



AT&T Business

Providing a

# higher level

of patient care

How virtualized networks can help  
healthcare organizations improve  
patient outcomes

# The right expertise

Patients walking into the Austin Cancer Center in Austin, Texas are scared.

They are anxious. And they want to know what their futures hold. Most importantly, they need to feel confident that their healthcare teams have the right expertise to treat their cancers.





# Better patient outcomes

## Providing a seamless technological

experience inside a healthcare organization can go a long way to help ease a patient's anxiety. By switching to a virtualized Wide Area Network (WAN), Austin Cancer Center can improve the patient experience by creating new efficiencies. With a virtualized network, Austin Cancer Center can now adjust bandwidth as needed and send large imaging files throughout the day without bogging down other activities on the network. This means, for example, that patients could be able to receive results much sooner than was previously possible and get in and out of the hospital in potentially much less time.

"If a patient comes into the center and their plan is already queued up, then we can get them into their treatment room. They can then be out in, say, 10 minutes instead of more than 30. The patient feels less anxiety, because things are being efficiently managed," says Jason Lindgren, Chief Information Officer at Austin Cancer Center. "On the other hand, if our system is crashing, then it takes longer to get their imaging studies and treatment plan. This can cause patients to question whether we have the right systems in place to effectively treat their disease."

In addition to increasing patient satisfaction, another benefit of having a virtualized WAN can be faster processing of imaging studies, which could enable Austin Cancer Center to handle a larger number of patients, and because there could be a shorter waiting time, patients could be treated sooner. The healthcare system also could see higher revenue from the increased use of imaging machines.

Virtualization in healthcare IT not only involves the network, but also the hardware components—such as routers and firewalls—that can now be delivered as software elements on a single multi-purpose device. This takes up less space, requires less power consumption, and can provide notable cost savings. A vendor using the latest in virtualization technology manages these applications in a cloud-based environment. Hospital IT networks can stay up to date with the latest software without purchasing new purpose-built equipment. The software is electronically updated with the latest enhancements as they become available.

**By switching to a virtualized Wide Area Network (WAN), Austin Cancer Center has been able to improve the patient experience by creating new efficiencies.**

By using virtualized networks, healthcare organizations like Austin Cancer Center can reduce costs, provide higher levels of patient care, improve security, and enhance network efficiencies. Hospitals, large healthcare systems, and clinics can focus on implementing emerging technologies to support better patient outcomes, rather than spending excess cycles managing their physical data centers and networks.

A survey by  
TriCore Solutions  
found of healthcare  
organizations:

**49%**  
use a private cloud

**19%**  
use public cloud  
services

**32%**  
use a hybrid IT  
environment  
(some portions are virtualized  
while others are  
on-premises)

## Virtualization: the future of healthcare IT

**The decision to move to the cloud has been debated** for years in the healthcare industry. It's now no longer a question of, "Should we move to the cloud?" Today, the focus is on when and how to move to virtualization.

Lee Kim, Director of Privacy and Security, HIMSS North America, said several long-term trends are driving healthcare systems to move to a virtualized network.

"The good old days of healthcare systems maintaining their own infrastructure in house are pretty much fading fast. We are finding that technology demands are just too much for what a single IT team at a healthcare system can do, so many hospitals and institutions are moving to a virtualized network," says Kim.

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# Several industry trends contribute to virtualization as the future of healthcare



## Shifting data towards the cloud

The data at a hospital or institution doesn't live in a vacuum. Additional data from other places, such as pharmacies, other hospitals, clinics and doctors' offices, as well as the Internet of Medical Things (IoMT), all work together to make up a patient record.

Because so much data from these sources is now moving to the cloud, it becomes challenging for healthcare systems to get and share all the data needed to treat patients if their data is stored in an on-premises data center.



## Increased security requirements

With new security threats occurring daily, and malicious attacks becoming more sophisticated, healthcare IT departments must devote a large amount of resources to protecting their networks and data.

However, without dedicated resources and specialized training, it is challenging for a single IT team to have the knowledge and time required to keep their individual network secure.



## New technology requiring new hardware/software

Technology continues to evolve at a rapid pace. However, this often means increased infrastructure requirements. Constantly buying new infrastructure becomes too costly for many hospitals.

The result? Not being able to support or use the latest medical technology, because the supporting network is too outdated.



