FRONTIER WHITE PAPER

Bandwidth's Role in Helping Healthcare Organizations Improve Efficiency and Reduce Costs

Today's healthcare providers face increased expectations from patients, new government mandates on patient data, and pressure from all sides to control costs. Given these challenges, the healthcare industry is increasingly turning to communications technologies, particularly Internet access products, to improve patient care and increase cost efficiencies.

The following questions were posed to a team of communications technology experts from Frontier Communications with experience serving the healthcare industry: Kevin Robertson, Product Marketing Senior Manager; Nathan Dirickson, Director, Commercial Data Product Management; and Kris Howerton, Director, Product Development.

Q. WHAT ARE THE PRIMARY CHALLENGES CURRENTLY FACED BY HEALTHCARE ORGANIZATIONS?

A. The healthcare industry is encountering what could be described as the "perfect storm." In the next four years, 74 million baby boomers will reach retirement age and demand for healthcare services of every kind can be expected to grow exponentially. An explosion is also taking place in the sheer numbers of pharmaceutical products and medical advancements available; this complex landscape challenges doctors, medical facilities and administrative staff in their quest to achieve operational effectiveness.

For example, over 90,000 people are admitted to intensive care units on any given day in the United States[1]. According to the World Health Organization's 9th edition of the International Classification of Diseases, there are over 6,000 approved drugs and over 4,000 medical and surgical procedures in use today. Multiple changes, additions and warnings are published every day for these remedies. Technological advances—from surgical automation to real-time unified communications—extend and enhance the capabilities of medical science.

[1] Reference: Dr. Atul Gawande, best-selling author of the "Checklist Manifesto," a MacArthur Fellow, Associate Professor at Harvard Med School, who leads World Health Organization special programs studies.

Management has a more subtle healthcare challenge but one that carries significant barriers to advancement and compliance. Doctors, hospital administrators, insurance companies, state and federal regulators, pharmaceutical companies and technology vendors all function as a very large and disparate collection of cooperative groups. As a result, coordinated efforts rarely occur with respect to acceptance of new technology or compliance with new (and sometimes expensive) government regulation.

The Health Insurance Portability and Accountability Act (HIPAA), along with numerous additions and supplementary regulations, is forcing fundamental changes to the established medical culture. Electronic Data Interchange (EDI) is required for at least eight different types of information transfer including everything from healthcare benefit eligibility inquiries to pharmacy claims. Security requirements associated with Protected Health Information (PHI) approach levels similar to handling national security information.

Q. WHY HAVE MANY HEALTHCARE ORGANIZATIONS BEEN SLOW TO ADOPT TECHNOLOGY SUCH AS ELECTRONIC PATIENT RECORDS?

A. For healthcare professionals directly caring for patients, maintaining Electronic Medical Records (EMRs) can be a diversion from their primary focus. Clinicians often regard the EMR system as counterproductive since the forms are not user friendly. In addition, entering data into a computer while in front of a suffering patient may work against the goal of improving healthcare.

Securing a paper record in a doctor's office is far easier, cheaper and more certain than translating and migrating years of protected private patient information into electronic records. This is especially true when records are hosted on servers with new and unfamiliar processes.

The healthcare industry carries the responsibility of more people's lives to an extent unmatched by any other industry. As a result, the medical community moves slowly and carefully,

as it should in regard to new technologies, medications and processes. "Do it right the first time" is a concept we all want the healthcare industry to embrace. The burden to lower the barriers to migration rests with technology vendors. Upfront costs, operations interruptions, support staff training and applications integration are important challenges for providers to solve. Developing and offering the right solutions will do more to expedite migration of healthcare providers to new technologies.

Q. IN WHAT WAYS CAN COMMUNICATIONS TECHNOLOGIES HELP IMPROVE THE QUALITY OF PATIENT CARE WHILE CONTROLLING COSTS?

A. Carrier-grade Ethernet solutions can reduce response times and enhance the availability of medical records and real-time data. By doing so, these solutions can facilitate more accurate diagnoses, hospitalization and prescription of needed medication. Ethernet is a mature technology used in nearly every personal and professional PC, and public and private LAN.

Public network solutions have evolved from the "dumb pipe" services of private lines and Frame Relay to smart networks that can host and improve more operating functions. The State of Ohio purchased an "information highway" from a consortium of 20 phone companies. This information highway provides connectivity between courthouses, jails and the state judicial branch as well as between universities and libraries in the state. It also provides connectivity between hospitals, medical colleges and research facilities.

Carefully designed intranets and extranets can facilitate improved communications efficiencies and optimize use of bandwidth. Examples include:

- Intranets structured between doctors, labs and hospitals
- Intranets between hospitals and suppliers, special services and emergency response agencies
- Extranets to medical research and the latest training

Recent federal legislation expands the size of the customer base for the U.S. healthcare industry to 310 million (total U.S. population). Enhanced communications with patients needing care or being cared for can expedite diagnoses, shorten hospital stays and facilitate preventive care. Technologies exist that can connect patients to doctors, hospitals, pharmacies and claims departments. The technology and devices that comprise unified communications at this level are available today, and the core transmission technology that supports increasing bandwidth and the multimedia dimensions of these solutions is Ethernet.

