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IT & DATA MANAGEMENT RESEARCH, INDUSTRY ANALYSIS & CONSULTING

Prepared for:

kentik

Network Observability: Delivering Actionable Insights to Network Operations

October 2022 EMA Research Report Summary

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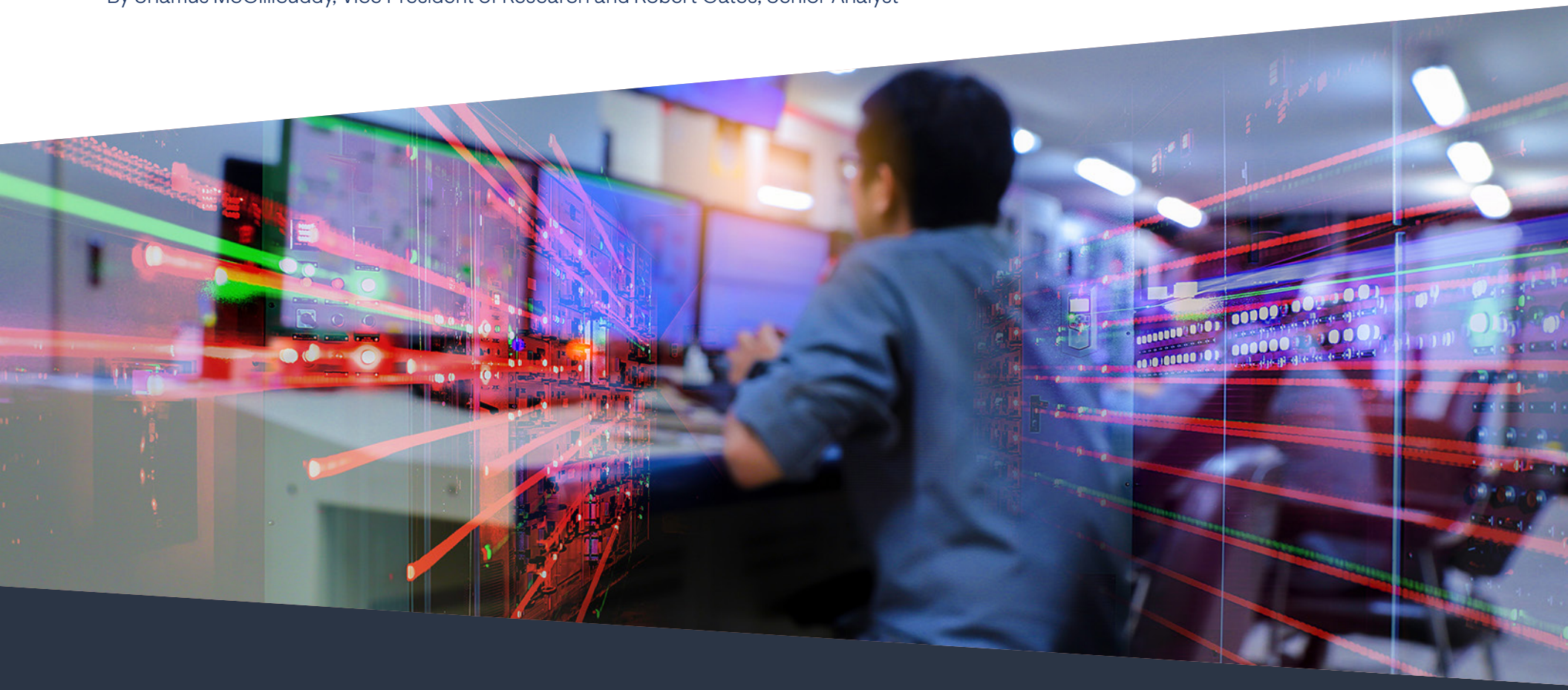

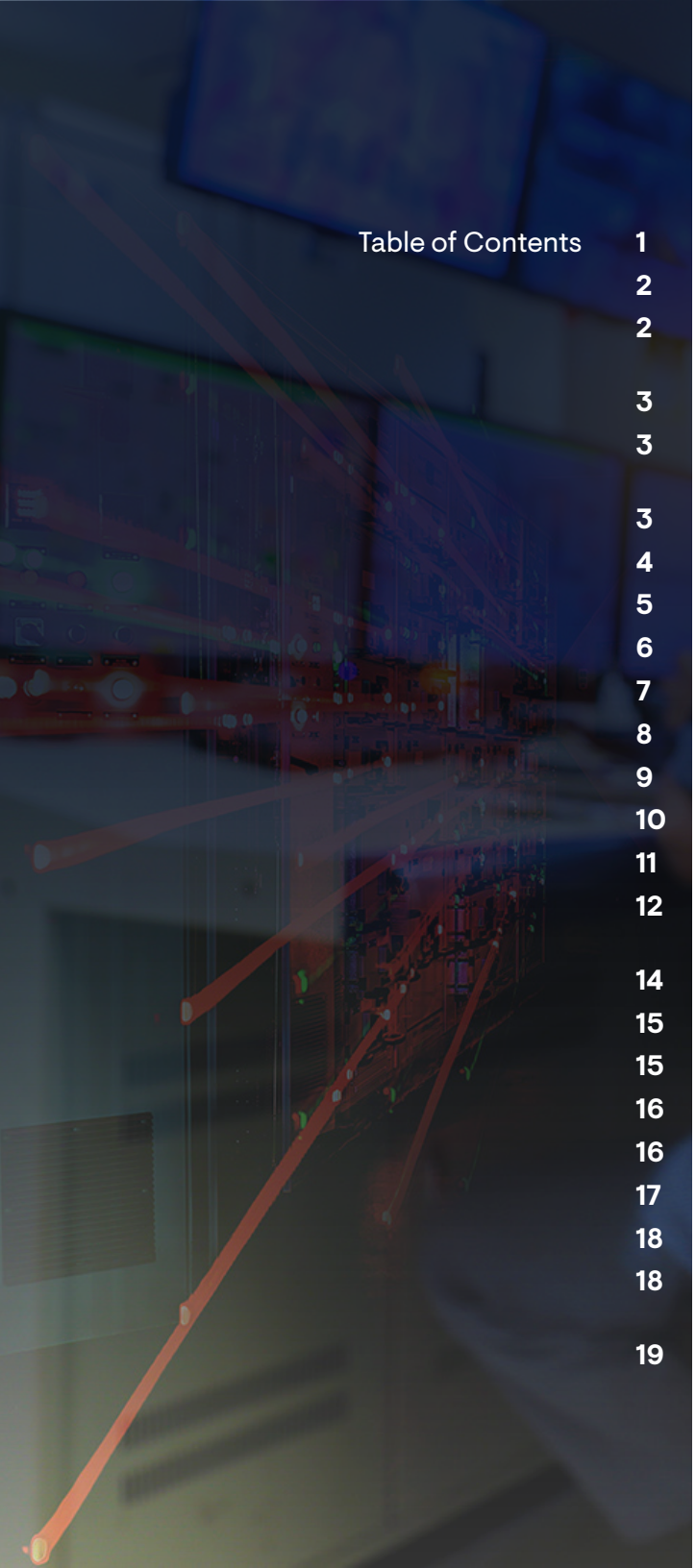

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Introduction

Network Operations Crossroads

The tools that enterprises use to monitor and manage their networks are under a harsh spotlight today. Network operations teams are struggling to maintain visibility in a rapidly changing digital world. In fact, the number of network operations teams that are successful with their overall missions has declined from 47% in 2018 to 27% in 2022, according to EMA's Network Management Megatrends research.[1]

EMA research found that IT organizations are scuffling to hire and retain networking personnel, which leaves them with a dearth of people who know how to effectively use network monitoring tools. They are also challenged by tool sprawl, since network teams use 10, 15, or even 20 tools to monitor and troubleshoot their networks. Furthermore, most enterprises are now multi-cloud and modernizing their digital services with cloud-native application platforms, whereas network operations teams are struggling to maintain operational visibility.

Given all these factors, EMA believes the tools that IT organizations use to monitor and manage network health and performance must evolve.

Network Management Vendors Embrace Observability

Every IT organization maintains several tools for monitoring and troubleshooting networks and analyzing a variety of data to understand where and why network problems are occurring. These tools are also important to network security and capacity management.

Historically, network teams refer to these tools as "network monitoring" or "network performance management." More recently, tool vendors have started using the term "network observability" or a variation, such as "unified observability," to market their solutions. These vendors are borrowing a concept the DevOps industry embraced to describe the tools it uses to monitor dynamic application environments. DevOps defines observability as the process of understanding the internal state of a system by measuring its external outputs. In the context of DevOps, these external outputs are metrics, logs, and traces. However, network teams are dealing with network infrastructure, not applications. Network observability requires its own definition.

After more than one year of conversations with vendors about network observability, EMA has determined that the definition of this novel term is fuzzy at best. However, the emergence of network observability is notable because it signals that vendors are trying to articulate a new wave of innovation in their products.

EMA believes it is critical to define network observability for IT buyers, so they and their vendors can effectively communicate with each other about emerging network operations requirements and the innovations that vendors offer to address those requirements.

The emergence of network observability signals that vendors are trying to articulate a new wave of innovation in their products.

[1] EMA, "Network Management Megatrends 2022: Navigating Multi-Cloud, IoT, and NetDevOps During a Labor Shortage," April 2022.

