VIAVI Solutions

The New Age of Network Observability

HOW INCREASED DEMAND AND ACCELERATED CHANGE DRIVE INNOVATIVE MANAGEMENT STRATEGIES

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EARLY NETWORK MONITORING

Network performance monitoring and diagnostics (NPMD) has evolved considerably over the years. Today, the shift to cloud computing, a work from home revolution brought on by the COVID-19 pandemic, and digital transformation have ushered in a new era. However, with the right tools and strategies, you can rise to the challenge.

To understand how we got here, it's important to consider the evolution of the network itself. The first large-scale, general-purpose computer network to connect different kinds of computers together was switched on in late October 1969. The advanced research projects agency network (ARPANET) consisted of four connected university computers. Just like today, information was sent via packets that could be routed and reconstructed. Even with only three protocol layers and no TCP/IP, this early network would revolutionize communication, and along with it, the need for (NPMD) tools to help ensure its continued function.

The analyst firm Gartner defines network performance monitoring tools as "software and hardware that provide historical, real-time and predictive views into the availability and performance of the network and the application traffic running on it by leveraging a combination of packet data, flow data, and infrastructure metrics."

With time, network performance monitoring tools evolved. Perhaps the best known, and most powerful early portable network analysis device was the Dolch PAC 64. This DOS-based packet sniffer was contained inside a solid suitcase and featured a nine-inch green display and 256 MB buffer. It also weighed in at a bulky 20 pounds (nearly 10 kilograms). With the advent of laptops and software-based sniffing programs, less cumbersome solutions eventually emerged.

One of these, released in 1987, was tcpdump. It is still a well-known option for capturing and analyzing packets in UNIX/Linux environments. Ethereal which later evolved into Wireshark soon became the freeware analyzer of choice, with its three-pane decode and color-coded protocol listings. By setting up filters, capturing traffic, and analyzing packets, Wireshark made it possible to drill down to the root cause of network problems.

However, according to Nielsen's Law of internet bandwidth, "a high-end user's connection speed grows by 50 percent per year." With that in mind, packet capture and analysis was easier to do with less traffic traversing the network.

MANAGING HIGHER AND HIGHER SPEEDS

In 1995, the 100 Mbps Fast Ethernet system was developed. It included multiple varieties of twisted pair and fiber optic media systems, and a few years later, 1,000 Mbps Ethernet (1 Gb Ethernet) arrived.

Only a decade ago, 10 Gb ethernet was considered top of the line for business. Fast forward to 2015 when over a quarter of enterprises were projected to implement 40 Gb, and today 100 Gb Ethernet is not uncommon.

Of course, compared to the other standards, 100 Gb offers higher data transfer speeds, which means more packets to capture, which leads to huge packet capture files. Graduating to more robust, commercial packet capture solutions like VIAVI Observer Analyzer with GigaStor became necessary, not only for the increasing bandwidth demand, but also to contend with the surge in unified communications (UC) and video traffic.

As enterprises continued to build out their data centers, some savvy operators decided it was just too much trouble. What if up and coming organizations could simply migrate their services to somebody else's infrastructure?

THE CLOUD IS BORN

Though the phrase "cloud computing" was coined as far back as the mid-nineties, it didn't really go mainstream until around 2013 when Amazon Web Services (AWS) added 280 new features to its cloud platform. By 2016, that number was over a thousand with Microsoft and Google scrambling to catch up. Enterprises were enthusiastic about cutting capital expenditures in favor of the cheaper (for now) operating expenses of a cloud services vendor. The loss of visibility inherent to migrating services to the cloud was left to IT to work out as the monitoring challenges multiplied.

Despite the monitoring challenges of these new network environments, even by 2010, over 80 percent of organizations that had migrated to the cloud realized benefits including infrastructure cost reductions and increased application availability.

By 2016, almost **90 percent** of enterprises had migrated at least one application to the cloud and one in three had migrated the majority of their resources. The days of the on-premises data center, for most organizations, were numbered.