## Lack of experienced IT professionals in healthcare

Healthcare systems often struggle to find the IT talent needed to maintain on-premises infrastructure. Because healthcare IT compensation is often lower than other industries, it is challenging to attract and retain top talent.

IT professionals also are often deterred from the 24/7 nature of the healthcare industry, as opposed to jobs with more traditional schedules.



Crystal ball into the future:

## Healthcare systems no longer owning hardware

**Miami Children's Hospital took a step-by-step approach** to having a completely virtualized network. Last year, the healthcare system moved their customer service data and all applications for the main hospital and 14 outpatient clinics to a virtualized infrastructure. Currently, the supply chain data, clinical data, and fiscal data resides in an on-premises data center with an off-site backup storage location.

“All healthcare systems should very seriously consider virtualization,” says Dr. Narendra Kini, CEO at Miami Children’s Hospital. “The technology has evolved to the point where benefits outweigh the risk. I think the efficiencies, the cost, and the capabilities have advanced to the point where it’s a very viable alternative. Looking at the decade forward, it would almost make no sense for healthcare organizations to invest in their own hardware environment.”

# Step-by-step

# How virtualized networks can benefit your healthcare organization

**Over the past few years, a large** national healthcare provider based in the Southeastern U.S. has moved towards virtualization and currently uses a public cloud. Virtualized cloud-based routers and segmentation support a network of 75 hospitals, 100 clinics, over 200,000 employees, and close to a million end points.

With a virtualized network, they are no longer limited by their hardware. Agility with software configuration, implementation and adaptability is key to being able to virtualize in this type of infrastructure environment.

Although the infrastructure is not located in a server room on-site, they have the same level of control and visibility as in the past. Close collaboration with their vendor is essential to configure the network to meet their needs today. As their needs change, they can adjust their configuration and service level without purchasing a single piece of new physical equipment or having to dispose of outdated hardware, providing better agility, visibility, and scalability.

Because of the size and scale of many hospital networks, having a software defined controller managing and orchestrating endpoints can be much more efficient than relying on manual processes. Manageability, including a more automated policy and near-real-time visibility are huge benefits of moving to a virtualized network.

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**As we look towards moving to a more virtualized network, we are focused on manageability.**

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# Additional benefits may include:

## More quickly connecting new locations after M&A or expansion

Connecting networks after a merger/acquisition or moving to a new location can take months with a traditional hardware-centric networking model. However, if fiber is already provisioned, a virtualized network can be live within days. This can enable healthcare systems to begin operating as a single unit much quicker. For new locations, this means they can be online in less time.

Because Miami Children's Hospital has multiple locations and plans to expand to new locations, the healthcare organization sees the scalability of virtualization as a significant benefit. "As we continue to expand our business our current virtualized infrastructure allows for rapid scalability and availability to support locations geographically or in other ways becomes a much quicker and more efficient process," says Kini.

## Ability to prioritize critical traffic

In healthcare, not all network traffic is created equal. Certain types of data can literally mean the difference between life and death for a patient, while other data is not time-sensitive. It's essential that organizations have the ability to identify and prioritize network traffic as it relates to patient care. With a virtualized network, healthcare systems can divert less critical traffic and manage bandwidth for critical applications over a variety of transportation types.

In the past, Austin Cancer Center sent radiology studies to radiologists after business hours, because the files were so large they bogged down the network during busier office hours. Their Position Emission Tomography (PET) scanner, a scanner used to produce multi-dimensional images of the human body, generates extremely large data files, upward of 1GB per patient. After moving to a virtualized network, Lindgren can now simply adjust the settings and level of service to prioritize the critical files. "Now we can send those in near-real time. After the patient leaves the scanner, the study is already on its way to the radiologist," says Lindgren. "If we can't get those to the radiologists in time, it can really affect that patient's care."

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## Network agility and reducing total cost of ownership

Lindgren says one of the biggest benefits Austin Cancer Center has found since moving to a virtualized network is that the power to adjust bandwidth is now in their own hands. The center is now able to manage or resolve bandwidth requirements based on the actual needs of the clinic, instead of either paying for a level of bandwidth only needed for a short period or having lower network performance during high-need periods.

"Surprisingly, cancer is actually seasonal. When we have a reduction in cases, we can easily scale our bandwidth down to save money. We can also analyze the net flow of data and make adjustments based on what our vendor's data is telling us," says Lindgren. "Previously, we had to do a contract amendment just to do analytics. It really helps us not having to go through the song and dance."

