
STATE OF THE NETWORK

VIAVI Solutions

STATE OF THE NETWORK

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# FOREWORD BY SHAMUS MCGILLICUDDY, VP OF RESEARCH, ENTERPRISE MANAGEMENT ASSOCIATES (EMA)

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In planning this foreword for the VIAVI 2021 State of the Network (SOTN) report, I was curious to see how survey data would line up with EMA research. Over the last six years, in more than 20 surveys of network engineering and operations professionals, there are some recurring themes that are echoed and validated by what VIAVI has found this year.

## THE NETWORK TEAM SKILLS GAP

For instance, there is a skills gap. For the first time in the fourteen years of the survey, the VIAVI SOTN found that the biggest issue NetOps teams have with troubleshooting application performance is a shortage of skilled personnel. EMA research has revealed this challenge many times over, whether network teams are working with legacy technology or next-generation solutions. It's hard to hire people who know how to troubleshoot a network.

There are ways to mitigate the skills gaps. For instance, IT organizations can adopt network management tools with role-based workflows that are aimed at empowering lower-level admins to take on tasks usually reserved for power users.

Another option is to embrace network automation. Our research at EMA has found almost universal interest in expanding the use of network automation. Indeed, the network managers in this year's SOTN survey recognize this as an opportunity to close a skills gap. The survey found that the second most common benefit of network automation is its ability to free up skilled personnel to focus on business priorities. Automation tools can either shorten workflows for skilled engineers, or it can allow them to delegate more tasks to admins.

## COLLABORATION AND CLOUD MIGRATION IN A POST-PANDEMIC ERA

Our research has confirmed that most enterprises will have permanently expanded their remote workforces. Work-from home populations will shrink after the pandemic, but it will not settle back down to the level it was pre-pandemic. The SOTN survey found that managing UC and collaboration applications in a post-pandemic world will make or break an IT team's ability to deliver a good user experience. VIAVI also found that network managers are spending a lot more time in 2021 troubleshooting UC problems. This will likely prompt many organizations to review and update their tools for UC management.

Lastly, don't sleep on the cloud. The pandemic has accelerated cloud migration for a variety of reasons, but SOTN has revealed that IT organizations are mainly motivated by service availability and resilience. This is a strong counterpoint to the idea that cloud adoption was always about cost reduction. And it also points to a critical role for network infrastructure pros in the cloud. If anyone knows about building resilient infrastructure, it's routing and switching experts. Go forth, folks. Spread your wisdom and help your companies thrive in the post-pandemic era.

STATE OF THE NETWORK

## EXECUTIVE SUMMARY

VIAVI Solutions presents the 14th Annual State of the Network report. Every year we ask networking and security professionals from around the world to tell us what challenges they have faced over the preceding 12 months. This data provides a barometer for the IT industry and examines trends over time, helping IT teams plan projects and optimize processes.

The past year has proved to be challenging, yet transformative for us as individuals, businesses, and as an industry. Most of us have needed to drastically alter our methods of collaborating, using tools like Teams, WebEx, or Zoom to accomplish our daily activities. As organizations, we were challenged to maintain smooth service delivery and optimal end-user experience despite such disruption.

The 2021 VIAVI State of the Network reveals that we have emerged on the other side more resilient and poised to embrace new ways of achieving operational objectives to accelerate the digital transformation. Budgets are expected to grow significantly and with it, rapid adoption of previously emerging technologies. The challenges have not gone away, just shifted — finding and retaining IT talent has become more difficult when it comes to troubleshooting than any technical hurdle. As security threats surge, network teams are collaborating with security more than ever. War Room scenarios involving NetOps, SecOps, and DevOps continue regularly and the importance of network and application access, especially for remote workers, has never been more critical.

The findings of this year's survey uncover how IT has adapted to overcome the disruptive challenges of yesterday with long-lasting, future-proof solutions of tomorrow.

## TOP 5 KEY FINDINGS

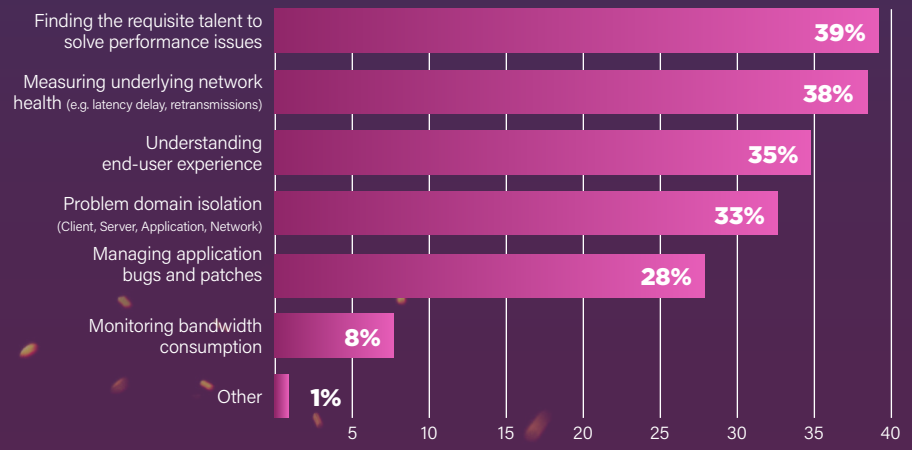
1. **Skills Gap Expanding:** For the first time in our annual survey, a non-technology challenge has risen to the top. Organizations have made it clear that their biggest challenge in troubleshooting applications is finding requisite talent to solve performance issues.
2. **Day After SUNBURST:** More than half (51 percent) of organizations responding were impacted by the SUNBURST hack. The network team has increased its involvement in resolving security issues from 61 percent to 87 percent, the highest in the past three years of this survey.
3. **Unified Communications (UC) Issues Consume IT Resources:** At least 10 hours per week are being spent resolving UC issues — a quarter of a Full Time Employee (FTE) week. "Monitoring quality of UC and collaboration technologies like WebEx, Teams, and Zoom" was the most critical aspect of managing end-user experience.
4. **Increased Trust in Cloud:** Organizations embraced cloud for its reliability in delivering critical applications, with smaller businesses leading the charge. More than 37 percent of respondents cited "Improved service availability and reliability" as their top reason for migration.
5. **Budgets Grow to Keep Up with Innovation:** The number of IT teams expecting increasing budgets has nearly doubled from last year — 60 percent versus 32 percent — to keep up with technological innovation. IT teams reported at least 70 percent adoption of technologies including SASE, AIOps, SD-WAN, IoT, and Private 5G by the end of 2022.

