

Metro Optical Ethernet for Healthcare Providers

Delivering secure, scalable connectivity across metro areas



As more and more healthcare providers adopt advanced life-saving digital technologies and administrators seek to ensure compliance with regulations, one thing is clear – demand for secure, reliable, high-bandwidth connectivity continues to rise. Metro Ethernet is a flexible, highly-scalable solution that delivers switched, Ethernet connectivity to enable healthcare organizations to extend their local area networks, with control over routing and traffic prioritization, to meet this demand cost effectively.

Metro Ethernet provides technical expertise, responsive account management and world-class services that exceed customers' expectations for quality, value and reliability.

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Introduction

Healthcare technologies and regulating entities are changing the way healthcare is delivered. For example, the Health Insurance Portability and Accountability Act (HIPAA) has been in place for several years, yet many healthcare providers are uncertain how to ensure full compliance. This uncertainty affects systems and practices, but also affects data security and the amount of data that flows between locations in healthcare organizations.

For emerging digital applications such as electronic medical records, picture archival and communications systems and computerized physician order entry the implications on bandwidth demands are clearer. Consider a physician requesting a 50Mbps digital MRI image from a remote server, then multiply that by the thousands of radiology examinations conducted by healthcare organizations and the number of physicians who could potentially access them. As more physicians appreciate how technologies can help improve the quality of care, adoption is escalating.

Metro Ethernet offers a highly-scalable, secure and cost-effective solution to meet the connectivity demands of healthcare organizations between multiple locations and across metro areas. Metro Ethernet delivers greater service flexibility by enabling healthcare organizations to obtain the exact amount of bandwidth required or upgrade their network and increase capacity quickly.

Delivering improved quality of care

The healthcare industry faces an unprecedented array of challenges such as demographic changes, regulatory requirements and using new technologies that promise to improve the quality of care. In an environment that demands lower healthcare costs, healthcare IT managers are focusing on the following operational imperatives:

Supporting advanced technologies

Healthcare organizations are adopting new, highly sophisticated technologies that improve quality of care and expand service offerings by improving information flow from supplier-to-hospital, bedside-to-lab, doctor-to-patient.

Enabling robust first responder capabilities

Healthcare organizations realize that their role as critical first responders to emergencies and natural disasters requires robust, dependable communications networks with advanced Business Continuity/Disaster Recovery (BCDR) capabilities.

Ensuring regulatory compliance

Healthcare administrators insist on full compliance with regulatory requirements for data creation, data integrity, data storage and retrieval, along with overall security and the privacy of patient information.

Reducing operating costs

With ever increasing pressure on healthcare costs, IT managers know that they must achieve the first 3 imperatives while reducing costs and improving resource use and productivity.

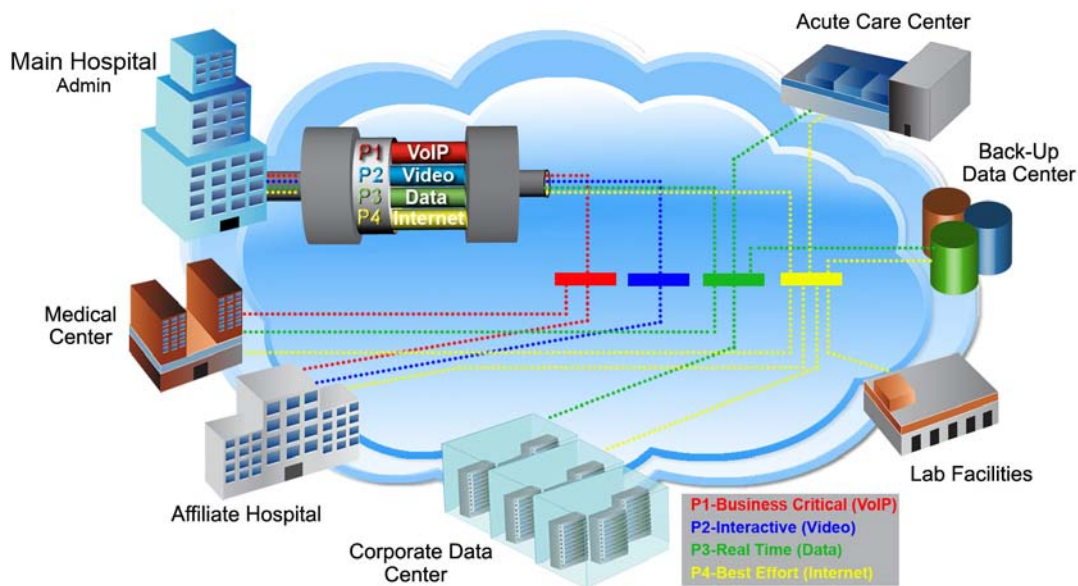
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Metro Ethernet overview

