



Optimization Pack 1.3

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HDX RealTime Optimization Pack 1.3 for Microsoft Lync

Citrix® HDX™ RealTime Optimization Pack for Microsoft® Lync® version 2010 provides a highly scalable solution for delivering real-time audio-video conferencing and VoIP enterprise telephony through Microsoft® Lync® in XenDesktop, XenApp, and VDI-in-a-Box environments. HDX RealTime Optimization Pack leverages your existing Microsoft® Lync® infrastructure and inter-operates with other Microsoft® Lync® endpoints running natively on devices.

HDX RealTime Optimization Pack consists of both client and server components:

- The client component, called *Citrix HDX RealTime Media Engine*, is integrated with the Citrix Receiver on the endpoint device and performs all signaling and media processing directly on the user device itself, offloading the server for maximum scalability, minimizing network bandwidth consumption and ensuring optimal audio-video quality.
- The server-side (and virtual desktop) component, *Citrix HDX RealTime Connector*, is a connector to the Microsoft® Lync® client that drives the RealTime Media Engine on the endpoint. The RealTime Connector runs in the virtual server environment alongside Microsoft® Lync® and communicates signaling information over a Citrix ICA virtual channel to the RealTime Media Engine running on the user device.

For more information

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About HDX RealTime Optimization Pack 1.3

What's new

- We've added two authentication methods: TLS-DSK and Kerberos.
- We've simplified logon so your users aren't prompted for credentials as often.
- We've added menu options to Microsoft Outlook and as Smart Tags in other Microsoft Office applications. Note that Smart Tags are supported only with Office 2003 and Office 2007.
 - Start a Call
 - Start a Video Call
 - Select a Number

For more information about Smart Tags in Office applications, see <http://support.microsoft.com/?kbid=306422>.

Fixed issues

- You can now run the Citrix HDX RealTime Connector with Remote PC Access on a 64-bit machine. [#16345]
- When you log on, the User Name field is now blank and you no longer see the SIP Address of Record (AOR) populated in that field. [#16219]
- During logon, you are not prompted for credentials by the Citrix HDX RealTime Connector because Single Sign-On (SSO) is implemented in most cases. [#16198]
- During logon, the Citrix HDX RealTime Connector implements Single Sign-on when you use the *domain-name\user-name* format for User Name in Lync and select Save Password. [#16054]
- We've optimized LyncMonitor.exe in Citrix HDX RealTime Connector to use less CPU, so you can be more flexible with your XenApp deployments. [#15966]
- When the Citrix RealTime Media Engine is accessing devices on a terminal configured for the Norwegian language, the RealTime Media Engine can now use the devices. [#15751]
- The Save password functionality has been fixed. [#15712, #150]
- You can now see the entire People Options button in the Group Conversation) window. [#15658, #15313, #132]
- For the Citrix RealTime Media Engine, the Citrix Merchandising Server and StoreFront MetaData file is now called CitrixHDXRealTimeMediaEngineMetadata.xml. [#15348]
- For the Simplified Chinese version of the Citrix HDX RealTime Connector, you can now access the correct Help page. [#15312, #132]
- For the Citrix HDX RealTime Connector, you can now restart the video with the Start My Video button when the video is stopped during an ad-hoc conference call. [#15308]
- For the Citrix HDX RealTime Connector, you can add an additional user to the call with the Add User button. This button was previously occasionally unavailable. [#15268, #136]
- For the RealTime Connector and the RealTime Media Engine, the Media Engine successfully registers when set to automatic configuration. The registration also succeeds when the domain of the user's SIP Address of Record is different from the primary domain served by the Citrix HDX RealTime Connector. [#14986, #124]
- For the RealTime Connector and the RealTime Media Engine, the Media Engine successfully logs on if NTLM in Lync is disabled because the TLS-DSK and Kerberos authentication methods are now available. [#14298]

HDX RealTime Optimization Pack 1.3

Known issues

General

- If you want your location and Single Sign on (SSO) information to be used in your authentication process for logons, you must enable the save password feature. [#15878]
- Call forwarding is not available in this release. With the HDX RealTime Connector installed and the Lync native voice and video calling disabled (TelephonyMode = 5), the Lync Call Forwarding functionality is disabled.
- With the HDX RealTime Connector installed and the Lync native voice and video calling disabled (TelephonyMode = 5), the Lync "Meet Now" feature does not provide the user with the option to join the meeting using Lync voice and video. The user can join the meeting using a telephone number. [#14543]
- The Lync Optimization Pack is not available to work with the hosted version of Microsoft Lync (Office 365).
- When Remote PC is enabled on a device and you try to start the RealTime Connector and the RealTime Media Engine from the device, you might have to wait a short period of time for the RealTime Media Engine to initialize. Wait about one minute before you try to place a call. [#14438]
- Users cannot place themselves on hold in a conference call if they are connected by way of Citrix Access Gateway and UDP is blocked for the user. The users see the "The system could not place the call on hold. Please try again." error. The calls remain up. The workaround is for the users to hang up and then call back. [#14436]
- When the HDX RealTime Connector is running on a Windows XP system employing a VPN and an additional network adapter, DNS resolution of the SIP server and SIP proxy server host name may fail. SIP server host names are typically resolved by way of internal DNS, rather than external DNS. Some VPN implementations might circumvent effective DNS resolutions. To resolve this problem, add the domain name of the Internal Server and External Server to the Windows XP HOSTS configuration:
c:\windows\system32\drivers\etc\hosts.
- When you run the RealTime Connector in a XenDesktop session, the user device or the XenDesktop host may block traffic to or from the RealTime Media Engine host. You might see an error message such as "RealTime Connector is waiting for the connection from the Media Engine..." or "Failed to maintain RealTime Connector on this device. Communication to the Media Engine was disrupted. Please contact your system administrator." In such cases, create an exception in the Windows firewall.
- When attempting to make high-definition video calls from a home office, take into account your user's network bandwidth and ISP routing policies. If you observe pixilation of the video or problems with lip sync, adjust the Maximum Packet Size (MTU) on the network interface card properties to a lower value such as 900 to avoid situations where ISPs perform traffic shaping based on packet size.
- Occasionally on devices running Linux Ubuntu 11 on 32-bit systems, you can experience poor video quality—namely flickering image—during a call. To improve video quality, increase foreground and decrease background lighting and adjust the anti-flicker setting on the transmitting camera.
- On some HP T610 terminals running Ubuntu 10.4 Linux operating system, the PulseAudio network sound server may not start at system initialization or become disabled during