# IT SKILLS GAP CATAPULTS TO TOP TROUBLESHOOTING CHALLENGE

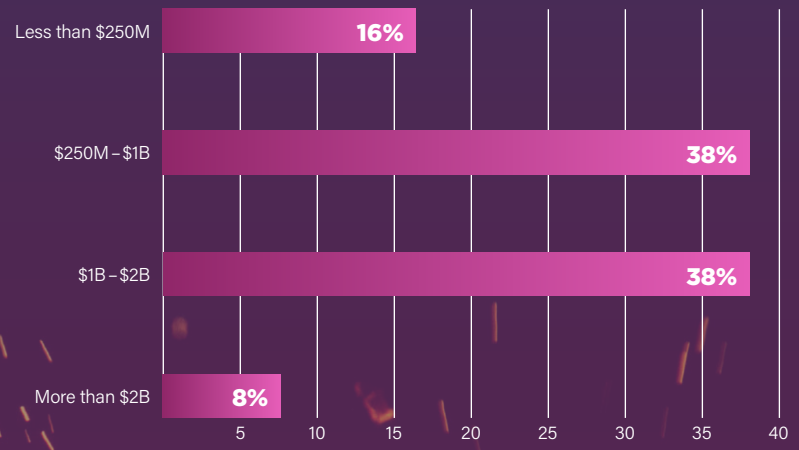
For the first time, a non-technology challenge has risen to the top: organizations have made it clear that their biggest challenge in troubleshooting applications is finding requisite talent to solve performance issues. This suggests that the skills gap is expanding based on previous survey findings. During the last year, IT departments have found it challenging to attract candidates with skills that keep up with the breakneck speed of digital transformation. 'Measuring the underlying network health' (38 percent) and 'understanding the end-user experience' (35 percent) were the second and third highest, respectively.

Predictably, the skills gap was most acute among mid-size organizations. More than 90% of organizations less than $2B in revenue declared finding requisite talent to be their biggest challenge.

## WHAT ARE THE TOP 2 CHALLENGES YOU FACE WHEN TROUBLESHOOTING APPLICATIONS?




## FINDING THE REQUISITE TALENT TO SOLVE PERFORMANCE ISSUES

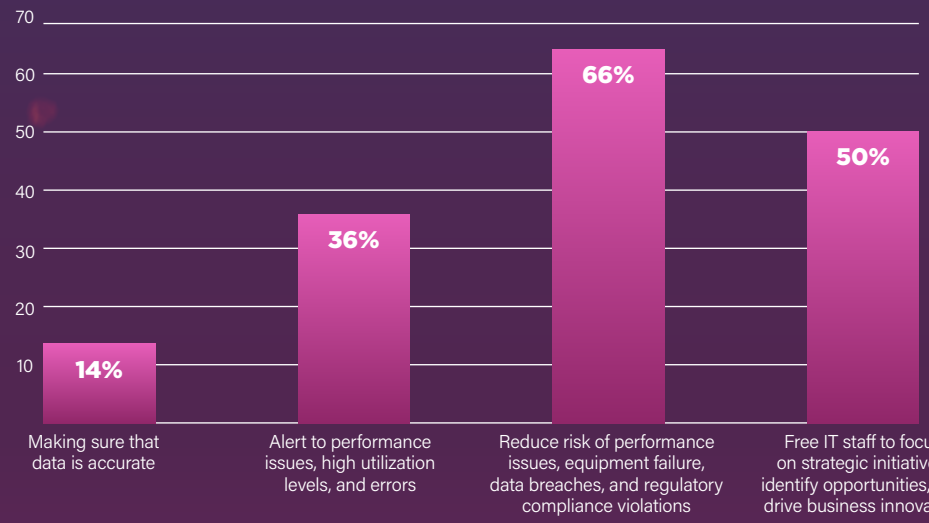


## IT SKILLS GAP CATAPULTS TO TOP TROUBLESHOOTING CHALLENGE (CONTINUED)

How then can IT resolve this skills gap? The data suggests that using network automation is one of the best ways to mitigate this shortage of trained and qualified technicians.

When asked about the top two benefits of using automation, the second most popular answer was to leverage network automation to "free IT staff to focus on strategic initiatives, identify opportunities, and drive business innovation."

### WHAT ARE THE TOP TWO BENEFITS OF USING AUTOMATION?




## KEY TAKEAWAYS

Finding and retaining qualified talent has only been exacerbated by rapidly accelerated innovation. Ensuring that IT staff keep current is a daunting task. What helps?

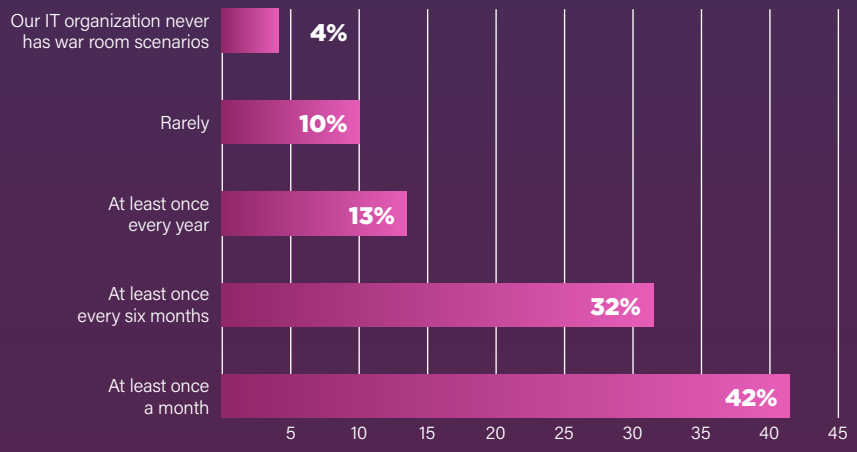
- **Invest in the right tools:** Those with accessible, intuitive, role-based workflows that let you measure underlying network health easily. Avoid, where possible, any tools that only one team with specialized knowledge or training can use.
- **Implement automation measures for network monitoring:** The easier it is for your staff to automatically flag root cause of problems, the easier they can address them, and the more time they have available to focus on key strategic goals and drive optimal service delivery.

