IDC ANALYZE THE FUTURE

IDC TECHNOLOGY SPOTLIGHT

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High-value business outcomes, dynamic technology solutions, and high-integrity user experiences are strategic focal points for IT organizations in this Digital Era. Detailed knowledge of and control over each are vital for the success for both IT and the business.

Network Analytics: The Deep Impact of Comprehensive Intelligence and Insights

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Before and early in the COVID-19 pandemic, most organizations followed traditional approaches to network improvements. Upgrade network devices. Add more connections. Increase bandwidth capacity. At the same time, any significant new network-focused technology adoptions, design improvements, and service activations were put on hold as more pressing demands (e.g., work-from-home access, enhanced collaboration, security concerns) moved front and center for IT.

As the pandemic continued, however, IT faced a big decision in managing and advancing their network and their network management approach. Return to the traditional approach and deliver the expected tactical technology improvements? Or develop a new approach and improve strategic business outcomes? While the world is still very much in the throes of the pandemic as we move into 2021, we already see a significant portion of organizations already changing network priorities and practices forever – not just as a stopgap for the pandemic (see Figure 1.)

FIGURE 1: ***The Next Normal in Network Management***

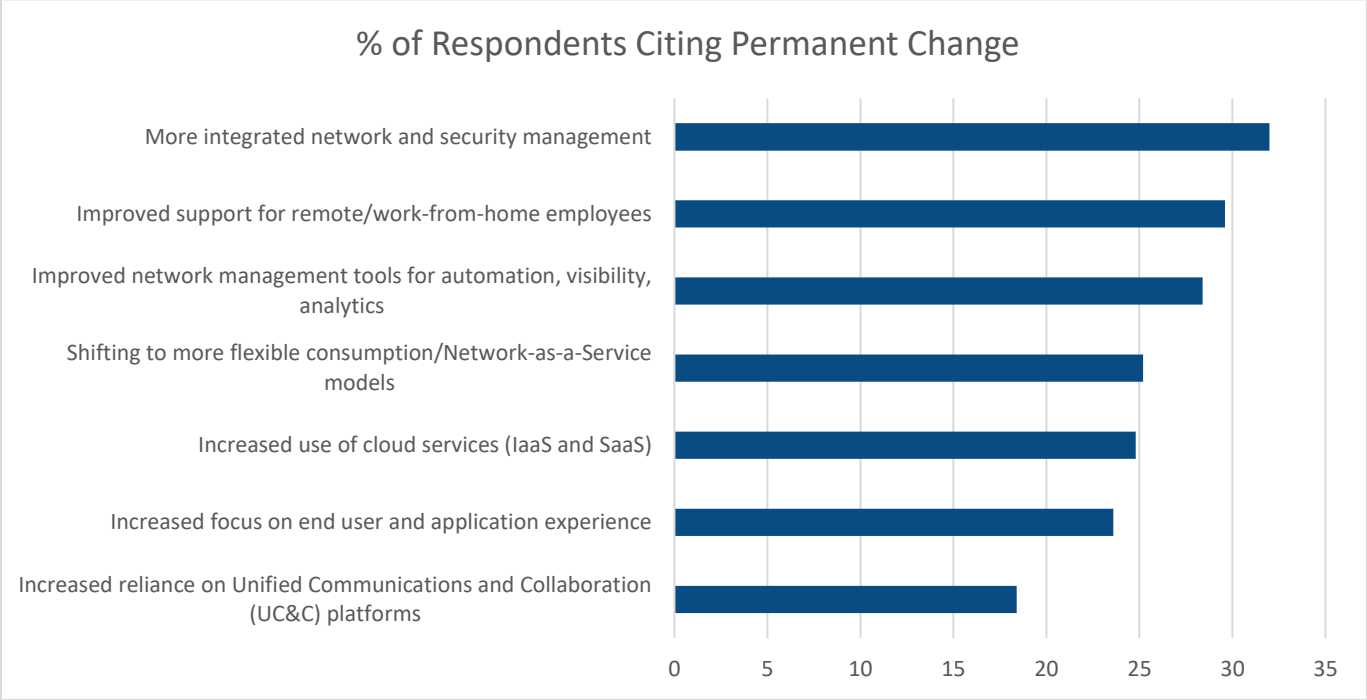
The COVID-19 pandemic has driven permanent changes in network management.

