

How SyncMetra Enables Private 5G for Enterprise AR / VR Applications

Simplifying network architecture and reducing operational costs to support rapidly growing enterprise AR/VR use cases.

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Introduction

Canoga Perkins's [SyncMetra 100](#) is an advanced, feature rich, 5G TSN Switch purpose built for public and private 5G and beyond mission critical applications that require deterministic and guaranteed data delivery in a specific time window.

SyncMetra 100 guarantees bounded latency with no data loss. It is well suited for deployment of 5G disaggregated networks in Industry 4.0, gaming, XR, autonomous vehicles, and any applications that require guaranteed data delivery in a specific time window.

Private 5G networks are used across several industries. The SyncMetra 100 product is designed to meet and exceed stringent bandwidth, latency, and scalability performance demands of Private 5G now and in the foreseeable future.

SyncMetra 100 is fully programmable, allowing customers to extend connectivity and network capabilities as specifications continue to evolve. SyncMetra 100 simplifies the end-to-end network architecture significantly reducing operating costs. SyncMetra 100 offers AI Fabric technology to enhance Quality of Service (QoS), especially in high traffic or unpredictable network environments. It also features a Lossless Fabric that guarantees ultra-low latency and minimal jitter, which are critical for TSN applications.

In this paper, we will explore how networks that are powered by SyncMetra can create successful and enjoyable user experiences while keeping the precision needed for various applications.

Applications

The use of AR / VR in business applications is growing because AR / VR technology provides immersion, realism and real-time interactions. Some of the important commercial uses of AR/VR include:

- Corporate training
- Military and law enforcement training
- Remote healthcare
- Customer demonstrations
- Virtual classrooms
- Virtual “try before you buy” retail environments
- Robotic repair of manufacturing equipment
- Remote collaboration

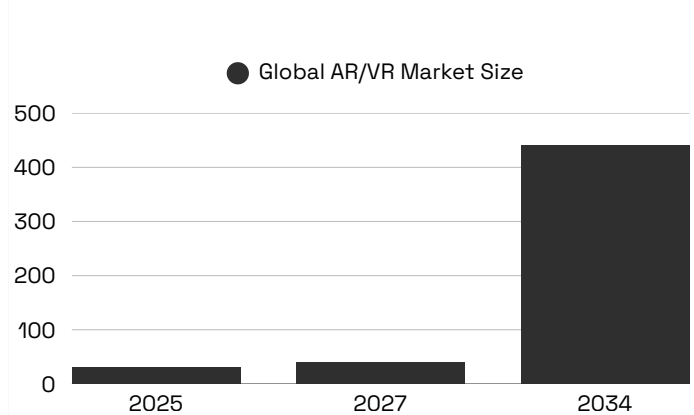


Market Outlook

Industry analysts believe that AR/VR business use cases are about to enter a phase of rapid expansion as more executives see how the technology can solve problems in their organizations. This, combined with improvements in hardware, software, connectivity, and content creation will increase the market size for AR/VR.

Drivers of Commercial AR/VR Success

- Better software: Advanced development platforms and AI-driven spatial mapping enable the creation of highly intuitive, realistic environments that better mirror real-world movements.
- Better hardware: Modern headsets are more comfortable and feature increased pixel density, lighter ergonomic designs, and integrated eye-tracking to reduce user fatigue during extended sessions.
- Bounded latency networks: Technologies like private 5G and Time-Sensitive Networking (TSN) provide a guaranteed ceiling for data delay, ensuring that performance remains consistent even during peak usage.



Source: Fortune Business Research

The Importance of Low Latency in AR/VR Applications



The deeply immersive AR/VR experience requires a seamless link between the user's physical movement and their visual perception. High latency networks break that link because of a phenomenon known as motion-to-photon lag. When a user turns their head, the brain expects the visual display to update in under 20 milliseconds. If the network cannot deliver the updated frames within this window, the image appears to "swim" or lag behind the user's actual position. This sensory mismatch is the primary cause of motion sickness in an AR/VR experience.

High-latency networks also destroy the sense of "presence" that makes the use of AR/VR practical for distance applications. Delays of even a fraction of a second can lead to critical errors or the misalignment of digital overlays causing problems for robotic applications like remote surgical assistance or industrial repairs.

SyncMetra by Canoga Perkins

SyncMetra Delivers Bounded Latency for Private 5G

Canoga Perkins' SyncMetra is a software-defined, IT-operated private 5G network transport solution. It is designed to bridge the gap between standard wireless networks and the high-performance requirements of mission-critical applications like industrial automation, enterprise AI, and immersive AR/VR.

Why Use SyncMetra for Enterprise AR/VR?

Enterprises use SyncMetra to support their AR/VR applications since it supports the deterministic, low latency connectivity not available with other enterprise network technologies. This throughput is essential for high-fidelity, multi-user immersive experiences.

Some of the advantages the system delivers include:

- **Eliminates Network Congestion:** SyncMetra provides dedicated, managed network slices for content-rich AR/VR.
- **Ensures Multi-User Synchronization:** SyncMetra keeps audio, video, and simulated data streams perfectly aligned. This is critical for collaborative training where every user must see the same action at the exact same time.
- **Reduced Latency (URLLC):** SyncMetra can be configured for 5G ultra-reliable low latency communication (URLLC), reducing lag that can otherwise cause motion sickness or breaks in immersion during complex tasks.
- **IT-Friendly Deployment:** SyncMetra allows IT departments to deploy and manage a private 5G network with the same ease as Wi-Fi. There is no need for extensive specialized telco expertise or cost-prohibitive hardware.
- **Bounded Reliability:** Unlike standard 5G, which may have variable performance, SyncMetra offers "bounded latency," meaning the delay is guaranteed to stay within a range of between one-10 microseconds.

Organizations today are deploying AR/VR to help in applications that need to simulate a real world scenario for training or remote robotic activities. To be effective, these systems need to create an immersive world that reacts instantaneously to a user's movements. That's where SyncMetra can help. With its bounded latency technology, SyncMetra provides the low latency network that allows AR/VR applications to deliver full value.

About Canoga Perkins

With over five decades of engineering excellence, Canoga Perkins has consistently led the charge in delivering mission-critical network solutions that empower industries to innovate and thrive. Trusted by leading service providers, industrial enterprises, utilities, military branches, and government agencies, Canoga Perkins combines a rich legacy with a relentless drive for innovation. We lead with AI whenever possible, designing intelligent solutions that are not only reliable and secure but also scalable and adaptable, ensuring our clients are always at the forefront of technological advancement.

Learn more at www.canogaperkins.net.

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