# WAR ROOMS SHED LIGHT ON NETOPS, SECOPS, DEVOPS COLLABORATION

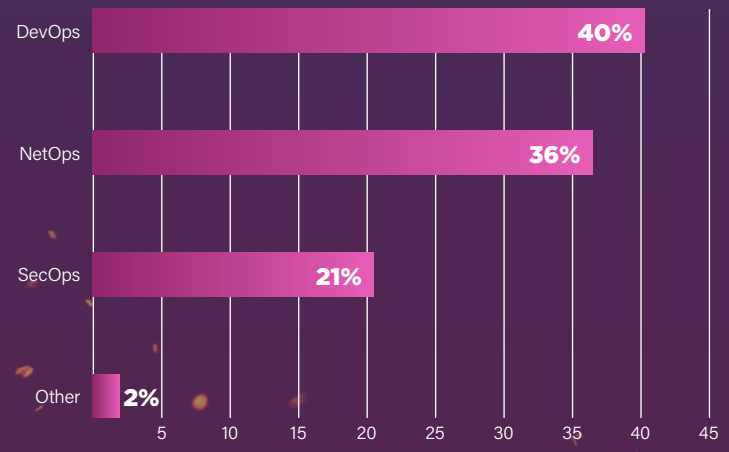
"IT war rooms" occur at least once a month for 41% of organizations, with 73% saying that they meet in war rooms at least once every six months. Only 4% of organizations say they never have war room scenarios at all. NetOps, SecOps, and DevOps are regularly pulled away from their daily operations to solve severe performance and security escalations.

NetOps and SecOps are being called into war rooms in nearly equal measure, frequently with DevOps also involved, suggesting IT teams are engaging in cross-team collaboration in absence of a common data set.

## HOW OFTEN DOES YOUR ORGANIZATION MEET IN "IT WAR ROOMS" TO SOLVE A DIFFICULT PROBLEM?




## WHO WOULD BE CALLED INTO A WAR ROOM TO QUICKLY RESOLVE A SEVERE PERFORMANCE OR SECURITY INCIDENT?




## KEY TAKEAWAY

Given the talent shortage, executives should be aware of the impact that pulling NetOps, SecOps, and DevOps into IT war rooms has on meeting deadlines of key projects. Though war rooms are inevitable if a critical problem occurs, technology that enables cross-silo collaboration should be used to make them less frequent. Sharing the same data sources will minimize the fire-fighting and enable scarce IT resources to be deployed on proactive and longer-term initiatives.

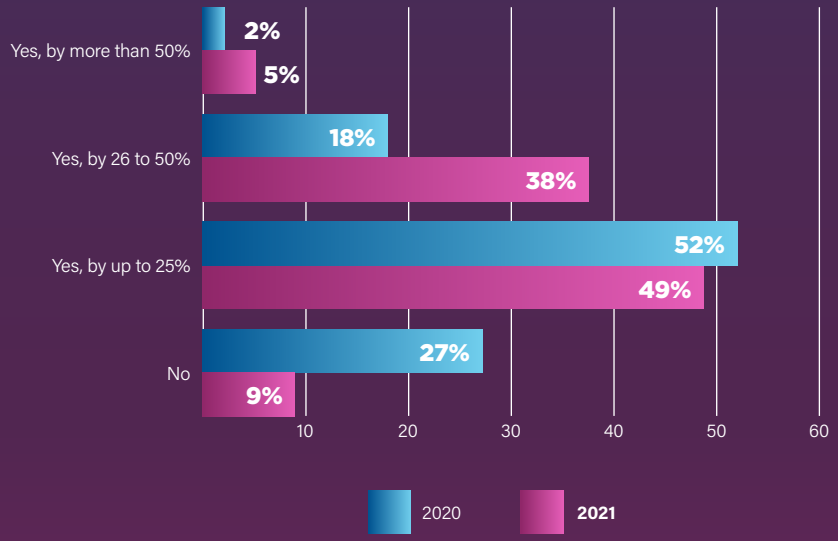
# IT TEAMS OVERWORKED WITH SURGING CYBERSECURITY THREATS

Since the start of the remote working transition, the amount of time spent solving security issues has increased across the board. Breaches like SUNBURST are requiring NetOps to shift their attention to urgent cybersecurity incidents.

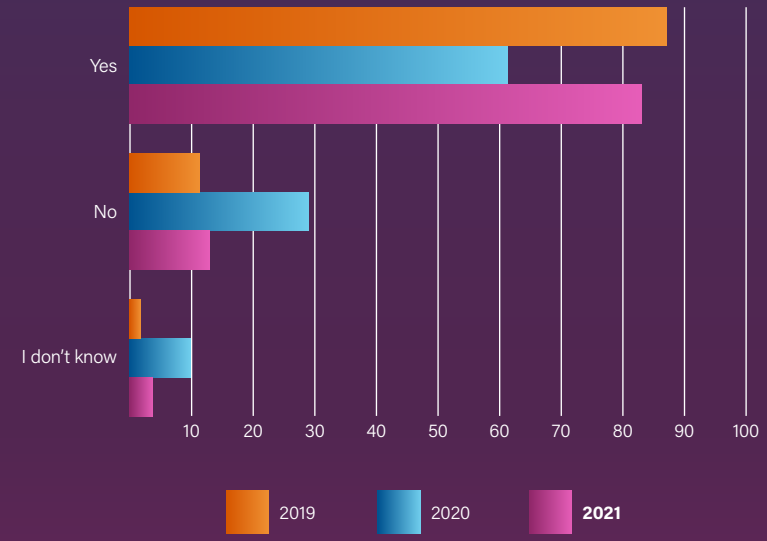
Those who have spent no time whatsoever resolving security issues has significantly dropped from 27% to 9%. Security is a part of daily operations for nearly everyone in IT.

The network team has increased its involvement in resolving security issues from 61% to 87%, the highest it has been in the past three years of the survey.

## HAS THE TIME YOU SPEND RESOLVING SECURITY ISSUES INCREASED?




## IS YOUR ORGANIZATION'S NETWORK TEAM INVOLVED IN RESOLVING SECURITY ISSUES?




## KEY TAKEAWAY

Security investigations abound, and the role of NetOps in mitigating cyber risk has never been more critical. Executives should also be aware that this is taking away time from the network team's typical daily tasks like driving smooth service delivery. Given the close partnering between NetOps and SecOps, role-based workflows that facilitate collaboration across silos should be a key initiative. Investing in improved performance monitoring solutions that offer the right network visibility may be a cost-effective way to enhance cybersecurity breach resolution.

