UNDERSTANDING THE TOOLS AND TRENDS FOR SMART NETWORK MANAGEMENT

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CONTENTS

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INTRODUCTION

MODERN networks are the veins that connect the digital world. With the rate of digitalization increasing at a pace never seen before, the pressure on networks – and the professionals who manage them – to ensure their digital infrastructure is 'always on' is continuing to mount.

Another driver creating challenges for network infrastructure management is the large and continuously growing number of networked elements, whether IoT devices (sensors, actuators, scanners, digital signage and lighting, etc., many of which are powered via Power over Ethernet), mobile phones, wearables, and other computing platforms. All of these connect at the edge of enterprise networks – the access layer – challenging IT's ability to see, control, and manage everything that is being connected.

Every industry, in every part of the world, is using technology like never before for its many business benefits. For network and infrastructure managers, the challenges of managing their organization's often sprawling technology stack and skyrocketing number of connected devices cannot be underestimated.

Add to this environment IT budget management challenges and the need to improve IT staff efficiency while streamlining processes – and doing all this securely – a difficult situation at best.

" EVERY INDUSTRY, IN EVERY PART OF THE WORLD, IS USING TECHNOLOGY LIKE NEVER BEFORE FOR ITS MANY BUSINESS BENEFITS.

OVERVIEW OF SURVEY

TO GET A BETTER understanding of trends in the market and to gain insight into their priorities – including the role of technology in facilitating efficiencies – we surveyed 51 industry professionals with responsibility over their organization's network infrastructure.

SUMMARY OF FINDINGS

- More than **30%** of respondents ranked **achieving appropriate level of risk management** as their top network management objective, while budget management was considered the most important business objective (**27%**)
- More than **70%** of respondents said they either occasionally (31%) or frequently (41%) used **network testing tools**
- A total of **27%** of respondents ranked **connectivity problems** as the biggest efficiency **gap for their organization**, followed by network performance (**25%**) and bandwidth/SLA verification (**20%**)
- Almost **60%** of respondents **agreed or strongly agreed** that a reduction in time spent on reactive incidents would benefit the effectiveness of ongoing proactive projects in their organization.

"

MORE THAN 30% OF RESPONDENTS RANKED ACHIEVING APPROPRIATE LEVEL OF RISK MANAGEMENT AS THE TOP NETWORK MANAGEMENT OBJECTIVE.

METHODOLOGY

All respondents were either employed as a Network Manager or Director of IT Infrastructure from a range of industry verticals based at organizations with more than 500 employees in North America.

CHAPTER 1
GETTING TO KNOW THE NETWORK

TODAY'S network and infrastructure leaders depend upon a range of tools and technologies to help them quickly identify and resolve potential issues within their network to ensure business continuity.

In this chapter, you will read about the types and number of different tools used, as well as the requirement and use of network testing tools.

We asked participants to indicate the types of monitoring, troubleshooting and analysis tools/technologies in use in their organization. They were able to check all that applied. Most popular tools were cable testers, network testers/analyzers and incidental packet capture and analysis.

Cable Testers	**57%**
Network Testers/Analyzers	**51%**
Incidental packet capture & analysis	**41%**
Network management system (SNMP-based monitoring)	**39%**
Infrastructure vendor tools/systems	**37%**
Flow data collector(s) – NetFlow, sFlow, etc.	**31%**
Packet brokers/taps	**27%**
Real-time packet analysis	**25%**
Other	**22%**

Respondents were asked how many separate tools/solutions were in use in their organization to monitor, detect, alert and solve IT network issues.

29% reported they had 11–15 tools in use; **24%** selected 21–50 and **20%** said 6–10. A further **12%** indicated they had 16–20 solutions in use; **10%** reported more than 50 and **4%** stated only 1–5.

Tool proliferation is often a hidden cost in network operations, not just in terms of purchase and deployment but in ongoing management and maintenance of the tool itself. Acquiring a multi-function tool that replaces multiple point solutions provides greater function and efficiency with less overhead.

