

REAL-TIME TELEMEDICINE NETWORK EXTENDS AND IMPROVES MEDICAL CARE ENABLE THE HIGHEST-QUALITY TELEMEDICAL AND TELESURGERY APPLICATIONS

Faced with ongoing shortages of specialists and trained personnel and a greatly increased patient caseload, healthcare providers are challenged to meet growing service demands without jeopardizing patient safety. Innovative providers are exploring real-time telemedicine applications to increase access to medical services, extend physician reach and presence, and reduce medical errors and operational costs. New telepresence and telesurgery solutions enable physicians to conduct examinations and guide surgical procedures from remote medical offices and hospitals.

Telemedical applications allow medical personnel to use HD video technology to conduct remote consultations and clinical assessments—helping healthcare providers extend coverage while making better use of limited medical staff resources. It is ideal for rural areas where patients often have inadequate access to critical medical devices, including MRI and X-Ray technologies, which require a specialist.

Telesurgery enables surgeons to leverage state-of-the-art robotics and HD video technology to perform remote surgical procedures. It brings surgical expertise to remote areas and underserved populations and helps healthcare providers improve surgical outcomes, reduce costs, and make better use of expert surgeons.

TELEMEDICAL AND TELESURGERY IT CHALLENGES

Healthcare IT managers face a number of technical barriers when implementing real-time telemedicine. Many hospitals rely on aging legacy networks that lack the capacity and performance to deliver premium-quality HD video streams and the reliability to support life-critical applications. High-capacity fiber optic networks help overcome these limitations.

KEY APPLICATIONS DRIVING IMPROVED HEALTHCARE:

TELEMEDICINE

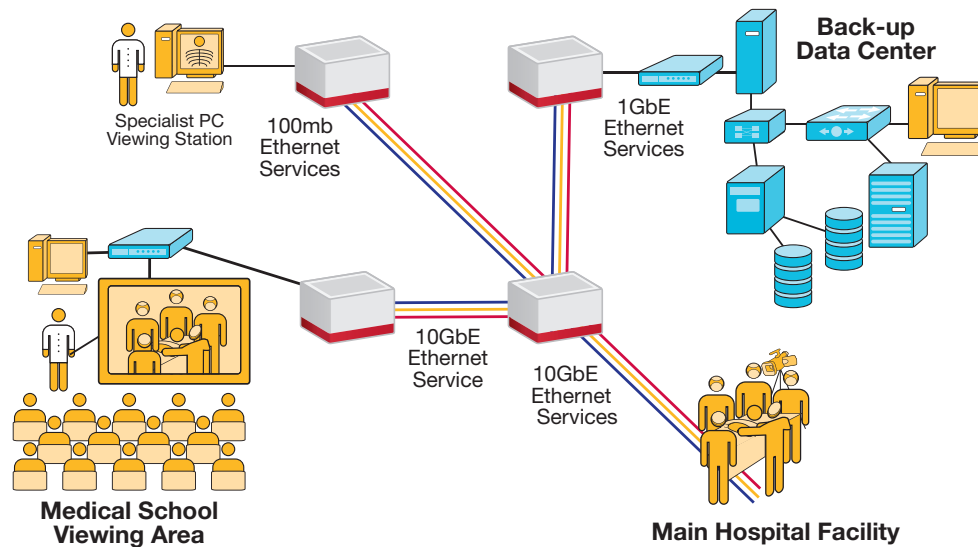
- > **Expands reach** – serves new markets and geographies
- > **Improves care** – delivers high-quality healthcare to underserved areas
- > **Increases physician productivity** – eliminates travel downtime, allows providers to treat more patients per shift
- > **Lowens care delivery costs** – increases productivity, cuts travel expenses
- > **Helps facilities go green** – eliminates unnecessary doctor and patient travel

TELESURGERY

- > **Improves patient outcomes** – brings expert surgeons to remote areas and rural populations
- > **Cuts costs** – eliminates travel expenses and lost time due to travel
- > **Increases surgeon productivity** – makes better use of specialists
- > **Extends knowledge** – local surgeons can observe and learn
- > **Improves hospital image** – facilities can better serve communities

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Figure 1: Ethernet network for telehealth applications



COMCAST METRO ETHERNET SERVICE

A high-bandwidth, low latency Ethernet service lets hospitals replace legacy leased-line infrastructures with high-capacity fiber networks that meet the rigorous performance and availability demands imposed by telepresence and telesurgery applications. Comcast Metro Ethernet Services can deliver as low as 1M of bandwidth and as high as 10G of bandwidth to support HD video signals over standard fiber optic networks with original signal quality. Shown in Figure 2, the main hospital facility uses an HD video camera and microphone at the main location to broadcast the surgery or procedure taking place. Using a high-bandwidth, low latency Ethernet connection, the HD video can be transported to a medical school viewing area, where students can take advantage of the learning experience. An additional site is connected, where a medical specialist views the procedure from a PC or video appliance.

The specialist can interact with the surgeon delivering the procedure and acts as another set of eyes during the procedure. Finally, a digital record of the procedure is captured and stored as a video file and backed up at an off-site location in real time via a high-speed Ethernet service. Applications such as this, where low network latency and resiliency are critical, are more challenging over legacy networks due to inherent latency and lack of transparency. Metro Ethernet networks are capable of delivering the right amount of bandwidth at lower costs, with higher performance than traditional networking designs allow.