCopy

msiexec /i <path_to_msi> /l*v <install_logfile_name>

This process is the default installation, which installs Teams to the **%AppData%** user folder. Teams won't work properly with per-user installation on a non-persistent setup.

• Per-machine installation

PowerShellCopy

msiexec /i <path_to_msi> /I*v <install_logfile_name> ALLUSER=1

This installs Teams to the Program Files (x86) folder on a 32-bit operating system and to the Program Files folder on a 64-bit operating system. At this point, the golden image setup is complete. Installing Teams per-machine is required for non-persistent setups.

There are two flags that may be set when installing teams, **ALLUSER=1** and **ALLUSERS=1**. It is important to understand the difference between these parameters. The **ALLUSER=1** parameter is used only in VDI environments to specify a per-machine installation.

The **ALLUSERS=1** parameter can be used in non-VDI and VDI environments. When you set this parameter, **Teams Machine-Wide Installer** appears in Program and Features in Control Panel as well as Apps & features in Windows Settings. All users with admin credentials on the machine can uninstall Teams.

Verify media optimizations loaded

After installing the WebSocket Service and the Teams desktop app, follow these steps to verify that Teams media optimizations loaded:

- 3. Quit and restart the Teams application.
- 4. Select your user profile image, then select About.
- 5. Select Version.

If the media optimization is loaded correctly, you will see this banner:

You have Microsoft Teams Version 1.5.00.8070 (64-bit). AVD Media Optimized.

5.4. Zoom

5.4.1. IGEL OS Configuration (UMS based)

the Zoom plugins are included in IGEL OS 11.08.290 and IGEL OS 11.08.211



You need to choose the version you want to use:

AVD with Teams and Zoom						
A / Sessions Unified Com One One	nmunications 🕨 Zoom Client Selection					
Configuration	Zoom client version	2 🖄	5.13.10.23090	•		
Sessions	Smart Virtual Background Support	2 🔥	Auto	•		
 Sessions Summary Global Session Options Citrix RDP Horizon Client Appliance Mode AppliDis Evidian AuthMgr NoMachine NX Client X Sessions Parallels Client PowerTerm Terminal Emulation IBM iAccess Client ThinLinc SSH VNC Viewer Firefox Browser Chromium Browser Media Player VoIP Client HP Anyware PCoIP Client AVIO Amazon deskMate Unified Communications 						
Communications Zoom Client Selection						

5.4.2. AVD Configuration



(1)

If you want to use a perfect Zoom experience on Azure Virtual Desktop, you need the corresponding Zoom VDI build which fits to the plugin you have chosen in the UMS:

To be compatible, the plugin version must be equal to or less than the Zoom VDI application version. Installing a plugin with a version greater than the Zoom VDI application is not supported. Zoom always recommends updating the Zoom Plugin after updating the Zoom VDI application as many new features require an updated plugin. -> <u>https://support.zoom.us/hc/en-us/articles/360041602711-VDI-backwards-compatibility</u>

All VDI Downloads are located here: VDI releases and downloads – Zoom Support

For IGEL OS 11.09.100 and 11.09.104 you need:

[a]

5.15.2.23760, the download is here: https://zoom.us/download/vdi/5.15.2.23760/ZoomInstallerVDI.msi

[b]

5.14.10.23670, you can download here: <u>https://zoom.us/download/vdi/5.14.10.23670/ZoomInstallerVDI.msi</u>

[c]

5.13.10.23090, the download is here: https://zoom.us/download/vdi/5.13.10.23090/ZoomInstallerVDI.msi

(2)

For AVD installation you should use these parameters:

msiexec /i C:\yourfolder\ZoomInstallerVDI.msi ZNoDesktopShortCut="true" ZConfig="nogoogle=1" ZRecommend="AudioAutoAdjust=1" /quiet /qn /norestart ALLUsers=1

source: <u>https://support.zoom.us/hc/en-us/articles/201362163-Mass-Installation-and-Configuration-for-Windows</u>

After installation you should be able to start the Zoom VDI app:



Results

The results of my testing were very positive! Looking at the processes running on the AVD Desktop, we can see that Zoom is using pretty much zero resources:

_							
19	Task Manager					_	\times
File Options View							
Pro	cesses Performance Users Details Ser	vices					
			~ 3%	40%			
Na	me	Status	CPL	Memory			
>	Compute-laaS-VMAgent master		1.39	50.1 MB			^
>	Antimalware Service Executable		0.59	132.3 MB			
~	🕼 Task Manager		0.59	20.2 MB			
	iligi Task Manager						
>	Microsoft Monitoring Agent Ser		09	24.0 MB			
>	Service Host: Storage Service		09	1.8 MB			
	System Center Management Ser		09	16.3 MB			
	Desktop Window Manager		09	30.2 MB			
~	Zoom Meetings (32 bit) (2)		09	47.2 MB			
	🙄 Zoom Meeting		09	44.6 MB			
	Zoom Sharing Host (32 bit)		09	2.6 MB			
	System		09	0.1 MB			
>	Service Host: Remote Desktop S		09	173.6 MB			
	Client Server Runtime Process		09	1.0 MB			

