



Solution Guide for Sennheiser Headsets, IGEL Endpoints and Skype for Business on Citrix VDI



Virtualizing Windows applications and desktops in the data center or cloud has compelling security, mobility and management benefits, but delivering real-time voice and video in a virtual environment is a challenge. A poorly optimized implementation can increase costs and compromise user experience. Server scalability and bandwidth efficiency may be less than optimal, and audio-video quality may be degraded.

Enabling voice and video with a bundled solution in an existing Citrix environment delivers clearer and crisper voice and video than legacy phone systems. This solution guide describes how Sennheiser headsets combine with Citrix infrastructure and IGEL endpoints to provide a better, more secure user experience. It also describes how to deploy the bundled Citrix-Sennheiser-IGEL solution.

Business Challenge and Need for Bundled Solution

Today's audio and video communications capabilities are truly astounding. Crystal-clear, instantaneous and reliable communications are available to almost anyone, anywhere. But until recently, the best communications capabilities were not available in virtualized environments. The technology simply didn't exist to support real-time, high-definition video and audio in a virtualized environment.

Plus, many companies haven't yet taken advantage of these audio-video capabilities for additional important reasons including:

- Network Traffic: Transcoding, re-packetization and added latency of hair-pinning all degrade the quality of audio and video.
- CPU demand: Voice and video processing puts a heavy burden on servers, increasing latency.
- Concurrent users: CPU demand puts downward pressure on the number of concurrent users who can be supported. This is especially detrimental for large enterprises.
- Cost: All the above increase the cost of real time, high definition audio and video.

What This Program Addresses

Citrix bundled solutions featuring IGEL and Sennheiser seeks to provide a unified, contextual and secure user experience. It fills those needs in the following ways:

- **Unified:** The solution unifies across apps, services, and cloud networks.
 - Sennheiser headsets plugged into an IGEL managed endpoint can access Skype for Business delivered by Citrix VDI.
 - Running Skype as a virtualized app allows IT to deploy a single standardized version with minimal latency to support people on every platform used by the organization.
 - 720p high definition video quality and voice on VDI enables “local-like” quality with maximum server scalability.
 - The technology partnership of Sennheiser and IGEL Technology ensures a unified audio experience across all products.
- **Secure:** The solution addresses security from an analytics-based, user-centric perspective.
 - Skype client and associated data are kept in the data center and never exposed to potential threats on the endpoint device.
 - Users can seamlessly move between devices. Typically headsets travel with users, who can plug into new devices and go. This ensures compliance in healthcare settings, among others.
- **Contextual:** The solution automatically adapts content, performance and access to match each worker’s requirements.
 - Users get the same native interface as having a local client, even though Skype is running virtually in the datacenter.
 - Sennheiser headsets are designed to meet different user needs while ensuring full interoperability and are tested with IGEL OS and Citrix Ready. The solution provides users with a high-quality audio quality experience regardless of whether they primarily work with mobile devices, thin clients or desk-top PCs.
 - All Sennheiser USB headsets and speakerphones are verified as Citrix® Ready™ for the HDX Realtime Optimization pack and Skype for Business certified.
 - IGEL managed endpoints clients are verified compatible against Citrix [NetScaler SD-WAN](#) solution (formerly CloudBridge) thus successfully delivers the enhanced virtualized Skype for Business experience in challenging network conditions that Citrix [NetScaler SD-WAN](#) offers by providing virtual WAN connectivity for maximum reliability at a reasonable cost.



Products Included in This Bundle

Citrix HDX Realtime Optimization Pack offers a scalable solution for delivering audio-video conferencing and voice over internet protocol enterprise telephony through Microsoft Skype for Business. The Optimization Pack supports XenDesktop and XenApp virtual environments for users on a variety of platforms, including IGEL. Additionally, HDX RTOP can offload 720p HD H264 video streams during peer-to-peer Skype for Business call when IGEL OS managed endpoint is plugged with a H264-encoding-UVC-1.1/1.5 supported webcam. Leveraging abilities of such a camera, HDX RTOP can save significant number of CPU cycles away from an IGEL OS managed endpoint, thus available for other CPU heavy applications.

