

A photograph of two surgeons in an operating room, wearing blue scrubs, masks, and hairnets, focused on a procedure. The image is overlaid with a dark blue gradient.

# TRANSFORMING HEALTHCARE OPERATIONS

LEVERAGING NETWORK INFRASTRUCTURE  
AS A STRATEGIC ASSET FOR DELIVERING  
BETTER OUTCOMES

There is a crucial need for healthcare organizations to address persistent clinical and IT staffing shortages, ongoing budget constraints and increasing cybersecurity threats, which are impacting clinical productivity and patient care.

This article presents research findings that suggest with the right investments in network modernization and network visibility and control, healthcare organizations can improve IT staff productivity, reduce risks and implement the advanced software applications clinicians need to provide better care to their patients.

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In a research project conducted by HIMSS and sponsored by Extreme Networks, findings revealed the major challenges affecting clinical productivity in the healthcare industry, included staffing and budgeting shortages and cybersecurity threats. These may all be symptoms of a larger problem, insufficient investment in the network infrastructure.

The clinical staffing shortage in the healthcare industry is a well-documented issue. Since before the pandemic, doctors and nurses have been hard to find, expensive to hire and even more expensive to retain. The problem has only gotten worse. Hiring and retention efforts have had an impact that drives up healthcare costs throughout the industry. These increased costs, in turn, force difficult decisions that delay the sufficient IT investment needed to maintain and improve the network infrastructure.





# THE IMPACT OF STAFFING AND BUDGET SHORTAGES

The impact of staffing and budget shortages on healthcare organizations cannot be overstated. According to the research by Extreme Networks and HIMSS, **60% of respondents ranked clinical staffing shortages as one of their biggest organizational challenges today**, with 32% of those respondents ranking it as their number one priority.

**84%** This clinical staffing shortage is most impactful for organizations between 2,500-14,999 employees, with 84% of respondents citing it as their most important issue.

**47%** The shortage of IT staffing exacerbates the challenges healthcare organizations face, with 47% of respondents ranking it in their top three challenges.

**24%** When it was in the top three challenges, IT staffing shortages were most often listed as the second biggest organizational challenge at 24%.

When it comes to deploying modern healthcare software, 74% of respondents listed IT staffing shortages as a deployment barrier, making it clear that the lack of qualified staff is hindering the adoption of new technology.

**“Automation can help healthcare organizations overcome staffing and budget shortages by increasing efficiency, reducing the need for manual labor and streamlining processes. This can help reduce costs and improve productivity, allowing healthcare organizations to deliver higher quality care to patients with limited resources.”**

DOUG MCDONALD EMBA FHIMSS,  
CPHIMS DIRECTOR - EXTREME ALLIANCE

Financial and inflation challenges are also a persistent threat to healthcare organizations, with more than half of respondents ranking it as a top three organizational challenge. C-suite executives were 27 percentage points more likely to list this challenge in their top three (77% vs. 50%). Organizations of less than \$1.1B in annual revenue were nearly 15 percentage points more likely than the average to express financial challenges.

### Organizations are finding it difficult to leverage modern patient care due to the cost of technology investments.

**44%** This ranked as a top three challenge for 44% of respondents, but it was most frequently listed as their third biggest challenge.

**77%** This is especially felt in the Northeast, with 77% of respondents likely to choose technology cost as a major challenge.

**79%** Additionally, 79% of respondents shared that overall costs create a significant barrier to deploying modern software.

Since the start of the pandemic, technology investments have increased for 90% of respondents. These findings make it clear that healthcare organizations have turned to technology to address staffing shortages, improve clinical productivity and the quality of care they provide to their patients.

As a result, the limited budget left to address the IT staffing shortage has led to less responsive IT, delayed projects and increased risks. Cyberattacks are increasingly threatening sensitive network assets, and with fewer staff to defend against them, the threat is even more significant.

## THINGS TO CONSIDER

Struggling to find and keep staff in healthcare is a daily battle. With limited staff, patient care can suffer as the staff you do have burns out from the stress of a mountain of work. Without additional budget, the reinforcements clinicians need are delayed or in some cases, never come at all. Over time, this leads to employee turnover creating a vicious cycle of ever-dwindling staff.

Consider how advanced clinical software and mobile devices can add automation and AI decision-making increase clinical productivity and support care delivery.





