IDC

SPOTLIGHT

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As the digital business model accelerates across all industries, comprehensive intelligence and insights focused on applications, on-premises infrastructure, public cloud services, and digital experiences are core tenets of the successful IT organization.

Network Observability: Measure Accurately, Monitor Continually, and Manage Precisely

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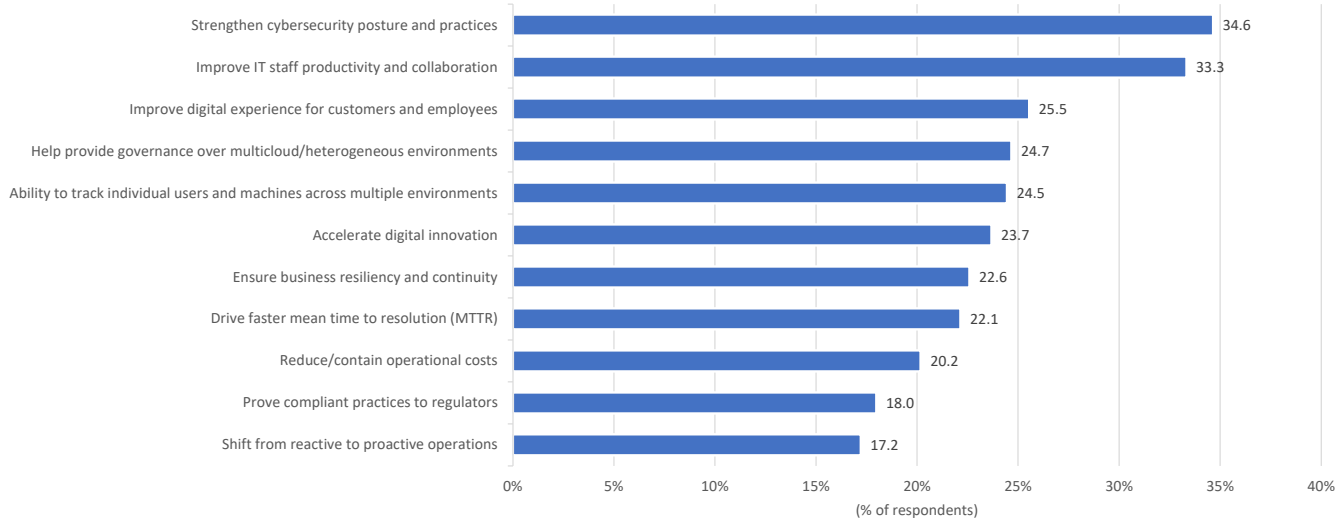
Introduction

The digital business model is accelerating across all regions, industries, and organizations. Serving as the central resource driving business exchanges, user experiences, and cybersecurity postures, the digital infrastructure — with all its many private systems and public services, computing and networking components, and expanding sets of applications and data — must be both maximally resilient and highly responsive.

Knowing the detailed status of digital infrastructure conditions and components at any moment in time has become a vital requirement for digital business success. The movement of traffic, operational status of systems, contribution of cloud services, future problems and threats, and end-user and application experiences are all top care-abouts in IT management. IDC survey results point to the wide-ranging benefits of the improved visibility and control offered by observability solutions applied to the digital infrastructure (see Figure 1). Security postures, staff productivity, user experiences, cloud governance, and digital innovation are all cited as top benefits of the heightened visibility and control delivered by advanced observability tools and related practices.

FIGURE 1: ***Detailed Visibility and Control: The Impact Is Far and Wide — From Systems to Services to Staff***

Q What are the biggest benefits of applying observability across the entire digital infrastructure?



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Source: IDC's Worldwide Deep Observability Survey, 2022

Network Observability: Critical Roles and Responsibilities

Digital Acceleration and the Resilient and Responsive Network

The acceleration of the digital business model has raised the stakes in deploying, operating, and optimizing a highly resilient and responsive network infrastructure. Unfortunately, as the world's networks have grown more critical, they have also grown more complex. The underlying connectivity is wide ranging — from WAN to LAN, from wired to wireless, and from on premises to cloud. Shared resources are highly varied — from physical to virtual servers, from centralized to distributed storage, from datacenter to cloud, and from in-house applications to software as a service (SaaS). Network interactions and dependencies are literally all over the map, compounding the challenges of deploying, operating, and evolving any network.