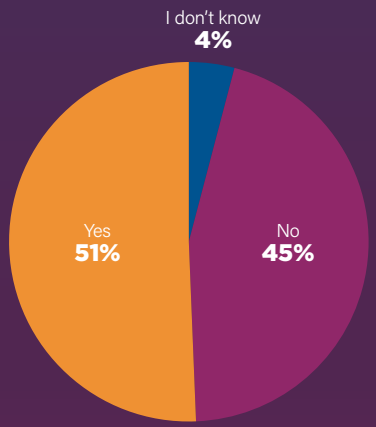
# THE DAY AFTER SUNBURST: NETWORK VISIBILITY DATA SEVERELY UNDERUTILIZED

Given the persistence of cybercriminals, malicious actors and rogue nation states, there is little chance of avoiding a security incident. Last year, by implanting malware in a routine software update, the recent SUNBURST attack took command and control of hundreds of systems. According to this survey, more than half of organizations were impacted by the SUNBURST hack.

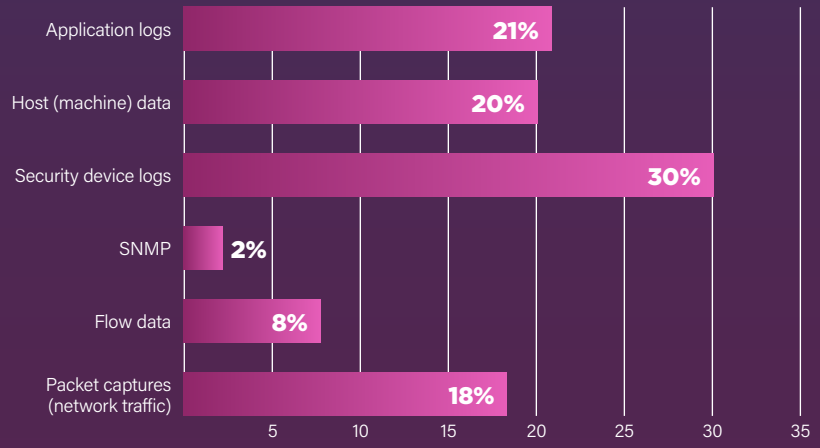
SUNBURST did not discriminate based on organization size, but disproportionately affected healthcare/medical verticals.

Interestingly, packet and flow data were used less this year than in previous years, falling behind syslogs and host data. This is noteworthy because full fidelity data for forensics is a critical component of containing the scope and impact of any breach quickly.

## WAS YOUR ORGANIZATION IMPACTED BY THE RECENT SOLARWINDS "SUNBURST" HACK?




## WHAT ARE THE TOP 2 NETWORK DATA SOURCES?



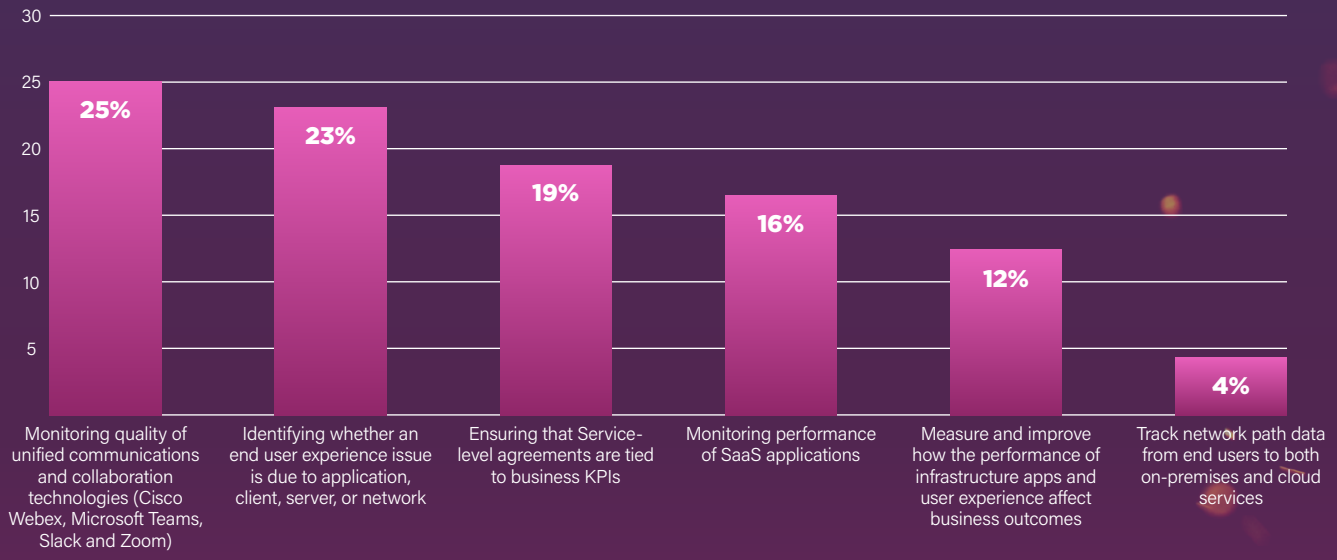

## KEY TAKEAWAY

Act like you've been hacked. Rather than attempting to prevent incidents like SUNBURST altogether, a futile effort, a better strategy is to assume that successful attacks can and will occur. While logs and machine data are effective, access to full-fidelity, court-admissible data helps IT identify and reduce dwell time of the bad attacker in the network. This ensures stolen data, legal costs and regulatory fines, and reputational damage from a breach is kept to a minimum.

# UNIFIED COMMUNICATIONS (UC): THE NEW GATEKEEPER OF OPTIMIZED END-USER EXPERIENCE (EUE)

Since the rollout of VoIP many years ago, the real-time nature of unified communications has been a bane to the existence of IT teams – any drop in service levels is obvious and frequently leads to significantly degraded experience for end-users. Given the shift to remote work, last year's survey found that understanding end-user experience was the top challenge for troubleshooting applications. Unified communications and collaboration services (UC & C) have become the gatekeeper to a smooth end-user experience.