Research Goals and Methodology

The goal of this market research is to define network observability and to provide a roadmap for IT organizations to navigate the marketing hype surrounding the term.

Defining Network Observability and Guiding Industry Innovation

The goal of this market research is to define network observability and to provide a roadmap for IT organizations to navigate the marketing hype surrounding the term. This research also aims to reveal how network tool vendors should evolve to provide better support to IT organizations. This report will help IT buyers understand what traditional network monitoring and network performance management vendors mean when they use the term network observability. The report should also help vendors establish a product roadmap for so-called network observability solutions.

Research Methodology

This research is based on a market survey of 402 enterprise IT stakeholders who are either responsible for their organizations' network management tools and/or are extensive users of such tools.

The survey participants were a mix of technical personnel, IT middle management, and IT executives. They worked within a variety of functional groups in IT organizations, most often in a network engineering and architecture group, a network operations center, or a CIO's suite.

The enterprises represented in this survey range in size from 500 total employees to 50,000 or more, with annual revenue ranging from $50 million to $5 billion or more. More than one dozen industries participated, with the most numerous being manufacturers, financial and insurance companies, retailers, non-IT professional services firms, healthcare providers, and energy and utility companies. Sixty percent of respondents were in North America and 40% were in Europe.

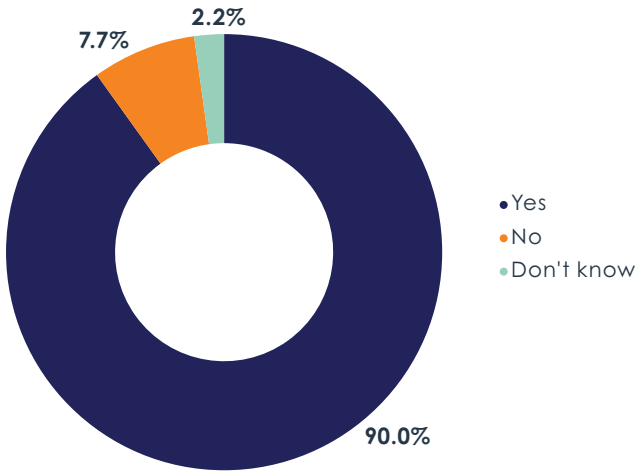
Additionally, EMA interviewed nine IT professionals one on one, primarily from Fortune 500 companies, to enrich our survey data analysis with qualitative insights. They are quoted anonymously throughout this report.

Defining Network Observability

The IT Practitioner's View

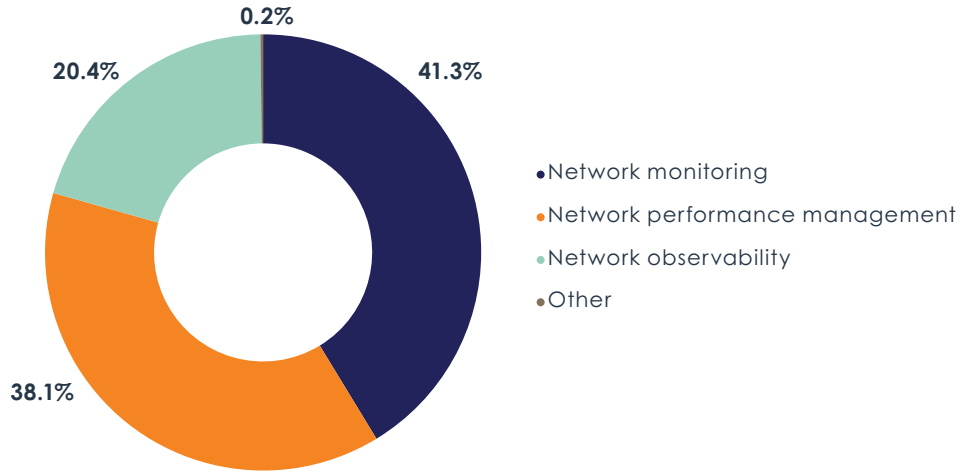
Although network observability is ill-defined, the term is resonating with IT professionals. **Figure 1** reveals that 90% of survey participants believe network observability is a useful term for describing the tools that they use to understand and manage the health and performance of their networks. IT executives were more likely to see the utility of the term while technical personnel, such as engineers and architects, were less likely, suggesting that vendor marketing around network observability has gained more traction in the CIO's suite than among network infrastructure and operations teams.

Figure 1. Do you believe network observability is a useful term for describing the tools you use to understand and manage the health and performance of your network?



Most IT professionals still think that network monitoring or network performance management are better labels for describing their tools, as **Figure 2** reveals. Only 20% prefer to use "network observability" today. One participant selected "other" and typed in "network health management."

Figure 2. Which of the following terms do you prefer when describing the tools your organization uses for monitoring and troubleshooting your network?



People who work in a CIO suite, network engineering, IT architecture, and cybersecurity were all more likely to prefer network observability than were members of a NOC. Note that highly skilled technical personnel who handle complex problems staff network engineering, IT architecture, and cybersecurity, while most NOCs are filled with less experienced technicians who specialize in simple monitoring and triage. EMA suspects that network observability resonates with users who need more advanced capabilities from their tools.

Also, respondents who reported the most success with their network operations tools were more likely than others to embrace the idea of network observability over monitoring and performance management.

Sample Size = 402

Finding Meaning

In one-on-one interviews, IT professionals had mixed opinions on what network observability means.

"For me, it's just another buzzword," said a network engineer at a $14 billion aerospace and defense company. "I'm still for the terms enterprise management or network management."

"I think it's just another catchphrase for network monitoring," said a monitoring engineer at a $15 billion financial services company.

"It's a broadening and deepening of network monitoring," said network engineer at a privately held gaming company. "We've been reasonably good at monitoring the network itself in terms of devices and paths on the network. But we haven't been able to see is what's really going on at an application level and how much network is impacting that."

"It's about getting insights from the network," said a network tools engineer at an $8 billion technology company. "It could mean more of a focus on the business impacts of the network."

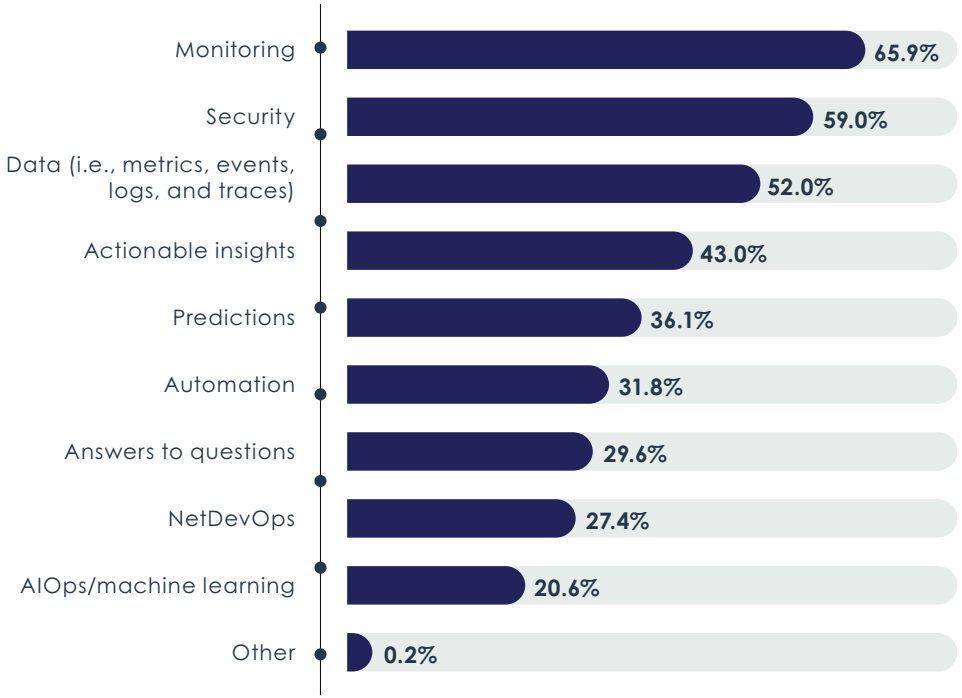
"Network observability is a superset of network monitoring. Monitoring is a subset of observability," said a network operations manager at a $500 million SaaS provider. "I think of monitoring as something that is not 'actioning.' Observability is about integration into event management, turning your observable metrics into something that alerts you or drives an action."

"Theoretically, monitoring is the collection of data, whereas observability is the analysis of that data to tell you if the system is behaving well," said a monitoring architect at a $35 billion media company. "The question is, who does that analysis, a human or the tool? Recently, I've seen tools with which AI and machine learning can enable anomaly detection without any setup of static thresholds."

In most of these interviews, IT professionals recognized network observability as something deeper than network monitoring, moving beyond the collection and presentation of data that most network monitoring tools excel at today. They hinted at a system that turns data into knowledge and actionable insights.

Figure 3 offers more guidance on what network observability means to IT professionals. Most survey respondents associated network observability with "monitoring, "security," and "data."

Figure 3. Words and phrases that research participants most associate with the concept of network observability



Sample Size = 402, Valid Cases = 402, Total Mentions = 1,470

We knew from our interviews that people believe that network observability overlaps significantly with network monitoring. The prominence of security broadens things for us. It's not just about understanding health and performance, but security, too. The popularity of data points to the fact that enterprises are collecting a larger volume and variety of data from their network than ever before. We will explore that issue shortly.