Q *What are the most important changes to your network operations in 2020 in response to COVID that will become permanent changes to your organization?*

AT A GLANCE

WHAT'S IMPORTANT

When judging IT success, the high-level focus is often on technology services and user experiences. However, behind exemplary service levels and user interactions stand highly detailed comprehensive visibility and analysis (and protection) of all – not just some – of the systems and services that combine to deliver the full promise of digital. Here, network analytics solutions that present wide-angle and in-depth views into infrastructure and applications, private systems and public services, and problems and threats are critical to management excellence and IT and business success.



Source: IDC, December 2020

Many of these permanent changes match up well to the capabilities and benefits delivered by advancing network analytics solutions. The comprehensive network intelligence and insights offered by these solutions serve to improve security postures, virtual work practices, cloud oversight, and user experiences – whether employee, partner, or customer and no matter location or application.

Mega Trends: Expansion of Cloud Services and the Network Edge

Enterprise priorities and building investments continue to drive advancements in technology infrastructure management.

- **Cloud and Multicloud: Continued Acceleration and Multiplication.** In today's IT environment, business exchanges and transactions that do not leverage cloud services (e.g., IaaS, SaaS) are increasingly rare. IDC 2020/21 survey research indicates that cloud adoption will further increase into the future. Given this increasing cloud dominance within tomorrow's IT infrastructure, it is necessary for network analytics solutions to heighten visibility into and control over cloud services and resources. While cloud service providers provide for select data insights and management interactions to customers, these are extremely limited. And while application performance monitoring solutions have provided some added visibility, detailed intelligence, and insights into the performance of all networking and computing components forming the user experience is lacking. Fully understanding the influence any one cloud or many clouds have on the user experience is critical as enterprises further accelerate their adoption of cloud services into the future.

- **The Network Edge: Expanding to Meet Evolving Requirements.** Digital transformation and the COVID-19 pandemic have redefined the network edge into the future. Distributed requirements relating to data processing, edge computing, application response, cloud delivery, pervasive security, and user mobility have pushed IT

resources further and further away from the traditional network and data center core and formed a more fluid enterprise network edge moving across multiple fronts. For years now, we have seen cloud service provider networks operate at the edge of the enterprise network. User mobility and IoT deployments have caused many enterprises to prioritize wireless connectivity at the network edge. More recently, the pandemic forced the home network to form a vital edge of the enterprise network. These varied network edges form critical boundaries where administrative control can pass from one enterprise IT team to another or even pass from enterprise IT to cloud service provider. In addition, IT solutions, suppliers, and processes can also shift as these boundaries are crossed, further complicating network management efforts. Consistent visibility and control over the interactions across these boundaries and activity within the bounded domains serves a crucial function for all involved – enterprise and service provider.

The Influence on Network Management Challenges

The continued acceleration of cloud services adoption and the ever-shifting enterprise network edge present significant challenges to the network – and the network staff. Particularly vexing challenges include:

- **Rising Complexity & Costs.** Every new technology, site, connection, device, endpoint, application, datastore, cloud service, and provider added to the network increases complexity substantially. And in networking, complexity is the enemy. It heightens service and security risks. It prolongs problem resolution. It complicates designs and deployments. It heightens integration requirements. It drives down the efficiency and effectiveness of both systems and staff. And it slows digital transformation.

- **Loss of Visibility & Control.** Networks, by their nature, are multi-technology and multi-vendor. Detailed visibility into and complete control over network components, networked resources, and connected endpoints presents a huge challenge for even those enterprises that favor private on-premises solutions. Introduce multiple cloud services into the environment and visibility and control is severely challenged. Not only are cloud resources out of sight for the enterprise, but they are also beyond the enterprise's control. At the network edge, limited visibility and control threatens proper operation, use, and service delivery.

- **Digital Delays & Disappointment.** In this hyper-connected digital business world, network service quality directly determines the level of success of the business, end users, and the IT organization. Network downtime, slowdowns, and breaches have an immediate and very visible effect on digital execution. In addition, a network that cannot readily adapt to new requirements (e.g., applications, data, devices, etc.) impedes digital movements. Business profitability, user productivity, IT credibility, competitive positioning… all and more are negatively impacted by inferior and inconsistent network access and service levels.