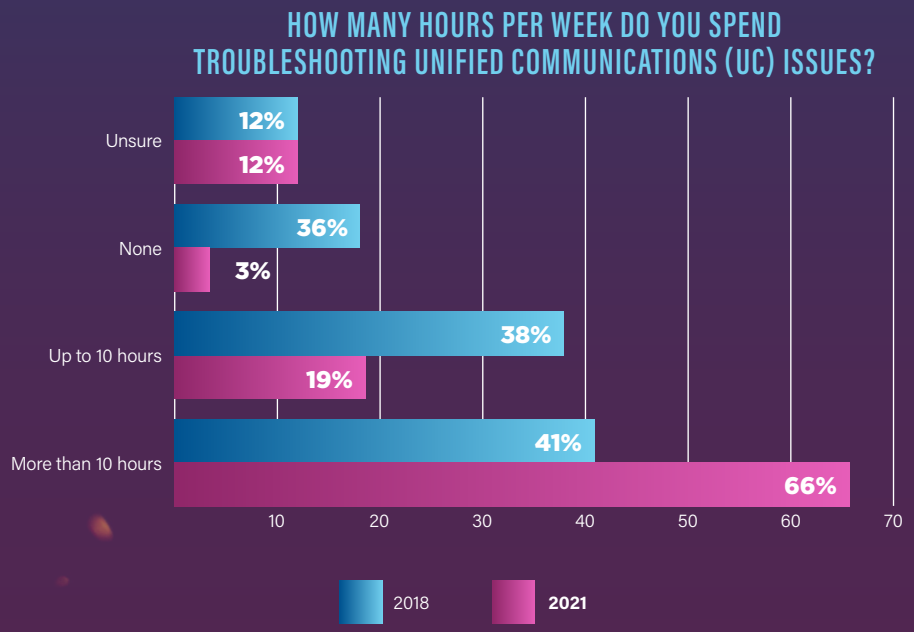
## MOST CRITICAL ASPECTS OF EUE MONITORING FOR YOUR IT ORGANIZATION?




"Monitoring quality of UC & C technologies like WebEx, Teams, and Zoom" was the most critical aspect of monitoring EUE followed closely by "identifying whether an end-user experience issue was due to an application, client, server, or network." For C-level executives however, "ensuring service-level agreements were tied to business KPIs" was the second most important challenge.

## UNIFIED COMMUNICATIONS (UC): THE NEW GATEKEEPER OF OPTIMIZED EUE (CONTINUED)

Time spent resolving UC issues has increased overall since 2018, with those who spent more than 10 hours increasing from 41% to 61%. Only 3% spent no time resolving UC issues in 2021 compared to 36% in 2018.



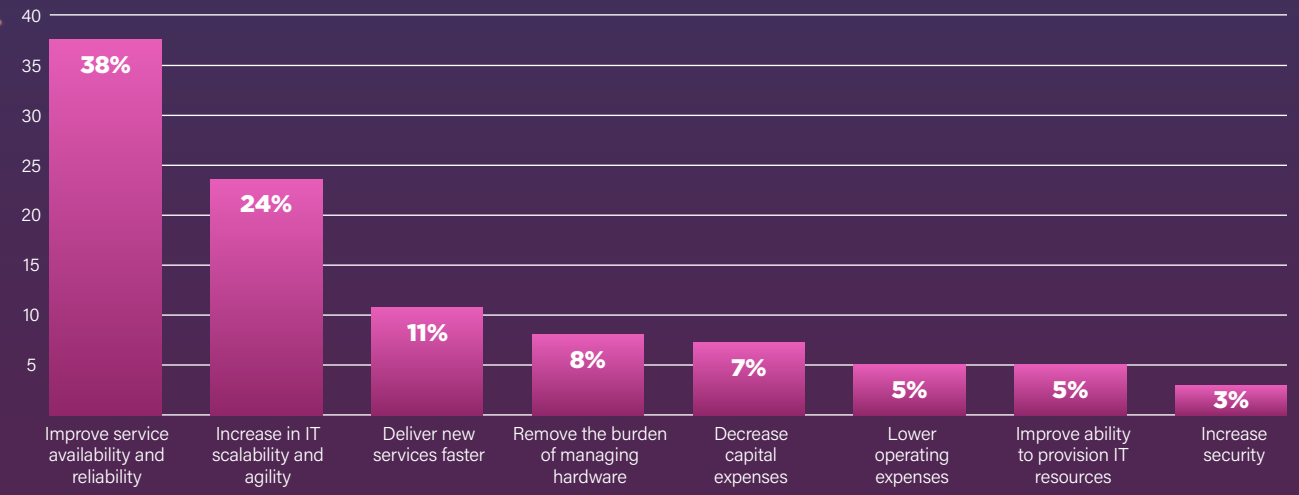

### KEY TAKEAWAY

Executives should take note that at least 10 hours per week are being spent resolving UC-related issues – a quarter of a Full Time Employee (FTE) week. With many companies opting to work remotely indefinitely, it is not surprising to see an increase in reliance in UC & C technologies for employees everywhere. What is striking is just how critical robust UC monitoring is to ensure smooth application delivery and optimal end user experience.

# INCREASED TRUST IN CLOUD DRIVEN BY SERVICE RELIABILITY

State of the Network 2021 shows a banner year for cloud deployments. Organizations embraced cloud for its reliability in delivering critical applications, with smaller businesses leading the charge.

## WHAT IS YOUR COMPANY'S TOP REASON FOR MOVING TO THE CLOUD?

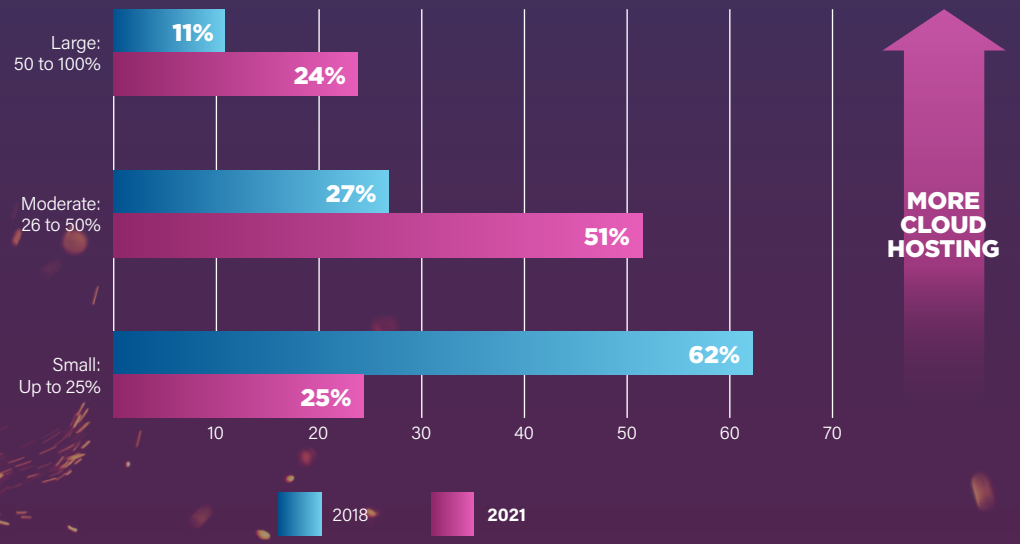



Cloud hosting suppliers have provided nearly flawless access despite the global pandemic. This is reflected as more than 37 percent of respondents citied "Improve service availability and reliability" as their top reason for migration to the cloud.