Metro Ethernet combines the simplicity and low cost of Ethernet with the speed and reliability of optical fiber to deliver flexible, highly-scalable connectivity between hospitals, clinics, laboratories and medical offices across a metro area. Metro Ethernet is available in point-to-point and multipoint service configurations with bandwidth available in manageable increments from 10Mbps to 1Gbps. Traffic flows securely as Ethernet virtual circuits (EVCs) across a shared network infrastructure.

Metro Ethernet can enable a patient's file to be transported to multiple locations or to be updated by a physician, nurse, pharmacy or laboratory with each being served by a separate EVC to help ensure confidentiality and security. In addition to IP-centric applications, Metro Ethernet is ideal for integrating voice, video and Internet traffic to eliminate network overlays.



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Quality of service

CenturyLink™ offers a quality of service (QoS) feature with Metro Ethernet that enables health care organizations to prioritize and control network traffic by type to help ensure availability and efficiently manage network resources.

Recommendations for QoS strategies include:

- Priority 1 – used for mission-critical market data that require immediate connections
- Priority 2 – used for specific financial transactions and customer relationship management (CRM) applications
- Priority 3 – used for regular business data
- Priority 4 – used for communications that only require best effort service

CenturyLink can assist healthcare organizations with the design and deployment of customized solutions with our technical experts at our National System Design Center. Metro Ethernet solutions are highly-reliable and backed by a written service level agreement (SLA) that defines performance objectives. Our network operations center (NOC) continually monitors the network to support SLAs.

Benefits

- Securely connects multiple facilities across a metro area
- Point-to-point and multipoint service
- Supports adoption of advanced medical technologies
- Offers unparalleled scalability to precisely match bandwidth to requirements
- Delivers high availability – up to 99.9% SLAs
- Enables control over routing and traffic priority
- Is more cost-effective solution overall than other service options

Supporting advanced technologies

Network requirements	CenturyLink solution
Business Continuity/Disaster Recovery and storage Driven by HIPAA and other regulations, off-site data storage and retrieval is vital to healthcare organizations	
<ul style="list-style-type: none">• Private, secure networking• Flexible capacity to accommodate large planned and unplanned data transmissions• High-network availability and survivability	Metro Ethernet can include high-capacity, redundant trunk connections enabling switching if a failure is detected
Enterprise resource planning Used to improve supply chain and inventory management	
<ul style="list-style-type: none">• High-network availability• Network flexibility to accommodate bursts of traffic• Quality of service	Quality of service enables prioritization of traffic to update inventory systems cost-effectively

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Electronic medical records and computerized physician order entry	
Healthcare organizations are adopting new applications that eliminate paper files and handwritten orders while speeding universal access to complete patient information	
<ul style="list-style-type: none"> • Private, secure networking • Network extensibility, enabling remote and mobile access • Network storage and retrieval • Quality of service with high-network availability 	<ul style="list-style-type: none"> • Metro Ethernet runs on a private network • Supports most higher-layer applications • Preferred transport to connect data centers because of its large file transfer capability
Picture archival and communications systems	
Enable the archival and transmission of large, digital x-ray, MRI, CT and ultrasound images	
<ul style="list-style-type: none"> • Capacity to transport large data files • Network extensibility, enabling remote access • High-performance connectivity • Quality of service with high-network availability 	Point-to-point EVCs capable of handling large frame sizes: <ul style="list-style-type: none"> • Mammography images – 32Mbps • CT – 20Mbps • Digital x-rays – 8Mbps • MRI – 8Mbps • Ultrasound – 5Mbps to 8Mbps
Radio frequency identification	
The FDA has completed pilots of radio frequency identification marking and bar coding of medical devices and medications to reduce errors, with adoption over the next 2 – 3 years	
Physicians are using wireless connectivity with EMR at the point of care	
<ul style="list-style-type: none"> • Scalable network connectivity to handle exponential number of devices and data tags • High-resiliency • Private, secure network • High-network availability 	<ul style="list-style-type: none"> • Highly-scalable in increments to adjust to increasing bandwidth needs driven by technology • Metro Ethernet can aggregate traffic from many sites to a hub for handoff to a data center for further processing
Internet connectivity	
Support for research, collaboration, email and web access	
<ul style="list-style-type: none"> • High-performance connectivity • Scalable network capacity to adapt to growing demand • High-network availability and survivability 	Metro Ethernet is just one option to connect to the Internet, CenturyLink also offers CenturyLink IQ™ Networking as another option to connect to the Internet
Medical and professional training	
Video and other media used for training and professional development	
<ul style="list-style-type: none"> • High-capacity network • Quality of service 	Metro Ethernet supports distance learning, video, data and voice in an environment with low latency and jitter, necessary for sensitive applications