Cloud-through-Client Visibility and Control: Key Focal Points and Benefits

With IT organizations emphasizing service integrity, dynamic technologies, and infrastructure resilience and readiness, it follows that cloud services, network core/edge components, and connected client experiences are developing to be equally important focal points for network operators – both enterprise and service providers – and network management solution suppliers. Comprehensive intelligence and insights provided by network analytics solutions across these three focal points drive significant benefits for the user, the IT organization, and the business itself.

Complete Visibility: From All Possible Angles, Across All Possible Pathways

As networks grow more complex and critical, comprehensive network datasets -- from more sources and mechanisms – are required to develop a complete and continuous view of network operating conditions and health. Here, high-volume high-quality data focused on such key areas as traffic movement, device status, bandwidth utilization, and user experience drive both in-depth analysis and precise management actions. In essence, the more complete the picture, the more the return across key fronts:

- **User Experience.** This is the ultimate judge of service quality (and source of credibility) for IT organizations. Providing for the best possible user experience – for all exchanges, at all times across all pathways – must be prioritized. Bear in mind that the users in this Digital Era are not only internal workers, but also external partners and end customers (e.g., consumers in retail, patients in healthcare, clients in financial services).Assuring the best possible experience for these many user groups is paramount not just for IT, but also the business. Productivity and profitability are at stake when the user experience degrades, or worst of all, is interrupted.

- **Network Health.** Enterprise networks are comprised of many components from core to edge – e.g., hardware devices, software systems, wired and wireless connections, security solutions, communications, and internet services, and even, home networks. Knowing the detailed status (e.g., load factor, error rates, utilization levels…) of each component on a continual basis enables full and accurate analysis of not only individual components, but how components are working together to deliver consistent network service levels and to contribute to delivery of the best possible user experience. Detailed and timely network component data contributes to faster problem resolution, early warning of developing problems and threats, timely and cost-effective component upgrades, and proactive network optimization.

- **Cloud Environments**. For most every organization, cloud services – from IaaS to SaaS –play a significant role in the delivery of not only infrastructure resources, but also business applications. IT service levels are often primarily determined by the quality of these cloud services. And yet, IT organizations have limited visibility into and control over cloud resources and service delivery. Here, intelligence presented from inside the cloud (via management instances), across the cloud (via synthetic exchanges), and at the edge of the cloud (via detailed private network data) enable a more complete view into cloud services and service levels. For cloud customers, this clearer view into their cloud and multi-cloud environments provides for more accurate cloud service oversight and validation, more timely cloud-related problem identification and resolution, and more confidence in future cloud service expansion and expenditures.

Complete Control: Problem Resolution. Predictive Readiness. Prompt Rollouts

IDC research into the business value of network analytics solutions indicates significant benefits are realized when operator analysis and actions are enhanced by detailed data and in-depth analysis. The following stand out:

- **Identify Anomalies and Root Causes in Multivendor, Hybrid Environments.** With the right set of tools and techniques, expert operators can effectively diagnose and repair network problems. Unfortunately, time is always short for staff and is always ticking for those impacted by problems or threats. Add in cloud services to the mix and the challenge to identify and resolve problems or mitigate threats is further complicated and prolonged. High-

capacity and highly capable analysis not only reduces repair times, it also reduces the load on IT staff, allowing for more time and energy focused on higher-impact strategic management tasks.

» **Predict Network Needs. Prescribe System/Service Adjustments.** Forewarned is forearmed. Detailed knowledge of network operating conditions and component health enables a more proactive network management approach. Continuous tracking of key network measurements enables the ready identification of trends (or building problems). This forewarning can direct immediate fine-tuning of systems and services that optimizes the existing networked environment. For more significant changes, greater precision in setting thresholds enables more timely cost-effective updates to network systems and services. Update too early and costs increase. Update too late and risks increase. Trend analysis and tight thresholds provide for the right updates at the right time.

» **Match Network to Applications… and Applications to Network.** In this Digital Era, business applications are developed and deployed quickly. And with SaaS offerings, activation can be immediate. Networks must accommodate the demands of new applications readily – whether on-premise or cloud-based. The NetOps team must fully understand ahead of time how the network will react to new application exchanges, flows, and users. This is one of the primary drivers of the DevOps movement within IT. Infrastructure operations knows what to expect from oncoming applications, allowing for proactive analysis and digital preparedness. In addition, detailed data and analysis provided during testing and pilot projects facilitate network-friendly application design and SaaS access. Just as the network can be optimized for an application, so too can an application be optimized for the network.