10% HAD MORE THAN 50 IN USE

4% HAD ONLY 1–5 IN USE

29% HAD 11–15 IN USE

12% HAD 16–20 IN USE

20% HAD 6–10 IN USE

24% HAD 21–50 IN USE

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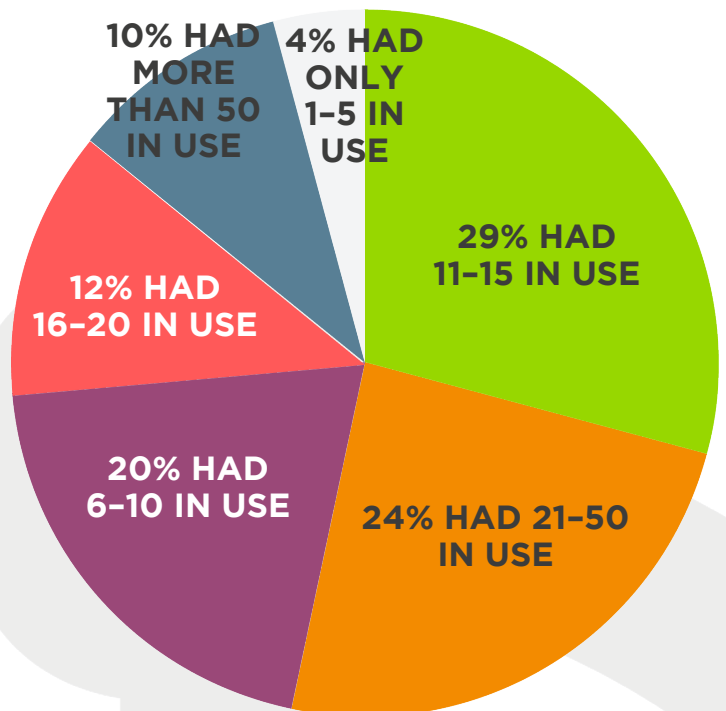
CHAPTER 1

GETTING TO KNOW THE NETWORK

. . . CONTINUED

Survey participants were asked to describe their previous requirement and use of handheld network testing tools. More than **40%** said they used these tools frequently as they had found this to be most efficient option for them. A total of **31.4%** said they occasionally used these tools in some areas, as and when required, while the remaining **27.4%** said they had never historically required or used such tools.

Tools that can be deployed directly to the point of problem occurrence provide visibility and data that cannot be obtained from centralized monitoring systems.

NEVER
27.4%

FREQUENT
41.2%

OCCASIONAL
31.4%
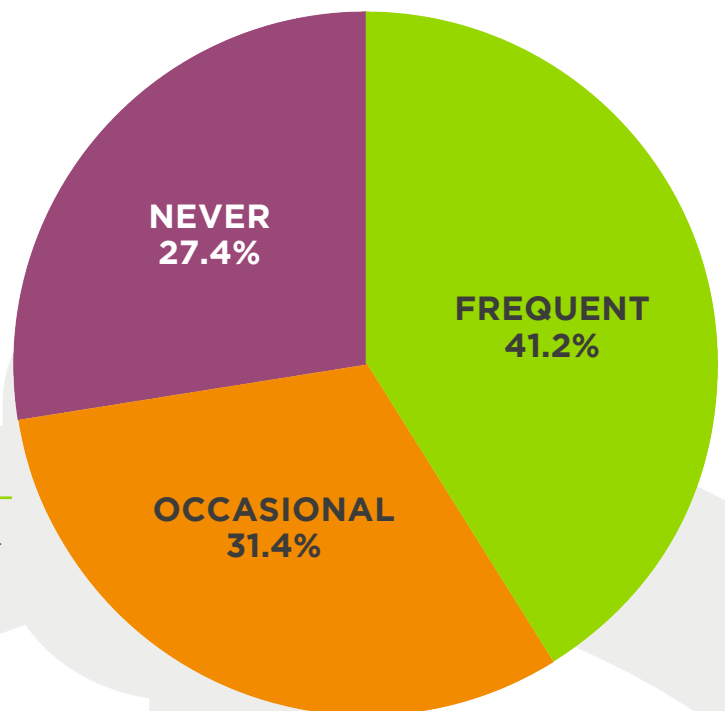
CHAPTER 2
NETWORK CHALLENGES AND RESOLUTIONS

THE RELIANCE upon digital infrastructure cannot be overstated as digitalization has impacted almost every organization in some way. It means that reliable network connectivity and performance are key business enablers and top priorities for network managers.

In this chapter, you will find out more about how organizations respond to network incidents, how they assign staff to be responsible for different network technology areas, and some of the key business challenges, network management objectives, and efficiency gaps.

	More than 90%	75–90%	50–74%	25–49%	10–24%	Less than 10%
1–3 days	26	13	9	2		
12–24 hours	6	6	33	4		
6–12 hours		2	16	19	12	
3–6 hours		1	5	24	16	3
1–3 hours					23	26
Within 1 hour				3	10	36

Respondents were asked what percentage of connectivity and performance problems are resolved within the indicated timeframes. With a majority of respondents indicating that resolution of most problems takes 1 day or more, clearly improvement is necessary.

CHAPTER 2
NETWORK CHALLENGES AND RESOLUTIONS   . . . CONTINUED

How many 'experts' does your organization have on staff for these various technologies?

(You may skip an entry if you do not know)

Technology	None	1	2	2–5	>5
a. Wi-Fi		2	23	20	6
b. Packet Analysis	3	7	6	18	17
c. Switching		8	22	8	13
d. Routing/WAN	1	16	13	19	2

TAKEAWAY

While staffing levels by technology expertise is highly dependent on the size and nature of the organization, a challenge in network operations is the efficient sharing of knowledge and collaboration between centralized experts and remote staff. Investing in tools that provide remote visibility and facilitate team collaboration is key to fast problem resolution.