Q. WHAT ARE SOME EXAMPLES OF APPLICATIONS THAT BECOME AVAILABLE TO A HEALTHCARE ORGANIZATION ONCE IT UPGRADES FROM T-1 OR DSL SERVICE TO ETHERNET? WHAT BENEFITS DO THESE APPLICATIONS PROVIDE?

A. T-1 service is late-stage technology, now being replaced by more versatile, scalable, maintainable and efficient services. The real communication technology decision is between a DSL service and an Ethernet solution. Which communication service to order depends on the application itself, the urgency and criticality of the information, and resources available.

DSL is a shared service, meaning that as more and more users begin using the local DSL infrastructure, the fixed level of performance is spread over all users. Data that contains video or information that has a real-time requirement should not be provisioned over DSL. DSL service is cost effective, and serves quite well for non-real-time administrative data or inquiries and filings for benefits.

Ethernet is inter-operative across devices and vendors with mature standards. The technology is nearly universal in LANs and WANs including the PCs of patients and work-at-home/road-warrior professionals. Ethernet bandwidth is symmetrical and dedicated; in other words, a 50 Mbps service will transmit and receive at full bandwidth all the time. Highly interactive video conferencing or data from a video probe can be viewed and controlled remotely in real time with an Ethernet solution.

Aside from performance of Ethernet technology, the cost of this premium service will be higher than DSL but can be scaled to the exact level required for each application. If 14 Mbps or 230 Mbps or even 100 Gbps is the appropriate level, Ethernet can be scaled to provide that bandwidth at varied levels of availability and reliability. In addition, IT expertise, CPE equipment and management systems for Ethernet are commonly available and cost effective.

Q. HOW DOES IMPROVING BANDWIDTH ADDRESS SOME OF THE CHALLENGES FACED BY HEALTHCARE ORGANIZATIONS?

A. The implementation of greater bandwidth and its related technologies can have a dramatic impact on a healthcare provider's ability to deliver quality patient care. To illustrate this point, consider this story. A major telecommunications company established a high-speed video connection between a small remote hospital and the University of Kentucky College of Medicine. A patient at a remote hospital was experiencing a growth on his vocal cords not recognized or understood by the local hospital staff. The video feed sent to the College of Medicine allowed the school's staff to observe the problem in high-resolution color video and provide the right diagnosis. This life-saving solution leveraged readily available technology that's unfortunately not widely used.

Aside from the obvious effects of increased bandwidth—expediting administrative and medical functions in a healthcare facility—high bandwidth supports unified communications. For example, it allows for the process of equipping patients with small, wearable sensors so they can leave the hospital sooner and still be closely monitored. This addresses healthcare challenges of containing costs without sacrificing care.

Q. HOW CAN A CAMPUS-WIDE Wi-Fi NETWORK ENHANCE PATIENT CARE IN TERMS OF ACCESS TO PATIENT INFORMATION?

A. Wi-Fi helps address the challenges of rising healthcare costs, HIPAA regulatory compliance requirements and the need to speed up EMR adoption. With a Wi-Fi Mobility network, health-

care workers have secure and untethered online access to real-time critical patient information.

In today's environment, healthcare workers as well as patients are highly mobile and depend on effective, timely communication. Physicians also require access to patients' medical information when and where they need it. For example, doctors want to be able to review patients' lab reports online from a remote office in a multi-clinic environment, rather than waiting for an in-house courier to deliver a paper copy. Patients who travel frequently or live in remote locations may send regular medical updates to their physicians without making office visits. Incorporating "location independent" connectivity where doctors and patients can access and exchange information quickly provides the mobility, accessibility and portability necessary to enhance overall healthcare quality.

Q. WHAT ARE EXAMPLES OF mHEALTH APPLICATIONS THAT A Wi-Fi NETWORK MAKES POSSIBLE?

A. In general terms, Wi-Fi solutions reduce costs, minimize wait times, maximize resource utilization and enable healthcare administrators, physicians and staff to stay connected. These solutions are key to the growing mHealth field, defined as the practice of medical and public health that's supported by mobile devices such as smartphones, tablets, etc.

Examples of common mHealth applications in use include:

- ePrescriptions
- Real-time EMR updating and reporting
- Billing solutions that optimize reimbursement intervals
- Patient diagnostic and charting telemetry solutions

Q. HOW CAN A VOICE-OVER-IP (VoIP) SOLUTION SAVE MONEY FOR A HEALTHCARE ORGANIZATION?

A. A VoIP solution can reduce labor and operational expenses for a healthcare organization by eliminating the need to manage, monitor, maintain and troubleshoot separate voice and data networks. In addition, only one set of wiring is required to the desktop for both computer and phone compared with the two sets of wiring that buildings would traditionally have for their voice and data services. For healthcare organizations that incur long distance charges, a VoIP solution can significantly reduce those expenses.

Network convergence, including VoIP and Unified Communications, allows healthcare organizations to gain new efficiencies, increase productivity and improve overall patient care. Using VoIP services, patient calls can be self-routed to the appropriate department without operator assistance using auto-attendant functionality. Records related to the patient's visit can also be stored and retrieved, while seamlessly connecting to existing medical billing software or patient administration applications.

Want to know more? Start a conversation about Frontier's offerings with one of our U.S.-based representatives. Visit www.frontier.com/enterprise today.

DATA • VOICE • VIDEO