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Architecture Overview

Basic Healthcare & Hospital System Network Configurations

Where, when and how patients manage their health has evolved significantly, with even more change and upheaval on the horizon. Healthcare IT leaders must pay careful attention to their network architecture options in an era where digital health is now the rule, rather than the exception.

HQ Campus

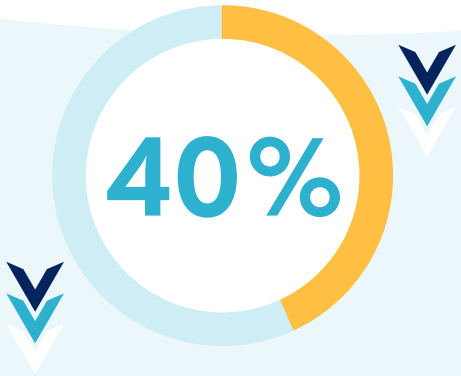
In this basic architecture, fiber or 5G is used to connect different functions – surgery, radiology, medical teaching center, etc. – located in various buildings with the hospital's center of operations/ central data center.

Core

This network architecture design is ideal when there is >1 regional headquarters throughout a state (or across multiple states).

This design requires well-thought-out Disaster Recovery (DR) and Business Continuity (BC) plans that include secondary, tertiary and public cloud-based data centers (DCs).

Connectivity options such as managed dark fiber, managed wavelength, 10Gbps – 100Gbps+ dark fiber, or 100Gbps Ethernet services allow for data mirroring and backup recovery to occur in between the main headquarters location and regional headquarters, the primary, secondary, and tertiary DCs and cloud DCs.



One multi-facility hospital system reduced ER mortality rates by 40% when it upgraded its core network from 1Gbps to 10Gbps to accommodate new bandwidth needs for a remote ER patient video monitoring application.

WAN

Clinics, rural physicians' offices, outpatient treatment centers, etc. can leverage the capabilities of a Software-Defined Wide Area Network (SD-WAN) to split traffic between Ethernet and Internet underlay connectivity services – often at a lower cost – and experience better application performance.

More specifically, a single site can route non-mission critical network traffic over a business internet service and route more important, latency sensitive traffic over 1GigE or 10GigE Ethernet. What's more, SD-WAN gives hospitals and healthcare systems the choice between deploying the solution via a software-based, virtualized version uploaded onto a universal customer premises device (uCPE) or a dedicated physical device.

A large medical system anticipates saving $3M by replacing physical devices like routers, firewalls, etc. with virtualized network functions across all physician offices.

SASE

Delivering and receiving care from anywhere via virtual visits and telehealth consultations and patient monitoring from afar are still popular alternatives to traditional care delivery models.

To protect private data shared between patients and providers during these virtual encounters, today's healthcare IT leaders should seriously consider deploying bundled cloud-based security services like Secure Access Service Edge (SASE) combined with a "zero-trust network access" approach.

Edge Compute

Today's providers often rely on Artificial Intelligence (AI) to quickly parse through large sets of structured and unstructured data in near real-time when patients' lives are on the line. To that end, many healthcare systems are now deploying edge compute solutions for their low latency, mobility, and data processing capabilities.