



## NVIDIA CLOUDXR™ STREAMING FOR EXTENDED REALITY

### The Challenges of Enterprise XR

Creative and technical professionals use an immersive visual computing platform to imagine, design, and build everything from office buildings to airplanes to feature films. Leveraging virtual and augmented reality, those professionals are now gaining deeper insights into their digital creations—understanding the true scale of their models, acquiring muscle memory through immersive training, and benefiting from natural collaboration environments.

The promise of augmented reality (AR), mixed reality (MR), and virtual reality (VR)—collectively known as extended reality (XR)—is nothing short of revolutionary. However, most existing XR systems fall short of that promise for two reasons:

- > Powerful VR workstations with RTX GPUs drive beautiful, high-fidelity immersive experiences - but they typically require dedicated space and equipment, as well as awkward physical tethers to attach the VR headsets to the workstation.
- > Mobile VR and AR devices offer fantastic convenience and mobility, but they lack the memory and computational power to drive the high-fidelity and photorealism expected in enterprise experiences.

“One of the biggest pain points of large scale VR roll-outs is the fragmented device landscape and the uncertainty of which VR hardware the customers will effectively use. By integrating NVIDIA CloudXR into our VR deployment solution Innoactive Portal, our enterprise customers like TÜD SÜD are able to offer their different VR apps with a standardized and frictionless user experience to their audience. Whole VR libraries are now accessible via cloud streaming to broad audiences, with a single click, without wires, everywhere.”

Daniel Seidl  
CEO  
**Innoactive**

“At VMware we’ve been working closely with NVIDIA on addressing some of the challenges of deploying virtual and augmented reality (XR) in the enterprise.

Specifically our customers, deploying immersive training or immersive design solutions, need the highest fidelity experience with the greatest mobility. Running VR applications on VMware vSphere with NVIDIA vGPU and streaming using NVIDIA CloudXR to a mobile VR headset is a great way to solve that challenge.

We’ve also been developing VMware Workspace ONE HR Hub which leverages NVIDIA CloudXR to stream enterprise XR.”

Matt Coppinger  
Director - AR / VR,  
Advanced Technology Group  
VMware

## The Enterprise Streaming Solution with CloudXR

To this point, two main goals of enterprise XR have proven irreconcilable: users want the freedom of mobile devices and the power of high-performance GPUs. The breakthrough of [NVIDIA CloudXR](#) is that it simultaneously delivers both: CloudXR users harness the full power and visual richness delivered by NVIDIA’s RTX GPUs while enjoying the freedom and mobility of untethered AR and VR devices.

CloudXR is also an incredibly versatile solution, supporting the full range of XR applications, XR devices, wireless networks, and VR Ready servers. Everything works together out-of-the-box: your favorite PC-based OpenVR application can instantly stream to your favorite mobile XR device; apps don’t need to be modified, no special equipment is needed.

And most importantly, with CloudXR, the streamed experience is flawless—virtually indistinguishable from the tethered version and infinitely more convenient. The magic of CloudXR’s high fidelity lies in its underlying streaming engine—it constantly adapts to dynamic network conditions, automatically adjusting streaming parameters to optimize the end-user experience. The result is a beautiful enterprise streaming experience every time.

## Benefits

The value of CloudXR to enterprise organizations is enormous for six main reasons.

- 1. Convenience:** users can stream to whatever XR devices they have with them, wherever they are. Quest 2 HMD at their home for checking out a proposed building renovation project, iPhone at the cafe for looking at a new printer design at scale. It all just works.
- 2. Ease of setup/use:** no dedicated (expensive) VR room required, and no dedicated staff is needed for ongoing maintenance and support.
- 3. Data security:** valuable data and IP are kept behind your firewall; just pixels are streamed.
- 4. Scalability:** remotely connect to whichever server has the right horsepower to drive your experience.

- 5. Full-fidelity experiences:** enterprise users need full-fidelity models for design decisions. Decimated versions lack the required quality and realism, and they’re time-consuming to create. But, full-fidelity models can’t fit on mobile devices – they have too much geometry for the available RAM and can’t be rendered fast enough on a mobile GPU. With CloudXR streaming, users can visualize their experiences at full fidelity on their mobile XR devices.

- 6. All of your XR apps at your fingertips:** mobile XR devices are very limited in how much memory they have. As a result, it’s typically impossible to store all of your company’s training applications; instead, users and IT staff are constantly shuffling content on and off devices. With CloudXR, all the content your users need is always available for streaming.

## Stream any application

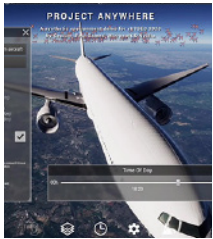
### ARCHITECTURE



Credit: Theia Interactive

Empower architects, engineers, and designers to collaborate in real-time on designs with immersive XR using NVIDIA CloudXR.

### PUBLIC SECTOR



Deliver high-quality, simulated training cost-effectively via immersive graphics-rich virtual reality.

### MANUFACTURING



Credit: Mindesk

Compress design cycles and accelerate time-to-market while protecting sensitive data by enabling virtual access to photorealistic 3D models.

### TRAINING



Credit: Innoactive

Increase productivity and deliver better design and training outcomes with immersive software, now available on any device, from anywhere.

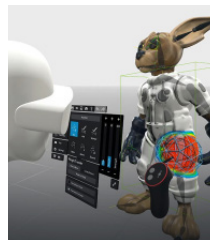
### HEALTHCARE



Credit: Gamoola

Deliver remote immersive training for radiologists, physicians, and medical imaging specialists.

### MEDIA AND ENTERTAINMENT



Credit: Masterpiece Studio Pro

Interact with 3D design and character animation immersively to accelerate the creation pipeline.

## NVIDIA CloudXR Requirements

SERVER	CLIENT
<p>The CloudXR server is where the XR application is running and where the rendering is being done. Examples of CloudXR servers include the following:</p> <ul style="list-style-type: none"> <li>&gt; EGX Server in the Cloud at a Telco's Edge</li> <li>&gt; EGX Server that runs on-prem</li> <li>&gt; Local PC Workstation</li> <li>&gt; Cloud Service Provider Virtual Machine Image</li> </ul>	<p>CloudXR supports a wide variety of AR and VR client devices. We currently provide client sample implementations for the following devices:</p> <ul style="list-style-type: none"> <li>&gt; Android ARCore phones and tablets</li> <li>&gt; Apple iPhones and iPads</li> <li>&gt; Oculus Quest</li> <li>&gt; Oculus Quest 2</li> <li>&gt; Valve Index</li> <li>&gt; Vive</li> <li>&gt; Vive Pro</li> <li>&gt; Vive Pro Eye</li> <li>&gt; Vive Focus Plus</li> </ul>