"The virtual network was significantly lower (in cost) than what we were already paying, and we found the service level was considerably higher," says Lindgren. "There is no way I could have accomplished this goal without using a virtualized network."

In addition, with traditional on-premises solutions, healthcare organizations often have multiple pieces of equipment, each in their own box and each supporting a different function, like routing, security, WAN acceleration, etc. By moving to a virtualized solution, healthcare systems may only have one or two boxes, which can provide more functionality and a higher level of performance. This can help reduce costs significantly over traditional on-premises solutions.

## Solving IT talent shortage and management issues

Purchasing new equipment, installing routers, and maintaining specialized on-premises hardware takes time – often lots of time. Every hour spent on these tasks takes away from supporting clinical applications or medical equipment that improves patient care.

Complicating this issue is that unlike other industries, healthcare IT is a 24/7 business. Finding IT staffing willing to work nights and weekends often proves challenging, especially since they can find other jobs with regular 9-to-5 hours. Often the more the senior level IT experts work the day shift, which can make it hard to maintain a high level of IT excellence 24/7.

Finding talent—particularly talent with experience in security—isn't easy. A 2017 survey conducted by Enterprise Strategy Group and the Information Systems Security Association found that 51 percent of cybersecurity professionals reported a talent shortage in security expertise at their organizations.

Healthcare systems with a virtualized network can reduce the impact of these challenges by minimizing the amount of time that IT staff spends performing activities like software updates, patches, or managing on-premises equipment.



# Protecting your data

## How virtualized networks handle security

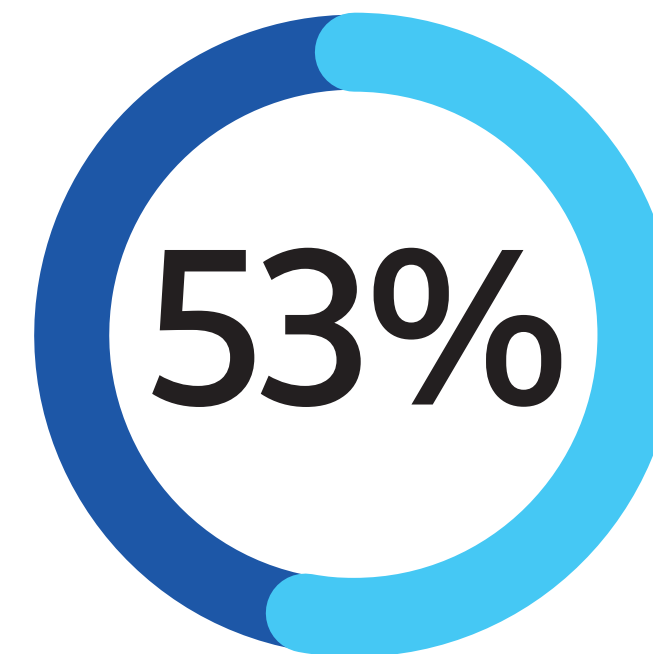
It's impossible to bring up the topic of virtualized networks with healthcare system leaders without hearing security concerns. According to the 2017 Healthcare Information and Management Systems Society (HIMSS) Cybersecurity Survey, lack of cybersecurity relating to cloud service providers is a top concern with 53 percent of respondents. Similarly, cloud security is one of the top priorities according to respondents to the 2018 HIMSS Cybersecurity Survey.

In many ways, virtualized networks can provide enhancements over security managed on site by your IT teams. Network service and cloud providers are constantly monitoring threats and receive information from government agencies about new and evolving threats. With a virtualized network, software updates to your firewall can be made much more quickly than asking your IT staff to take on this task manually.

"When I'm asked about security on a virtualized network, I say that if we are being honest, there is no such thing as an absolutely 100% secure system," says Lindgren. "However, I am not concerned about our security on our virtualized network. We are using a strong encryption with firewalls."

While tools and firewalls protect against most security threats, healthcare systems should take precautions to prevent as many human errors as possible. Kini says the security vulnerability that keeps healthcare leadership up at night is the human operator.

"We have secured our systems by using encryption technologies and digitizing our data streams, and we have ensured our systems are protected against intrusions," says Kini. "But at the end of the day, we have 3,000 plus employees who have passwords. How these people store those passwords, how visible these passwords are, the length at which these systems are open is still a major vulnerability."