Known issues

operation. In such cases, contact HP to receive the latest version of their terminal software.

HDX RealTime Media Engine

- Sometimes, when attempting to install the HDX RealTime Media Engine on Windows, a message indicates that there is no available disk space. However, limited space does exist on the Z:/ drive of the terminal. This is a known issue for Microsoft installers and applies to the Citrix Receiver as well.
- If the screen saver is not disabled by the Citrix HDX RealTime Media Engine during an active call on a Linux terminal, the RealTime Media Engine disconnects the call. To work around this problem, move the mouse occasionally or call back. [#16110]
- The RealTime Media Engine software rejects incoming call attempts sent from the LifeSize Express 220 without signaling an incoming call dialog to the user. [#14762]
- During installation or un-installation, it is possible to encounter certain error conditions where the error message string is not localized. [#14530, #93]
- When a user who is using a Plantronics Blackwire™ C620-M audio headset device attempts to answer an incoming call by pressing the button on the chord, the terminal and XenDesktop freeze. At this time, we recommend against using this device with the HDX Optimization Pack. Users who have this device should answer the calls only using the incoming call dialog that appears in the RealTime Connector. [#14526]
- When calls end abnormally on a Windows or Linux device, error messages appear as text overlaid on top of the video display. However, on a Macintosh computer used as a terminal device, when certain errors during a call cause that call to fail, the video window immediately closes and you cannot view the error string. [#14515]
- The buttons for the Audio Device functions (Pickup Call, Mute, Hangup) do not work on certain USB audio devices in SUSE Linux Enterprise Desktop 11 on Dell Wyse terminals such as the Z50D or in Ubuntu Linux 10.4 on terminals such as the HP T610. In particular, the Logitech B350, Polycom CX300, and Plantronics Calisto P540-M are known to exhibit problems in this area. However, the devices themselves continue to work as audio devices. [#14253]
- The Mute button/function is not available on a Plantronics Blackwire C620-M. This is because the device does not adhere to the Lync protocol specification. [#14165]
- In Seamless mode, the following issues exist for Full Screen video:
 - Full Screen video appears in letterbox format with the Linux version of the RealTime Media Engine in Seamless mode. [#13564]
 - The Full Screen Control hides behind other apps in a Seamless session in XenApp Seamless mode. [#10731, #3]
- In some cases, when a user opens the Video page of Tools > Audio Video Settings, the display presents a black preview window, and the RealTime Connector does not display video during a call. This problem has been observed in the following environment: a terminal device running SUSE Linux Enterprise Desktop (SLED) 11 SP1 and XenDesktop servers running Windows7. The problem occurs because the RealTime Media Engine requires an accelerated video driver to use the XVideo extension. The standard SLED 11 SP1 distribution may not include that driver. As a result, no video is rendered on the terminal screen. To resolve the problem, update to SLED 11 SP2, which contains the required driver to render the video normally.

HDX RealTime Connector

- When you use a Macintosh laptop as a terminal, your built-in camera does not work when the HDX RealTime Connector is in non-optimized (fallback) mode.
- Lync Native calling is disabled by default. However, if the administrator enables Lync Native calling, you can accept a call using Lync Native calling when the HDX RealTime Connector is installed. To prevent this, make sure that built-in Lync calling is disabled when running the Citrix HDX Optimization Pack.
- When switching between terminals connecting to the same XenDesktop, sometimes the RealTime Connector will fail to start the RealTime Media Engine and connect with it properly. The software displays a popup message with error code 70. The workaround is to restart Lync, which then restarts the RealTime Connector and it will connect properly. [#14039]
- Selecting a device and then navigating to the advanced tab and back to the device tab causes the selected device to revert to the one that was originally selected. The workaround is to exit the dialog after selecting the new device. [#13450]
- The RealTime Connector can stop working after launching XenDesktop while the RealTime Connector was launched earlier (after sleep mode on terminal). The workaround is to restart Lync in the XenDesktop session. [#63]

System requirements for HDX RealTime Optimization Pack 1.3

Environments

HDX RealTime Optimization Pack is supported in the following Citrix environments:

- XenDesktop 5.0, 5.5, 5.6, or 5.6 Feature Pack 1 for Windows 7
- XenApp 6.0, 6.5, or 6.5 Feature Pack 1 for Windows Server 2008 R2
- VDI-in-a-Box 5.2

For more information about XenDesktop and XenApp editions that include Lync optimization, see the following:

- [XenApp features by edition](#)
- [Compare XenDesktop features by edition](#)

HDX RealTime Connector

You install HDX RealTime Connector on XenDesktop virtual desktops or on servers in your XenApp farm.