At the time, it felt like a cosmic shift, but as an NPMD concern, it would soon be eclipsed by digital transformation. The meteoric rise of music and video streaming services, ecommerce, social media, and more, impacts how people consume content and interact with one another on both personal and business levels.

NPMD FOR THE DIGITAL BUSINESS

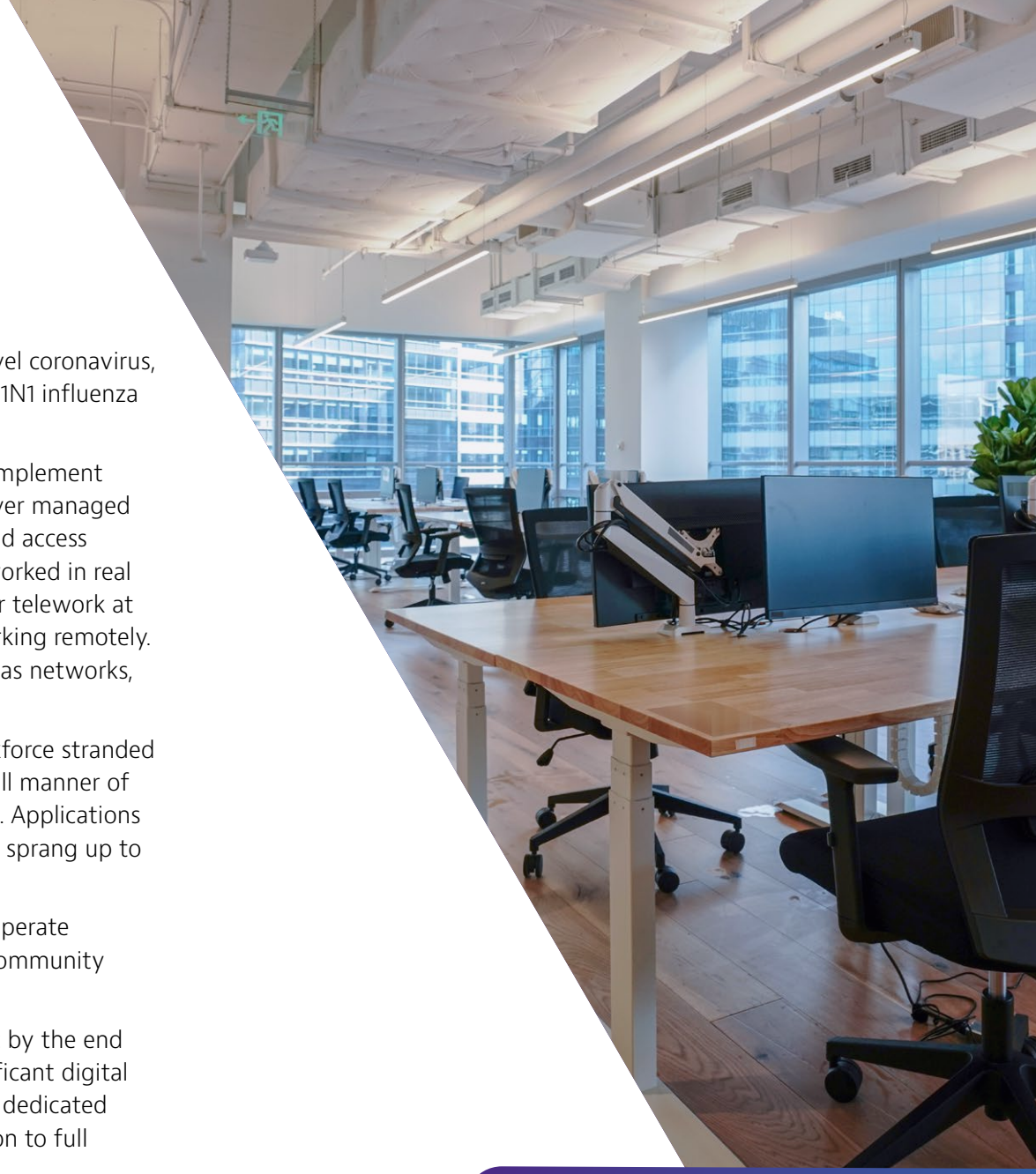
According to Salesforce, digital transformation is the process of using digital technologies to create new, or modify existing business processes, culture, and customer experiences to meet changing business and market requirements. This reimagining of business in the digital age is digital transformation.