Detailed intelligence and insights focused on network infrastructure and interactions are now keys to success in building out a resilient and responsive digital infrastructure. Current and trending conditions of the network, along with detailed component health checks and digital experience measurements, provide the level of visibility and control necessary for the network and networking staff to deliver on their full promise. A look further into the future of networking shows that the detailed intelligence, in-depth insights, and precise automated actions driven by advancing network observability solutions promote a more dynamic networked environment.

Network Observability: Key Management Focal Points

As we exit the COVID-19 pandemic and enter a new world focused squarely on accelerating the hyperconnected digital business model, network visibility and control have become paramount. The following are all important focal points:

- **Ensure a positive digital experience.** The digital experience is the ultimate indicator of service quality for all endpoints — human and machine. Tracking the experience of any key exchange — whether involving on-premises systems or public cloud services (or both) — serves to focus observability efforts on overall end-to-end performance. It is this systemwide service condition that really matters to the business. IDC survey results consistently cite customer satisfaction and worker productivity as top-rated digital business priorities for all organizations. The digital experiences of the customer and worker are central to serving these business priorities.
- **Strengthen the resiliency posture and practices.** Continual and comprehensive measurement and monitoring of network infrastructure conditions and components enable consistent service delivery, rapid problem resolution, and threat mitigation. Key capabilities, such as root cause analysis, digital experience measurement, and anomaly detection, identify problems and threats early in their development and direct fast-acting remedial actions by IT staff. Prompt and precise observations minimize network downtime and slowdowns, while also ensuring efficient and effective staff actions. In examining more proactive management practices, detailed measurement and continual monitoring of network and networked components reduce the risks associated with capacity-related failures/slowdowns, security vulnerabilities, and belated system and service upgrades.
- **Enable cloud visibility, control, and delivery.** For the IT organization, cloud and multicloud networking heighten the complexity of infrastructure management. This difficulty is then compounded by limited cloud visibility and control. Too often, the cloud is a blind spot for the subscribing enterprise. Fortunately, network observability solutions are expanding their intelligence gathering and analytical insights focused on cloud services, infrastructures, networks, and applications. Network observability solutions present significant advantages in areas such as feature velocity, management simplicity, flexible packaging, and industry baselining.
- **Drive operational excellence.** In this digital era, networks are increasing in complexity and criticality. And to make network management more challenging, each network is custom fit to serve a single organization and its unique business and technology demands. The comprehensive visibility and control provided by network observability solutions are required for all network-related system and service components, connected resources, security mechanisms, management practices, and IT staff to operate at maximum efficiency and effectiveness. Detailed network intelligence and insights can report operating conditions, track utilization trends, direct corrective actions, and predict demands and outcomes. All these actions and more drive excellence in network operations, engineering, security, and service levels.
- **Accelerate digital innovation.** The digital business environment requires much more from the network and, as a result, much more from network management solutions and staff. Networks must be more resilient and responsive. Network management must be more precise and proactive. Without complete visibility and control over the network infrastructure, networked resources, cloud connectivity, and connected end users and devices, organizations are left hoping for good outcomes versus driving them as they accelerate their digital initiatives. Limited network intelligence and insights serve to constrain digital business movements and heighten the risks of failures, slowdowns, and threats.

Network Observability: Key Tactical and Strategic Benefits

Tactical Gains: A Focus on Resiliency

Tactical gains focus on more immediate and often more readily apparent improvements in network service levels, resource utilization, and staff productivity. The detailed visibility and control presented by network observability solutions across on-premises systems and cloud-based services enable faster problem identification and resolution. Key capabilities such as complex correlations and root cause analysis pinpoint problems rapidly and precisely, filtering out the "noise" generated by multiple alerts and directing resolution efforts to the proper staff (i.e., NetOps, SecOps, and CloudOps). These same gains are also presented in security. Here, anomaly detection provides for timely identification of rising threats, thus speeding up the mitigation efforts of the NetOps and SecOps teams.

The heightened visibility and control also allow organizations to readily discover and precisely track the use of networked resources — from networking systems to networked applications. The organization not only presented an accurate view into the network infrastructure but also is able to maximize resource efficiency and minimize capacity-related risks, avoiding overuse breakdowns and overspending on unused resources.