- Supported operating systems:
 - Desktops: Windows 7
 - Servers: Windows Server 2008 R2
- Memory: minimum 4 GB RAM, 120 MB paging file
- Disk space: minimum 100 MB available
- Network interface: full-duplex Ethernet TCP/IP local network connection
- Software:
 - DirectX 9 (minimum)
 - Microsoft .NET 3.5 SP1
 - Microsoft Lync 2010

Installation prerequisite

Before installing HDX RealTime Connector on a host running the Windows 7, turn off Administrator mode for Microsoft Lync.

1. Right-click the Microsoft Lync shortcut on your Desktop or in the list of programs in the Start Menu and choose Properties.
2. In the Properties dialog box, click the Compatibility tab.
3. On the Compatibility tab, ensure the Run this program as an administrator checkbox is cleared.

HDX RealTime Media Engine/Client Device

You install the HDX RealTime Media Engine on the client device.

Make sure you have installed a certificate for the Microsoft Lync Server on the client device and that the certificate specifies the correct domains that are associated with the Microsoft Lync Server. The Certificate domains should match the SIP Addresses of Record that use the RealTime Connector and the HDX RealTime Media Engine. If there is more than one domain, make sure you list them in the Subject Name and Subject Alternative Name values on the Certificate. If you do not do this, your Citrix HDX RealTime Media Engine cannot authenticate with the Lync Server.

Important: Thin client manufacturers make changes to the specifications of a devices without notice. These lists apply to the configurations provided at the time of testing.

Supported terminals:

Dell Wyse

Model	Processor	Operating System
R80L	1.5GHz* AMD Sempron	Windows XP E
R80LE	1.5GHz AMD Sempron	Windows XP E
R80LW	1.5GHz AMD Sempron	WES 2009
R80LEW	1.5GHz AMD Sempron	WES 2009
R80L7	1.5GHz AMD Sempron	WES 7
R80LE7	1.5GHz AMD Sempron	WES 7
Z90SW	AMD G-T52R 1.5GHz	WES 2009
Z90DW	AMD G-T52R 1.5GHz	WES 2009
Z90S7	AMD G-T52R 1.5GHz	WES 7
Z90D7	AMD G-T52R 1.5GHz	WES 7
Z90DE7	Dual core AMD G-T56N 1.65 GHz	WES 7
Z50E	AMD G-T52R 1.5GHz	SUSE Linux 11 SP1/SP2
R50L	1.5GHz AMD Sempron	SUSE Linux 11 SP1/SP2
R50LE	1.5GHz AMD Sempron	SUSE Linux 11 SP1/SP2
X50m	Dual core AMD G-T56N 1.6 GHz	SUSE Linux 11 SP1/SP2

HP

System requirements

For the combination of an HP T610 terminal with HP Thin Pro (Ubuntu Linux 10.04), the following issues can occur:

- Before you run the Citrix HDX RealTime Media Engine on a terminal, obtain a patch from Hewlett-Packard to fix a problem with the PulseAudio service.
- If you insert a new audio device on a terminal and the device is not recognized by the Citrix HDX RealTime Media Engine or the Citrix HDX Realtime Connector for Microsoft Lync software, reboot the terminal.

Model	Processor	Operating System
T610	AMD Dual Core 1.6 ghz	Ubuntu 10.04
T610	AMD Dual Core 1.6 ghz	WES 7

Centerm

Model	Processor	Operating System
C32	Dual core Intel D2550 1.86 GHz	WES 7
EI945-3	Dual core Intel D2550 1.86 GHz	WES 7

IGEL

IGEL claims support for the HDX Optimization Pack with all of its Linux thin clients as of Version 4.10.100.

Supported operating systems

You can install HDX RealTime Media Engine on devices running any of the following operating systems:

- Macintosh OS X 10.6, 10.7, or 10.8 with 41.4 MB of free disk space
- Windows Windows 7, Windows 8, or Windows XP
- Windows devices: WES 7, WES 2009, Windows XPe, or Windows Thin PC (TPC)
- Linux (Ubuntu 11, Ubuntu 10.04, or RedHat 6.2)
- Linux (SUSE Enterprise SP1/SP2)

Requirements for audio and video calling:

- RealTime Connector can support video calls in high-definition (HD) video. The RealTime Media Engine measures the speed of the user device and then encodes HD video if the camera, the host device, the bandwidth setting, and the remote endpoint support high-definition specifications.
- Camera:
 - Most USB webcams are supported. The Logitech Webcam models B910 or C920 are recommended.
 - Resolution: 320 x 240

- Color space: 1420 or YUY2
- Frame rate of at least 10 fps, 24 fps for HD video
- Native driver or supporting Windows UVC driver
- Audio input/output must be DirectSound-compatible and capable of 16-bit mono or stereo sound at 16,000, 32,000, or 44,100 samples per second. A USB headset is recommended.

Requirements for Lync-compatible USB telephone calling:

HDX RealTime Connect supports Lync-compatible USB telephone devices, including wired and wireless phones, speaker phones, and headsets. For full information about supported devices, see the Microsoft USB device specification:

<http://download.microsoft.com/download/3/0/6/306d68d9-6d56-4ecd-a0cd-143431419290/lynclogorevf.zip>

This document defines several categories of USB connected devices and requirements for those devices to support specific USB commands.