With digital businesses, performance is key. Ten years ago, Amazon first revealed that every 100 milliseconds of network latency cost them one percent in sales, while Google found an extra half a second in search page generation time reduced traffic by 20 percent. Imagine what that figure is worth to Amazon today, even if latency is cut in half to 50 milliseconds. It may sound trite, but when it comes to the digital business, time is money.

With increased focus on modern innovative technology and user experience, it became critical to manage multiple data sources to the appropriate service levels.

In a 2019 study by Forrester, 85 percent of businesses still viewed digital as nice to have. In mere months, that number would change significantly.

THE GREAT ACCELERATION



In March of 2020, the World Health Organization declared the novel coronavirus, COVID-19 a global pandemic, its first such designation since the H1N1 influenza pandemic of 2009.

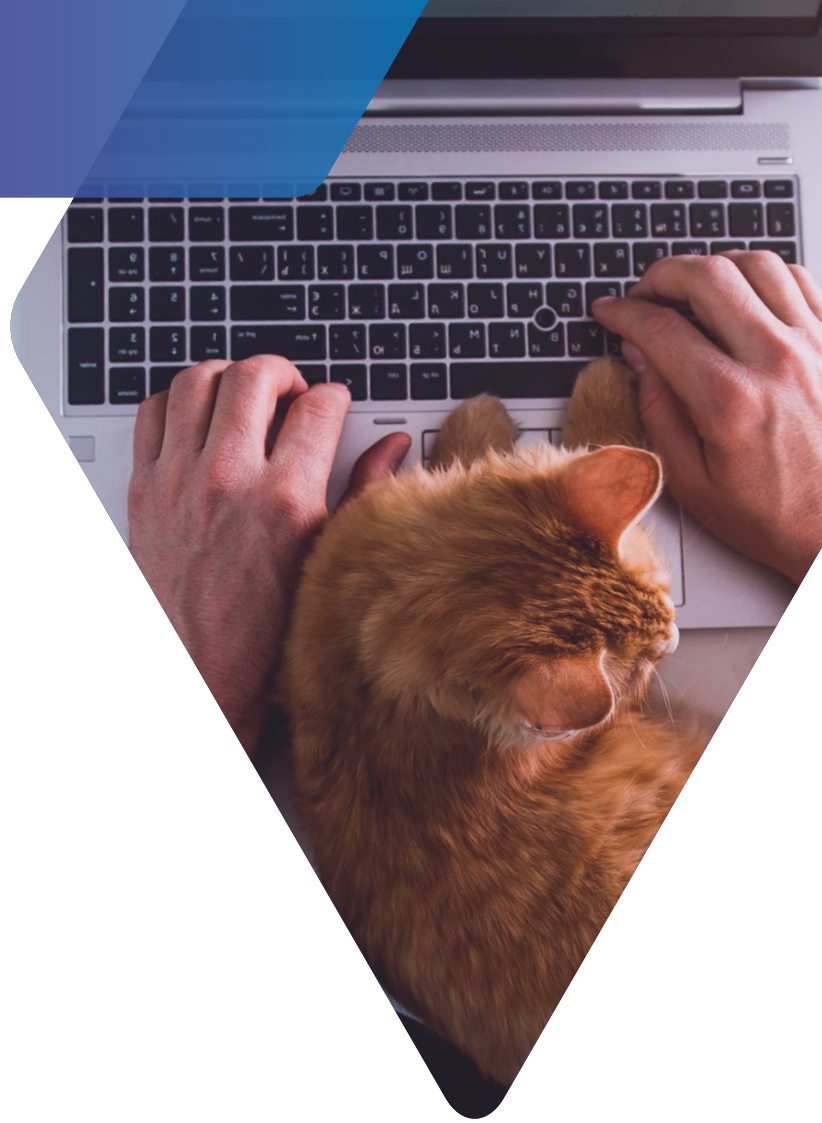
As governments mandated lockdowns, enterprises scrambled to implement effective work from home protocols in organizations that had never managed a remote workforce. Virtual desktops, new security safeguards, and access management were deployed quickly as network administrators worked in real time to define new KPIs and processes to understand and monitor telework at scale. Additionally, this was all achieved with the IT team also working remotely. In the scramble to keep businesses functioning, visibility suffered as networks, devices, and access were rearchitected.

