



Build a network foundation for a real-time healthcare system

Use case

In healthcare, digital transformation promises to increase access to more efficient and higher quality care. Patients want faster access, digital connectivity, and more integrated devices. But growing digital technology use is fueling data overload without producing timely, actionable information. To move toward a real-time care model, healthcare organizations must evolve their IT infrastructures so they can capitalize on the massive volumes of information gathered by digital technologies.

This use case describes the crucial role that cloud and network technologies will play in building an IT foundation for a real-time healthcare system that provides benefits to patients and care providers while delivering a good return on investment.

Challenges

Why networks and the cloud are essential for real-time healthcare

Healthcare systems are complex ecosystems that include hundreds of clinical and business processes executed across many locations. Expanding points of care, digital practices, and big data call for a new business and IT model that allows the healthcare system to operate in real time and support a more connected, aware, and patient-centric approach to care.

To provide the IT infrastructure required for a real-time healthcare system, you need a network that delivers improved:

- **Scalability** – Virtual care solutions enabled by cloud-based patient portals, Internet of Medical Things (IoMT) devices, and big data are creating new demands for network scalability and capacity.
- **Reliability** – Doctors need the ability to retrieve electronic health records (EHRs) or digital images on demand to gain a 360-degree view of a patient's health. Networks must minimize downtime and support backup and disaster recovery capabilities to provide the level of continuity required by a real-time care environment.
- **Quality of service** – Medical applications, services, and data must be prioritized. At any given moment, the network must differentiate between what is important and what is not and match quality of service to each traffic type or application.
- **Security** – Concerns about security are putting new pressure on network infrastructure and those that manage it. Key areas of concern include meeting strict regulatory requirements for patient data privacy and confidentiality, new devices connecting to the healthcare network, patients and visitors accessing the wireless network, and IoMT devices that monitor patients and other medical equipment

Solution

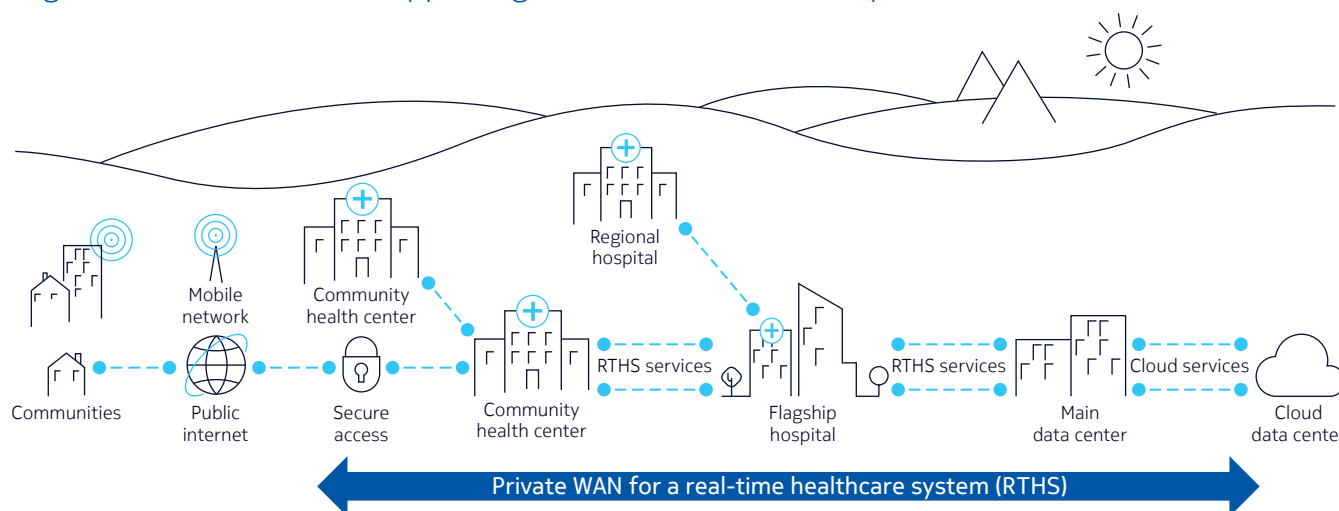
A private network to support a private-hybrid healthcare cloud

Real-time healthcare requires an aware and adaptive technology infrastructure that senses, directs, and changes as needed. To support the transformation to a real-time care model, you need to embrace innovative cloud and networking technologies. Nokia helps you create a foundation for the real-time healthcare system by:

- Connecting your private cloud infrastructure to ensure compliance with regulatory and organizational guidelines
- Leveraging your existing infrastructure investments
- Consolidating and transforming your data centers
- Supporting applications that are critical to patient care and safety

With our help, you can build a private wide area network (WAN) that connects multiple sites and data centers to create a secure private cloud for critical healthcare applications.

Figure 1. Private network supporting a real-time healthcare system



This private WAN starts with a high-performance backbone that brings optical networking and IP/MPLS connectivity to hospitals, care facilities, and data centers. The backbone combines scalability, reliability, quality of service, and security with intelligence that supports the requirements of multiple real-time services and applications.

