

Networking and Infrastructure Support for Production and Post-Production Applications



A Vertiv Application Brief

The broadcast and government IT sectors may seem to have little in common on the surface, but their IT needs are remarkably similar. Both industries demand secure, reliable, low-latency networks and prioritize visibility and control across those networks. The need to reduce latency is driving computing to the edge of the network, closer to end users – whether those users are military personnel, air traffic controllers, university researchers, or broadcast engineers and editors.

- As the broadcast community embraces the network edge, technology limitations have hampered wholesale remote access. The accepted state of the art is compatible with video resolutions up to 1600x900, but the industry is in a race to produce and make available more and more 4K content. The demands of working with or transmitting 4K video require zero-latency networks – and that means more robust edge computing on site and in network nodes closer to where the work is performed.
- Government applications are more diverse, requiring low-latency and advanced network security as well. Airports, military, security and command and control centers are common uses for data, infrastructure and KVM systems to access them.

The proliferation of edge deployments to support these applications introduces challenges around managing these sites, ensuring their availability, and keeping data secure as the number of network access points increases. IT and infrastructure management systems are critical to reliably and efficiently operating and maintaining these networks.

There is another fundamental challenge, ubiquitous across these distributed networks and increasingly cramped studio facilities and control rooms – a lack of space for the advanced equipment needed in modern broadcast and government IT environments. This can include networking equipment, such as servers, service processors, routers, switches and storage devices; KVM switches to access and control routers, switches and servers; and physical infrastructure systems to provide backup power and cooling. Space is at a premium, and the ability to conserve space is valued.

The Case for Robust Infrastructure and IT Management at the Edge

The value proposition for remote management of these environments is compelling.

IT Infrastructure:

- **Availability:** The work supported at today's network edge is just as critical as compute at the core. Failure to provide adequate infrastructure support at the edge can result in costly outages, service interruptions, and damage to an organization's reputation. Consider uninterruptible power supply (UPS) systems, power distribution, and cooling systems with the availability features typically found in enterprise data centers, but scaled for edge operations.
- **Ease of deployment and use:** Look for infrastructure technologies that are easy to order, deploy and maintain. To save space, edge-ready solutions are designed with convenience in mind, and many are fit in the racks with the equipment they are protecting, such as compact UPS systems with long-lasting batteries, rack power distribution with remote reset capabilities, and systems that provide airflow and cooling right-sized edge compute.

IT Management:

- **Efficiency/Productivity:** Networks are living organisms, growing and changing daily. Remote management capabilities allow network operators to quickly and easily update firmware, configure and activate new installations, and manage multiple active computers from a single workstation. Increase employee productivity by enabling collaboration and work environment
- **Security:** Every edge site is a potential point of entry into the network, managing access to the equipment at those sites. Leverage IT Management devices to safeguard against unauthorized users to compute and to isolate critical equipment and networks.
- **Manageability:** IT personnel can enable collaboration across sites and increase network efficiency and employee productivity. Instead of acting as a collection of individual edge sites, those sites can work together efficiently. Quickly and easily update firmware and perform new deployments as well as manage multiple active computers from a single monitor.

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Vertiv™ Solutions

Vertiv is a global leader in critical infrastructure solutions, with a broad portfolio enabling secure remote access and high-definition video editing for broadcast and government applications. Vertiv solutions provide the holistic visibility and control these organizations need to access, manage and share large volumes of data and 4K video across today's control rooms, studios and editing suites.

The Vertiv™ portfolio includes a full suite of devices and software designed specifically for complex environments and hybrid architectures that include critical edge deployments.

Vertiv™ Avocent® ADX Ecosystem

A vendor-neutral platform, the Vertiv™ Avocent® ADX Ecosystem monitors and manages critical IT devices across today's distributed networks, including servers, service processors, virtual machines and containers, routers, switches, firewalls, storage devices, and environmental and device sensors. The Avocent ADX Ecosystem includes several individual components, each of which can be deployed independently or in tandem, for a more robust user experience. These include:

- **Avocent® ADX RM1048P Rack Manager**

- Connects and manages devices in the rack
- Consolidates IP addresses to mitigate IP shortages as more equipment is added to the rack.
- Utilizes power over ethernet (PoE) to reduce the number of cables in the rack.