Microsoft Skype for Business provides secure and instant communications with virtually anyone, anyplace. It supports virtual meetings with up to 250 people, requiring no more than a phone or internet connection. Skype for Business meshes smoothly with popular Microsoft Office apps such as Outlook, Word and PowerPoint. Worldwide, Skype for Business serves as the most popular PBX for enterprises that support more than 400 lines, and 90 percent of all Fortune 100 companies use Skype for Business.

Sennheiser headsets and speakerphones: Long an industry leader in the audio industry, Sennheiser's products provide outstanding audio quality and unrivaled durability. Sennheiser headsets and speakerphones give businesses the tools they need to leverage the advancements in communication technology into competitive advantages.

IGEL OS via UDC3 or on UD Pocket, UD5, UD6 managed by Universal Management Suite (UMS): IGEL OS has revolutionized access to virtualized applications and desktops. This time-tested operating system (currently in its sixth generation) standardizes endpoints, and provides for adaptive configuration and granular control. The result is a reliable, trouble-free workspace customized for, and fully supporting, users in virtual environments.

Logitech C930/C920 web cam: These logitech cameras support H264 encoding UVC 1.1/1.5 camera produce the high-definition video-audio. Utilizing the advanced compression technology H.264, Logitech cameras deliver true-to-life high definition while eliminating the slowdowns and delays typical with video compression. If plugged in on a supported endpoint device, Citrix HDX RTOP can offload H264 video streams to the web camera thus saving expensive CPU cycles of the endpoint device for other high compute processes, thus able to deliver 720p HD video quality during peer-to-peer Skype for Business calls. A drop of video quality (360p) will be observed without the Logitech C930/C920 web cam as part of the bundle solution.



Technical Overview

Citrix HDX RTOP provides a highly scalable solution for delivering real-time audio-video conferencing and VoIP enterprise telephony through Microsoft Skype for Business. HDX RTOP supports users in XenDesktop and XenApp environments on IGEL OS, Linux, ThinOS, Mac, and Windows devices. The HDX RealTime Optimization Pack leverages existing Microsoft Skype for Business Server infrastructure (or Skype for Business Online in the Microsoft Office 365 cloud) and inter-operates with other Microsoft Skype for Business endpoints running natively on devices.

Citrix. XenDesktop can be securely deployed in a variety of ways: on premise, cloud-hosted, as a Citrix Cloud service, or with a service provider. Organizations can choose the deployment option that best aligns with their enterprise cloud strategy. Citrix also enables a hybrid cloud deployment for organizations that wish to deploy Citrix software in a cloud, but manage on premises.

Deploying XenDesktop begins with installing the following components. This process prepares for delivery of applications and desktops to users inside your firewall.

- One or more Delivery Controllers
- Citrix Studio
- Citrix Director
- Citrix StoreFront
- Citrix License Server
- One or more Citrix Virtual Delivery Agents (VDAs)

Optional components and technologies such as the Universal Print Server, the Federated Authentication Service, and Self-Service Password Reset

System requirements for XenDesktop Install can be found [here](#).

Sennheiser. Sennheiser is shaping the future of audio — a vision built on more than 70 years of innovation culture, which is deeply rooted within the family-owned company. Founded in 1945, Sennheiser is one of the world's leading manufacturers of headphones, microphones and wireless audio transmission systems. Sennheiser also specializes in wireless and wired headsets and speakerphones for unified communication in contact centers and offices. Sennheiser's headsets and speakerphones are designed and manufactured to fulfill on three core principles:



1. **Sound Quality:** Every Sennheiser product supports the company's reputation of providing the industry's best high-quality audio for both speakers and microphones.
2. **Quality Design:** Sennheiser products are built to last, and consistently earn industry awards for design, durability, ergonomics and audio quality.
3. **User Focus:** Over the decades, Sennheiser has developed a global reputation for manufacturing products that fulfill users' most compelling needs, while simultaneously addressing their common concerns. Providing outstanding wearing comfort and safeguarding users' hearing are just two examples of Sennheiser's focus on users' wants and needs.

