

IT network considerations during healthcare system integrations

In the last decade, since the passage of the Affordable Care Act, healthcare payment models have transitioned from volume-based reimbursements to value-based incentives encouraged under the law.¹ To remain viable, enterprise providers are seeking the right mergers and acquisitions to create economies of scale, geographical dominance and an expanded roster of quality clinicians.²

Ultimately, the goal is to achieve the patient-centric Quadruple Aim of enhancing patient experience, improving population health, reducing costs and improving the work life of clinicians and staff.³

As consolidations of healthcare organizations continue, IT leaders are tasked with integrating acquired physician practices, hospitals and other adjacent healthcare organizations, into their existing IT networks.⁴

This guide offers best practice solutions for IT leaders on how to efficiently onboard new locations, improve interoperability and overcome the complexities of integrating complex, dispersed and disparate network infrastructures.

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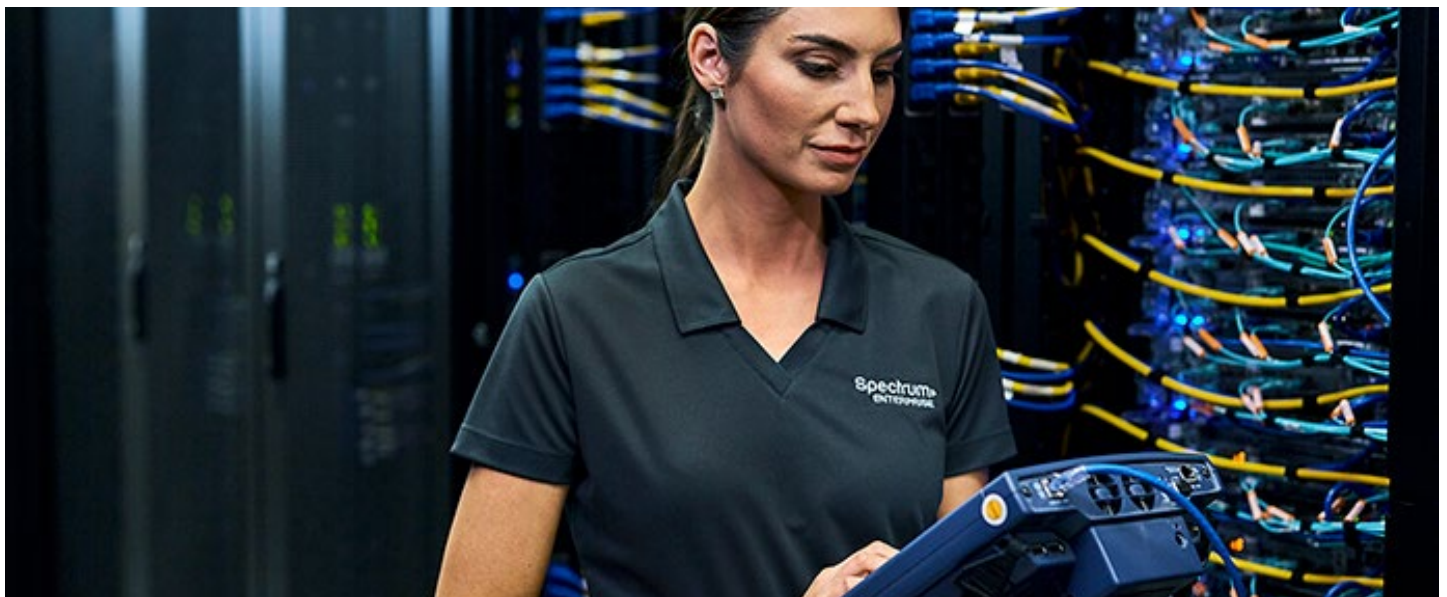
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Efficiently onboard new locations

Careful preparation is the key to every successful integration. While oftentimes integration decisions are made without much notice to the supporting IT staff, whenever possible start with a thorough requirements assessment before any integration work begins and carefully analyze the proposed facility’s existing IT infrastructure. Unexpected IT overhauls can be costly.

Ensure quick scalability: As industry consolidation continues to accelerate, larger patient populations and geographic span has the potential to create scalability and interoperability concerns for newly-united healthcare organizations. When seeking to assure a positive patient experience to retain and attract patients, continuity of care and avoiding disruptions in service is critical. Therefore, choosing a network provider that can scale nationwide, while maximizing uptime, is paramount.

Ensure functionality across multiple platforms: Save time and resources by tapping into existing infrastructure first, ensuring multiple platforms can be used for primary connectivity and for redundancies to protect against outages. Integration experts can design a system that makes full use of existing hardware.

Assess security requirements: Changes in interoperability requirements, HIPAA mandates, telehealth protections and transmission of protected health information (PHI) over cloud-connected devices all require layered, secure protections and redundancies. These are critical to protecting patient privacy and avoiding fines or costly updates, as well as to retaining brand value.