CHAPTER 2
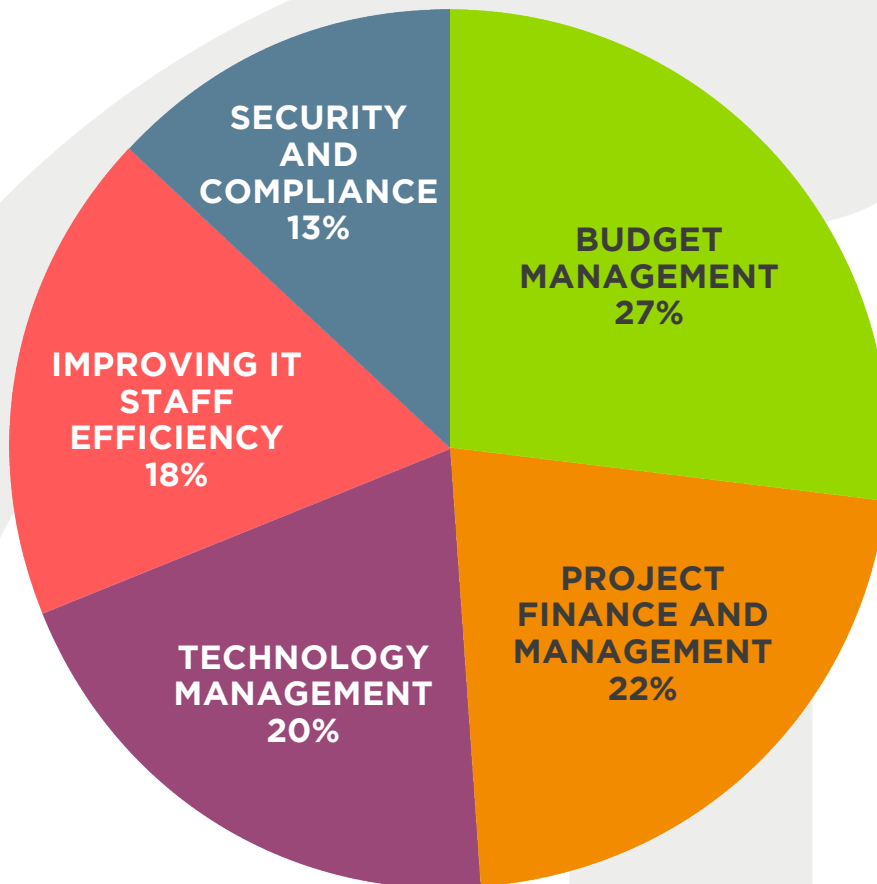## NETWORK CHALLENGES AND RESOLUTIONS . . . CONTINUED

Participants were asked to rank a selection of **business challenges** in order of their concern or importance.

HIGHEST RATED CONCERN

A total of **27%** selected budget management as their highest rated concern, followed by project finance and management (**22%**); technology management (**20%**) and improving

IT staff and efficiency (**18%**). The remaining **13%** selected security and compliance as their top business concern.


SECURITY AND COMPLIANCE
13%

BUDGET MANAGEMENT
27%

IMPROVING IT STAFF EFFICIENCY
18%

TECHNOLOGY MANAGEMENT
20%

PROJECT FINANCE AND MANAGEMENT
22%

CHAPTER 2
NETWORK CHALLENGES AND RESOLUTIONS . . . CONTINUED

SECOND HIGHEST CONCERN

Meanwhile, **23.5%** of participants selected security and compliance as their second highest concern (rated 2) while **21.6%** chose budget management and **19.6%** opted for technology management. A further **19.6%** went for project finance and management and the remaining **15.7%** selected improving IT staff and efficiency.