The top secondary selection in Figure 3 is "actionable insights." EMA believes that this is where network observability begins to distinguish itself from network monitoring and network performance management. Generations of network monitoring vendors have spent decades perfecting how they present data so that network engineers can combine data with their own knowledge of their networks to glean insights. EMA argues that network observability represents a step forward into something new. Whether through AI and machine learning, statistical analysis, or other algorithms and correlations, tools must find and present insights so that users can spend less time staring at data and more time acting.

Tools must find and present insights so that users can spend less time staring at data and more time acting.

Organizations that were the most successful with their tools were more likely to select three of the less popular items charted in Figure 3: AIOps, predictions, and NetDevOps. These more successful organizations are pointing to other concepts that should be considered when defining network observability. We already covered AIOps. "Predictions" suggests an interest in preventing problems before they impact the business. "NetDevOps" recalls the DevOps origin of the term observability. It suggests that network teams need to combine their observability efforts with DevOps teams. In fact, previous EMA research found that network and DevOps teams are trying to improve their partnerships. One key area of collaboration that EMA discovered in its research is around monitoring or observability. DevOps teams in particular have told EMA that they want to collaborate on monitoring and observability with network teams.

Members of a cybersecurity or IT security team were more likely to select "answers to questions" and "actionable insights," suggesting these capabilities are important to making network observability solutions relevant to security teams. Organizations with highly distributed networks (large numbers of WAN-connected sites) had an affinity for the word "predictions," suggesting a desire to mitigate complexity with more proactive operations.

A Definition of Network Observability

Given our findings, EMA defines network observability as the following:

A network monitoring system that collects a complete and diverse set of network data to provide deep visibility and actionable insights into the current and future state of a network. Those actionable insights include, but are not limited to, network performance, application performance, network security, and end-user experience.

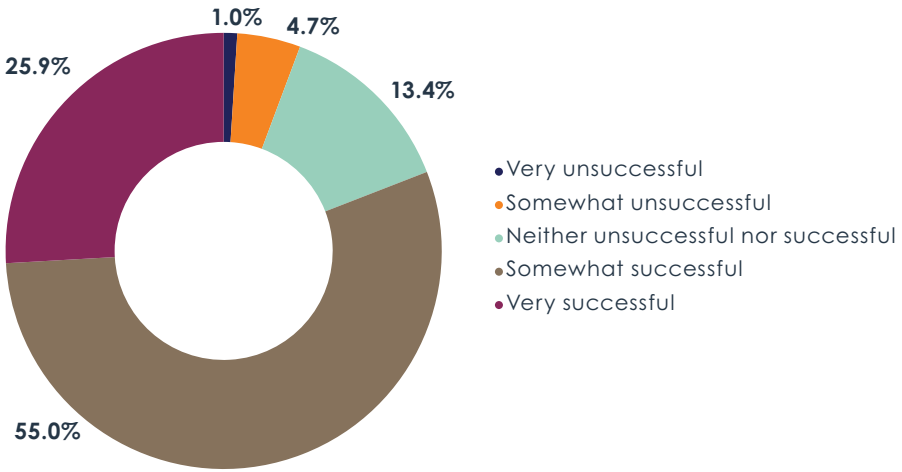
The State of Network Operations

On Network Tools: "We Could Do Better"

Only 25.9% of organizations are fully successful with their use of network monitoring or network observability tools.

This section explores how effectively network operations teams solve problems with the tools they use to monitor and manage their networks. First, **Figure 4** reveals that only 25.9% of organizations are fully successful with their use of network monitoring or network observability tools. A majority describe themselves as somewhat successful, meaning they know they could do better. A network team manager at a $70 billion financial services company offered a classic example of this sentiment: "On a scale of one to ten, I'd say we're at a 7 or 8. There are areas for improvement."

Figure 4. How successful do you think your organization is with its use of network monitoring or network observability tools?



Other interviewees explained why a self-assessment on tooling can be complicated.

"[Our tools] are doing okay, given that we've sunk tens of millions of dollars into them," said an IT operations manager at a very large government agency. "If you're willing to go to all the effort to get all the reporting right, they are fairly effective. The problem is that the larger your enterprise is, the longer it takes to know that something has gone wrong."

"We have certain tools that are fulfilling our needs, particularly newer tools," said a monitoring architect at a $35 billion media company. "There are some legacy tools with pain points that I'm trying to address. About half of my tools are meeting our needs."

"I'm very satisfied with one tool. It's feature-rich. We find that some other tools we use are less effective, with bugs that force us to wonder whether reporting reflects reality," said a network engineer at a $14 billion aerospace and defense company.

"The more time I spend in the industry, the more I feel like we're not getting it quite right," said a network operations manager at a $500 million SaaS provider. "It's a gut feeling. We have gaps for things such as the volume of events occurring on network devices. You can set a myriad of thresholds, but there will always be an edge use case that slips under the radar."

IT executives tended to report more success than middle managers (e.g., IT directors and supervisors), who in turn tended to report more success than technical personnel (e.g., admins, engineers, and architects). It appears that the closer a person is to the tools, the less successful they feel those tools are in serving the business. From a silo perspective, people in the CIO's suite and cybersecurity were the most sanguine about success. Members of network engineering teams, network operations, cloud operations, and IT architecture teams were all more pessimistic.

Sample Size = 402

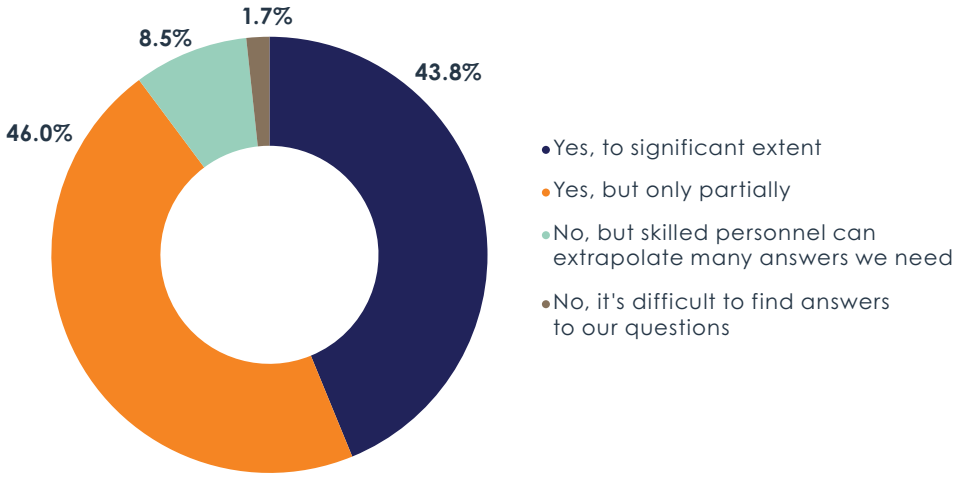
Answers and Insights

Many network operations professionals and network tool vendors have told EMA that network observability solutions should be able to provide easy answers to any questions that an IT professional might have about his or her network. EMA believes this is a fair requirement for a solution that is supposed to provide actionable insights into the state of a network. Thus, we asked research participants if they have a tool that can provide such answers.

Only 43.8% of respondents believe they have a network observability tool that can truly answer any question about the network.

Figure 5 reveals that most network teams do have such a tool, although the ease of getting to those answers varies. Only 43.8% of respondents believe they have a network observability tool that can truly answer any question about the network. Another 46% believe they have limited capabilities, and another 8.5% believe answers require significant extrapolation from data. The most successful users of network observability reported the most advancement in this area.

Figure 5. Do you believe that you have a tool that can answer any question that you might have about your network, such as questions about performance, security, capacity, compliance, and cost?



"You're collecting all this data and you can slice it up in any number of ways," said a network operations manager at a $500 million SaaS provider. "But you're not doing scalable network observability until you get have a system that can send an alert that can immediately say 'X, Y, and Z is happening, go look at it.'"

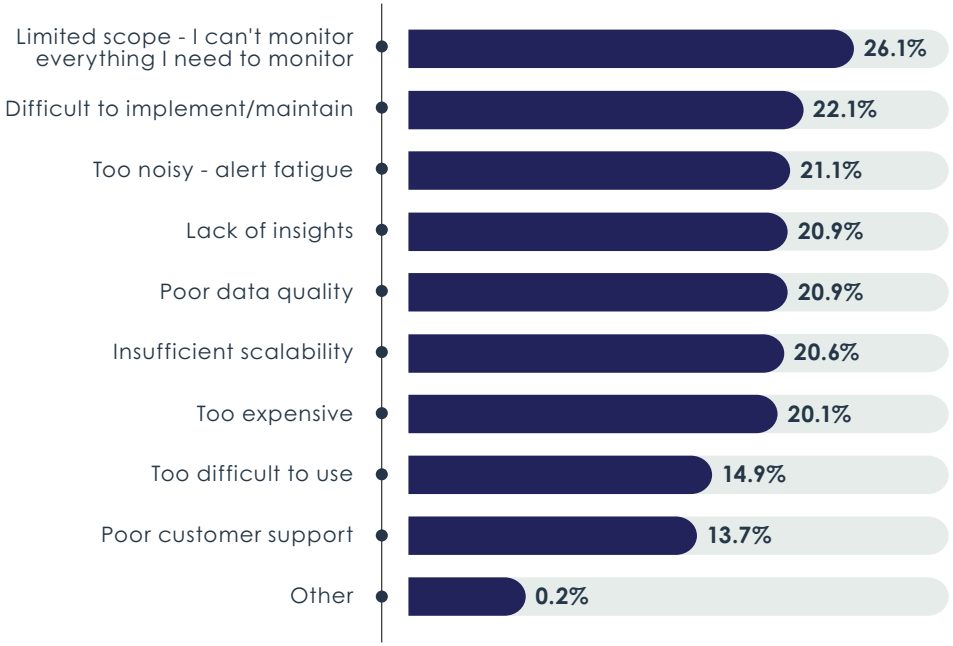
"Until recently, I expected a monitoring tool to know when something is down and when it's up," said a network tools engineer with an $8 billion technology company. "Now it's about, 'How can I proactively use the data to identify ongoing issues and get the insight to fix a problem before it becomes something serious?' Networks are becoming smarter, faster, and more automated. Monitoring has to shift with that."