Meet network needs today and tomorrow: As your enterprise grows, so will the need for increased bandwidth to handle increases in electronic health records (EHRs), diagnostic imaging, Internet of Medical Things (IoMT) connectivity and expanded telehealth options. The practice of estimating bandwidth requirements is specialized and complicated, but it provides invaluable insights into planning your IT system.

The Office of the National Coordinator for Health Information Technology (ONC) recommends considering the following factors — number of users, user locations, real-time transactions, hardware and storage technology.⁵ Needs increase exponentially as you look to implement big data, telehealth and cloud-based computing initiatives and will continue to grow as machine learning, IoMT and other innovative technologies continue to take hold in care delivery. With all that said, the ONC’s bare minimum recommended bandwidths for each type of network are:⁶

- **Single physician practice** – 4 Mbps.
- **Small physician practice (2-4 physicians)** – 10 Mbps.
- **Nursing home** – 10 Mbps.
- **Rural health clinic (approximately 5 physicians)** – 10 Mbps.
- **Clinic/Large physician practice (5-25 physicians)** – 25 Mbps.
- **Hospital** – 100 Mbps.
- **Academic/Large medical center** – 1 Gbps.

For a successful IT integration you need:

- Quick scalability.
- Functionality across multiple platforms.
- Proper security measures in place.
- Flexibility of network architecture to compensate for future needs.

Support medical technologies across locations

Bringing together rural offices, labs, diagnostic centers and telehealth centers requires carefully plotted solutions which make use of both the existing connectivity infrastructure and high-performance upgrades.

Virtual health: Even prior to the COVID-19 pandemic, telehealth services were critical to reaching rural and other underserved communities — connecting patients with specialists in other parts of the country. Now, with an increased need for clinical services combined with heightened concerns of patient and doctor safety, more doctors are utilizing telehealth for routine care, regardless of that patient's proximity to care services. A recent survey showed as many as 90 percent of all doctors are treating patients with telephone and video telehealth services, and two-thirds of them expect to continue beyond the COVID-19 pandemic.⁷

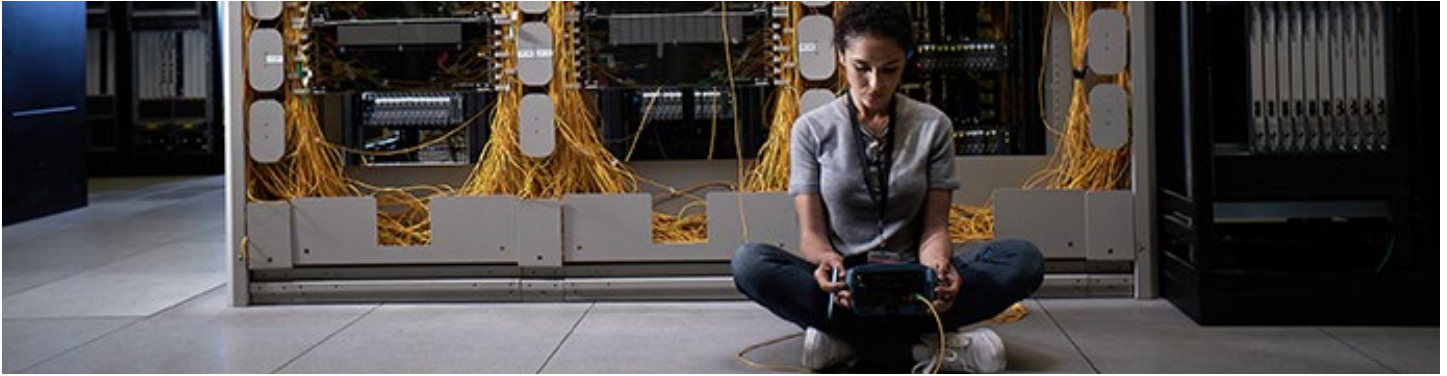
To connect distant offices and support the bandwidth necessary for interoperable telehealth services, the FCC has continued to evolve the [Rural Health Care \(RHC\) Program](#) to facilitate telehealth access through wireline services like fiber-based internet and Ethernet, helping to ensure reliable, strong connections to these locations.⁸

EHRs: ONC guidelines on interoperability have mandated moves toward universal availability of EHRs and the seamless portability of medical histories, test results and doctors' diagnoses. Instantly sending, receiving, finding and integrating EHRs requires a high bandwidth, HIPAA-compatible platform with a secure connection to cloud-based applications.