IMPROVING IT STAFF AND EFFICIENCY
15.7%

SECURITY AND COMPLIANCE
23.5%

PROJECT FINANCE AND MANAGEMENT
19.6%

BUDGET MANAGEMENT
21.6%

TECHNOLOGY MANAGEMENT
19.6%
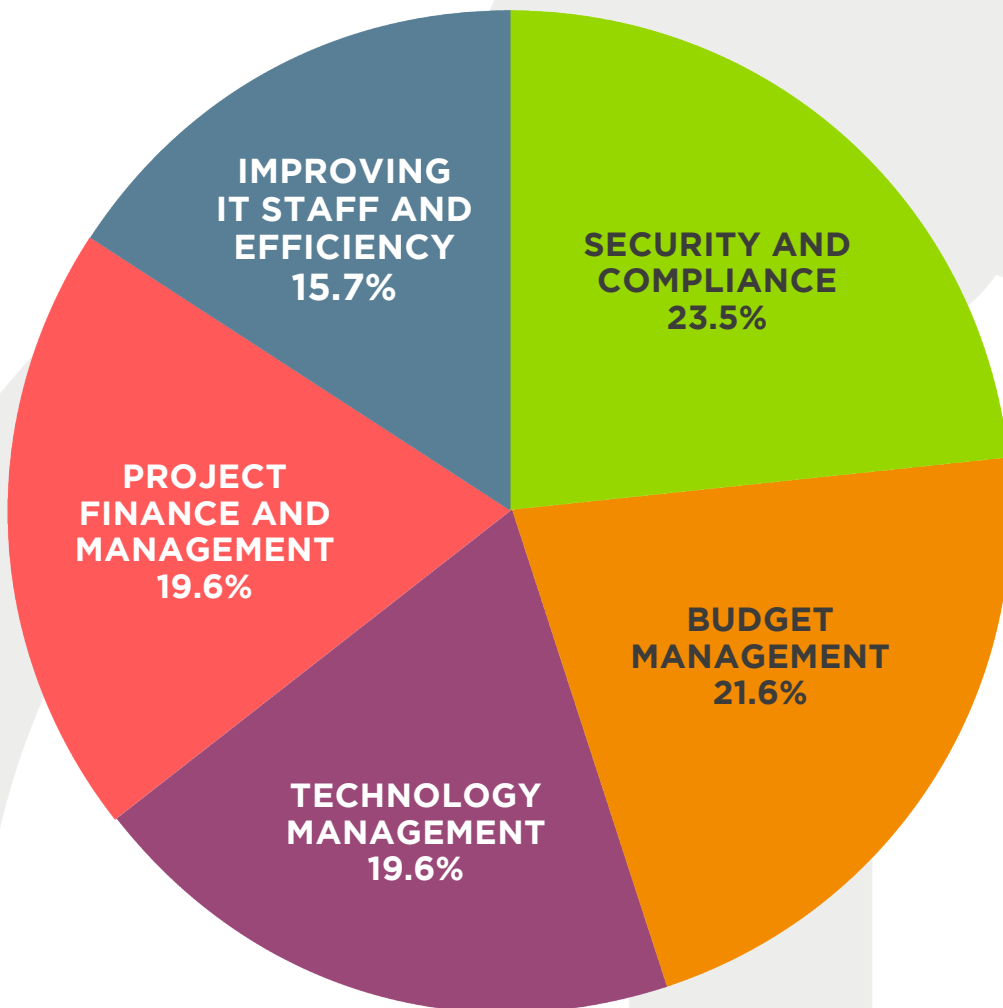
NETWORK CHALLENGES AND RESOLUTIONS . . . CONTINUED

Participants were then asked to rank or prioritize certain **network management objectives** in terms of how important or challenging they were for their organization.
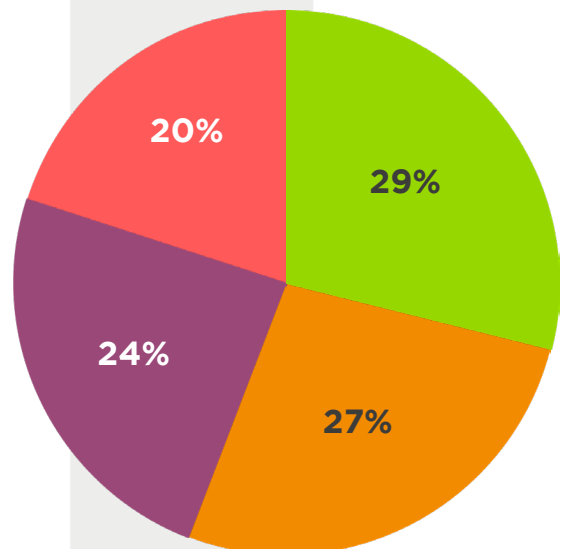
PRIORITY 1

A total of **31%** said achieving appropriate level of risk management was their top challenge while **25%** selected excessive time to repair – it takes too long to resolve issues. The remaining participants selected improving cost efficiencies (**22%**) and improving staff efficiencies (**22%**).