In addition to business applications and services, the remote workforce stranded at home suddenly required food, furniture for home offices, and all manner of enrichment delivered digitally or by logistics to their living spaces. Applications like DoorDash, HelloFresh, Uber Eats, and other hybrid enterprises sprang up to serve this new population.

Healthcare and telehealth services also surged in reaction to a desperate need for no-contact medical consultations, vaccine distribution, community information, and more.

As part of its digital business predictions, Forrester estimated that by the end of 2021, 30 percent of Global 2000 companies would have a significant digital product portfolio and one in five would stand up digital divisions dedicated to launching "disruptive products to accelerate their transformation to full ecosystem participation."

A REMOTE WORK REVOLUTION



By the end of 2021, 51 percent of all knowledge workers worldwide are expected to be working remotely, up from 27 percent of knowledge workers in 2019, according to Gartner.

Gartner also estimates that remote workers will represent nearly one in three employees worldwide by the end of 2021. This is up from 17 percent of employees in 2019. Gartner defines knowledge workers as those who are involved in knowledge-intensive occupations, such as writers, accountants, or engineers.

Gartner defines a remote worker as an employee working away from their company, government, or customer site at least one full day a week (hybrid workers) or who work fully from home (fully remote workers).

With entire lives led online, network latency has become very expensive, in more ways than one. For one thing, time lost due to latency is not recoverable, and it is unrealistic, perhaps even dangerous, to expect zero latency.

Not only will **40 percent of users** stop engaging if an application or page doesn't load, IT must also contend with cybercrime that is up **600 percent**. Add staff shortages, a growing IT skills crisis, and other monitoring minutiae and it's easy to see why the old NPMD strategies are no longer adequate.

MANAGING THE CRITICAL NETWORK

Networks have become the backbone of communication for every organization. To keep up with the complex, hybrid architecture of today, businesses need to have a comprehensive network observability platform that embraces wire data, enriched and enhanced flow, and synthetic and active test for cloud sources, to ensure optimal application availability and delivery to stakeholders.

Digital innovation requires a reliable and secure network foundation to deliver its promise — and reliable networks start with basic observability.

THE FUTURE OF NPMD

Though network innovation has evolved from sending a few packets across the wire to today's vast, complex, and distributed global networks, future challenges may originate from a decidedly less technical source.

In the 2021 State of the Network Study, the top challenge for troubleshooting issues was not necessarily the tools themselves. More specifically, nearly 40 percent of respondents identified "finding the requisite talent to solve performance issues" as the number one challenge in troubleshooting applications.