Considering NETSCOUT

NETSCOUT is a long-time supplier of management solutions that offer insights, control, and protection of both enterprise and service provider networks. Their solutions and services are well-established across the globe, serving over 2,000 customers and, specifically, 90% of Tier-1 service providers and 90% of U.S. Fortune 100 companies. With this significant presence in larger organizations, NETSCOUT functions as a key management partner for customers accelerating towards the digital – and, increasingly, virtual -- future.

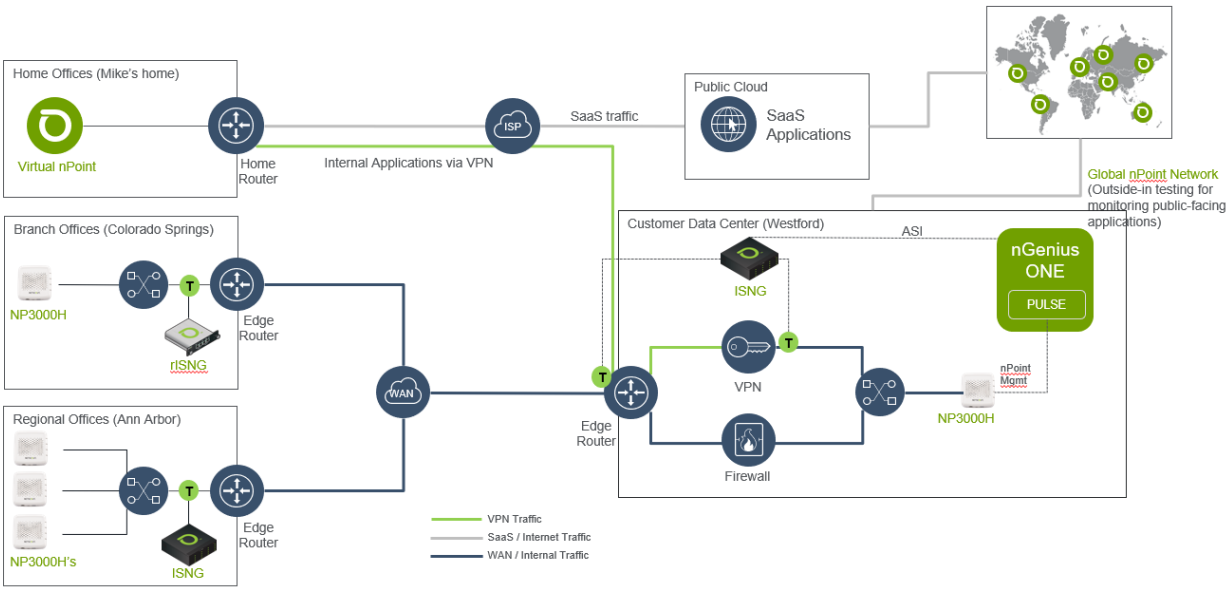
Owing to key network management requirements focused on speed, reliability, security, flexibility, and automation, NETSCOUT has developed a portfolio of both hardware and software solutions that balance performance and intelligence. Striking this balance is critical in today's networks where high-speed connections, cloud services, complex traffic flows, fast-developing threats, and continually rising user expectations are not just common, but multiplying.

Cloud-thru-Client Insights: NETSCOUT Smart Edge Monitoring Solution

In recognition that cloud services are pervasive and still accelerating across enterprise organizations, NETSCOUT is emphasizing the development and delivery of network analytics solutions that provide for visibility and control for public and private cloud, hybrid cloud, multi-cloud environments, and the increasingly influential home office. Its Smart Edge Monitoring (SEM) solution leverages key NETSCOUT monitoring and management systems that enhance visibility and control for network exchanges and user experiences tied to cloud service delivery and quality. (See Figure 2.)

FIGURE 2: ***Smart Edge Monitoring: Enabling the Core, Cloud, and Client View***

Cut resolution times. Solidify user experiences. Validate service levels. Drive business outcomes.