31%
25%
22%
22%
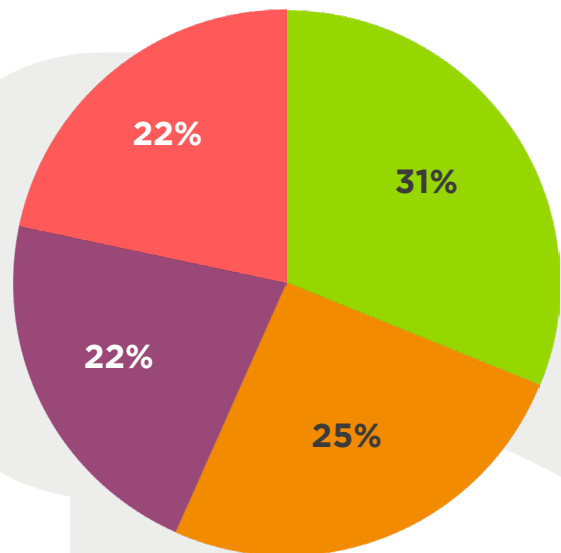
PRIORITY 2

Improving staff efficiencies was selected as the second most important or challenging network management challenge by **29%** of respondents, followed by achieving appropriate level of risk management (**27%**); improving cost efficiencies (**24%**) and excessive time to repair (**20%**).
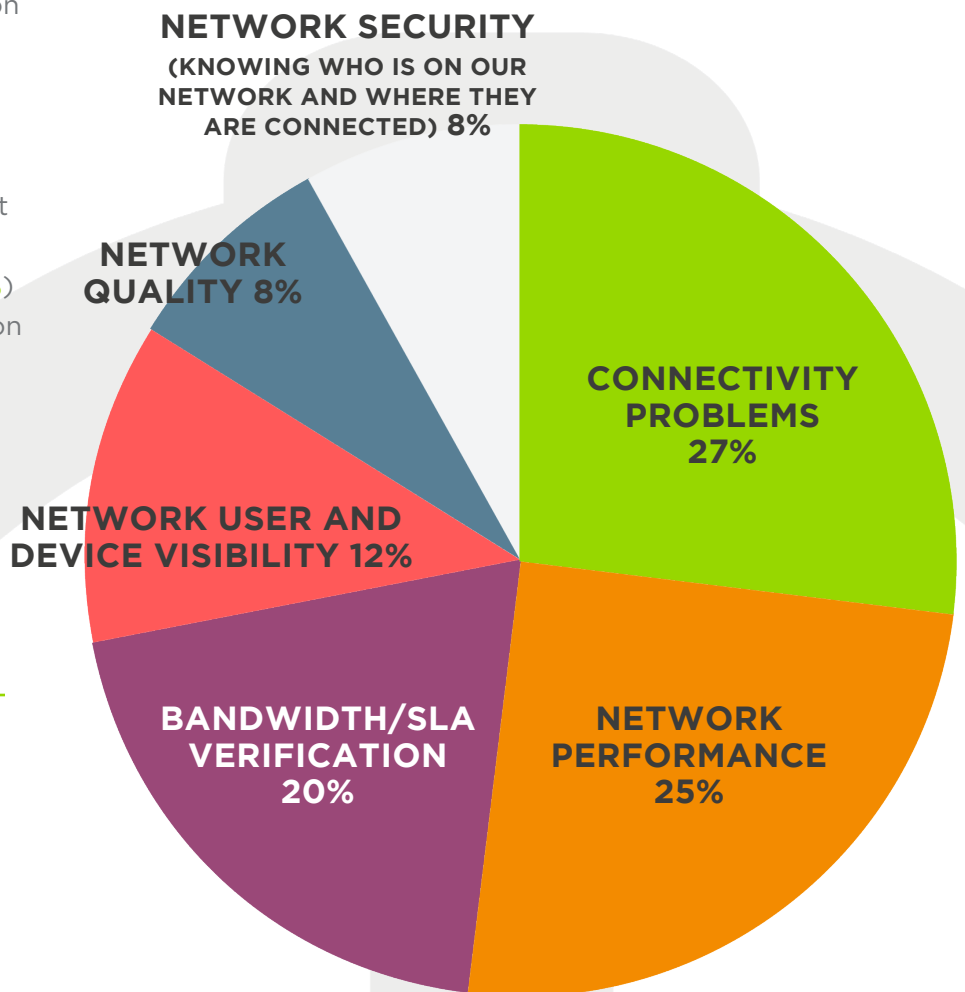
29%
27%
24%
20%

PRIORITY 3

Finally, survey participants were asked to rank the most common cause(s) of efficiency gaps for their organization.

Connectivity problems was selected by **27%** as the highest rated efficiency gap, followed by network performance (**25%**) and bandwidth/SLA verification (**20%**). A further **12%** opted for Network user and device visibility. The remaining **16%** selected network quality (**8%**) and network security (**8%**).

TAKEAWAY

Aside from the obvious and critical need for managing risk, resolving issues more quickly to ensure user productivity is a daily, ongoing priority. This is directly related to improving staff efficiencies and their efficiency gaps when solving specific types of network issues as fast as possible.