Strategic Gains: A Focus on Responsiveness

Strategic gains and returns from network observability are strong and widespread. Time savings across tactical duties (e.g., problem resolution, system deployments, and services oversight) enable the networking staff — and staff in other IT domains — to be redirected to high-impact activities such as policy formation, predictive modeling, infrastructure automation, technology advancement, and digital innovation. Improved network service levels boost the credibility of the IT organization and strengthen the belief that IT can lead — not just support — digital acceleration efforts.

And with detailed knowledge of the state of the network at any given moment in time, the networking team and the broader IT organization can respond readily to new business requirements. In essence, the network can be made ready for anything (e.g., new workloads, new processes, new connections, new users, and new threats), reducing risk and increasing agility.

Network Observability: Vital Solution Capabilities

The following are crucial capabilities in a network observability solution:

- **Gathering comprehensive intelligence:** The digital infrastructure is complex, formed by many interdependent systems and services both private and public. They all must operate in concert, with each performing flawlessly and working faithfully with others. Here, the ability to measure and monitor what the end user experiences when executing an application is critical. Deeper within the underlying network infrastructure, a variety of other data collection methods (e.g., logs, polls, flows, packet telemetry, and cloud connectivity metrics) provide further details on network conditions and components. A comprehensive network observability solution provides for a full spectrum of network measurements and mechanisms (both physical and virtual).
- **Providing in-depth analysis:** Generating actionable insights from all collected network intelligence is core to the observability mission. Here, conditions are evaluated. Anomalies are detected. Correlations are made. Root causes are determined. Actions are directed. Trends are identified. The list of analysis tasks is lengthy and often interrelated. The more complete the data set and the smarter the analytics engine, the more accurate, precise, and

predictive the insights become. Artificial intelligence/machine learning (AI/ML)–driven analysis is heightening the processing capabilities and output quality of observability solutions.

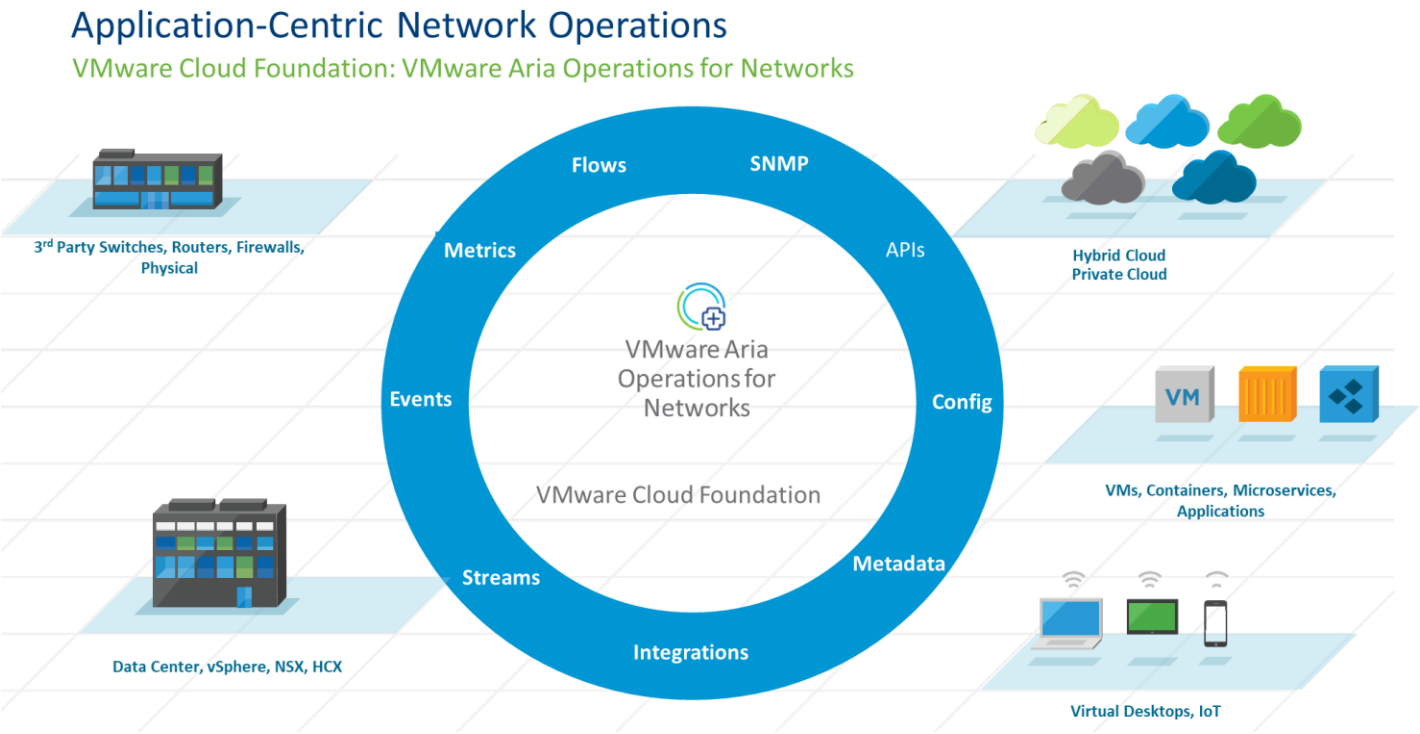
- **Directing precise actions:** Comprehensive intelligence and in-depth analysis promote precise and proactive network management actions. Too often, network operators are left to determine and execute their own actions (or their own automation scripts, programs, or runbooks) based on intelligence and insights presented to them by network observability solutions. Solutions that leverage all available data and analysis to trigger the next level of automation — from guided remediation to autonomous networking — boost service excellence, staff productivity, and network dynamics.
- **Contributing to IT observability:** Network observability solutions can provide detailed network data and in-depth network analysis that prove very valuable to the operations, forensics, design, and optimization efforts of computing, cloud, security, and applications teams. Management applications, systems integration, tool exports/imports, role-based dashboards, and open APIs drive network observability solution usage and impact across IT silos, enabling IT teams to operate with a network-level single source of truth and work together more effectively and efficiently against problems and across projects.