Sample Size = 402

Observability Challenges

Figure 6 provides insights into why so few network teams are completely successful with their tools. The number-one issue is scope limitations. There are certain technologies or domains in the network that IT organizations cannot monitor. This issue is driven by the proliferation of disruptive technologies, such as public cloud and software-defined WAN. It's also driven by changes to business operations, such as work-from-anywhere.

Figure 6. Top complaints about network monitoring and network observability tools



Six other issues emerged as significant secondary challenges with tools. Members of IT architecture and IT program management groups were most likely to complain of difficulty with implementing tools. This difficulty was also more prominent among operators of the largest networks in this survey.

Small and medium companies tended to complain more about noisy alerts. Companies that were the least successful with their network monitoring and network observability tools were more likely to struggle with a lack of insights. They were also more likely to complain about poor customer support, which was otherwise the least problematic issue in this survey.

"There are things I'd like the network to tell me, or things I would like to know from the network, but the data and insights are not easily accessible in a practical way," said a network engineer at a privately held gaming company. "If a service is misbehaving or user experience is affected, I want to find out as fast as possible, but that's hard. Sometimes the network knows, but sometimes the network alone can't tell me what's wrong."

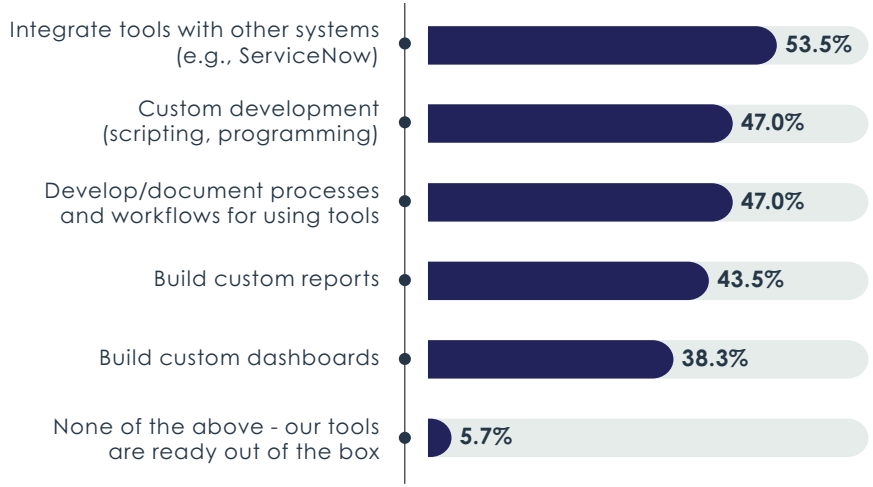
Operators of the smallest networks were more likely to complain about the expensiveness of their tools, although plenty of interviewees from Fortune 500 companies also complained about expense. "Cost is a big factor," said a network tools engineer at an $8 billion technology company. "Tool vendors are going to a subscription model, and that's making things expensive. Everyone we talk to is trying to do a million-dollar deal. They are trying to bundle the solution with so many other things to drive bigger deals. As soon as you go for a tool that is innovative, the price skyrockets."

Sample Size = 402, Valid Cases = 402, Total Mentions = 727

Tools Rarely Deliver Value Immediately Out of the Box

For all their rich features and capabilities, network tools require a great deal of customization and tuning before they deliver value. **Figure 7** reveals that only 6% of organizations can get useful insights from their tools without any customization. As tool vendors evolve from network monitoring to network observability, they must find ways to provide actionable insights out of the box. Some customization is inevitable, but IT organizations should expect more of their vendors.

Figure 7. To gain useful insights from network monitoring and network observability tools, IT organizations must customize and optimize tools in the following ways



"When you deploy a monitoring tool, you have to adapt the tool to your environment, train engineers on how to use it, and build processes around the tools," said a network tools engineer with an $8 billion technology company. "We have to do a lot of things for teams to build dashboards, reports, and custom integrations into other tools. Unless you have someone full time to adapt a tool to your network, insights are overlooked or not developed, and that leads to disappointment and management questions about whether they are getting value from an investment."

The integration with other systems is the most common requirement. EMA research often finds that organizations integrate network monitoring and network observability tools with IT service management, IT automation, and security monitoring. IT executives reported integration as a requirement more often than technical personnel. Some integration is always expected. For example, alerts in a network observability tool should open an enriched ticket in an IT service management system. However, the organizations in this research are telling EMA that integration is required for useful insights, suggesting that individual network monitoring tools cannot provide enough value without pulling information with other systems.

Nearly half of organizations also require custom development in the tool, using scripting and coding. The same number must also develop and document processes and workflows for using the tools, suggesting that tools are too difficult for most personnel to use without guidance from highly skilled engineers. A majority of the most successful research participants reported that their organizations develop and document processes and workflows, suggesting this is a best practice for organizations when they run into skills gaps.

A smaller number of network teams spend time building custom reports and dashboards. Less successful organizations were more likely to devote time to building custom reports. Operators of larger and more distributed networks were also more likely to build custom reports.

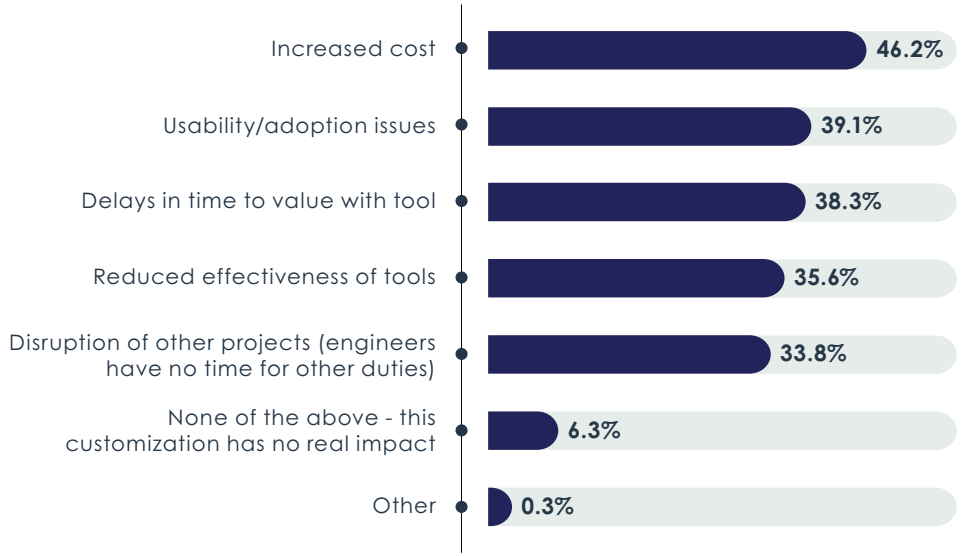
Sample Size = 402, Valid Cases = 402, Total Mentions = 945

This requirement for customization, integration, and documentation can have negative impacts on the value of the tool, as **Figure 8** reveals. Most often, this work drives up costs for an organziation. Cost is especially an issue for IT organizations that lack formal tool engineering teams. When network teams purchase and implement tools on their own, customization is more likely to drive up expenses.

Many organizations also experience problems with usability and adoption of tools. Many reported delays in getting value out of their tools. Delayed value is especially a problem for larger companies and usability is a bigger issue for operators of larger networks.

Some reported that tools are less effective when customization is required. More than one-third reported that this work disrupts other projects, as engineers have no time for other duties. Technical personnel were more likely to report disruption of other projects than IT executives, and members of network engineering teams were especially aware of this issue.