Citrix Receiver requirements:

The terminal device must have one of the following Receivers installed:

- Citrix Receiver for Mac 11.5 or 11.6
- Citrix Receiver for Windows 3.1 or 3.0
- Citrix Receiver for Linux 12.0

Third-party video drivers and Citrix HDX RealTime Optimization Pack

The Windows operating system installed on some thin client terminals often does not include Windows USB video class (UVC) drivers for web cameras, although these drivers have been included with standard Windows XP and Vista operating systems since SP2. When you install a web camera on a terminal device, the installation program may report that it does not have required files.

We recommend that you use the standard Windows device drivers for webcams because vendor-supplied drivers can sometimes cause crashes and BSOD events on certain platforms (especially 64-bit Windows).

How to download HDX RealTime Optimization Pack 1.3

You can download HDX RealTime Optimization Pack 1.3 from the Citrix download pages. To access the downloads, you must log on to My Account with an account associated with the license entitlement for your XenDesktop or XenApp deployment. If you do not have such an account, contact Citrix Customer Support. They can help you associate your account with your license entitlement.

The Optimization Pack 1.3 is available in the download pages of the following releases:

- [XenApp Components](#) (XenApp 6.5 Feature Pack 1 and the XenApp 6.5 releases)
- [XenDesktop Components](#)(XenDesktop 6.5 Feature Pack 1 and XenDesktop 5.6)
- [Citrix Receiver Additional Client Software](#)

For XenApp and XenDesktop, locate your version of the product and click Log in for more.

From the list of download packages:

1. Click the link for HDX RealTime Optimization Pack 1.3.
2. Select the language package and click Download.
3. Go through the prompts to complete the download and then save the .zip file to a location on your computer or device.
4. Unzip the package and place the following installation files on an available network drive or on a local device, such as a USB flash drive.
 - Citrix HDX RealTime Media Engine.msi
 - HDX RealTime Connector LC.msi

Now you can make HDX RealTime available to your users. Before installing the HDX RealTime Media Engine or RealTime Connector, be sure your environment meets the minimum software hardware and software requirements. See [System requirements](#).

Installing HDX RealTime Optimization Pack

If you have not already downloaded the installation files for the HDX RealTime Optimization Pack, see [Download](#).

The order of the Optimization Pack installation is important:

1. If Receiver is running, close it.
2. Install the RealTime Media Engine on your users' devices.
3. Start XenDesktop.
4. Install the RealTime Connector on your XenDesktop virtual desktops, VDI-in-a-Box virtual desktops, and XenApp servers.

See:

- [Install the RealTime Media Engine](#)
- [Install the RealTime Connector](#)

Deploy HDX RealTime Media Engine to your users

You install the HDX RealTime Media Engine on client devices. The media engine provides local media processing of audio/video calls and peer-to-peer communication with other callers using Microsoft Lync.

Your method for deploying HDX RealTime Media Engine to a user device depends on the operating system of the device:

- [Deploy HDX RealTime Media Engine to Windows devices](#)
- [Deploy HDX RealTime Media Engine to Linux terminal devices](#)
- [Deploy HDX RealTime Media Engine to Mac devices](#)

Deploy HDX RealTime Media Engine to Windows devices

Citrix HDX RealTime Connector requires the installation of the HDX RealTime Media Engine on the host terminal device. This topic describes the steps for deploying HDX RealTime Media Engine to thin client terminals running Windows operating systems.

You can deploy HDX RealTime Media Engine to your users' Windows devices either with or without the use of Merchandising Server. This topic describes both methods of deployment.

Prerequisites

Before deploying HDX RealTime Media Engine to a Windows client device:

- Ensure that Citrix Receiver is installed on the user device and is able to connect through XenDesktop or to XenApp.
- If the device is using RAM disk, increase it to its maximum size.

To maximize RAM disk space

1. Log on to the device as a local administrator.
 - If there is a red ball (labeled FBWF) in the Windows notification area, skip to the next step. The write filter is disabled.
 - If there is a the green ball in the Windows notification area, click the green ball and choose DISABLE so that the ball turns red.
2. Restart your device and log on as a local administrator.
3. Open Control Panel > Ramdisk.
4. In the Ramdisk Configuration dialog box, increase the size of the RAM disk to the maximum amount.
5. Restart your device and Microsoft Lync if you are running it as a published application.

Deploying HDX RealTime Media Engine through Merchandising Server

Citrix supplies a metadata file, CitrixHDXRealTimeMediaEngineMetadata.xml, so you can deploy Media Engine to your users from Citrix Merchandising Server. CitrixHDXRealTimeMediaEngineMetadata.xml identifies the terminal plug-in as Citrix HDX Real Time Media Engine.msi. To configure Merchandising Server for deployment of the Media Engine to a group of terminals, navigate to the location of these two files and select them as the metadata file and plug-in.

Deploying HDX RealTime Media Engine without Merchandising Server

After ensuring system requirements and prerequisites are met, you can deploy the media engine to your users through Citrix Merchandising Server or by making the installer available from a flash drive, web page, or network drive.

To install HDX RealTime Media Engine without the use of Merchandising Server

1. Log on to the terminal or computer as a local administrator.
2. Run Citrix HDX RealTime Media Engine.msi. After accepting the terms of use, the installer runs silently.
3. Install a web camera on the device, following manufacturer's installation instructions.