# INCREASED TRUST IN CLOUD DRIVEN BY SERVICE RELIABILITY (CONTINUED)

Contrasting these results with the 2018 State of the Network vividly shows the growth of cloud hosting.

## APPLICATION CLOUD HOSTING SOTN 2021 VS 2018




## KEY TAKEAWAY

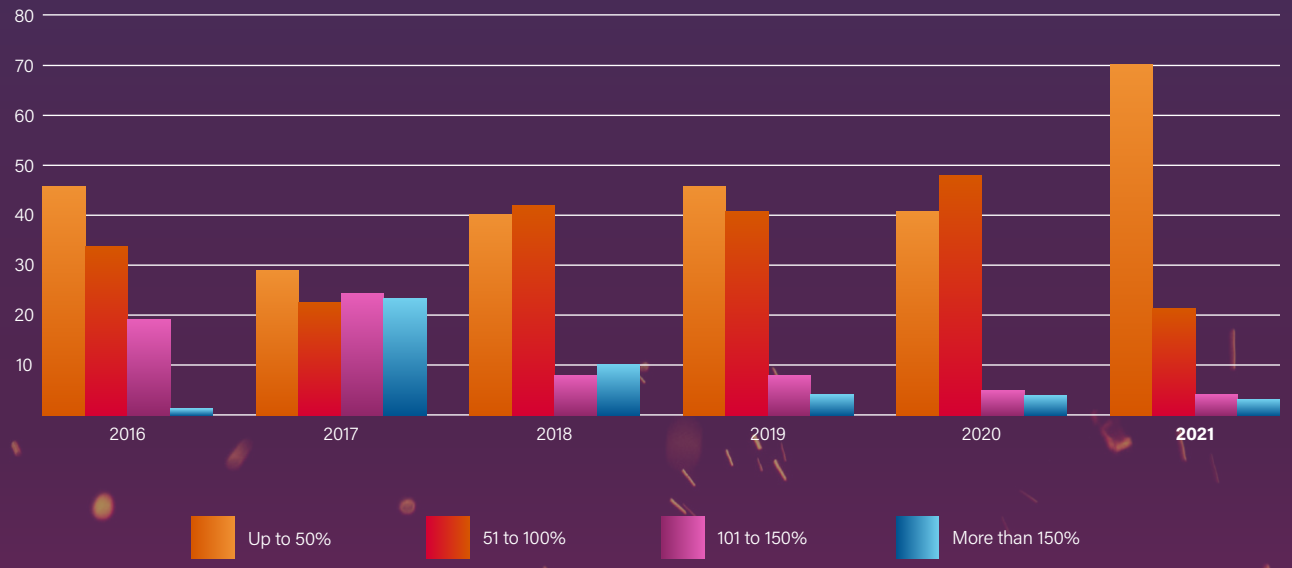
Cloud has proven its worth during a major global event. IT teams must ensure that network visibility and service deliverability isn't impacted by cloud deployments. Observer can help here with monitoring insights and end-user experience scoring, wherever the services are hosted.

## REMOTE WORK AND CLOUD ADOPTION ALTERS BANDWIDTH GROWTH EXPECTATIONS

For the first-time in the last five-years of the State of the Network survey, overall bandwidth growth projections slowed. This is likely caused in large part by the acceleration of cloud deployments as well as the dramatic shift to work from home. This shifts traffic load from typical corporate data centers to the home/public based network resources. Numerous independent third-party sources validate this internet traffic growth.

In the most recent 2021 findings, more than 70 percent expect "Up to 50%" growth, much lower than in past years. However, the rate is still steep with an additional 20+ percent expecting up to 100 percent growth. Interestingly, these general reductions applied across all size organizations where the 1 to 50 percent stands out.

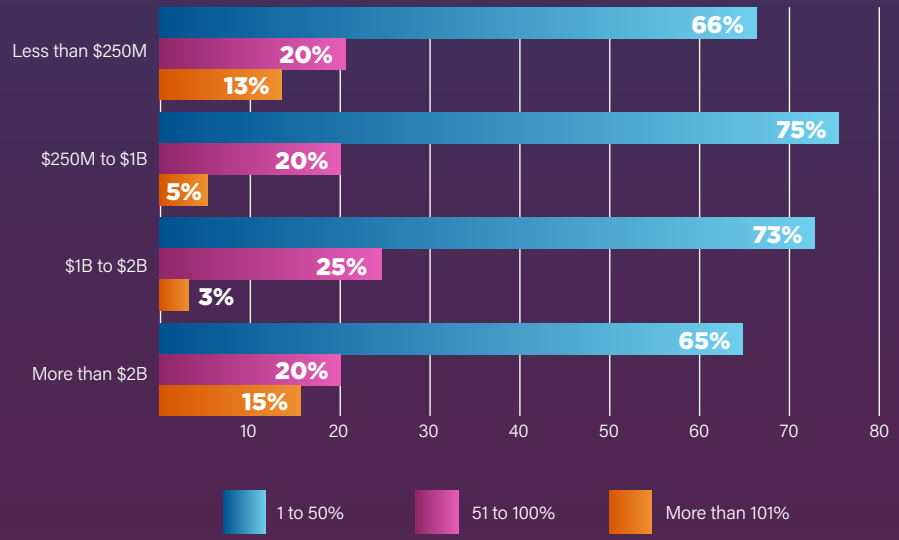
### FIVE-YEARS OF BANDWIDTH GROWTH



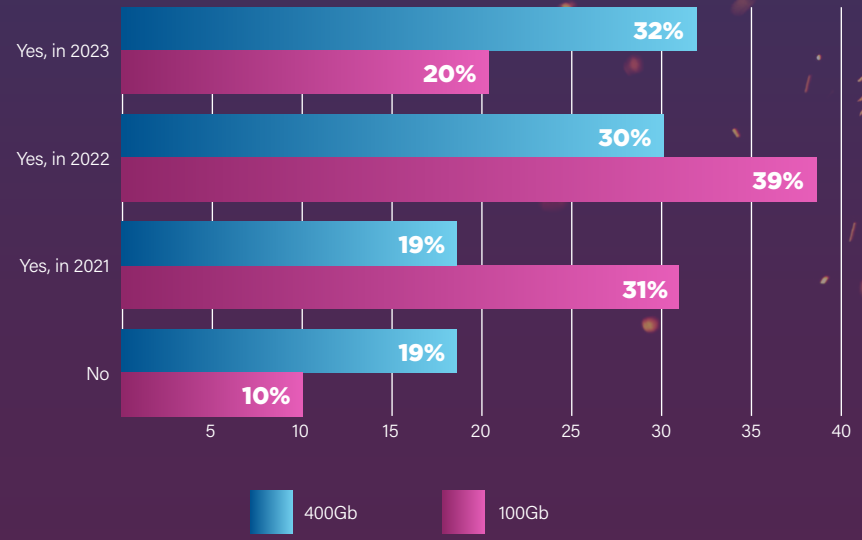
# REMOTE WORK AND CLOUD ADOPTION ALTERS BANDWIDTH GROWTH EXPECTATIONS (CONTINUED)