Considering the VMware Aria Operations for Networks Solution

VMware is a global supplier of technology solutions that function across a wide spectrum of critical digital infrastructure domains including cloud services, application development, networking, security, and end-user workspaces. Its solutions are at work within many of the largest and most sophisticated private enterprises, government and educational institutions, and public service providers. VMware's strengths in software development, systems integration, and services provisioning have served the company and its customers well as more dynamic and adaptive on-premises systems and public services have become core technology tenets of the digital business model.

VMware Aria Operations for Networks is a network observability solution that provides detailed visibility and enhanced control across an end-to-end network infrastructure including private and public networks, physical and virtual networks, and VMware-driven and multivendor networks (see Figure 2). Sample key capabilities include application discovery, performance monitoring, security auditing, unified on-premises and cloud troubleshooting, and predictive modeling.

FIGURE 2: ***VMware Aria Operations for Networks***



Source: VMware, 2024

VMware Aria Operations for Networks can be applied to a very diverse networking environment. In-depth monitoring and unified management are provided for VMware solutions such as NSX and VMware Cloud. For network operators and engineers looking to eliminate cloud blind spots and ease migration, monitoring and management extend to VMware's cloud-centric solutions (e.g., VMware Cloud solutions for AWS, Microsoft Azure, and Google Cloud; VMware HCX; and VMware Tanzu). Beyond VMware-focused observability, VMware Aria Operations for Networks supports a wealth of solutions and suppliers operating within the world's enterprise and service provider networks. In a world where no two networks look alike, providing the IT staff with tools that consolidate network monitoring and management across diverse networking environments is a key to success in overcoming challenges related to complexity, cost, resiliency, and staffing.

VMware Aria Operations for Networks enables deployment and operation as an on-premises solution as part of VMware Cloud Foundation. VMware Cloud Foundation allows customers to run their business-critical and modern applications efficiently and securely.

Key Capabilities Serving Critical Outcomes

Network observability solutions must serve both wide-ranging and in-depth requirements when measuring, monitoring, and managing the network infrastructure. By supporting a wide range of observability capabilities, network environments, and customer use cases, VMware Aria Operations for Networks exemplifies the type of broad and deep solution required in today's digital business environment.