Deploy HDX RealTime Media Engine to Linux terminal devices

HDX RealTime Connector requires the installation of the Citrix HDX RealTime Media Engine on the terminal device. This section describes how to install the Media Engine for these Linux distributions:

- Fedora 16 (Verne) x86, RPM-based
- Ubuntu 11.10 (Oneiric Ocelot) x86-64, Debian-based

Prerequisites

Before deploying HDX RealTime Media Engine to a Linux terminal device running Ubuntu:

- If the Ubuntu system is newly installed, install all available updates from the Update Manager before proceeding.
- If the Ubuntu system does not have a directory called `/usr/lib32`, create it with this command: `sudo mkdir /usr/lib32`

To prepare terminals running Ubuntu for installation of HDX RealTime Media Engine

When performing the following steps, place all installation files in a directory, such as `/downloads`, and run commands in that directory.

1. Download the 64-bit Debian Citrix Receiver package from <http://www.citrix.com/English/ss/downloads/details.asp?downloadId=2316611&productId=1689163>. The download is under the heading `icaclient_12.0.0_amd64.deb`.
2. Download the RPM Open Motif version 2.3.3 package from <http://motif.ics.com/open-motif/download/openmotif-233-1e153i386rpm>. The file name is `openmotif-2.3.3-1.e15.3.i386.rpm`. The RPM package is necessary because there is no Debian package for version 2.3.3 of Open Motif.
3. Convert the Open Motif RPM package to a Debian package. For information, refer to steps 2b-2d in <http://support.citrix.com/article/CTX125285>.
4. Install these libraries required by Citrix Receiver:

```
sudo apt-get download libmotif4:i386 libxmu6:i386
sudo dpkg -x libmotif4* /tmp
sudo dpkg -x libxmu6* /tmp
sudo cp -r /tmp/usr/lib/* /usr/lib32/
```

The two `sudo dpkg` commands cause Linux to remove write privileges from both "group" and "user" for the /tmp directory. Be sure to reset privileges of /tmp back to 777 using this command: `sudo chmod 777/tmp`

5. Install the converted Open Motif package: `sudo dpkg -i openmotif_2.3.3-2_i386.deb`
6. Install the Citrix Receiver Debian package: `sudo dpkg -i icaclient_12.0.0_amd64.deb`
7. To fix any unresolved dependencies, run this command: `sudo apt-get install -f`
8. Verify that Citrix Receiver can connect through XenDesktop or to XenApp.
9. Go to "To run the HDX RealTime Media Engine installation script," later in this topic.

To prepare terminals running Fedora for installation of HDX RealTime Media Engine

When performing the following steps, place all installation files in a directory, such as /downloads, and run commands in that directory.

1. Download the 64-bit RPM Citrix Receiver package from <http://www.citrix.com/English/ss/downloads/details.asp?downloadId=2316611&productId=1689163>. The download is under the heading ICAClient-12.0.0-0.x86_64.rpm.
2. Download the RPM Open Motif version 2.3.3 package from <http://motif.ics.com/open-motif/download/openmotif-233-1el53i386rpm>. The file name is openmotif-2.3.3-1.el5.3.i386.rpm.
3. Install Open Motif: `sudo yum install -y openmotif-2.3.3-1.el5.3.i386`
4. Install the Citrix Receiver package: `sudo yum install -y ICAClient-12.0.0-0.x86_64.rpm`
5. Remove the files from the /tmp directory using these commands:

```
sudo rm -rf .X11-unix/  
sudo rm -rf .ICE-unix/  
sudo rm -rf .X0-unix/
```
6. Verify that Citrix Receiver can connect through XenDesktop or to XenApp.
7. Continue with "To run the HDX RealTime Media Engine installation script," next.

To run the HDX RealTime Media Engine installation script

The installation package for Citrix HDX RealTime Media Engine includes the following components. Use this package for both Ubuntu and Fedora. The software detects the type of Linux and installs the appropriate package.

- EULA.docx
 - HDXRTME_insdll.sh
 - /i386 subdirectory containing the Debian and RPM packages:
 - citrix-hdx-realtime-media-engine-1.0.1.i386.deb
 - citrix-hdx-realtime-media-engine-1.0.1.i386.rpm
1. Place the entire installation package in the directory from which you are running commands.
 2. At the prompt of the directory in which the software resides, enter `./HDXRTME_insdll.sh` and then follow the instructions provided by the script.
 3. If you have Microsoft Lync running as a published application, restart it (Microsoft Lync).

Deploy HDX RealTime Media Engine to Mac devices

HDX RealTime Connector requires the installation of the Citrix HDX RealTime Media Engine on the client device. This section describes how to install the Media Engine on supported Mac OS devices.

Before running the Citrix HDX RealTime Media Engine installation script, ensure you have Receiver for Mac installed on the device.

The installation package for Citrix HDX RealTime Media Engine includes the following components:

- Install HDXRealTimeMediaEngine.pkg
 - Uninstall HDXRealTimeMediaEngine
1. Log on to the Mac as an Administrator.
 2. Double-click the downloaded file, HDXRealTimeMediaEngine.dmg. The disk image mounts.
 3. To start the installation, double-click Install HDXRealTimeMediaEngine.pkg.
 4. Follow the instructions provided by the script.
 5. After the installation completes, confirm the installation: In the Mac System Preferences under Other, click Citrix HDX RealTime Media Engine to view the installed version.
 6. If you have Microsoft Lync running as a published application, restart it (Microsoft Lync).