**NETWORK SECURITY**
(KNOWING WHO IS ON OUR NETWORK AND WHERE THEY ARE CONNECTED) 8%

NETWORK QUALITY 8%

CONNECTIVITY PROBLEMS 27%

NETWORK USER AND DEVICE VISIBILITY 12%

BANDWIDTH/SLA VERIFICATION 20%

NETWORK PERFORMANCE 25%

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CHAPTER 2
NETWORK CHALLENGES AND RESOLUTIONS . . . CONTINUED

Reactive network troubleshooting is likely a key challenge for many infrastructure managers; we asked respondents to assess how often this negatively impacts proactive projects.

More than **50%** of participants stated that reactive network troubleshooting either frequently (**25.5%**) or sometimes (**25.5%**) impacts proactive projects. A further **24%** reported that this happened occasionally while the remaining **25%** said this was a rare occurrence.

RARELY 25%

FREQUENTLY 25.5%

OCCASIONALLY 24%

SOMETIMES 25.5%
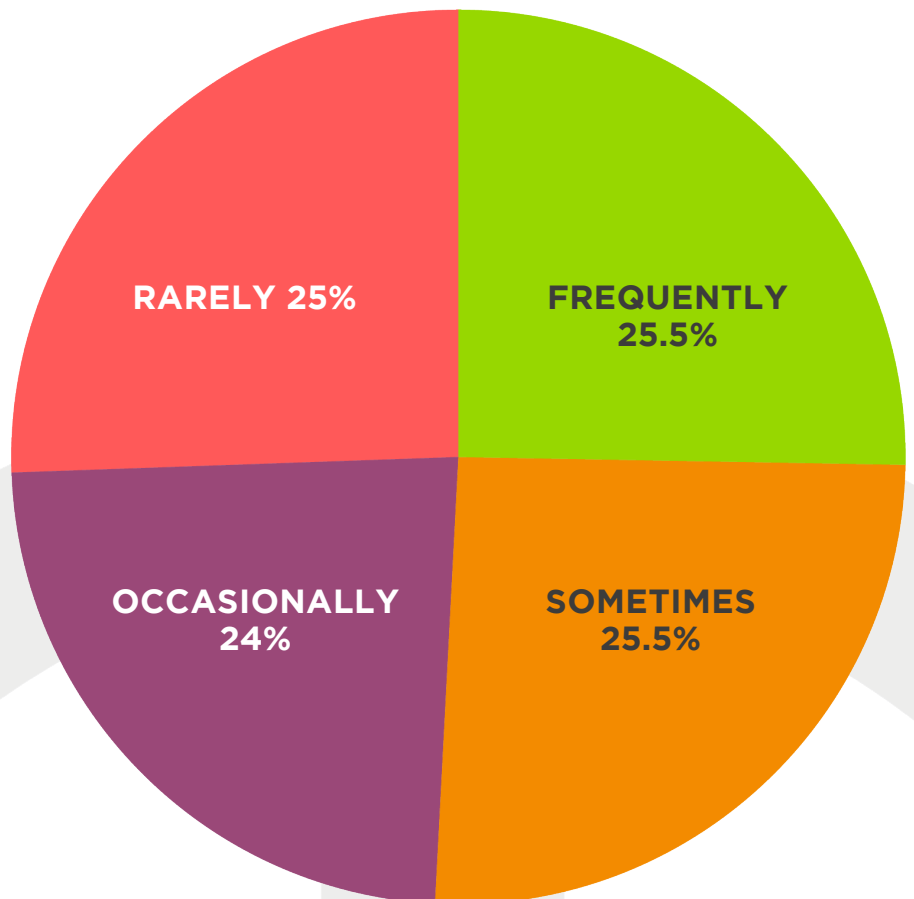
TAKEAWAY

While it is unlikely that a network will operate without ever having critical issues, having the right tools in place to proactively audit network configuration and performance and automatically create up-to-the-minute accurate documentation can dramatically reduce problem occurrence and speed resolution when problems do occur.

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CHAPTER 2
NETWORK CHALLENGES AND RESOLUTIONS . . . CONTINUED

Extended 'mean time to repair' (MTTR) can lead to different business impacts. Respondents were asked to rate each of the following in terms of their level of concern. **Reduced Network User Productivity – Impacted when network/application performance is slow or unreliable** was selected as the highest level of concern 15 times, followed by **reduced IT staff efficiency – projects are delayed as more time is spent troubleshooting** (10).
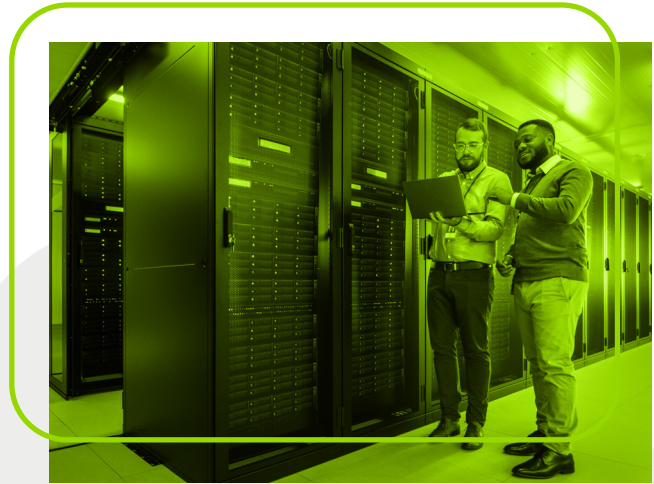
HIGH LEVEL OF CONCERN