That said, IT teams remain committed to deploying higher speed networks as emerging technologies continue to grow. This graph indicates more than 90 percent will deploy 100Gb and 80 percent are planning to deploy 400 Gb by 2023.

## 2021 EXPECTED BANDWIDTH GROWTH vs ORGANIZATION SIZE




## EXPECTED 100 GB AND 400 GB DEPLOYMENTS




## KEY TAKEAWAY

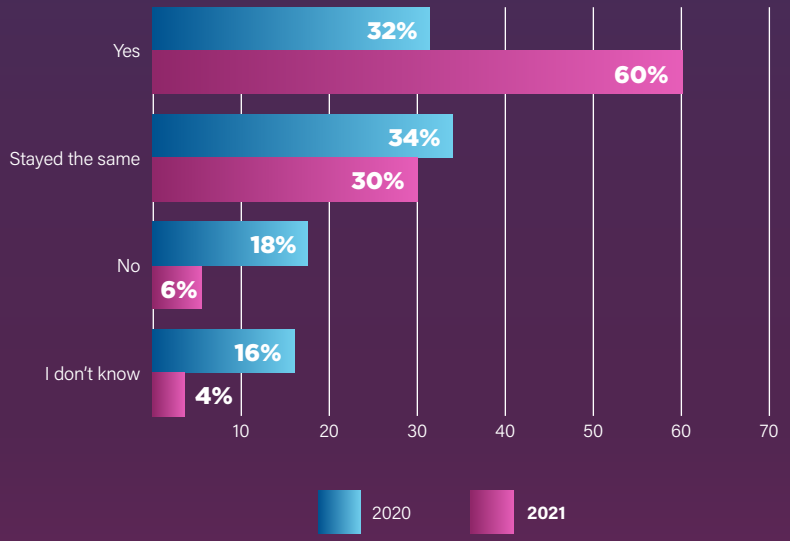
Even with more applications moving to cloud hosting, IT teams are making the decision to migrate internal network resources from 10/40 Gb to higher speeds. The dramatic drop in costs for 100/400 Gb equipment are likely facilitating the process--future proofing makes more sense at the right price.

# NEW TECHNOLOGY DEPLOYMENTS POISED TO REBOUND WITH INCREASED SPENDING

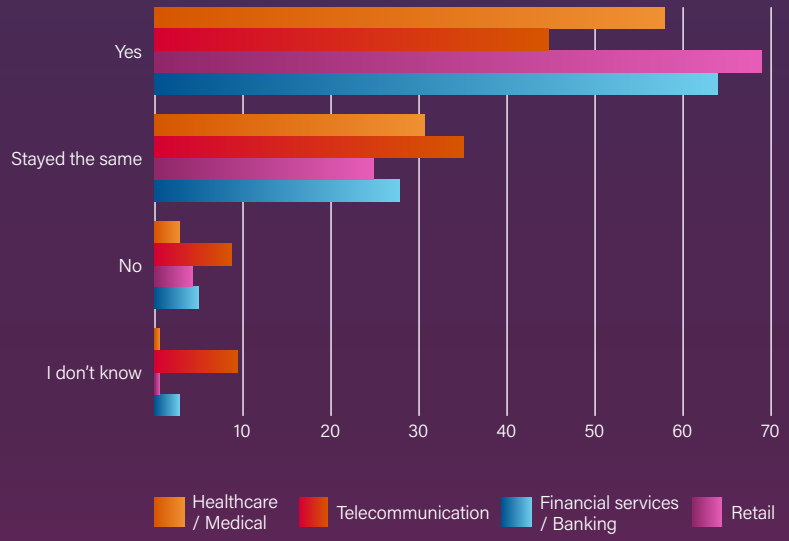
IT teams are feeling more bullish than in last year's survey and this is reflected in their growing budgets with nearly double—60 percent versus 32 percent—looking forward to loosened purse strings.

A closer look at the data shows significant variability in technology spend as a function of industry vertical with retail, financial/banking, healthcare, and telecommunications taking the top three spots.

