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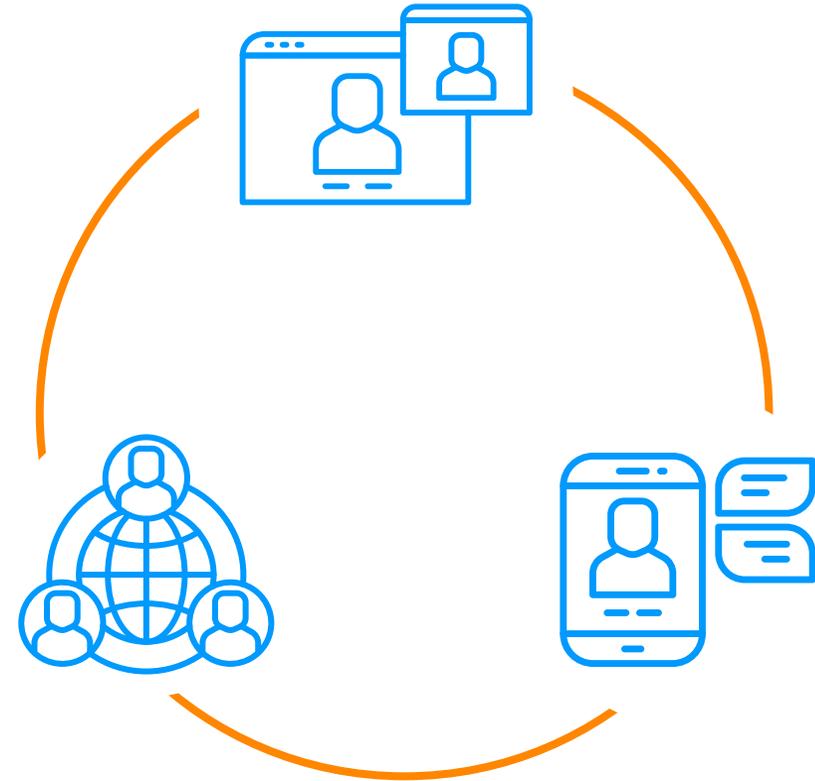
Next-Generation Networking in Healthcare



What Is NGN?

As connectivity needs change and network technology advances, the status quo of network infrastructure won't cut it. Instead, healthcare organizations need next-generation networking (NGN) technology that can evolve to meet the connectivity and communication needs of both today and tomorrow.

Generally, NGN combines communication methods, including voice, video and data, into a single IP-based infrastructure that can support new standards and technology such as 5G and Wi-Fi 6. This convergence and modernization enables healthcare organizations and others to support new applications, meet increased connectivity demands and overall deliver stronger network performance.



Convergence with NGN

By leveraging a single IP-based infrastructure, healthcare organizations can streamline support for a wide area of services. For example, NGN can enable capabilities like Unified Messaging, helping healthcare organizations manage multiple patient inquiry methods through a single interface.

IP NGN involves convergence across the following three main areas:



Application convergence, such as supporting data storage and mobile applications across a single infrastructure.



Service convergence, such as supporting data, voice and video services across the same operational layer.



Network convergence, such as being able to deliver services and manage security across a single network, which Cisco notes is “most often an IP Multiprotocol Label Switching (IP MPLS)-based network.”

Digitization at Healthcare Organizations Requires a Strong Network

Today's healthcare organizations are becoming more digital across both their back-end operational environments and their front-end patient services. For example, healthcare organizations are:

- Digitizing patient records.
- Implementing digital billing and scheduling systems.
- Leveraging new technologies like robotics in areas such as surgery.
- Providing telehealth services, such as for patient consultations.

Yet without a strong underlying network, healthcare organizations will struggle to run modern applications and systems, thereby stymying further digitization and innovation.



How NGN Supports Digital Transformation at Healthcare Organizations

NGN can:

- Increase network capacity
- Improve scalability
- Boost reliability.
- Facilitate better connectivity.
- Evolve with your organization.

With the right equipment, healthcare organizations can add more devices to their networks and become more digital with a strong backbone in place to support digitization for the foreseeable future.