Install HDX RealTime Connector on your servers

HDX RealTime Connector enables video conferences. To make Citrix HDX RealTime available to your users in XenApp and XenDesktop environments, you install HDX RealTime Connector on your XenApp servers and XenDesktop virtual desktops.

To install into a XenDesktop environment

Install HDX RealTime Connector onto a XenDesktop virtual desktop you want to make available to your users. Before installation, ensure that Microsoft Lync is not running on the XenDesktop virtual desktop.

To install HDX RealTime Connector

1. Start a XenDesktop virtual desktop and log on as Administrator.
2. On the virtual desktop, run the installation wizard HDX RealTime Connector LC.msi and follow the instructions.
3. Restart the virtual desktop.

To install into XenApp environment

Install HDX RealTime Connector on each server in a XenApp farm where you want to make HDX RealTime available. Before installation, ensure the Microsoft Lync is not running in any sessions on the servers.

1. Log on to a XenApp server as Administrator.
2. Run the installation wizard HDX RealTime Connector LC.msi and follow the instructions.
3. Restart the XenApp server.

Configuring Your Environments for HDX RealTime Optimization Pack

To optimize performance of HDX RealTime conversations in XenDesktop virtual desktops and XenApp sessions, you can increase display memory.

To increase display memory in a XenDesktop virtual desktop or XenApp farm, you increase the Display memory limit of the Citrix Computer Policy Queuing and tossing. The recommended setting is between 8 and 16 MB.

Important: Increasing the display memory limit can affect the scalability of your XenApp farm, so do so with caution.

To modify Citrix Computer Policies, you must be a member of the Administrators group on the XenDesktop virtual desktop you are modifying and a Citrix Administrator for the XenApp farm you are modifying.

For more information for XenDesktop 5, see [Working with XenDesktop Policies](#).

For information for XenApp 6.5 for Windows Server 2008 R2, see:

- [Working with Citrix Policies](#)
- [Configuring HDX Broadcast Display Settings](#)

For information for XenApp 6 for Windows Server 2008 R2, see:

- [Working with Citrix Policies](#)
- [Configuring HDX Broadcast Display Settings](#)

Configuring client devices for use with RemoteScan and Citrix HDX RealTime Optimization Pack

You can use RemoteScan to initiate scans directly from your virtual desktop to any TWAIN or WIA compliant scanner. To run RemoteScan on client devices in XenDesktop or XenApp environments using Microsoft Lync with the Citrix HDX RealTime Optimization Pack installed:

1. Close RemoteScan if it is running on the client.
2. Open RegEdit on client device and go to [HKEY_LOCAL_MACHINE]/SOFTWARE/Citrix/ICA client/Engine/configuration/Advanced/Modules/ICA 3.0.
3. Remove RSICAWorkStationProxy from the VirtualDriver key.

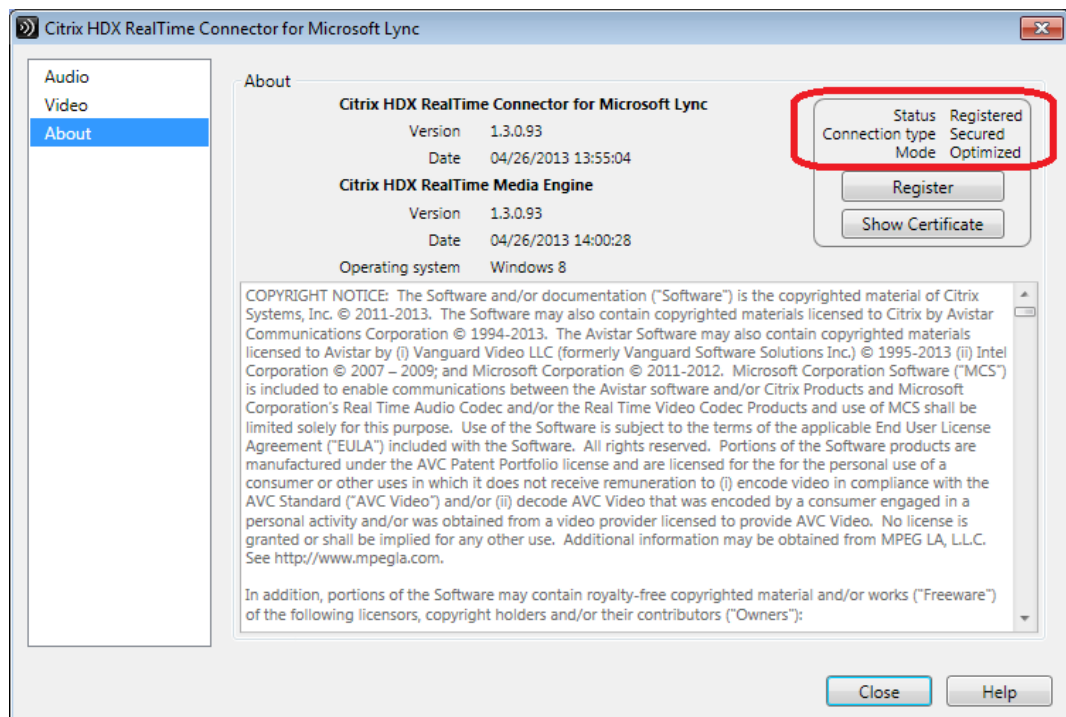
Configure

4. Add RSICAWorkStationProxy to the VirtualDriverEx key. Place it following all other virtual driver entries.
5. On the client device, edit c:\program files\remotescan server\server.ini and add the following entry in the [server] section: `noicaregistry=1`
6. Start RemoteScan on the device.