To connect multiple locations quickly, stitching them into an interoperable network, SD-WAN services are the optimal choice, since SD-WAN can work with multiple connection options and provide secure onramps to cloud services. The FCC also recommends bandwidths of at minimum 1 Gbps for major health centers.⁹

IoMT: The global IoMT market is expected to reach \$158 billion by 2022, a nearly four-fold increase over five years.¹⁰ That means thousands of new devices coming online in hospitals, like smart beds and scheduling tools, along with devices critical to patient care, like ultrasounds, glucose monitors and electrocardiograms. Even small fluctuations in internet bandwidth and speed can affect the accuracy of these sensitive devices, and the loss of connectivity could have serious consequences for device-dependent patients.¹¹ Seek out service level agreement (SLA)-backed internet and WiFi connectivity that have been designed and implemented to ensure ubiquitous coverage, and has reliable, consistent performance and uptimes.





Important product features to seek out:

- Low-latency service that supports symmetrical speeds up to 10 Gbps.
- Ethernet, which delivers a secure and faster connection.
- Networks provisioned with scalable gigabit ports to meet future needs.
- Able to support all network traffic including data, voice and video.
- Integrated managed services for routers, firewalls and WiFi.

Cloud connectivity expands

More than a third of healthcare organizations now store at least half their data in the cloud, accelerating far past the days where solely back-office data and functions were shifted to the cloud.¹² Today, critical cloud-based applications are proliferating throughout the industry, as they can ease integrating new locations, simplify software upgrades and eliminate the need to replace data center hardware every few years. Added to that, cloud storage gives healthcare providers centralized access to patient records, accessible to all, leading to interoperability improvements.

To support medical technologies across all locations, you'll need to carefully select the right mix of public and private networks. In situations where smaller offices need connectivity, public connections have real value, but private networks offer the real-time performance and extra security that may be desired.

Remember, public IP VPNs alone can be problematic, because you can't guarantee performance across the internet. But by combining the public internet with SD-WAN, you'll have two different connections, and can route traffic in the best way possible.

A private network like MPLS, with its variety of access technologies including legacy T1 may also be slower and require more supervision or staff specialization. Look to eliminate on-site management requirements with centralized cloud-based network management.

Given the vital need for timely and accurate information in care delivery, losing connectivity is not an option. Direct connections to your cloud offers an extremely reliable approach to maintaining this necessary uptime.

Reduce complexity and overall management effort

If you're now managing multiple pieces of equipment, have inconsistent performance, limited network insight or if you're dealing with multiple vendors, managed services will likely help you optimize performance. For most ongoing network integrations, choosing the right partner, and a managed network solution that is designed, installed, serviced and monitored by healthcare IT experts, can save you time, money and effort.

Many healthcare organizations are turning to managed, software-defined WAN (SD-WAN) solutions for several reasons. First, it can reduce WAN complexity and overall management effort. With some vendors, network experts will examine your existing and future architecture needs and, using what you already have, build out a new network to optimize its performance. This eliminates excessive hardware requirements and allows for cloud-based application upgrades while freeing your IT staff to concentrate on more strategic initiatives that grow your enterprise.

Second, a managed SD-WAN solution can improve network utilization by providing real-time insights into the demand and use needs of your network components and make adjustments for improved traffic performance. It can also optimize bandwidth, by utilizing and parsing all available network bandwidth, allowing users to direct traffic over both primary and secondary connections depending on internal priorities.

Lastly, SD-WAN can improve network flexibility. With intelligent routing based on both application type and real time network performance, seamlessly reroute traffic when connections become slow or unavailable. This also bolsters your existing business continuity and disaster recovery (BCDR) readiness and crisis response.

With an eye toward interoperability

The roadmap provided by ONC gives timelines and targets as healthcare organizations strive toward nationwide health IT interoperability, and the ability to send, receive, find and use portable EHR and other priority data to improve healthcare quality and outcomes.¹³ In addition to laying the groundwork for a nationwide learning health system, the ONC is also involved with creating nationwide standards for sending and receiving EHR and other critical data.

Managed data solutions can improve interoperability in several ways. First, using a single vendor can speed up resolution response times and avoid requiring IT workaround for dealing with inconsistent standards and protocols. It also creates a collaborative partnership to better support and achieve your IT goals.

Second, using cloud-based unified communications and a suite of collaboration services enable clinicians to work from anywhere with options to interact via instant messaging, voice and video chat to share critical information.

Third, session initiation protocol (SIP) trunking gives healthcare organizations a reliable and cost-effective voice service that can scale. Get performance guarantees, from the public phone network to the handoff at your PBX, and management of every aspect of the service with a managed solution.

Interoperability target 2021-2024¹⁴

- Achieve nationwide interoperability to enable a learning health system.

Where to get more answers

Careful planning, choosing the right technology and thorough vetting of the right partners can help you avoid the pitfalls of network integration.

Spectrum Enterprise has decades of experience specific to the healthcare industry, with additional expertise through the HIMSS Certified in Healthcare Technology Sales program. For a more in-depth conversation about our services, or to simply get answers to your network integration questions, contact our healthcare solutions experts today.

[Learn more](#)

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