You can further advance your network and cloud infrastructure by using innovative solutions such as software-defined networking (SDN) and software-defined wide-area networking (SD-WAN) to introduce optimization and automation capabilities.

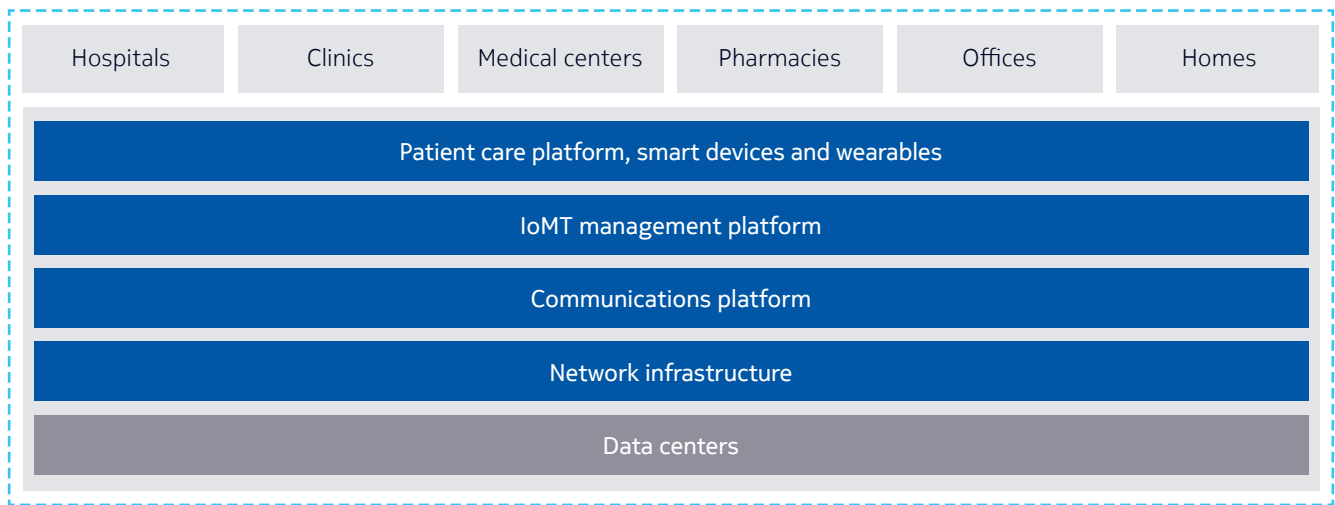
Evolve your network infrastructure for real-time care

Nokia can help you create a private WAN that enables the delivery of highly connected, digitally enhanced, patient-driven care. With a private WAN, you can support:

- Flexible and reliable bandwidth for increasing volumes of medical data
- Agile and dynamic provisioning to deliver services where and when needed
- Flexible SLAs to meet real-time healthcare system service and application metrics
- Multi-layer security to protect the confidentiality of patient data and EHRs
- Traffic engineering to ensure resiliency for specific medical applications
- Advanced network services to enable the convergence of legacy and new services
- Application-aware networking to prioritize different medical applications
- Real-time analytics and reporting to understand how the real-time healthcare system is performing

Our solutions provide the IT building blocks you need to support real-time care delivery. They let you move to a network-connected private-hybrid cloud infrastructure that speeds processes, balances resources and demand, and eliminates waste. With a state-of-the-art network as a foundation, you can use a wide range of applications—such as cloud-based communications, IoMT management platforms, and patient care platforms—to enhance and extend collaboration and workflows across the healthcare system and beyond.

Figure 2. Key building blocks for a real-time healthcare IT system



Communications and collaboration

Communications are shifting from back-office hardware to applications in clinical workflows. Our private network solutions let you accelerate this shift by supporting a unified, cloud-based communications and collaboration (C&C) platform.

Healthcare organizations can use this platform to make voice, chat, video conferencing, and file-sharing services available to any application, website, or connected object in the healthcare system. These services improve care quality, workflow efficiency, operational agility, response times, patient experience, and patient safety.

IoMT management platform

The IoMT promises to create many medical and clinical benefits for patients and clinicians. A network that can support thousands, or even millions, of connected medical devices is vital for healthcare organizations that are transitioning to a real-time healthcare model. Our private network solutions offer the scalability and capacity to manage massive numbers of IoMT devices.

Smart devices, wearables, and patient care platform

Deploying a scalable network for IoMT devices is just one part of the real-time health equation. It’s also important to make it easy for patients to use wearables and smart devices—and to enable clinicians to support them in a proactive, collaborative way.

Smart devices such as connected scales, blood pressure monitors, and wearable trackers can monitor patients in their homes. A patient care platform gives healthcare teams a more holistic view of the information generated by these devices. Together, these capabilities promote effective management of hypertension, congestive heart failure, stroke, and other chronic conditions.

Results

We can help you build a network and IT infrastructure that supports real-time care delivery. Our networking and cloud solutions provide the scalability and agility you need to address new demands and capitalize on mission-critical digital health data. They can speed your transition to a real-time model that increases access to quality care, improves operational efficiency, and reduces total cost of ownership, visit <https://networks.nokia.com/healthcare>.

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