a. Reduced Network User Productivity – Impacted when network/
application performance is slow or unreliable ⎯⎯⎯⎯⎯ **(15)**

b. Reduced IT Staff Efficiency – Projects are delayed as more time is
spent troubleshooting ⎯⎯⎯⎯⎯ **(10)**

c. High Downtime Costs – Because problems take longer to isolate
and resolve ⎯⎯⎯⎯⎯ **(9)**

d. Unnecessary Expenses – Poor investment decisions (when
organizations buy new infrastructure to solve performance issues) ⎯⎯⎯⎯⎯ **(9)**

e. Negative IT Department Reputation – Inconsistent service delivery
leads to unhappy users or customers ⎯⎯⎯⎯⎯ **(9)**

CHAPTER 2
NETWORK CHALLENGES AND RESOLUTIONS . . . CONTINUED

SECOND LEVEL OF CONCERN

a. High Downtime Costs – Because problems take longer to isolate and resolve ————— **(14)**

b. Negative IT Department Reputation – Inconsistent service delivery leads to unhappy users or customers ————————————————————— **(13)**

c. Reduced IT Staff Efficiency – Projects are delayed as more time is spent troubleshooting —— **(12)**

d. Reduced Network User Productivity – Impacted when network/ application performance is slow or unreliable ———————————— **(10)**

e. Unnecessary Expenses – Poor investment decisions (when organizations buy new infrastructure to solve performance issues) ———————— **(4)**

TAKEAWAY

Network operations must treat reduction in MTTR as a strategic importance, as the negative impacts have clear and direct effects on the organization.
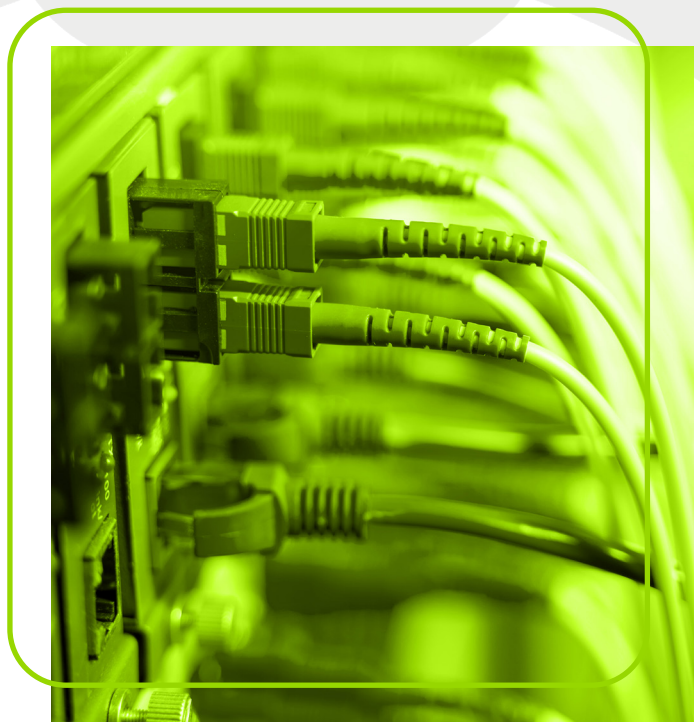
Finally, respondents were asked whether, in the coming year, they had any plans to reduce the number of tools in use; expand the number of tools in use; change vendors for one or more tools; hire additional network operations staff and reduce network operations staff.

TAKEAWAY

Reducing tool sprawl can reduce both hard and soft costs to network operations. When looking to reduce or change toolsets, multifunction, collaborative tools can improve efficiencies to a level that may relieve pressure to add staff, or make teams more productive even if headcount is reduced.