Troubleshooting HDX RealTime Optimization Pack

You can verify your installation and collect troubleshooting information from your users through the following:

- Confirm audio and video device detection. On the user device, from the Lync tools menu, choose Tools > Audio Video Settings.
- Open the Lync **About** page and confirm connection attributes (status, connection type, and mode). The following screenshot shows the correct connection values.



If the RealTime Connector is in fallback or non-optimized mode, the value of the Mode field is Un-Optimized. For fallback mode, video and audio processing occurs on the server and the media is sent from the terminal to the server and then back to the terminal.

- During a call, you can view information about your network health by typing Alt-N. The Network Health window appears, as shown in the following example. Values in red indicate potential problems with the network. To write the values to a text file whose default name is call_statistics_<date>.txt, click Save Statistics.

	Audio	Video	Total
Receive Packets Lost (%)	0.27	0.27	0.27
Receive Packets Lost	3	3	6
Sent Packets Lost (%)	0.00	0.00	0.00
Sent Packets Lost	0	0	0
Late Packets (%)	0.00	0.00	0.00
Dropped Packets (%)	0.00	0.35	0.18
Skipped Frames (%)	0.09	2.53	0.86
Jitter Buffer Size(ms)	0	10	-
Average Data Sent (kb/s)	34	194	228
Average Data Received (kb/s)	0	230	230

	Sent	Received
Video Frame Rate	15.06	30.11
Video Resolution	352 x 288	704 x 528
Limited by	Bandwidth	Codec
Video Codec	RT Video	RT Video
Audio Codec	RT Audio	RT Audio

Buttons: Save Statistics, Close

Find log files

MediaEngineHost.exe writes client-side error logs to %TEMP%\Citrix\RestrictedMediaEngine\ on the local terminal.

The RealTime Connector client application also writes logs to your XenApp or XenDesktop servers. You can find them in the following locations, depending on the client-side operating system.

- For Windows XP users: C:\Documents and Settings\USERNAME\Local Settings\Temp\Citrix\RealTimeConnector\MediaEngine\MediaEngineDebugLogs
- For Windows 7 users: C:\Users\USERNAME\AppData\Local\Temp\Citrix\RealTimeConnector\MediaEngine\MediaEngineDebugLogs

Determine whether your connection problems are related to DNS issues

If you have DNS problems on the terminal, these can cause the RealTime Connector and the Citrix HDX RealTime Media Engine to fail registration while the Lync application can register successfully. If this occurs, debug and fix the DNS problems from the remote terminal.

Save crash logs for Dell Wyse terminals

On Dell Wyse terminals, the log file of an application crash is not saved when the user works in User mode. To save crash logs, the user must work in Administrator mode. You can find crash logs in MS-RAMDRIVE, which is drive Z by default on Wyse terminals.

Change the location of Citrix HDX RealTime Media Engine error logs

Normally, the error logs from a client application are created on the local, client device. However, such local error logs are sometimes deleted when a terminal user logs off, so a system administrator is unable to retrieve them.

HDX RealTime Media Engine avoids this by writing error messages into the Media Engine error logs on the virtual desktop running on the client device.

To change the write location of Media Engine Host error messages from the virtual desktop back to the local client device

1. In the registry of the remote desktop running on the client device, in `HKEY_CURRENT_USER\Software\Citrix\HDXRTConnectorLC\MediaEngine`, create an optional registry key `\EnableRemoteDebugLogging`.
2. Set the registry key to `dword = 0` (disabled).

To re-enable remote error message logging on the virtual desktop, set the value of the key to 1 (enabled) or remove the key entirely.

Limit the video frame rate for Citrix HDX RealTime Media Engine

If you are having video problems attributable to a high Frames Per Second (FPS) rate, such as the image breaking up, you can limit the supported FPS with this registry key value:

```
[HKEY_CURRENT_USER\Software\Citrix\HDXRTConnectorLC\MediaEngine]  
"MaxAllowableFrameRate" = "15".
```

Determine whether your firewall is blocking the RealTime Connector

The RealTime Connector can fail to initialize if a personal firewall blocks the network initialization for too long. This condition resolves itself the next time the program is run after you unblock the application.

When the firewall is blocked, an error message such as the following can appear:

- RealTime Connector is waiting for the connection from the Media Engine...
- Failed to maintain RealTime Connector on this device. Communication to the Media Engine was disrupted. Please contact your system administrator.

In such cases, create an exception in the Windows firewall.

Restore Lync to a normal size after starting a second session

Occasionally, when you start a second session on a second terminal while a first session remains open, Microsoft Lync does not open in the second session. It stays minimized in the task bar. To maximize it, right-click the task bar and select Maximize. Then, to restore Lync to a normal size, restart Lync.

Resolve an “Application Not Running” error in the App Center Console

The error `Application Not Running` can appear when a published application is closed. To resolve this issue, add `LyncMonitor.exe` to a registry key in the XenApp server. For information, refer to <http://support.citrix.com/article/CTX133328> and <http://support.citrix.com/article/CTX891671>.

Resolve video quality issues when using a wireless network connection

If you experience issues with video quality when using a wireless network connection, try moving closer to the wireless access point. If that does not resolve the issue, try a wired network connection instead. When using a wired network connection, disable the wireless network adapter to avoid transmission issues.