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Enabling robust first responder capabilities

Healthcare organizations realize that their role as critical first responders to emergencies and natural disasters requires robust, dependable communications networks with advanced BCDR capabilities. In times of crisis, CenturyLink keeps networks running, accessible and operating at peak performance.

High availability

The Metro Ethernet infrastructure uses carrier-grade network elements with stringent reliability requirements and resilient failure recovery mechanisms to optimize the service for minimal failover administration.

Rapid response times

A designated account representative assists healthcare organizations with the design and deployment of customized BCDR solutions. If a disaster occurs, CenturyLink helps implement BCDR solutions to ensure the survivability of mission-critical applications.

Ensuring regulatory compliance

Ensuring regulatory compliance depends on the transport of volumes of patient data, often stored on multiple network servers or backed up in remote data centers. Metro Ethernet is provided across a carrier-class optical network with secure facilities that adhere to strict network policies specifically designed to meet the needs of the healthcare industry.

Security

Data travels over the Metro Ethernet infrastructure as native Ethernet, so many of the security methods used in the local area network (LAN) can be extended across a metro area. Connections are made through EVCs that partition traffic securely while maintaining connectivity across all devices. When complemented by firewalls, intrusion detection systems and anti-virus solutions, security can be efficiently maintained across the network.

Flexibility/scalability

Metro Ethernet can support point-to-point and multipoint connections with bandwidth up to 1Gbps. Unparalleled scalability with bandwidth is available in 10Mbps increments from 10Mbps to 100Mbps. Bandwidths in 100Mbps increments from 100Mbps to 1Gbps, (also at 150Mbps complementing traditional private line speeds) allow healthcare organizations to cost-effectively match Metro Ethernet to their requirements.



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Reducing operating costs

Healthcare providers must balance the need to implement advanced technologies to improve efficiency and the quality of care with a mandate to reduce overall healthcare costs. Metro Ethernet supports the continued adoption of new healthcare solutions while helping to ensure regulatory compliance while keeping costs down with unsurpassed flexibility and reliability.

Extended reach

Metro Ethernet can securely connect multiple healthcare facilities across a metro area, enabling healthcare professionals to collaborate more easily and centralize orders for medical equipment, supplies and medicines. Plus, the Metro Ethernet efficient BCDR and remote storage plans can be implemented with the security, availability, reliability and cost efficiency that helps ensure regulatory compliance.

Lower IT management costs

In addition to eliminating LAN/WAN protocol conversions and the need to support multiple legacy WAN services, Metro Ethernet enables healthcare organizations to merge IP data applications, voice, video and Internet traffic on a single network service. Metro Ethernet enables consolidating servers and remote facilities, further reducing overhead and ongoing management costs.



More cost-effective overall

Metro Ethernet bandwidth costs are typically lower than private line services and synchronous optical networks. Unparalleled flexibility and scalability allows healthcare organizations to better tailor bandwidth to their specific requirements.

Enabled by Alcatel-Lucent 7450 Ethernet service switch

With industry-leading density and performance, the Alcatel-Lucent 7450 Ethernet service switch (ESS) router supports scalable, reliable and predictable SLA-based carrier Ethernet services. The Alcatel-Lucent 7450 ESS router, part of the service routing platform, overcomes the limitations imposed by traditional Ethernet switches while minimizing operating expenses to reduce the total cost of ownership.

The ESS router dramatically improves network stability, scalability, availability and performance. Its QoS management enables support for different traffic types while superior provisioning tools speed deployment of new Ethernet services.

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