IGEL. The third partner of this bundled solution, IGEL, has attracted a global customer base that includes more than 17,000 businesses, two million hardware clients and more than 250,000 software clients. IGEL's exclusive focus upon endpoint management has spawned innovations such as hardware-agnostic software, no-touch deployment and built-in enterprise security.

Features of IGEL endpoint management solutions – and offered by no other industry competitors – include:

- A profile-based management solution that includes access control, load balancing and multi-tenancy
- Ten backend connections that make it easy to work in any environment (the closest competition offers only five backend connections)
- Hardware-agnostic; with UD Pocket or UDC 3, IGEL OS runs on any x86 device, IGEL software is compatible with all hardware devices, not just IGEL thin clients
- "Trusted execution," built-in security that runs a system of checks and balances every time a device is booted, to assure that security has not been compromised
- Multi-environment management capability, enabling management of all devices from a single platform
- More automatic updates than any competitor, assuring always up-to-date functionality and synchronization with industry partners – and updates continue for four years after EOL

IGEL guarantees a three-year maintenance support period for all customers from the respective end-of-life date.



Comfort in Deployment

Deployment of this bundled solution will be easy to implement for virtually all business organizations. Key deployment considerations for each component of this bundle include the following:

Citrix High Definition Experience Real Time Optimization Pack (HDX RTOP). HDX RTOP consists of both client and server components:

- **Client:** The Citrix HDX RealTime Media Engine integrates with Citrix receiver on the IGEL managed endpoint device and performs media processing directly on the user device. It offloads the server for maximum scalability, minimizing network bandwidth consumption and ensuring optimal audio-video quality.
- **Server (and virtual desktop):** HDX RealTime Connector connects to the Skype for Business client that drives the RealTime Media Engine on the IGEL endpoint. RealTime Connector runs in the virtual server environment alongside Skype for Business, communicating signalling information over a Citrix ICA virtual channel to the RealTime Media Engine running on the user device.

Additional detail about hardware, software and environment requirements for HDX RTOP may be found at [this link](#).

IGEL Managed Endpoints. Citrix HDX RTOP (RealTime Media Engine) runs on the endpoint device and is available on Windows and Linux platforms of IGEL.

IGEL provides a secure, hardware-agnostic operating system for virtually all machines built with industry standard components. IGEL provides built-in enterprise-level security features, and is updated four times yearly; the frequent updates assure that that the operating system always stays in sync with current client software releases from Citrix. Updates include the integration of all necessary components of IGEL certified technology partners, including Citrix HDX RTOP. All IGEL OS 10-based Universal Desktop™ (UD) thin clients, including the UD Pocket™ micro thin client and UD3, UD6 and UD9 thin clients and UDC (conversion software), have been verified as Citrix Ready.



Sennheiser Headsets are Skype for Business certified and Citrix Ready. Integration with Citrix HDX RTOP for Skype for Business is enabled, in part, by the following features:

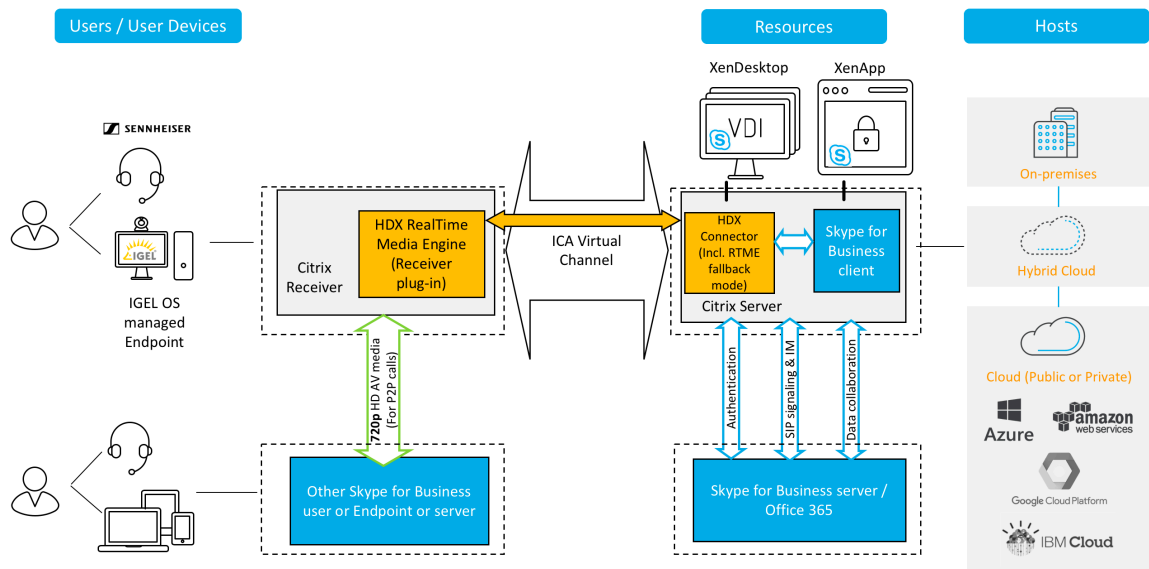
- Citrix HDX RTOP RealTime Media Engine (a plug-in to the Citrix receiver) runs on the endpoint device and is available on IGEL OS, along with Windows, Linux, Thin OS and others
- The Sennheiser headset is connected via USB to the IGEL OS-managed endpoint
Citrix HDX RTOP connector is added to the data center that connects to the Skype for Business client
- The Skype for Business client understands and accepts call control messages to and from the Sennheiser headset and/or speakerphone
- Sennheiser's Skype for Business certified headsets and speakerphones deliver automatic device detection by the client, remote call control from the device, and superior audio quality together with the Skype for Business client. For more information, please visit: <https://partnersolutions.skypeforbusiness.com/solutionscatalog/personal-peripherals-pcs> (select "Sennheiser" under Brands)



Solution Description

Combining Citrix HDX RTOP, IGEL managed endpoints and Sennheiser headsets into a single unified solution is a simple process. Following are the high-level installation steps:

Architectural Overview of Virtualized Skype for Business solution using Citrix HDX RealTime Optimization Pack, IGEL Endpoint and Sennheiser headset



1. Plug the Sennheiser headset or speakerphone and Logitech C930 / C920 webcam into the chosen IGEL OS powered endpoint
2. To configure, choose to set up directly in UMS (this is the standard) or directly on the endpoint- the view is the same. Everything you need is already integrated on the IGEL powered endpoint, there is no need to download anything.
3. Activate the HDX RealTime Media Engine (The RealTime Media Engine is a plug-in to the Citrix receiver that supports high-definition audio-video calls. Downloads of the RealTime Media Engine can be found [at this link.](#))



Figure 1

4. Set up the storefront session

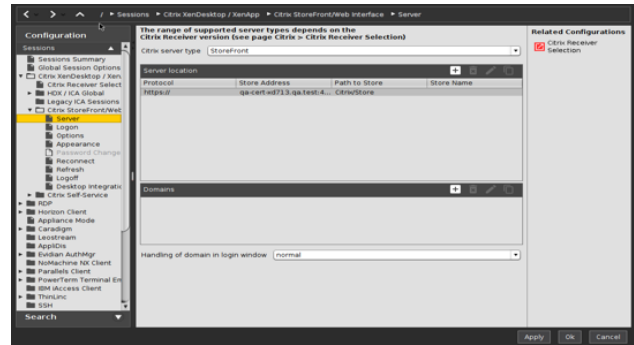


Figure 2

5. Set Windows 10 Machine to start automatically Windows 10 Machine will start automatically, if not,
6. Save all and close the set-up area