Figure 8. Negative impacts of tool customization



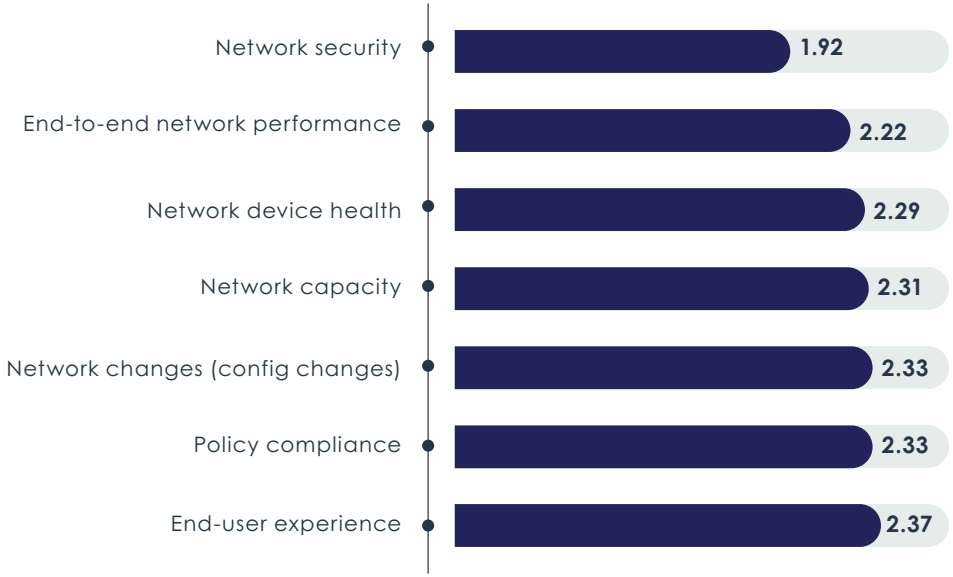
Sample Size = 379, Valid Cases = 379, Total Mentions = 756

Network Observability Requirements

Monitoring Priorities

EMA asked respondents to rate the priorities of seven aspects of the network that network operations teams might monitor. **Figure 9** reveals a strong focus on network security, followed by end-to-end network performance. Everything else is essentially tied for third. Successful users of tools were more likely to rate all of these as a higher priority, suggesting that it's a best practice to adopt network monitoring and network observability tools that can provide visibility into multiple aspects of network operations.

Figure 9. Mean responses: Monitoring priorities of the network operations team, with 1 being highest priority and 5 being lowest priority

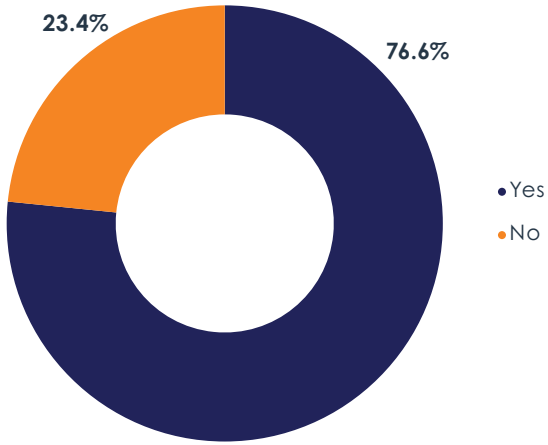


IT executives were more likely than technical personnel to place a higher priority on monitoring end-to-end network performance, policy compliance, end-user experience, and network security. Policy compliance emerged as more important to large enterprises than to small and medium enterprises.

Cloud

The public cloud is the top driver of network monitoring and network observability strategies. **Figure 10** reveals that 77% of network teams are attempting to monitor the cloud with the tools that they use to monitor on-premises networks. Network teams that buy and implement their own tools rather than rely on a dedicated tool engineering team are the most likely to try to extend their tools to the cloud.

Figure 10. Are the tools that your organziation uses to monitor on-premises networks also used to monitor the public cloud?



Members of security teams and cloud teams were less likely to report an effort to extend on-premises network tools into the cloud, but people from network engineering and the CIO's office were more likely.

Sample Size = 402

Empowering the Entire IT Organization

Many network management tools are difficult to use. They offer dashboards that are easy to understand, but people with a shallow knowledge of network technology often get lost when they dig deeper. EMA believes that network observability solutions of the future should offer more value to a broader constancy of users.

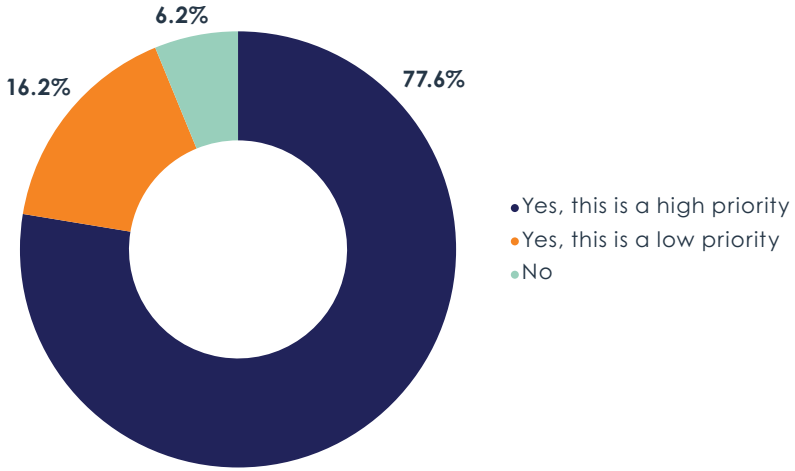
Reduce Escalations by Empowering Admins

Figure 11 reveals that IT organizations need to democratize tools now. More than 77% of organizations have made it a high priority to optimize their network tools so that lower-skilled admins can take on a larger share of problem-solving. Today, most NOCs are staffed by Tier 1 admins and analysts who often escalate complex problems to experts in network engineering, IT architecture, DevOps, and other groups whose primary missions are to design, build, and optimize infrastructure and services. Figure 11 makes it clear that organizations want tools that enable the NOC to solve more problems without escalating to other experts.

Technical experts who are on the receiving end of escalations from lower-skilled personnel were more likely to make this a high priority than IT executives. IT executives appear to be less aware of how critical this issue of empowering lower-skilled personnel has become.

"Transferring knowledge is my biggest challenge," said a network operations manager at a $500 million SaaS provider. "It's tribal knowledge. I am someone who tends to develop a deep knowledge and understanding of my platforms. I feel like I can take them to the next level. If I'm not available or my monitoring engineer is not available, it will be difficult for someone else to come behind us and understand how and why we did certain things. We try keep user experience as friendly as possible, but there are things that are necessarily complicated in order to achieve certain ends."

Figure 11. Does your organization's network operations strategy include a focus on enabling lower-skilled personnel to solve a larger share of problems with network monitoring or network observability tools?

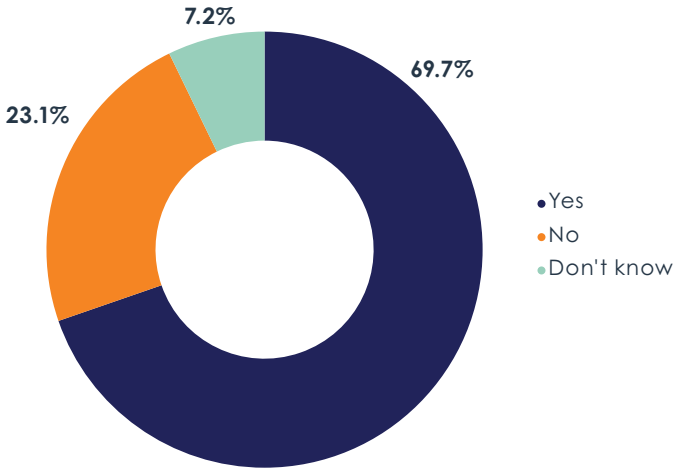


Sample Size = 402

Tool Democratization Across Silos

Figure 12 reveals that organizations also want to boost the relevance of their network monitoring and network observability tools to people outside network operations. Nearly 70% of network operations teams share their tools with other groups. This tool sharing is especially popular among organizations that are the most successful with their tools. Technical personnel were also more likely to report this cross-silo sharing of network tools, suggesting that it's very much an informal, bottom-up movement that IT executives and middle management are missing. They should provide more leadership here to ensure this tool sharing is as effective as possible. EMA found that organizations that are focused on empowering lower-skilled personnel with network tools were more likely to share those tools across siloes.

Figure 12. Other than the network operations team, are your network monitoring or network observability tools useful to any other teams in your IT organization?

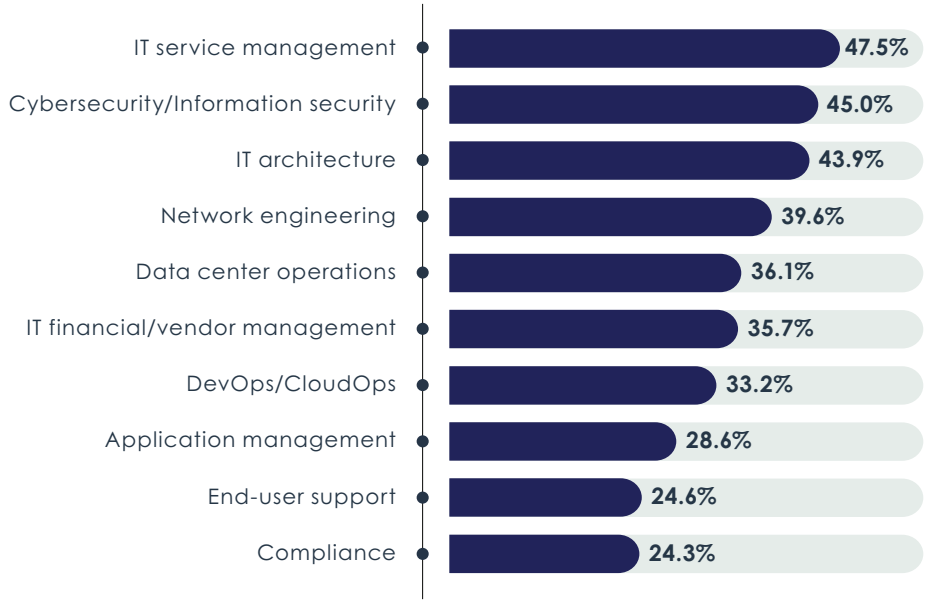


Sample Size = 402

Members of the network engineering and network operations teams were the most likely to report this tool sharing. DevOps and cloud teams were less aware, suggesting that network observability tools are either not offering them value or network teams are simply refusing to share with these groups. In either case, IT organizations need to focus on enhancing opportunities for these groups to leverage network tools.