## HOW IT STAFFING AFFECTS CLINICAL PRODUCTIVITY AND IT EFFICIENCY

The shortage of IT staff in the healthcare industry has a significant impact on clinical productivity and IT efficiency. One of the biggest challenges resulting from the lack of IT staff is the delay in project completion. According to the survey, 29% of respondents considered project delays very impactful in their ability to support the organization. This has led to a backlog of critical projects, affecting overall productivity and efficiency.

Additionally, the lack of IT staffing also limits the ability to deploy modern healthcare software. The survey found that **74% of respondents listed IT staffing shortages as a deployment barrier**. This prevents healthcare organizations from utilizing new technologies that can improve patient care.

**The shortage of IT staff also leads to a range of other issues that limit the ability to support the organization.**

- 66%** of the respondents said routine tasks take longer to complete because they don't have enough people.
- 55%** claimed resolution time on errors and issues has increased.
- 51%** of respondents said that their junior staff lacks the expertise to handle complex work.

**“IT staffing shortages can have a domino effect on other areas of the organization. By reducing the IT workload through automation and process improvement, healthcare organizations can free up IT staff to focus on higher-level strategic projects.”**

**BOB ZEMKE,  
CPHIMS CISSP CWSP EXTREME NETWORKS**

Interestingly, executives were less likely to see these issues as impactful to their ability to support the organization.

**31%** Only 31% acknowledge the impact of their junior staff's lack of expertise.

**70%** Additionally, the survey found that 70% of respondents were neutral or communicated little to no impact of IT staffing shortage on their ability to maintain safety and security for patients and employees.

**45%** 45% of those in a Director to EVP role found this to be a bigger problem than their employees.

In conclusion, the lack of IT staff in healthcare organizations can lead to delayed projects, hinder the deployment of modern healthcare software, and limit the ability to support the organization. Healthcare organizations need to invest in their IT infrastructure and hire more staff to ensure that they can provide the best possible patient care.

D'où la nécessité pour les établissements d'investir dans l'infrastructure IT et d'embaucher de nouvelles recrues en vue d'offrir aux patients les meilleurs soins possible.

## THINGS TO CONSIDER

Things can get contentious as the organization needs to roll out new applications or implement new devices that improve clinical productivity when IT support staff lack the resources to maintain the existing technology and install the tools clinicians need. This leads to a lack of trust in IT to facilitate change in the organization and adds pressure to limited IT Staff with valuable expertise to stretch further or seek other employment options.

Consider how cloud networking tools powered by AI can increase visibility and control for IT Staff which eases routine management and can automate provisioning, offloading tasks that require little expertise to less expensive, easier-to-find, junior IT staff or contractors.





## GROWING CYBERSECURITY THREATS

Cyberattacks are another major concern for the healthcare industry. With the rise of cyberattacks on the industry, it is no surprise that **59% of respondents ranked cybersecurity challenges in their top three organizational challenges**, ranking second as the number one priority. In fact, the healthcare industry is the third-most attacked industry globally, behind Education/Research and Government, making cybersecurity a critical area that requires constant attention.



The footprint of mission-critical applications to secure is large, with respondents communicating an average of 25 mission-critical applications to secure. **39% of respondents even shared that they were supporting more than 25 mission-critical applications.** However, the research highlighted a discrepancy between Executive Leadership and IT technicians, with executives recognizing eleven fewer mission-critical applications than their technicians. This disparity highlights the importance of clear communication between leadership and IT teams regarding the extent of the mission-critical applications that require securing.

**“It’s important to not only invest in cybersecurity measures but also ensure that the network infrastructure can support them.**

**Investing in core hardware and architectural design can help reduce security risks and technical debt in the long run.”**

BOB ZEMKE,  
CPHIMS CISSP CWSP EXTREME NETWORKS



As a barrier to deploying modern healthcare software, **47% of respondents felt security concerns as significant.** This was even more pronounced in respondents from the south, with 61% of organizations communicating this barrier. This also highlights that cybersecurity concerns are not limited to the IT department but are also felt by other departments like finance, operations and patient care which all need advanced tools.

### Cybersecurity is the biggest IT priority in 2023.

**59%**

of respondents ranked cybersecurity in their top three biggest IT priorities for 2023, and 29% of those ranking it as the #1 priority for the year.