6. Microsoft Remote Desktop (RDSH, RDP) on IGEL OS 11

6.1.1. IGEL OS Configuration (UMS based)

✓ ✓ ➤ ✓ / ► Sessions ► RDP ► RDP Global	I 🕨 Multimedia
Configuration	🖸 🖄 🗹 Enable Video Redirection
Sessions 🔨	
 Sessions Summary Global Session Options Citrix RDP Gateway Local Logon Window Keyboard Mapping Performance Options Native USB Redirection Fabulatech USB Redirection Fabulatech Scanner Redirection Multimedia 	





Configure sound channels for better quality:

RDP Client Access			
	em 🕨 Registry		
Configuration		Search parameter	rdp.winconnect.sound-channels
Sessions Accessories User Interface Network Devices Security System	* * * *	 input-language legacy-cache-size loglevel multitransport other-gateway-credentials plugins repeat 	
 Time and Date Update Remote management Cogging Power Options Firmware Customization Registry 		 remotefic-cache-size remotefic-mode reset-confirmed-certificates reset_license resolution sound-channels sound-compress sound-driver 	Audio channels Automatic Automatic Mono Stereo

Sometimes it is better to prefer GStreamer sound over PulseAudio – you can change that here:



Sound latency can be configured too – I recommend 200 ms for RDS environments:

RDP Client Access		
	ry	
Configuration	Search parameter	rdp.winconnect.sound-latency
Sessions ▼ Accessories ▼ User Interface ▼ Network ▼ Devices ▼ Security ▼ System ▲	rdpeai remotefx-ack remotefx-cache-size remotefx-mode reset-confirmed-certificates reset_license resolution cound changelin	
 Time and Date Update Remote management Remote Access Logging Power Options Firmware Customization Registry 	Sound-chambo sound-compress sound-driver sound-latency sound-quality ts-ciphers usemonitorfullscreen susemonitorfullscreen	Latency 🖍 200

If the webcam is listed in the Audio In section and you do not want to use the Audio portion of the Webcam, there is a special registry key available which disables the audio portion from the webcam:

Search parameter	multimedia.webcam.disable_audio
Search parameter	
 Ciscoteams Ciscovxme Gstreamer Mediaplayer Pulseaudio webcam 	
 disable_audio network pcoip pcom powerterm 	Disable webcam audio

6.1.2. Windows 10, Windows Server 2016, 2019 and 2022 Base Configuration

(1) Applied Audio settings via GPO:

Computer Config > Admin Templates > Windows Components > Remote Desktop Services > Remote Desktop Session Host> **Device and Resource Redirection**

Changed Allow audio and video playback redirection from Not Configured to Enabled

Changed Allow audio recording redirection from Not Configured to Enabled

(2) Computer Config > Admin Templates > Windows Components > App Privacy

Changed Let Windows apps access the microphone from Not Configured to Enabled

Options > Default for all apps

Changed from User is in control to Force Allow

(3) Changed Let Windows apps access the camera from Not Configured to Enabled

Options > Default for all apps

Changed from User is in control to Force Allow

(4) Computer Config > Admin Templates > Windows Components > Camera

Changed Let Allow use of Camera from Not Configured to Enabled

(5)

NOTE: On Windows Server 2016 and above Logitech webcam won't redirect until you apply this GPO:

Computer Configuration > Administrative Templates > Windows Components > Remote Desktop Services > Remote Desktop Session Host - set "Do not allow supported Plug and Play device redirection" to Disabled

Device and Resource Redirection		
Select an item to view its description.	Setting	State
	Do not allow video capture redirection	Not configured
	E Allow audio and video playback redirection	Enabled
	E Allow audio recording redirection	Not configured
	E Limit audio playback quality	Not configured
	E Do not allow Clipboard redirection	Not configured
	E Do not allow COM port redirection	Not configured
	E Do not allow drive redirection	Not configured
	E Do not allow LPT port redirection	Not configured
	Do not allow supported Plug and Play device redirection	Disabled
	Do not allow smart card device redirection	Not configured
	E Allow time zone redirection	Not configured

(6)

The following GPOs needs to be applied on RD Session Host:

 Computer Configuration > Administrative Templates > Windows Components > Remote Desktop Services> Remote Desktop Session Host > Remote Session Environment > RemoteFX for Windows Server 2008 R2 -set "Configure RemoteFX" to Enabled



6.2. Cisco WebEx Meetings

Unfortunately, currently no Client Plugin for IGEL OS is available

6.3. Cisco WebEx Teams

Unfortunately, currently no Client Plugin for IGEL OS is available

6.4. Microsoft Teams

Unfortunately, currently no Client Plugin for IGEL OS is available

6.5. Zoom

Unfortunately, currently no Client Plugin for IGEL OS is available