## PLANNED BUDGET GROWTH NEXT 12 MONTHS




## TOP FOUR VERTICALS IT SPEND

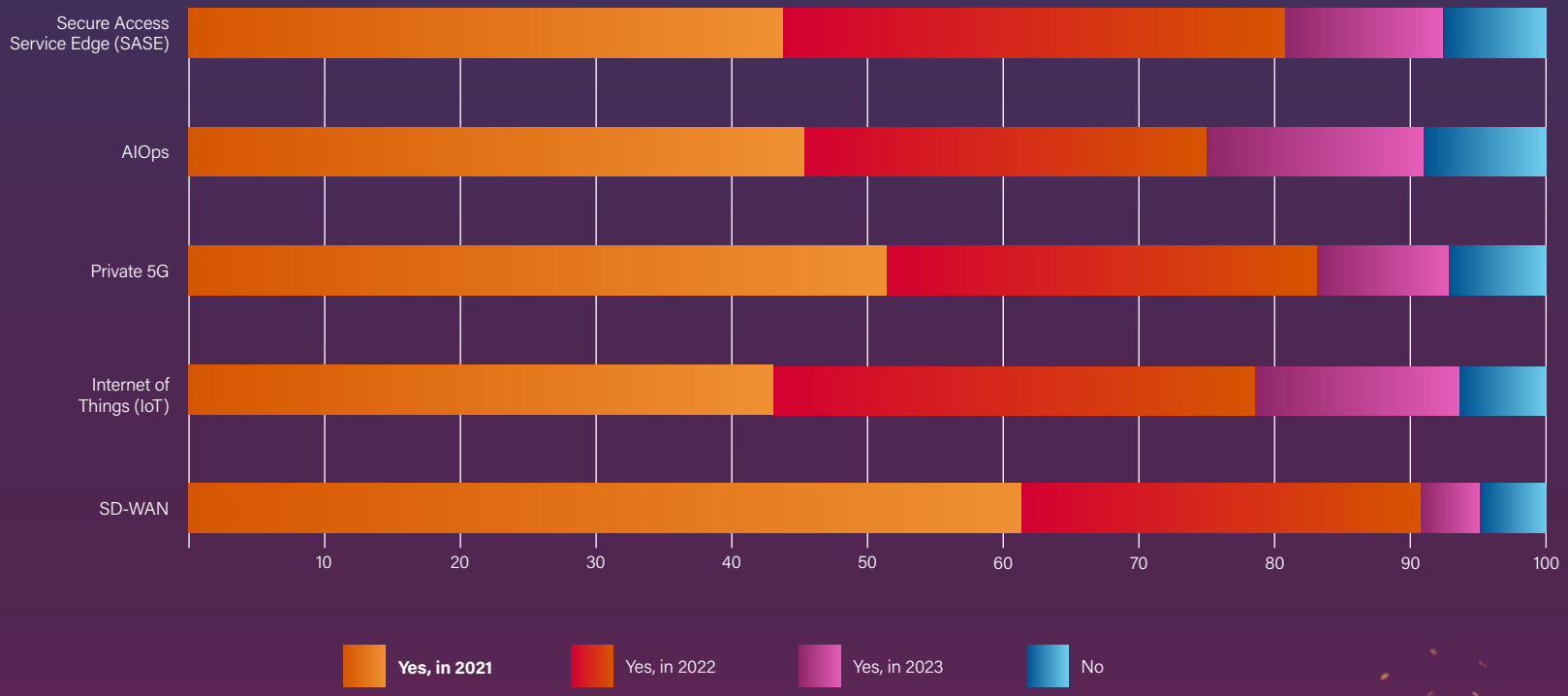



It's also notable that much of these increased outlays are anticipated in calendar year 2021, so it appears there may be some catch-up happening due to last year's pause in spending.

# NEW TECHNOLOGY DEPLOYMENTS POISED TO REBOUND WITH INCREASED SPENDING (CONTINUED)

IT teams reported more than 70 percent adoption of technologies incuding SASE, AIOps, SD-WAN, IoT, and Private 5G by the end of 2022.

## NEW TECHNOLOGY ROLLOUTS



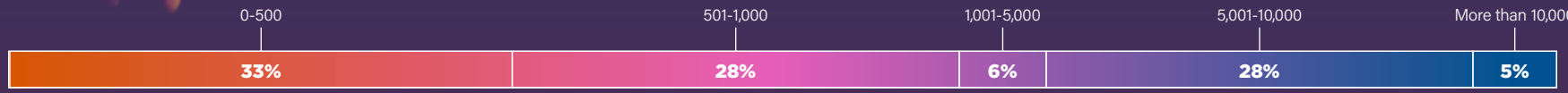

## KEY TAKEAWAY

If history is any indicator, network teams will need to be sure to maintain adequate operational visibility as these initiatives are introduced to ensure continued rapid troubleshooting and optimal IT service delivery. IT teams often fail to address monitoring visibility concerns until after new technology deployments, leaving them "flying blind" in delivering optimal IT services. It is better to consider complementary monitoring solutions alongside these new technologies.

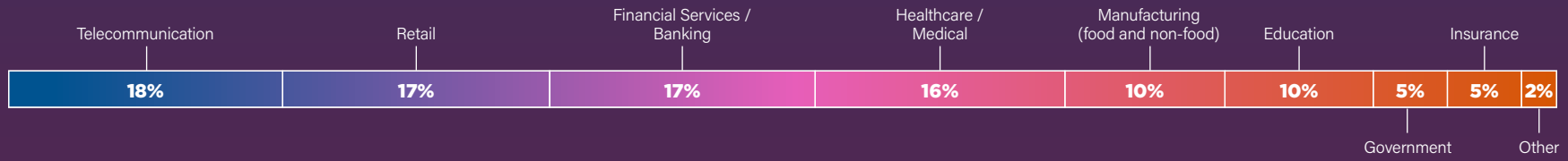
# SURVEY METHODOLOGY

The insights from this report were based upon a survey of network and security professionals. Results were compiled from the insights of 794 respondents from around the world. In addition to geographic diversity, the study population was distributed between networks and business verticals of different sizes.

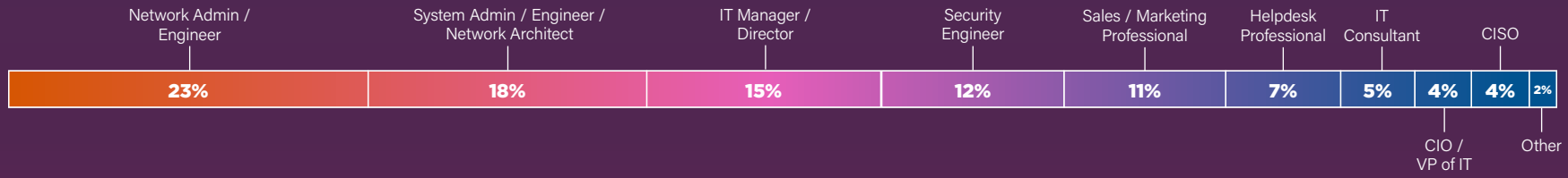
## HOW MANY EMPLOYEES DOES YOUR ORGANIZATION HAVE IN TOTAL?



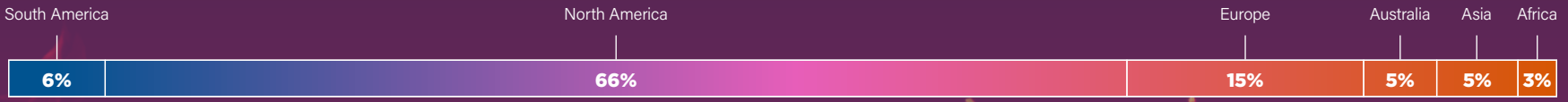

## WHAT IS YOUR PRIMARY MARKET SEGMENT?




## WHAT IS YOUR PRIMARY JOB FUNCTION?




## WHERE ARE YOU LOCATED?




For more information about the study's methodology or the results, contact sonus@pr.com

To see VIAVI Observer in action, please visit viavisolutions.com/observerdemo. Responses were collected in March 2021 via an online survey.

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