### Cybersecurity concerns

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# Budgeting: CapEx vs. OpEx

**Another consideration that healthcare organizations** may face when moving to a virtualized network environment is changing the budgeting classification for hardware-related expenses. Most healthcare systems have built accounting models that depreciate a piece of equipment over 7 or 10 years.

However, in a virtualized environment with physical assets moving to the cloud, the budget for this equipment shifts to operating expenses. It's important to engage key stakeholders across the organization early in the process when considering a move to virtualized network, to help minimize unexpected delays down the road.

## Moving forward to virtualized networks

**Many healthcare systems begin their journey to** virtualized networks with a large project designed to solve an important IT problem. However, these projects typically take multiple teams and years of effort, and they often have a long pay-off period. This means you cannot show leadership quick value to the business.

Instead of starting big, taking a small step toward virtualization with an easy-to-achieve use case may prove more effective. Consider starting with moving depreciated components to a virtualized network and adding more virtualized components as more assets depreciate. Talk with your leadership about the plan, and set up the budget for the project. By starting small, healthcare systems can show some successes to prove

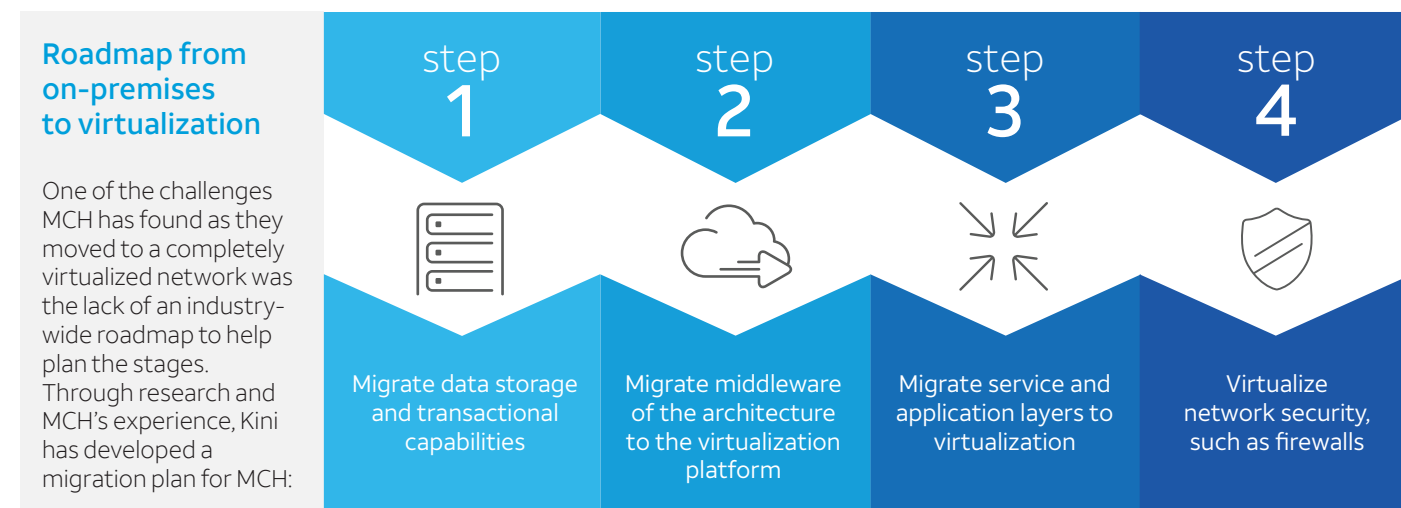
value to leadership. Your IT team can also become familiar with virtualized networks on a smaller scale before moving to a tougher use case.

After finding a virtualized network provider that meets your needs, make sure you plan a test takeover with your vendor. Your vendor will take over existing routers and firewalls that are on-premises to show how the process of a virtualized network works. Vendors can also develop a proof of concept to replace your current purpose-built devices with a universal device running a software-based equivalent solution, giving you the opportunity to experience the benefits and flexible structure before making your final decision.

Yes, moving to a virtualized network may seem daunting. You're not just buying a new piece of equipment or trying out a new technology. Successfully making the move to a software-defined infrastructure takes a shift in mindset and processes, plus planning.

With the recent and ongoing changes to the healthcare landscape, maintaining an on-premises network simply is not the long-term answer for hospitals, clinics, and institutions. By making a plan and moving towards a sustainable IT model, your healthcare system will have the technology needed to help increase patient satisfaction and improve your bottom line.

# Bottom line





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