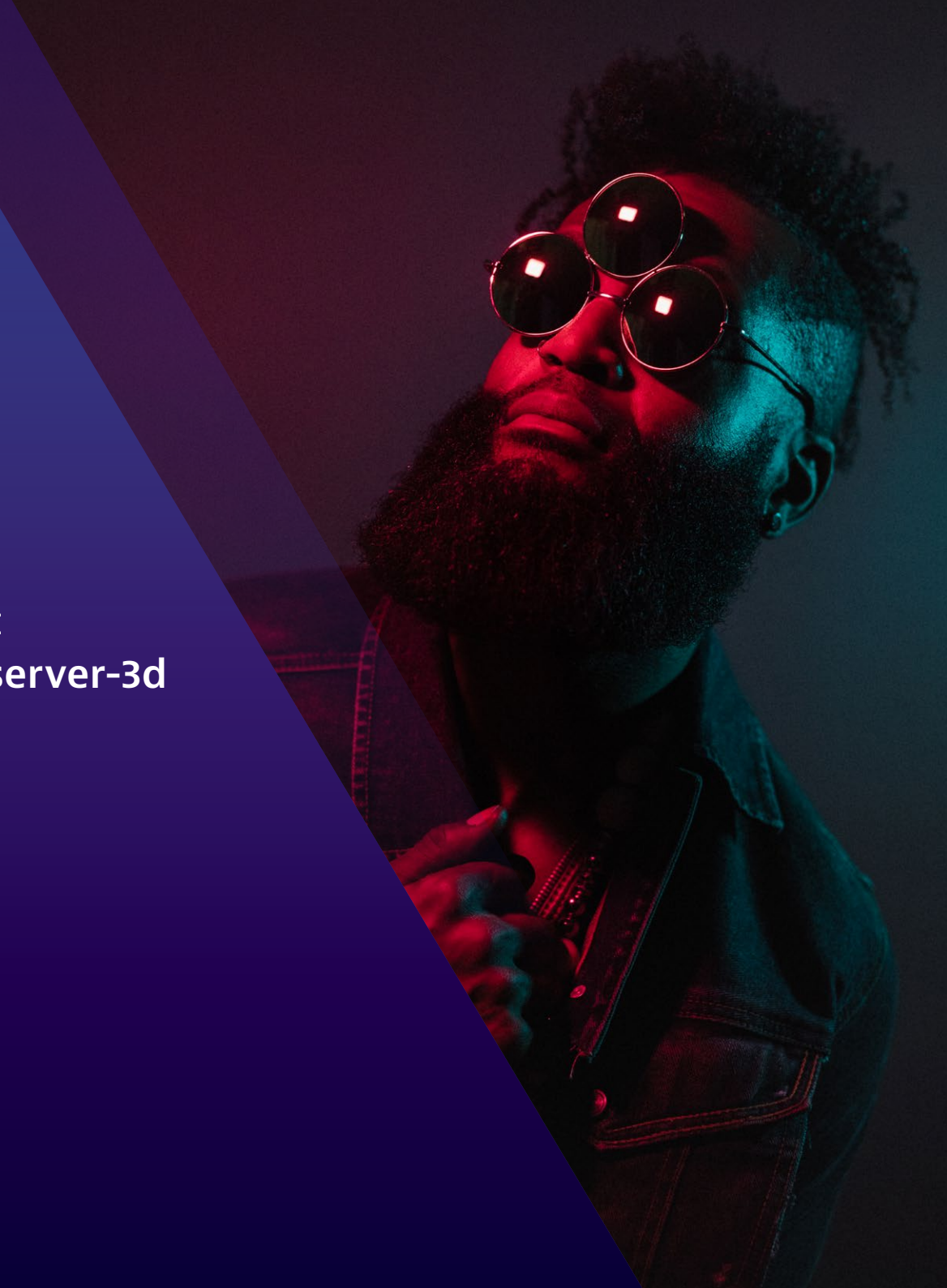
This statistic highlights the need to deliver more with less, leveraging artificial intelligence (AI) and machine learning to refine processes and scale up capabilities. A recent study by Tolly found that using the Observer executive dashboard capability and end-user experience (EUE) AI-based scoring, a single Observer operator could quickly complete problem isolation.

While this particular case study focused on a healthcare use case, Observer can provide custom dashboards for other verticals including finance, banking, and insurance with the ability to monitor performance for commonly used applications in those markets. In the case of financial services, for example, Observer can monitor apps for card processing, load origination, and account processing.

Observer allows for extensive customization which enables organizations to build out executive dashboards that meet their unique needs. Without the benefit of a solution like Observer, problem isolation can be time consuming and require cross-team support.

By leveraging the emerging capabilities of the most innovative NPMD tools, teams can help to satisfy business goals and overcome challenges across the entire IT enterprise life cycle, whether deploying new technologies, managing current resources, solving service anomalies, or optimizing IT asset usage.

NPMD has evolved a lot over the years, but with the right tools your organization can rise to the challenge. VIAVI Observer platform is your first line of defense. Learn more about the Observer platform today.



Learn more about the

New Age of Observability

and see the Observer Platform in action at:

viavisolutions.com/ptv/introducing-observer-3d

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