Equipment Highlight:



Cisco 8000

Cisco 8000 series routers include Cisco Silicon One chips that help bring supported capacities far above the 10Tb/s level. These routers support up to 259 TB/s.

“Scale network capacity for a decade or more without investing in a new routing platform.”

- Cisco, on the 8000 series router.

How NGN Supports Digital Transformation at Healthcare Organizations

77%

of consumers prefer digital services to pay health insurance bills.

75%

want to be able to monitor daily health metrics digitally.

71%

want to be able to check personal health information online.

Healthcare organizations need offer digital solutions for:

- Billing.
- Improve Access to personal information.
- Communication with insurance companies.
- Communication between patients and providers.

“IP NGNs refer to the idea of one network that can not only cost effectively deliver and manage all the voice, video, and data communications options available today, but one that can also adapt and grow to handle any new communications options that will inevitably evolve.”

- Mike Volpi, senior vice president of Cisco's Routing Technology Group.





How NGN Supports Digital Transformation at Healthcare Organizations

64% of IT leaders at U.S. hospitals and health systems rated their organizations as **behind the curve** on leveraging digital and mobile technologies. **Half** of these respondents noted “**difficulties integrating legacy systems with new digital/mobile technologies.**”

As important as digital transformation is to healthcare organizations, many organizations struggle to implement and manage new technologies, particularly those with older network infrastructure.

This challenge further underscores the importance of implementing an NGN that can support the next generation of technology standards, digital healthcare services and overall provide healthcare organizations with the infrastructure needed to thrive going forward.

How NGN Supports Smart Healthcare

Smart healthcare enables healthcare organizations to implement smart devices, applications and systems that can dynamically help deliver care, manage equipment, improve facility management and more.

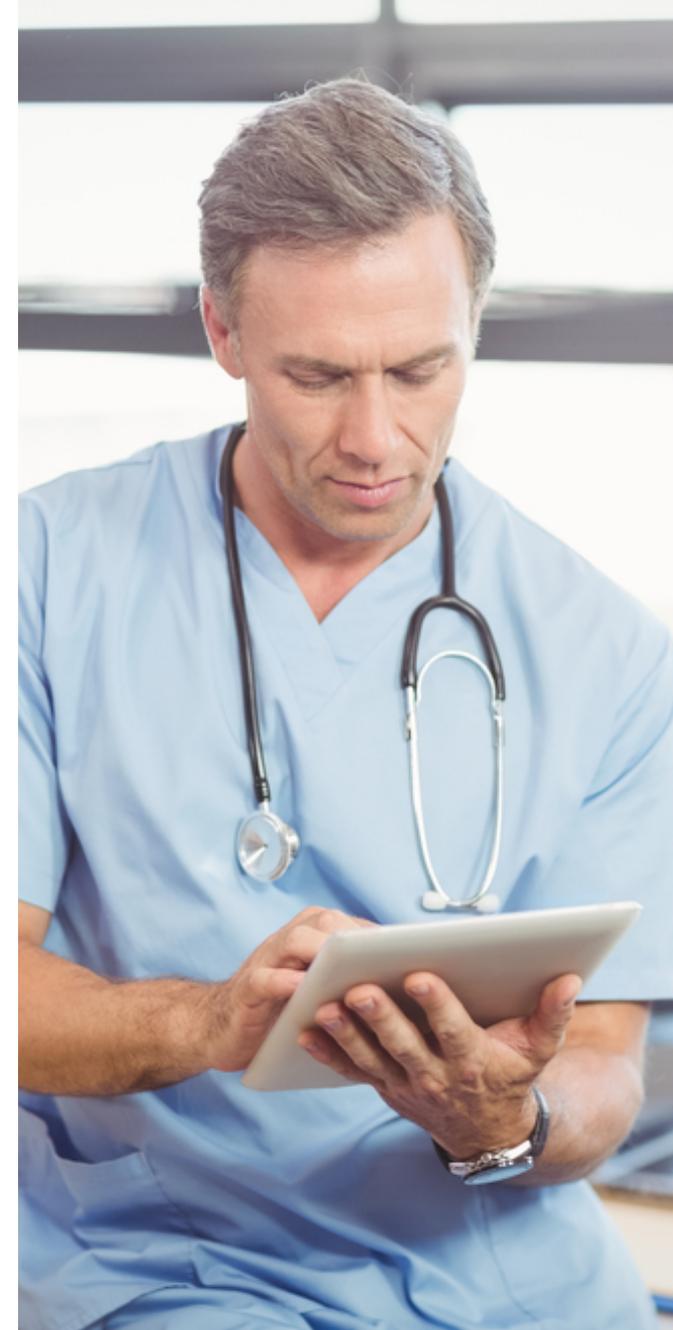
IoT in Smart Healthcare:

Using IoT devices in healthcare bring more areas of healthcare online, improving efficiency, enabling real-time performance monitoring and allowing for predictive maintenance.

Example use cases:

- Tablets that allow clinicians to take notes faster, and on the go.
- Sensors on x-ray or MRI machines can give performance updates and malfunction alerts.
- Vital sign monitors that immediately alert the patient's care team to critical changes.
- Smart thermometers for temperature-controlled rooms.

Healthcare organizations should look for NGN that can support smart technologies like IoT, particularly because having more connected devices can increase capacity, speed and security demands.



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“As sensors become more sophisticated, we’ll see similar closed-loop control of devices that monitor insulin levels, respiration, neurological activity, cardiac rhythms and GI functions.”

- Dr. David C. Klonoff, medical director of the Diabetes Research Institute at Mills-Peninsula Medical Center.



Improve Security With NGN

As healthcare organizations become more digital and use connected devices, security needs to be top of mind. These shifts will increase the amount of sensitive patient data that healthcare organizations need to manage, and they need to ensure that they have the right network infrastructure to store and access this data securely.

Look for next-generation equipment that has built-in security features. The Cisco 8000 series, for example, has a “Secure Boot” feature, which “establishes an authentication chain where each software module authenticates the next module in the boot process,” [explains Cisco](#).

Speed Without Sacrificing Security

Healthcare organizations using NGN can now move faster than ever with new advancements without sacrificing security.



NGN supports new standards like Wi-Fi 6, which uses the latest generation of Wi-Fi security, [WPA3](#). WPA3-Enterprise includes security protocols such as 256-bit Galois/Counter Mode Protocol encryption.

How NGN Supports Smart Healthcare

Similar to security concerns, healthcare organizations also need to ensure that they adhere to compliance requirements as they undergo digital transformation and leverage smart healthcare. In particular, healthcare organizations need to comply with HIPAA, which protects patient and data confidentiality.

So as healthcare organizations use electronic health records, for example, they also need to think about security in relation to compliance. That means leveraging a network infrastructure that can allow for efficient data management while still having protections in place to limit access to only authenticated users.

Solution Highlight:

Cisco ISE

Cisco's Identity Services Engine implements security and compliance-based policies by user. It validates user identity more securely than the simple username/password method and prevents unauthorized users from violating policies you set—including HIPPA restrictions.

NGN that integrates voice, video and data can help in this regard by keeping patient communications within a single system that can more easily be managed to meet compliance requirements, rather than needing to manage multiple systems.





Simplify Network Management With NGN

In addition to potentially simplifying compliance through convergence, healthcare organizations can simplify their overall network management with NGN.

With NGN supporting new standards and technologies, healthcare organizations can ideally use the same infrastructure for years to come. And as healthcare organizations add digital health services and smart devices, everything can be managed through a streamlined infrastructure, rather than having to piece together legacy IT assets to provide modern, user-friendly services.

Implementing NGN With Custom Computer Specialists

As valuable as NGN can be to supporting modern healthcare, implementing and managing network infrastructure can still be resource intensive.

That's why we offer managed NGN, helping your healthcare organization get up and running with the right infrastructure, and we can help you oversee your network infrastructure on an ongoing basis to:

- Stay compliant.
- Stay secure.
- Optimize performance.

We're compliance and IT experts with extensive experience helping all types of healthcare organizations implement the technology they need to operate at a high-level.

Get in touch with our team to see how we can help you leverage the power of NGN.





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