In detail:

- **Network assurance and verification:** VMware Aria Operations for Networks emphasizes service measurement and monitoring, from cloud to network to security to applications. It also adds a layer of verification in network management by matching network connections and exchanges with established business policies. Beyond current network operations, VMware Aria Operations for Networks also supports predictive modeling, allowing enterprises and service providers to evaluate the effect of considered changes in the network infrastructure. Features such as Guided Network Troubleshooting enable enterprises and service providers to move from a reactive to a proactive management posture.
- **Application intelligence and insights:** In the digital business environment, application portfolios (and related data sets) are advancing and expanding constantly. New technologies (e.g., containers, microservices, and no-code tools) lead to faster rollouts. Discovering and tracking applications, baselining application exchanges, assessing premises-to-cloud migrations, optimizing application performance, and speeding application-centric problem resolution and threat mitigation are all critical functions enabled by VMware Aria Operations for Networks.
- **Enhanced usability and analysis:** VMware Aria Operations for Networks provides for a streamlined approach to measurement and monitoring of the end-to-end network environment as well as underlying network systems and services, whether on premises or in the cloud. The following represent a sample of capabilities designed to simplify network management, boosting network integrity and staff productivity:
  - Consolidation of multivendor network monitoring
  - Cloud-to-client visibility and control
  - Guided Network Troubleshooting
  - Common and customer dashboards and widgets
- **Cloud management and migration:** VMware software solutions are omnipresent in all types of cloud environments — from public cloud to private cloud, from hybrid cloud to multicloud, and from IaaS to SaaS. VMware Aria Operations for Networks equalizes visibility and control capabilities across hybrid cloud. This is vitally important given the continued acceleration of cloud solutions (and application migrations to the cloud) across the digital infrastructure. IDC survey results indicate that in 2023, 42% of IT budgets will be associated with cloud spending. In 2024, that number is expected to rise to 50%. Measurement, monitoring, and management of cloud services and cloud-based resources require equal attention to detail in the future.

Meeting Challenges in Network and IT Observability

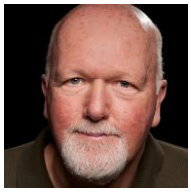
Network observability is driven by a complex web of industry-leading technologies such as cloud analytics, artificial intelligence, network virtualization, autonomous infrastructure, real-time telemetry, role-based dashboards, programmatic interfaces, and open source. Blending all these and more into a coherent and comprehensive network observability solution is a challenge for all suppliers. And network observability solution suppliers must not only provide the most positive gains for the network infrastructure and networking staff (both operations and engineering) but also provide strong contributions to peer IT domains (e.g., SecOps, DevOps, and CloudOps) as well as overarching IT management functions (e.g., AIOps, IT automation, and SRE). This requires suppliers such as VMware to not only

overcome network management challenges but also meet increasingly complex, broad-based IT management requirements.

Conclusion

Detailed visibility and complete control have become vital requirements across all areas of IT — from networking to computing, from core to cloud to edge, from security to development, from operations to engineering, and from problem resolution to business innovation. In-depth intelligence and insights serving both specific technology areas (e.g., networking) and multiple IT disciplines (e.g., NetOps and SecOps) enable systems, services, and staff to operate efficiently and effectively. In addition, the enhanced visibility and control provided by observability solutions enable ready and lower-risk adaptation to new demands driven by accelerating digital business road maps and digital infrastructure rollouts.

About the Analyst



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Mark Leary's core research coverage focuses on network performance management solutions, network automation projects and tools, and related predictive analytics, AI/ML-driven insights, digital experience management, and "programming" technologies as they apply to a resilient, dynamic, and secure network infrastructure.

MESSAGE FROM THE SPONSOR

VMware Cloud Foundation offering VMware Aria Operations for Networks provides advanced network visibility and an end-to-end network view of NSX and VMware Cloud Foundation, leading to improved application performance. VMware Cloud Foundation is a full-stack hybrid cloud solution that combines the scale and agility of the public cloud with the security and performance of the private cloud. Users can leverage network monitoring and network troubleshooting capabilities, including flow analysis and application discovery, for seamless network operations for VMware Cloud Foundation.

Discover more on how VMware Aria Operations for Networks is changing end-to-end network visibility and analytics at www.vmware.com/products/aria-operations-for-networks.html.

IDC Custom Solutions

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