Figure 13 reveals which groups are using network monitoring and network observability tools among the 280 organizations that share tools across silos. It points to three groups that are making extensive use of network tools: IT service management, cybersecurity, and IT architecture. Organizations that reported the most success with network monitoring and network observability tools were more likely to share these tools with all three of these groups.

Figure 13. Groups outside the NOC that use network monitoring and network observability tools



Sample Size = 280, Valid Cases = 280, Total Mentions = 1,004

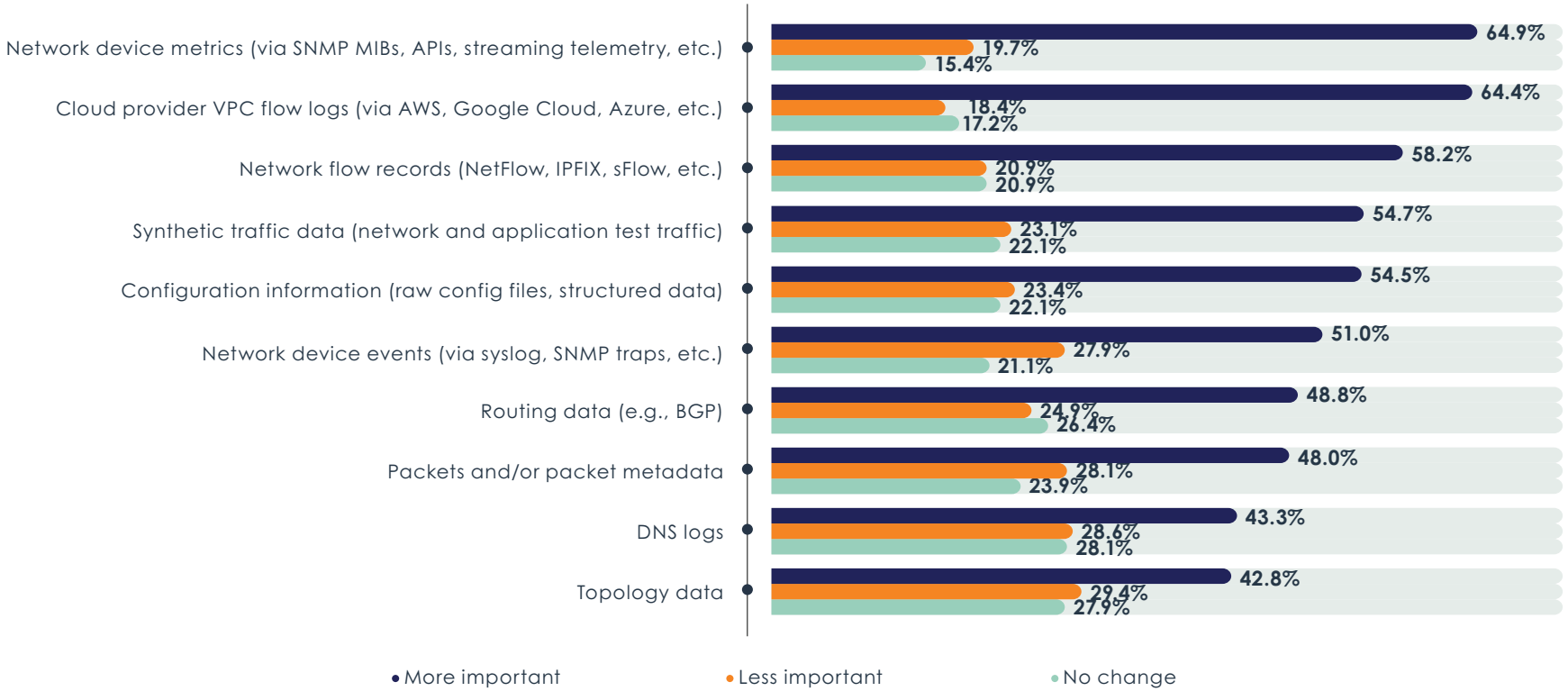
Network Data Requirements

Early in this report, EMA noted that data volume and diversity are a critical foundation of the concept of network observability. Metrics, logs, and traces are the currency of observability in the DevOps and CloudOps realm, but any veteran network engineer knows network operations requires a much broader set of data.

Data Diversity is Critical to Network Observability

Figure 14 reveals how the relative importance of various network classes of data has changed over the last three years for network teams. It reveals that the appetite for data diversity has increased across the board. Every class of data that EMA asked about is more likely to increase in importance than decrease. The most successful users of network tools were more likely to say every class of network data is growing more important.

Figure 14. Have any of the following types of network data become more important or less important to the management and monitoring of your network over the last three years?



Sample Size = 402

Network device metrics and VPC flow logs are seeing the most growth in importance. Device metrics have been a foundational source of data for decades, but somehow network teams perceive it as becoming even more important. Clearly, network teams believe VPC flow logs are a means for improved visibility into public cloud environments, which this report has already established as a significant challenge to network teams.

A majority of respondents also reported the network flow records, synthetic traffic data, configuration information, and network events are growing more important. Network teams are more likely than not to report that routing data, packets, DNS logs, and topology data are also becoming more essential.

Operators of larger networks were more likely to believe that device metrics, network flows, synthetic traffic data, and configuration information are becoming more important.

Volumes of Collected Network Data Exploding

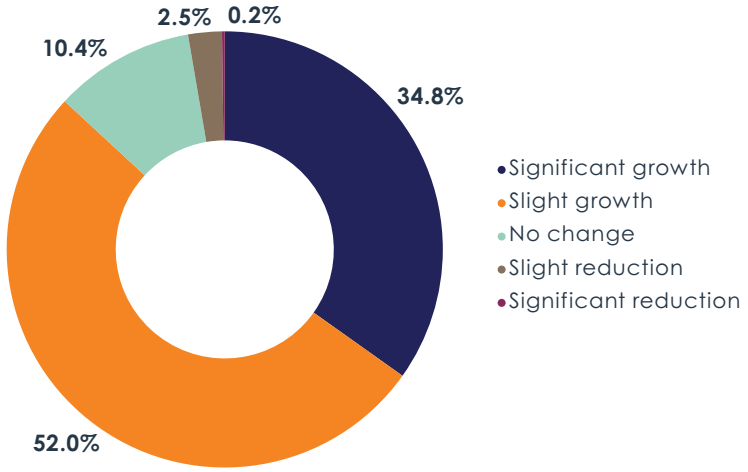
Nearly 87% of enterprises are experiencing growth in the volume of data they are collecting with their network monitoring and network observability tools, which points to the desire to build a complete picture of the state of the network. However, it also presages issues with tool scalability and costs.

Large enterprises and operators of larger and more distributed networks are reporting the most growth in data volumes. IT executives perceive more growth than middle management and technical personnel.

"We are collecting so much data," said an IT operations manager at a very large government agency. "Some of the things we collect, we have to store for years. We're also monitoring more things. It's not just about whether a box is up or its CPU is running. Now, we're monitoring transactions."

"Capacity constraints are a concern for our platform team," said a network operations manager at a $500 million SaaS provider. "The volume of data we send through analytics platforms is causing real performance concerns."

Figure 15. Changes in the overall volume of data collected by network monitoring or network observability tools

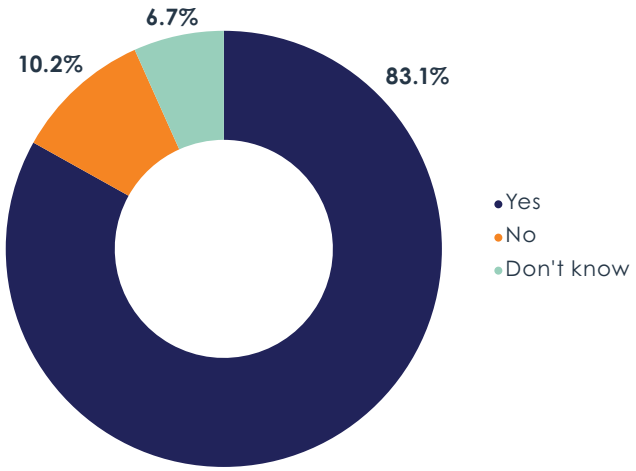


Sample Size = 402

Network Data Lakes are the Future

With network observability data diversity and volume expanding, EMA believes that many enterprises will seek a common platform for storing this data for ongoing analysis, especially since our research shows that both structured and unstructured data are becoming more important. In recent years, some network engineers and architects have revealed to EMA their intent to establish a data lake for networking data upon which they can perform queries and analysis with a variety of tools. **Figure 16** reveals that 83% of organizations are interested in streaming data from their tools to a central repository, like a data lake.