Install a root certificate for the RealTime Media Engine on Windows terminals

Certain Windows terminals do not include a VeriSign root certificate for RealTime Media Engine in the default set of trusted root certificates. If a terminal does not have the required certificate, these issues appear immediately after Lync starts:

- Lync does not connect to Media Engine.
- The camera preview does not work.
- The HDX RealTime Connector program information page does not include an entry for Media Engine.
- The terminal error log includes the following entry: `Media Engine package search failure. It is impossible to launch MediaEngineHost.`

For more information about root certificate issues, refer to the following articles:

- <http://support.citrix.com/article/CTX129998>
- <https://knowledge.verisign.com/support/code-signing-support/index?page=content&actp=CROSSLINK&id=AD220>
- <https://knowledge.verisign.com/support/code-signing-support/index?page=content&actp=CROSSLINK&id=SO14649>

Obtain a root certificate.

1. Go to <https://www.verisign.com/support/roots.html>.
2. Under VeriSign Root Package, click Download a root package to download the roots.zip archive.
3. Extract files from the roots.zip archive to the Windows terminal.

Install the root certificate manually or through the Microsoft Management Console (MMC).

- To perform a manual installation:
 1. From the Windows terminal, navigate to the \roots folder containing the extracted files and then open the folder Verisign Root Certificates > Generation 5 (G5) PCA.
 2. In that folder, right-click VeriSign Class 3 Public Primary Certification Authority - G5.cer and then click Install Certificate.
 3. Scroll below the Security Warning to open the Certificate Import wizard and then click Next.
 4. On the Certificate Store wizard page, click Place all certificates in the following store and then click Browse.

5. In the Select Certificate Store dialog box, select the Show physical stores check box.
 6. Open the Trusted Root Certification Authorities folder, select Local Computer, and then click OK.
 7. Click Next, review your settings, and then click Finish.
- To perform the installation with the MMC:
 1. From the Windows terminal, click Start and then type `run`.
 2. In the Run field, type `mmc` to open the terminal Console.
 3. In the Console File menu, select Add/Remove Snap-in.
 4. In the Add/Remove Snap-in dialog box, click Add.
 5. Select Certificates and then click Add.
 6. Select Computer Account and then click Next.
 7. Select Local computer and then click Finish.

Resolve installation issues

For software in general, the most common installation problems are related to corrupt system files needed for installation. These errors are rare, but difficult to troubleshoot.

The Media Engine installer requires Microsoft .NET 3.5.1. If it is missing from the computer, install it to resolve the problem. If it is already installed, run a repair installation on .NET.

On some Windows machines, customers encounter errors during software installation when embedded custom-action VB scripts run. Common errors presented to the user or captured in install logs are 2738 and 1720. Some customers have encountered these errors when an anti-virus program places the `vbscript.dll` ClassID under the `HKEY_CURRENT_USER` registry hive instead of under `HKEY_LOCAL_MACHINE` where it is needed for the proper elevated run level.

Run the following registry queries to determine if the `vbscript.dll` ClassID is installed for the current user, system wide, or both:

- `% reg query HKEY_CURRENT_USER\SOFTWARE\Classes\CLSID{B54F3741-5B07-11CF-A4B0-00AA004A55E8}`
- `% reg query HKEY_LOCAL_MACHINE\SOFTWARE\Classes\CLSID{B54F3741-5B07-11CF-A4B0-00AA004A55E8}`

The ClassID should appear only for `HKEY_LOCAL_MACHINE`. If it is under `HKEY_CURRENT_USER`, follow these steps. If ClassID is under `HKEY_LOCAL_MACHINE` and not `HKEY_CURRENT_USER`, start with step 2.

1. Run an anti-virus clean-up utility:

- a. If the terminal has an anti-virus program installed and the vendor has a clean-up utility, run the clean-up utility.
- b. Re-run the Media Engine installer MSI.
- c. If the issue persists, go to the next step.

2. Register vbscript.dll:

The vbscript.dll file or registry reference to its ClassID can become unregistered or corrupted. Follow these steps to register or repair it.

- a. Run CMD.exe as an administrator: Click Start, type `cmd`, right-click `cmd`, and click Run as administrator.
- b. Enter in the Command window:
 - For the 32-bit version of Windows: `cd %windir%\system32`
 - For the 64-bit version of Windows: `cd %windir%\syswow64`
- c. Enter in the Command window: `regsvr32 vbscript.dll`
- d. Re-run the Media Engine installer MSI.
- e. If the issue persists, go to the next step.

3. Remove the vbscript.dll ClassID:

- a. In the Registry Editor, locate and remove registry key `HKEY_Current_User\SOFTWARE\Classes\CLSID{B54F3741-5B07-11CF-A4B0-00AA004A55E8}`.
- b. Click Start > Control Panel, navigate to the User Account Control Settings, and then move the slider to Never notify.

After you complete the troubleshooting, you can revert this change if needed.

- c. Re-run the Media Engine installer MSI.
- d. If the issue persists, go to the next step.

4. Repair corrupt system files with System File Checker:

- a. Run CMD.exe as an administrator: Click Start, type `cmd`, right-click `cmd`, and click Run as administrator.
- b. In the Command window, enter: `sfc /scannow`
- c. Re-run the Media Engine installer MSI.
- d. If the issue persists, go to the next step.

5. Restore corrupt registry entries to their original state:

- a. Restart the Windows terminal and during the restart, insert the OS installation DVD to boot from it.

The OS installation DVD must match the Windows service pack installed on the terminal.

- b. Follow the installation steps, selecting the option to repair the OS.
- c. Re-run the Media Engine installer MSI.