76%	25%	49%	49%	43%
Reduce the number of tools in use	Expand the number of tools in use	Change vendors for one or more tools	Hire additional network operations staff	Reduce network operations staff
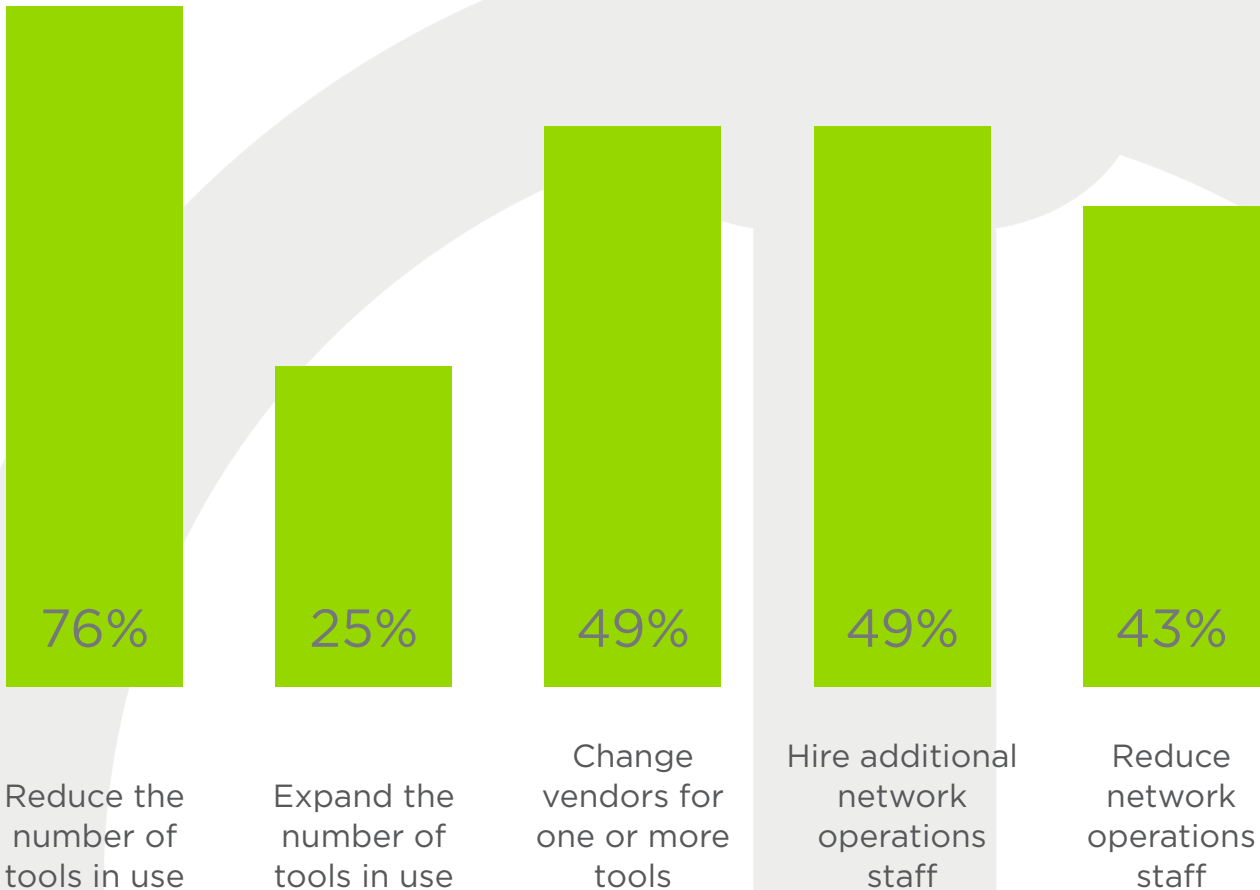
CONCLUSION

THE SURVEY HIGHLIGHTS some of the challenges facing Network Managers and Directors of IT Infrastructure as they strive to ensure business continuity for their increasingly digital organizations.

More than 50% of participants agreed that reactive network troubleshooting either frequently (**25.5%**) or sometimes (**25.5%**) impacts proactive projects, with respondents ranking 'reduced network user productivity' and 'reduced IT staff efficiency – projects are delayed as more time is spent troubleshooting' – as chief among their concerns relating to extended 'mean time to repair' (MTTR).

✓**SOLUTION:** Ensure technical staff have the right tools for visibility of issues and all necessary information for the task, including simplified collaboration for knowledge sharing.

The findings also demonstrated participants' desires to reduce the number of tools in use – with more than **75%** of respondents stating they had more than 11 separate tools/solutions in use to monitor, detect, alert, and solve IT network issues – as well as the need to hire additional network operations staff.

✓**SOLUTION:** Easy-to-use, multifunction tools can and should replace multiple point solutions which require too much overhead to maintain.

The key challenges for infrastructure teams were also highlighted, with budget management and project finance and management the highest ranked business challenges.

A total of **31%** said achieving appropriate level of risk management was their top challenge regarding network management objectives, while **25%** selected excessive time to repair, stating it takes too long to resolve issues.

Connectivity problems was selected by **27%** as the highest rated efficiency gap for organizations, followed by network performance (**25%**).

These findings highlight the pressures modern networks are under, and the business impacts that network management issues can present.

✓**SOLUTION:** Organizations need network troubleshooting solutions that ensure problems can be identified quickly and resolved effectively.

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