Figure 16. Are you interested in streaming data from your network monitoring or network observability tools to a central data platform, like a data lake?

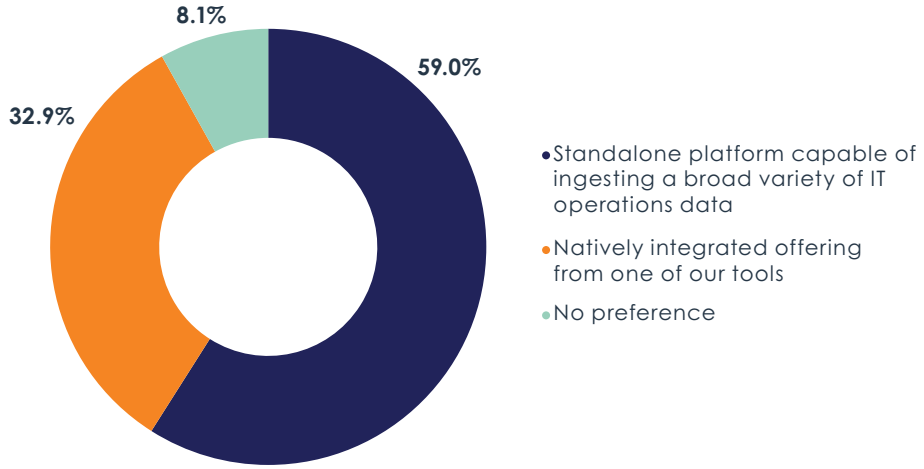


The most successful users of network tools were the most likely to have interest in these data lakes. Moreover, when teams outside the network operations group have interest in gleaning insights from network observability tools, an organziation is more likely to want to stream network observability data to a data lake. Respondents from the CIO suite and the network engineering team were more likely than other groups to express such interest.

Sample Size = 402

Figure 17 reveals that most organizations prefer to use a standalone data lake platform for this network data. Nearly one-third prefer a solution that is integrated with or native to one of their network observability tools. The standalone data lake is more popular in organizations in which multiple groups need insights from network observability tools.

Figure 17. Platform preferences for a centralized network data repository or data lake

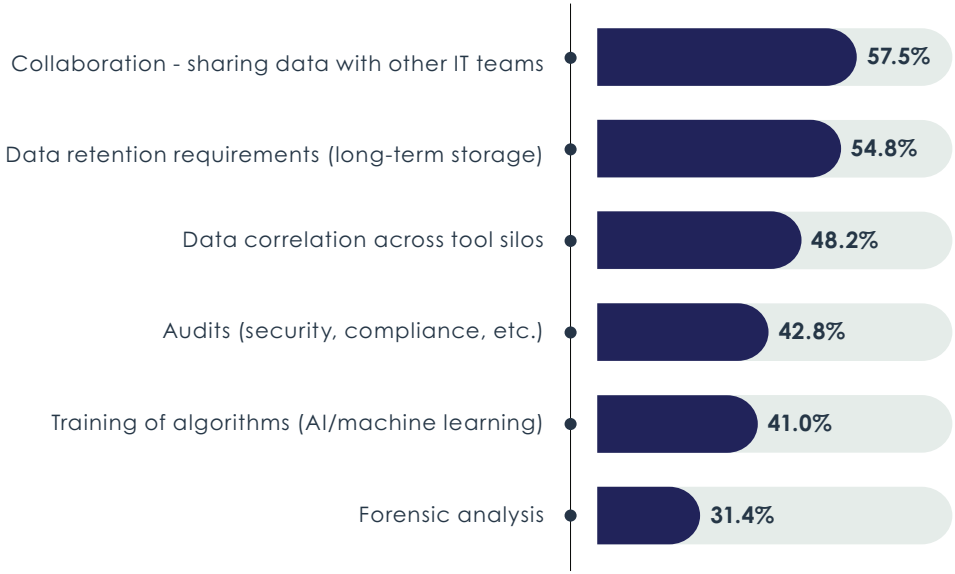


More successful users of network tools expressed a preference for a standalone data lake. Members of network operations and cybersecurity teams also had a stronger preference for the standalone data lake, but members of IT architecture groups preferred a data lake native to a tool.

Sample Size = 334

Figure 18 reveals how organizations plan to use these data lakes. Collaboration across groups in the IT organziation is the top priority. Operators of more distributed networks (250 or more WAN-connected sites) had the strongest affinity for this use case.

Figure 18. Top use cases for streaming data from network tools to a central data platform



Data retention was the other major driver of data lake interest. A majority of companies stream data from their network observability tools to a central data lake to address long-term storage requirements. The most successful users of network tools were the most likely to target this use case.

Correlation of data across individual network tools, audits, and algorithmic training (AI and machine learning) were the secondary use cases. Operators of very large networks were more likely to target audits.

"We need the ability to integrate data from other systems, show the data side by side so it's more correlated," said a monitoring architect with a $35 billion media company. "That will provide us with more insights."

"We have all this data. I'd love to stream all my monitoring data through something to identify anomalies," said a network operations manager at a $500 million SaaS provider.

Forensic analysis was a niche use case, although it was immensely popular among network teams that acquire their own tools rather than relying on a dedicated tool engineering team. It was also a higher priority for organizations that prefer to adopt a data lake that is natively integrated with one of their tools, rather than a standalone platform.

Sample Size = 334, Valid Cases = 334, Total Mentions = 921

Critical Insights

As defined by EMA, network observability solutions must provide IT personnel with actionable insights. **Figure 19** reveals the types of insights that organizations consider most important. Security-related insights are the most valuable, and the most successful users of network tools were the most likely to rank security insights highest.

Figure 19. Organizations ranked the importance of insights offered by network monitoring or network observability tools, 1 through 7: mean responses

Root-cause insights into network problems are also a very high priority. Cybersecurity professionals were particularly interested in these insights.

Application performance, capacity, business impacts, and user experience are all secondary priorities for insights. Operators of larger networks ranked application performance insights as more important. DevOps, network engineering, IT governance, and the CIO's office were all more likely to embrace capacity insights. Network operations and security were cooler toward them.

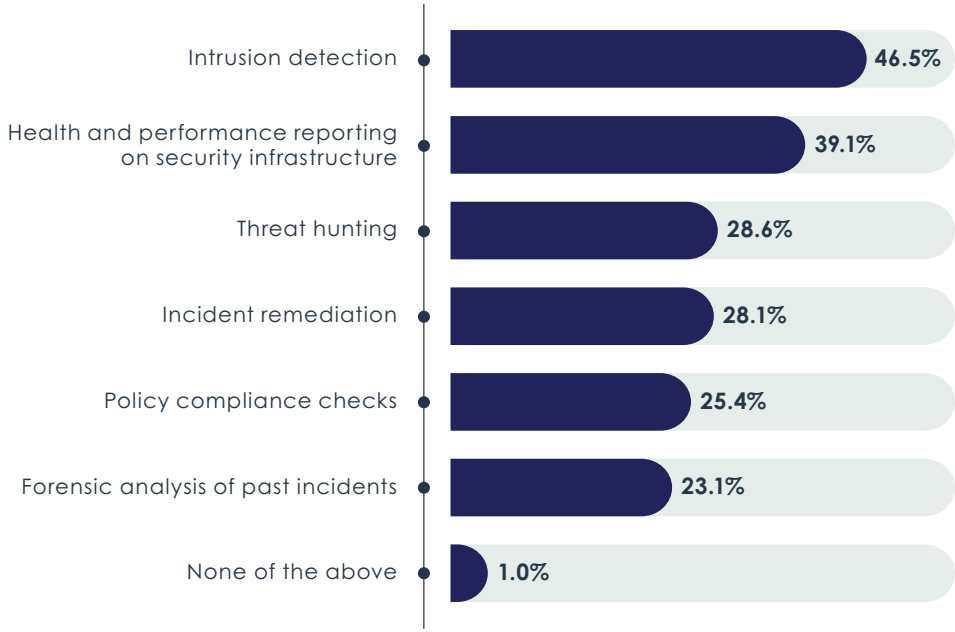
Sample Size = 402

Climate sustainability is a niche insight, ranked lowest by research participants. However, the most successful users of network tools were more likely to prioritize it, suggesting a potential emerging best practice.

Security Insights

Given the importance of security insights, EMA dove deeper into the topic as seen in **Figure 20**. Nearly half of organizations rely on these tools for intrusion detection, which points to the growing number of network tool vendors that have expanded into network detection and response solutions. Members of an IT architecture group were more interested in intrusion detection, but network architecture, network operations, and cybersecurity teams were less interested.