- **Avocent® ADX IPUHD 4K IP KVM**

- Compact dongle design to preserve space in the rack.
- Can accommodate more than 100 users and 48 unique targets in a single session.
- Delivers 4K video and high-speed performance (20GB on uplink) to enable real-time remote device and data management.
- Equipped with USB-C connectors with shorter cable lengths.
- PoE and IP consolidation reduces cable requirements.
- Can be used as a standalone 4K IP KVM



- **Vertiv™ Avocent® IPIQ IP KVM device**

- Plug and play connectivity to IT devices for remote management and control
- Secure and reliable access to IT devices anywhere
- Cost effective deployment for Edge or Enterprise configurations



- **Avocent® ADX MP1000 Management Platform**

- Manages service processors, virtual machines, IP KVM modules, and remote access appliances.
- Simplifies management, control, security, and automation of virtual and physical IT infrastructure across enterprise and edge.



Vertiv™ Avocent® HMX High Performance KVMs

A family of digital high-performance KVM switches that provide seamless access and sharing capabilities between multiple computing resources; remotely or from one location and delivers a high-fidelity, high-quality resolution with fast switching capabilities to enhance the user experience. The Avocent HMX series is the preferred solution for broadcasting, sports venues, post-production and many other industries where high resolution and zero latency are required. The Avocent® High Performance KVMs:

- Up to 4K resolution
- Offers both CATx cable or fiber optics for greater flexibility
- Provides 1:1 pixel mapping with real-time control and perfect digital video
- Digital DVI Video at either 2560x1600 or dual sessions at 1920x1200 each
- Unlimited extension distance through adding a 1GbE network switch



Vertiv™ Avocent® Commercial and Secure Multiviewer

This desktop device can be used in either a single or dual display projection scenario with up to 16 computers on a single screen and features such as tiling, windowing, and touch screen. The Avocent® Multiviewer delivers:

- 4K video capabilities
- Single-monitor visibility and control
- Secure connections to multiple computers or domains
- Seamless switching between sources
- Reduced desktop hardware
- Multiple configurations



Vertiv™ Liebert® GXT5 UPS System and GXT5 Lithium-ion

Vertiv's flagship small UPS system, the Liebert® GXT5 UPS is an online double conversion UPS system delivering premium power conditioning and protection in a compact, flexible rack/tower design. Its compact design makes it an ideal choice for edge computing environments. The Liebert GXT5 Lithium-ion replaces traditional lead acid batteries with more intelligent, longer lasting lithium-ion batteries that reduce the need for costly and inconvenient battery replacements.



Vertiv™ Geist™ Rack Power Distribution Unit (rPDU)

A rack-based PDU offering advanced energy management down to the individual outlet, allowing organizations to adjust power draw to meet equipment load. The Vertiv™ Geist™ universal power distribution units (UPDU) deliver those capabilities in a product that's compatible across facilities and global regions, so the same equipment can be deployed and serviced anywhere in the world.



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Vertiv™ Liebert® VRC

An in-rack or in-row cooling solution to protect sensitive IT and networking equipment from overheating. The systems are compact and easy to install and service.



Vertiv™ Geist™ SwitchAir™

In-rack cooling used to bring cool air directly to the network switches, load balancers and routers typically installed at the top and back of the rack, where cold aisle airflow may not reach.



Vertiv™ VR Rack

Designed to support high rack densities and the IT accessories needed in edge environments, including servers, storage, switches, routers, rPDUs, UPS systems, console port servers, and KVM switches. It offers the flexibility and ease of installation organizations crave.



	Government (Distributed Edge)	Production/Post Production (Distributed Edge)
Location	<ul style="list-style-type: none"> Control Centers Airports Education – Research Labs 	<ul style="list-style-type: none"> Broadcasting Arenas Stadiums
Number of Racks	5-20	5-20
Latency	Low latency	Zero-Latency
Security	<ul style="list-style-type: none"> Secure Boot FIPS 140-2 Crypto module support Strong Encryption 	<ul style="list-style-type: none"> Secure Boot Strong Encryption
Resolution	1920 x 1080 possibly up to 4K	Up to 4K
Color	16-24 bit	24 bit color
Audio	No	Yes

Vertiv Partners Are Ready to Help

Need help configuring your editing suite, control room or home workstation? Vertiv has a network of partners available to help you.

[Find a Vertiv partner near you.](#)

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