**94%**

This was even higher for IT Decision-making makers at 94%. It is evident that healthcare organizations are taking cybersecurity threats seriously and prioritizing cybersecurity measures to mitigate these threats.

Finally, **74% of healthcare organizations with less than \$1.1B in revenue communicated that cybersecurity is a top three priority for 2023,** 25 percentage points higher than those with more than \$1.1B in revenue. This indicates smaller organizations are feeling the critical threat requiring cybersecurity measures and are prioritizing investments in this area.

## THINGS TO CONSIDER

Healthcare will continue to be a target for cyberattacks as the threat footprint increases to provide automation and tools for clinicians in the face of limited budgets and IT support staff.

Additionally, limited IT expertise also inhibits the response time should a threat occur and limited non-invasive tools with which to keep the hospital working while dealing with the threat. Consider the inherent security of the network and how threat containment capabilities like hyper-segmentation and stealth networking can be an important complement to investment in threat prevention.





## TREATING THE SYMPTOMS HEALTHCARE'S BIG BETS

Given the impact attacks have had on healthcare, it is no surprise that cybersecurity ranks as a top investment area over the next 12-18 months, with 85% of respondents ranking it in their top three investment areas. 54% of those respondents ranked it as their top investment area, underscoring the importance of investment in cybersecurity measures.

However, cybersecurity is not the only priority in the coming 12-18 months.



Cloud infrastructure is a top three investment area for 63% of respondents.



Insights and analytics for AI are also an area of investment, with 67% of respondents selecting it as a top three priority. This is especially true for organizations with \$1.1B+ in revenue, with 78% reporting AI insights as a top three priority.



Advanced software applications and IT automation (AIOps) are also considered important, receiving 85% and 64% of respondents' selections, respectively.



Wi-Fi and network and data center modernization still received two-thirds of responses and location-based services nearly half..

**“While Wi-Fi and network investment may be considered a lower priority compared to cybersecurity and advanced software applications, it should not be overlooked. Ensuring a reliable and secure network infrastructure is critical for the success of other digital initiatives and can ultimately lead to improved patient outcomes.”**

DOUG MCDONALD EMBA FHIMSS,  
CPHIMS DIRECTOR - EXTREME ALLIANCE

When ranked against each other, healthcare respondents are clear.



Cybersecurity and Advanced Software applications are the highest priorities for 85% of respondents for investment in the next 12-18 months.



Insights and Analytics for AI, Wi-Fi and Network, Data Center modernization, IT Automation, and Cloud Infrastructure also feature prominently in respondents' top three priorities.

Overall, healthcare organizations recognize the importance of investing in cybersecurity, but their investment priorities reveal a focus on addressing the threats of intrusion, the pain of staffing shortages with advanced applications and AI tools to aid in datacentered decision-making.

## THINGS TO CONSIDER

The investments in advanced applications and cybersecurity provide the productivity and security needed to improve operating efficiency within the organization. This helps to offset the impact of staffing shortages and external threats. However, each application assumes a robust network in place upon which to operate. If you haven't done a readiness assessment of your network before adding systems, you may undermine the impact the new applications can have.

Consider conducting an audit of your network capabilities to determine if your existing infrastructure and support staff is sufficient to install and maintain your applications. If it isn't, it may be necessary to reprioritize your investments.



# INVESTING IN THE CURE

## NETWORK INFRASTRUCTURE

Investment in the network is crucial for hospitals to maintain and improve their operations, and this sentiment is echoed by the overwhelming majority of IT Leaders in the healthcare industry. The network is considered a strategic asset that is necessary for the success of a hospital's operations, with 93% of respondents agreeing or completely agreeing with this statement. Moreover, 71% of respondents completely agreed with the statement, underscoring the network's importance.

Given the network's strategic importance, an increasing number of respondents are prioritizing investment in this area.



59% of respondents ranked technology modernization and digital transformation as a top three priority for 2023



A quarter of respondents specifically selected growth and expansion of the network.



At 27%, migration to cloud platforms was a top three priority as well.