Figure 20. Security-related insights that are most important to get from network monitoring or network observability tools

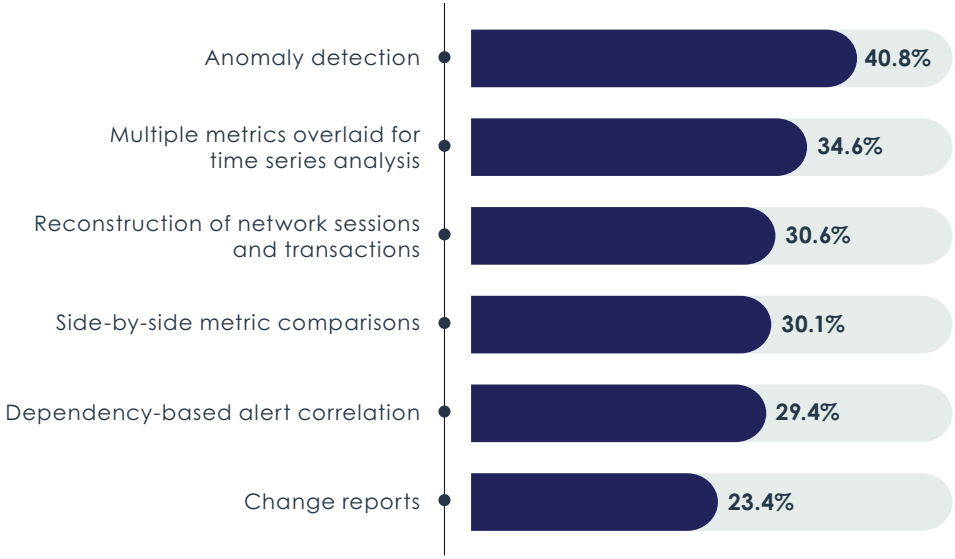


Sample Size = 402, Valid Cases = 402, Total Mentions = 771

Rethinking Troubleshooting Workflows

Figure 21 reveals the most critical troubleshooting features. Anomaly detection is the top priority. Also important is having multiple metrics overlaid for time series analysis. Operators of more distributed networks and larger networks were more likely to require multiple metrics overlaid for time series analysis, as well as side-by-side metric comparisons.

Figure 21. Troubleshooting capabilities most valuable in a network monitoring or network observability solution



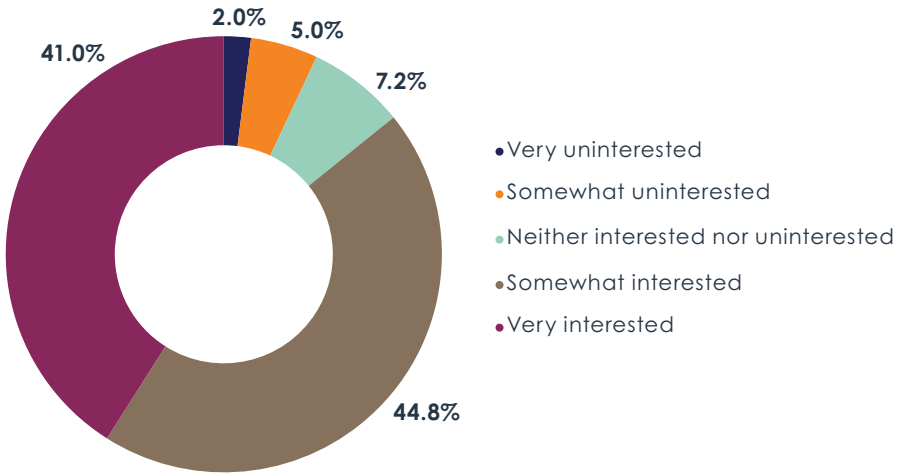
Very successful users of network tools were more likely to need solutions that can present multiple metrics overlaid for time series analysis. Successful teams are also more likely to want a feature that can reconstruct network sessions and transactions.

Change reports are a lower priority and were favored more by less successful organizations. However, technical personnel and middle management were more likely to require change reports than IT executives.

Sample Size = 402, Valid Cases = 402, Total Mentions = 759

Figure 22 shows that nearly 86% of respondents have at least some interest in automating troubleshooting with their network monitoring and network observability tools. Successful tool users were much more likely to have strong interest in this automation. IT executives had more interest than technical personnel and middle management. Members of network engineering and network operations teams were less interested than cybersecurity, cloud, and IT architecture teams. Interest was also higher among operators of larger and more distributed networks.

Figure 22. Interest in automated network troubleshooting



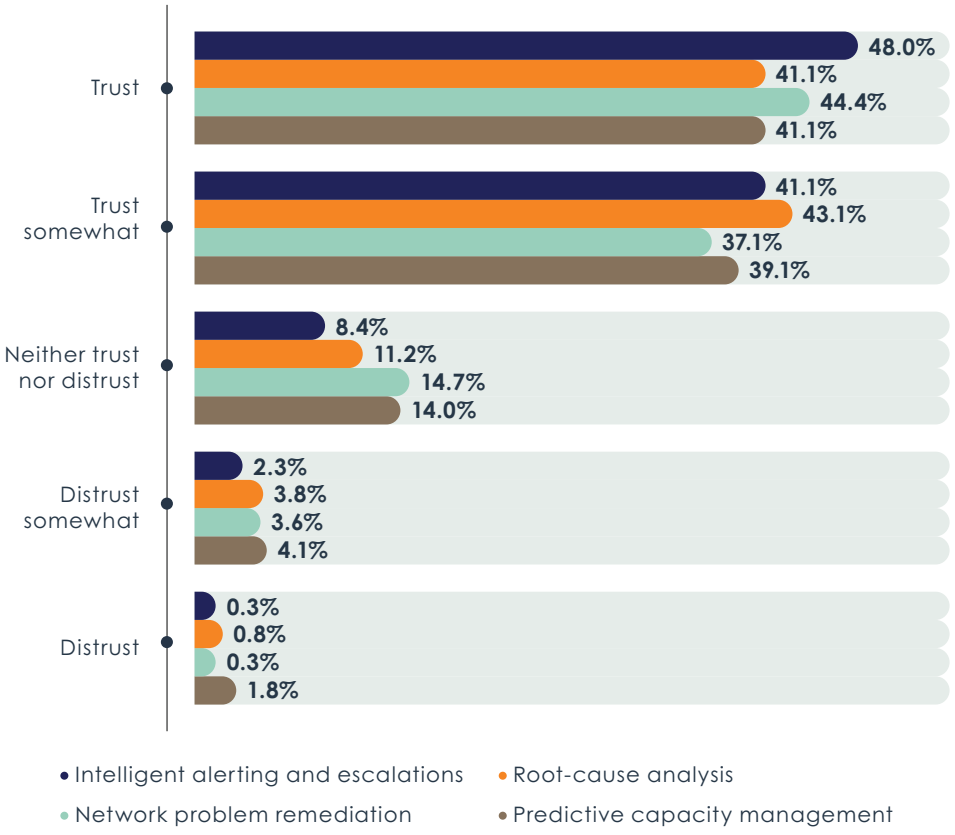
"When something happens, we want a seamless fix with automation," said a network tools engineer with an $8 billion technology company. "It should trigger an alert that triggers an automation script that checks issues, fixes the problem, and close the ticket, all without paging a person. I don't see many tools that can do it, but you can build it in-house if your vendor has web hooks or APIs. Productized automated troubleshooting with AI and machine learning would be great."

Sample Size = 402

Intelligent Observability with AIOps

AIOps technology uses AI and machine learning to automate various aspects of network management. EMA believes it is a key capability for network observability now and in the future. However, network teams will need to develop trust in this technology before they allow it to automate network operations. **Figure 23** reveals the extent to which networking professionals trust AIOps today. A minority of survey respondents fully trust AIOps to do any of the four use cases explored in the chart.

Figure 23. Trust in AIOps to support the following network monitoring or network observability use cases



Sample Size = 394

"I think AIOps can be useful if it can be harnessed and utilized properly," said a monitoring engineer at a $15 billion financial services company. "Ideally, if I get 500 hits from one IP in a minute, I would rather have it all automated so there is no human interaction involved in blocking that. It should be automated."

Intelligent alerting and escalations are the most trusted. Organizations with dedicated tool buying teams (both cross-domain and network-specific) are most trustful of intelligent alerting and escalation, versus decentralized buying teams that acquire and implement their tools as needed.

Network problem remediation is trusted a little less than intelligent alerting, but more so than other AIOps use cases, suggesting some openness to closed-loop operations.

Automated root cause analysis with AIOps is less trusted, but the most successful users of network tools are more likely to trust it, suggesting that striving for this kind of AI-assisted automation is a potential best practice.

Overall, successful users of network tools tended to trust AIOps to automate all aspects of network operations in Figure 23. This suggests that effective implementations of network tools with AIOps solutions tend to deliver strong value to IT organizations.

Conclusion

EMA hopes that this research settles the question of exactly what network observability is. We observed an astonishing and confounding array of takes on what the term could mean. One (unnamed here to protect the innocent) blogger recently wrote that network monitoring is essentially fault management, and network observability is essentially performance management. If that's the case, what have network performance management vendors been doing over the last 20 years?

Specificity is the best remedy for the marketing whiplash that IT professionals have experienced when trying to understand the idea of network observability. By combining quantitative market research with qualitative interviews with expert stakeholders, EMA has established the following authoritative definition:

Network observability refers to a network monitoring system that collects a complete and diverse set of network data to provide deep visibility and actionable insights into the current and future state of a network. Those actionable insights include network performance, application performance, network security, and end-user experience.

Network observability might involve a single tool, or it might include several tools linked together via integration and a common data lake. Regardless of the path one takes, this research offers a roadmap to IT stakeholders for how to get to a state of total network observability.

About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help EMA's clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise line of business users, IT professionals, and IT vendors at **www.enterprisemanagement.com**. You can also follow EMA on **Twitter** or **LinkedIn**.

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