Source: NETSCOUT, 2021

NETSCOUT 's SEM solution actively tests the health and performance of the entire pathway used by application traffic -- measuring and monitoring all the way from interacting clients to responding application workloads – no matter the location of the application or the specific networking/computing resources used (e.g., on-premise systems, cloud services, or co-location facilities).

SEM's combination of fully integrated synthetic tests and packet data-based analytics consolidates and streamlines alerting, monitoring, and workflows. Network operations teams can examine reports and performance of all synthetically generated traffic on key metrics such as packet loss, jitter, latency, application errors, volumes, etc. In addition, synthetic traffic can be compared with actual user traffic to assure accuracy and can also be used to emulate actual user exchanges when doing service assurance checks outside of user hours or in preparation for a new service/application rollout. As organizations move from a reactive to more proactive management model, this look-ahead capability becomes vital in the Digital Era where speed and accuracy combine to drive success.

Network Instrumentation at the Edge: Measuring Client and Service Performance

At the client edge, SEM uses synthetic monitoring to augment patented wire-data Adaptive Service Intelligence (ASI) with insights into the health and performance of high-level business functions such as login to O365 and Web page downloads. Here, NETSCOUT nPoint agents are placed at key locations in both private and public networks and generate client performance data. This client edge measurement provides for many benefits – e.g., proactive client problem management, work-at-home experience monitoring, private infrastructure and public service early warnings, and predictive network and application modeling.

At the services edge, ASI uses passive monitoring and nPoint synthetic transaction data to diagnose whether applications, clients, servers, or the network infrastructure is causing a service performance problem. With a single view, IT OPs can

accurately pinpoint service degradation issues across any domain (on-premise, cloud service, colocation facility, or remote office). Because ASI is extracted from wire data at different points in the network, IT teams get an accurate representation of service dependencies; visibility into applications errors; the precise location where network issues are introduced; as well as which servers and client communities are impacted. This end-to-end holistic view is achieved by deploying NETSCOUT ISNG solution (hardware appliance or virtual software) at strategic service edge locations across the private systems and public services infrastructure.

Challenges in Network Analytics

Network management capabilities are accelerating across multiple fronts – from operations to optimization, from resolution to readiness, and from core and cloud to edge and client. However, there are still many advancements required for network analytics solutions to keep up with digital business demands and new technology pressures. As network and cloud use increases, data collection and processing requirements grow exponentially. As networks grow to be more dynamic and critical, network automation must be applied to maximum effect. As networks grow more complex, suppliers must dedicate more attention to customer success and systems integration efforts. As network analytics solutions expand in scope and capabilities, the need to simplify operator interfaces and interactions becomes more vital. And, finally, as network data, analysis, and automation drives value beyond the network, cross-IT adoption must be prioritized. Advancements across each of these fronts present both strong opportunity and challenge for all suppliers – and much hope for enterprise and service provider customers.

Conclusion

IT management is a complex and critical undertaking for today's organizations. There are many moving parts – and many dependencies among all these parts. The devil is in the details when pressing forward in network visibility and control. To be successful, It is not enough to monitor a select set of key systems or services. It is not enough to manage a select set of key exchanges or users. And in this cloud-centric IT environment, it is certainly not enough to monitor and manage only on-premises infrastructure and applications. The complete view is all-inclusive. The complete view is all clear. The complete view has no blind spots. Core/edge infrastructure, cloud services, and client experiences must receive equal attention – and be supported by detailed visibility and control.

The devil is in the details when pressing forward in network visibility and control. The complete view is all-inclusive. The complete view is all clear. The complete view has no blind spots.

IDC believes network analytics solutions will play an increasingly important and expanding role in delivering this complete view and driving increasingly precise and proactive network and IT automation. NETSCOUT, with its long history, existing portfolio, and commitment to meet future challenges, is positioned to drive the digital success of its customers and respond effectively to the building opportunities for advanced management solutions.

About the Analyst

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Mark Leary is responsible for worldwide technology research and analysis focused on network management, including related analytics, AI/ML, automation and programmability. Mr. Leary also examines advancements in enterprise and cloud network technologies; adoption of cloud services and software-defined systems; network management best practices; and the evolution of IT staff roles and skills in this demanding hyper-connected digital era.

MESSAGE FROM THE SPONSOR

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