**“Network infrastructure is a strategic asset for healthcare organizations as it enables the delivery of quality care to patients. It’s the backbone of modern healthcare delivery, supporting critical functions like telemedicine, remote patient monitoring, and secure data exchange. Investment in network infrastructure is crucial for hospitals to maintain and improve their operations and to meet the growing demands of the healthcare industry.”**

DOUG MCDONALD EMBA FHIMSS,  
CPHIMS DIRECTOR – EXTREME ALLIANCE

When it comes to where investments will be made in the network over the next 12-18 months, 66% of respondents made Wi-Fi a top investment area. Data center modernization was the second-highest funding priority followed by cloud infrastructure investments. Still, these investments lagged nearly 20 percentage points behind cybersecurity and advanced software applications in priority.

**While not listed as the highest priority, Wi-Fi was a top three investment priority for 67% of respondents in an IT function. Wi-Fi is prevalent in healthcare settings, primarily used in care delivery and patient experience.**

**96%** 96% of respondents shared that Wi-Fi is being used for handheld mobile devices for patients and staff.

**84%** Furthermore, 84% of respondents shared that Wi-Fi is part of the patient experience delivery, with larger facilities being more likely to prioritize this aspect.

**83%** Additionally, 83% of respondents shared that Wi-Fi enables patient monitoring and results.

**59%** However, only 59% of respondents shared that Wi-Fi is used for location-based Services, suggesting that there is an opportunity for investment in this area.

Yet, only expanding the wireless network leaves the root cause of the challenges presented to healthcare unexplored. Network infrastructure, core hardware, the architectural design and the assumptions the systems were based upon hasn't changed in years. While best practice suggests a regular schedule of investment to modernize every 5-7 years, many organizations, including healthcare, have neglected the hygiene associated with network management in favor of investments elsewhere creating a deficit of technical debt.

The research reflects the type of thinking that contributes to increased technical debt. Invest in and work to alleviate the pain that is most acute while learning to live with the pain that is chronic. This has been and continues to be the approach.



Investing in the network allows IT to become more efficient and security risks are reduced. This allows for healthcare IT to implement the advanced software applications clinicians need to increase productivity in the face of severe clinical staffing shortages. With the right tools and investments, healthcare organizations can overcome these challenges and improve the quality of care they provide to their patients.

## THINGS TO CONSIDER

It's common to look beyond the network when it appears to be working fine and you've got more pressing issues needing IT investments, like advanced software applications and cybersecurity, but delayed investment in the maintenance and modernization of the network can come back to haunt you. The network can go from being a strategic asset to critical liability over time.

Consider how small investments in cloud managed networking tools, especially those powered by ML/AI, can introduce a level of visibility and control for your IT staff as you work to modernize your infrastructure alongside software and security investments.



# KEEPING THE NETWORK “A STRATEGIC ASSET” WITH EXTREME

As the healthcare industry continues to face growing cybersecurity threats and strives to keep pace with the latest technological advancements, it is becoming increasingly clear that modernizing the network infrastructure is not only necessary but essential to enable growth and innovation.

Extreme Networks is uniquely positioned to help organizations address these challenges and continue making the network a strategic asset. By investing in modern network infrastructure, healthcare organizations can increase network visibility and control, improve network security and promote greater clinical productivity. With the help of Extreme Networks, healthcare organizations can treat the cause of technical debt by modernizing their network infrastructure while also addressing the symptoms through tools that promote greater visibility and control.

Extreme Networks offers solutions designed to help healthcare organizations enhance the patient experience, overcome clinical staffing shortages and drive better patient outcomes. Extreme’s cloud-managed network

solutions provide greater visibility and control, enabling IT staff to easily manage the network and improve security in the face of growing cybersecurity threats. With features like AI-powered analytics, healthcare organizations can monitor network performance, predict potential issues and proactively address them before they impact patient care.

In addition, Extreme’s network infrastructure solutions support the necessary projects healthcare needs to achieve clinical productivity and overcome the limitations of clinical staffing shortages. With advanced automation capabilities, Extreme solutions allow healthcare organizations to simplify network management, reduce administrative tasks and optimize resources, allowing staff to focus on promoting the best possible patient care.

It is time for healthcare organizations to make the network a strategic asset by investing in modern network infrastructure. By partnering with Extreme Networks, healthcare organizations can treat the root cause of technical debt, address the symptoms through tools that promote greater visibility and control and support the necessary projects to improve patient outcomes and clinical productivity.





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