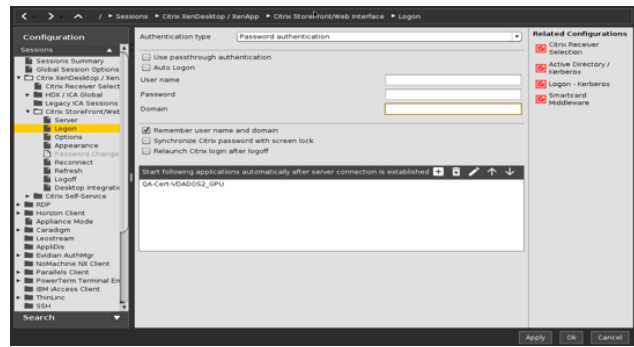


Figure 3

7. Click on the new icon on the desktop to start the storefront session

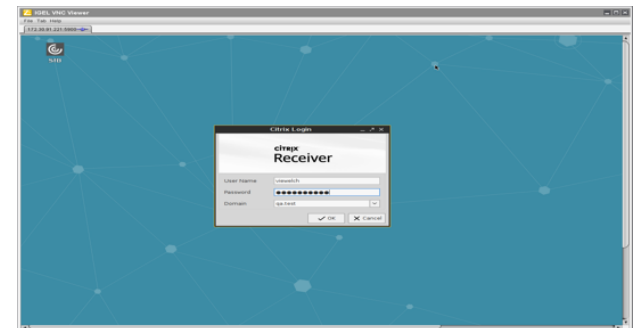


Figure 4

8. Wait for Windows 10 and Skype for Business to start
9. Enter sign-in details to log into and open Skype for Business

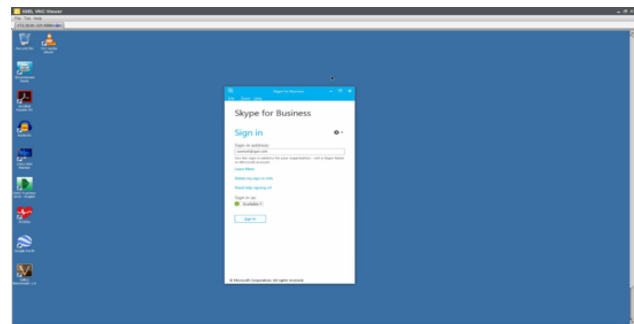


Figure 5

- The connected Sennheiser headset or speakerphone will show in the audio settings

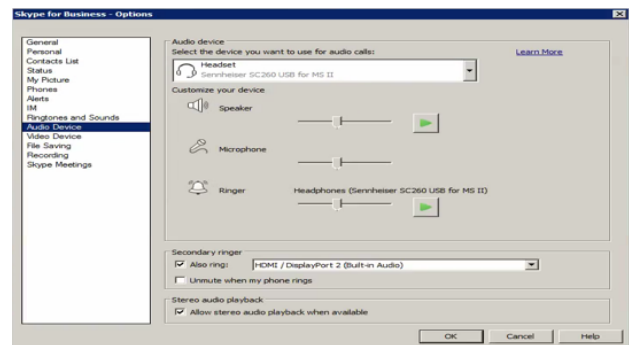


Figure 6

A Proven Bundled Solution

The ability to communicate with the utmost speed and quality that technology enables has always been a necessity for remaining competitive in the world of business. Until recently, however, the very best that communication technology could offer simply wasn't available in virtualized environments.

That is no longer true. The bundled solution comprised of Citrix High Definition Experience Real Time Optimization Pack, IGEL managed endpoints and Sennheiser headsets provides the best in speed and quality that communications technology makes possible.

For companies that recognize the importance of leveraging cutting-edge communications capabilities across virtualized environments, this Citrix-IGEL-Sennheiser partnership will provide a long-sought solution.

For more information about Citrix Ready solutions and partners, contact [Citrix](#).

For more information about Sennheiser headsets and speakerphones, contact [Sennheiser](#).

For more information about IGEL OS and IGEL thin clients, contact [IGEL](#).

Additional Links

Learn more about the [HDX RealTime Optimization Pack](#).

Citrix Ready identifies recommended solutions that are trusted to enhance the Citrix Delivery Center infrastructure. All products featured in Citrix Ready have completed verification testing, thereby providing confidence in joint solution compatibility. Leveraging its industry-leading alliances and partner ecosystem, Citrix Ready showcases select trusted solutions designed to meet a variety of business needs. Through the online catalog and Citrix Ready branding program, you can easily find and build a trusted infrastructure. Citrix Ready not only demonstrates current mutual product compatibility, but through continued industry relationships also ensures future interoperability. Learn more at citrixready.citrix.com.