AN MSP'S GUIDE TO THE LATEST LAN DEVELOPMENTS

A spotlight on the latest trends that signal a new networking future

EPITIRO

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Within just three decades, we have witnessed the emergence of the modern business network, the proliferation of LANs and the explosive growth of the internet as we know it today.

As WAN, LAN and wireless LAN infrastructure have evolved, so the demands on data networks have intensified. In response, innovations in modern networking technology have continued to emerge to keep pace.

Here we look five key developments that are shaping the future of LAN networks.

The drive to network automation

Within the controlled environments of data centers, where hundreds of thousands of ports and patch cords are commonplace, automated processes are currently more advanced.

The LAN environment, by its very nature, is more chaotic, with changes often triggered by unpredictable human and device behavior patterns.

Network visibility, consequently, is a vital first step to understanding the root causes of problems and to underpin the implementation of automated management solutions.

The coronavirus pandemic shone a spotlight on the value of remote network monitoring and management.

Remotely controlled 'virtual technicians' can now be deployed across multiple locations – and managed in real-time – helping businesses and managed service providers (MSPs) dig beneath the surface of high-level performance data, enabling complete control over network testing and troubleshooting.

As we glance to the horizon, we can expect to see automation playing an ever-increasing role in the day-to-day deployment and management of networks, with software applications performing many of the tasks and processes previously carried out manually.

Drawing upon the principles of software-defined networking (SDN) within data centers and SD-WAN, software-defined local area networks (SD-LANs) promise much, automating, for example, complex switch configurations.

An effective SD-LAN calls for dynamic LAN optimisation, adaptive access, centralized cloud-based management, open APIs with programmable interfaces.

As tech developments emerge, network automation will increasingly become a central pillar of modernizing our post-COVID IT environments, helping reduce costs, downtime and site visits.

New technologies are not only making networks more scalable and secure, they are also providing opportunities for them to become more automated.

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The rise and rise of artificial intelligence

The increasing complexity and scale of networks has made artificial intelligence (AI) – notably machine learning (ML) and machine reasoning (MR) – a significant development for MSPs in their drive to deliver robust and consistent service levels.

AI offers the potential for the vast amounts of LAN network data to be utilized in the most effective way possible.

Virtual wireless network assistants, underpinned by powerful AI engines, might ultimately combine data, domain learning and syntax to predict network behaviors with greater accuracy and be able to make dynamic adjustments to optimize performance.

AI algorithms enable terabytes of data to be analyzed in just a matter of minutes to help simplify network troubleshooting. This can include the swift identification of elements within a network, such as devices, access points or switches, which relate to particular problems. Furthermore, ML and MR can also help predict when and where future network problems may occur.

As MSPs look to increasingly utilize AI in networking, businesses should benefit from time and cost savings, along with an improved end-user experience.
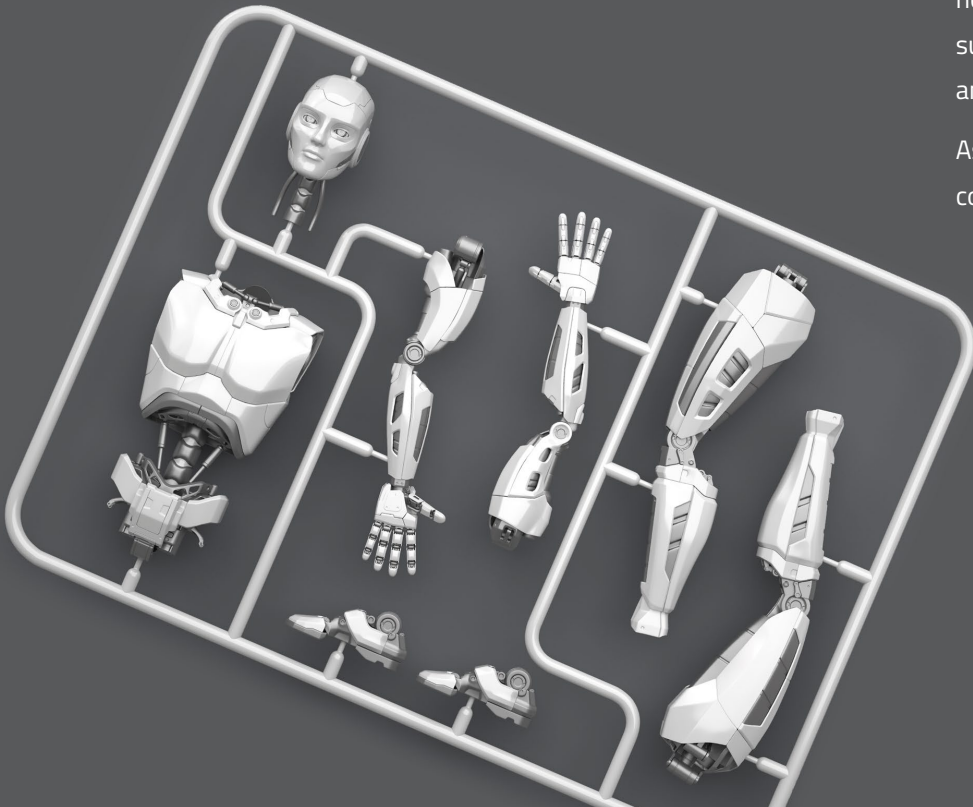
Networking tech to support Wi-Fi 6, 6E and beyond

With the advent of Wi-Fi 6, businesses and consumers alike can now view Wi-Fi as a legitimate alternative to the trusted Ethernet connection for stable data connectivity.

Network capabilities are constantly challenged however, and many wired networks may not yet be ready to support the new standard.

Connecting a Wi-Fi 6 access point to a standard gigabit network will mean users are restricted to 1Gbps connection speeds to their internal LAN or internet.

While everyone has different network requirements, switching infrastructure may need updating and for those looking to future-proof their setups, Cat 8 Ethernet cabling offers the best option in terms of shielding and performance, with 40Gbps speeds and 2,000MHz bandwidth, over distances of about 100ft (30m+).

Future-proofing Power-over-Ethernet (PoE), meanwhile, may call for the PoE++ standard (802.3bt).
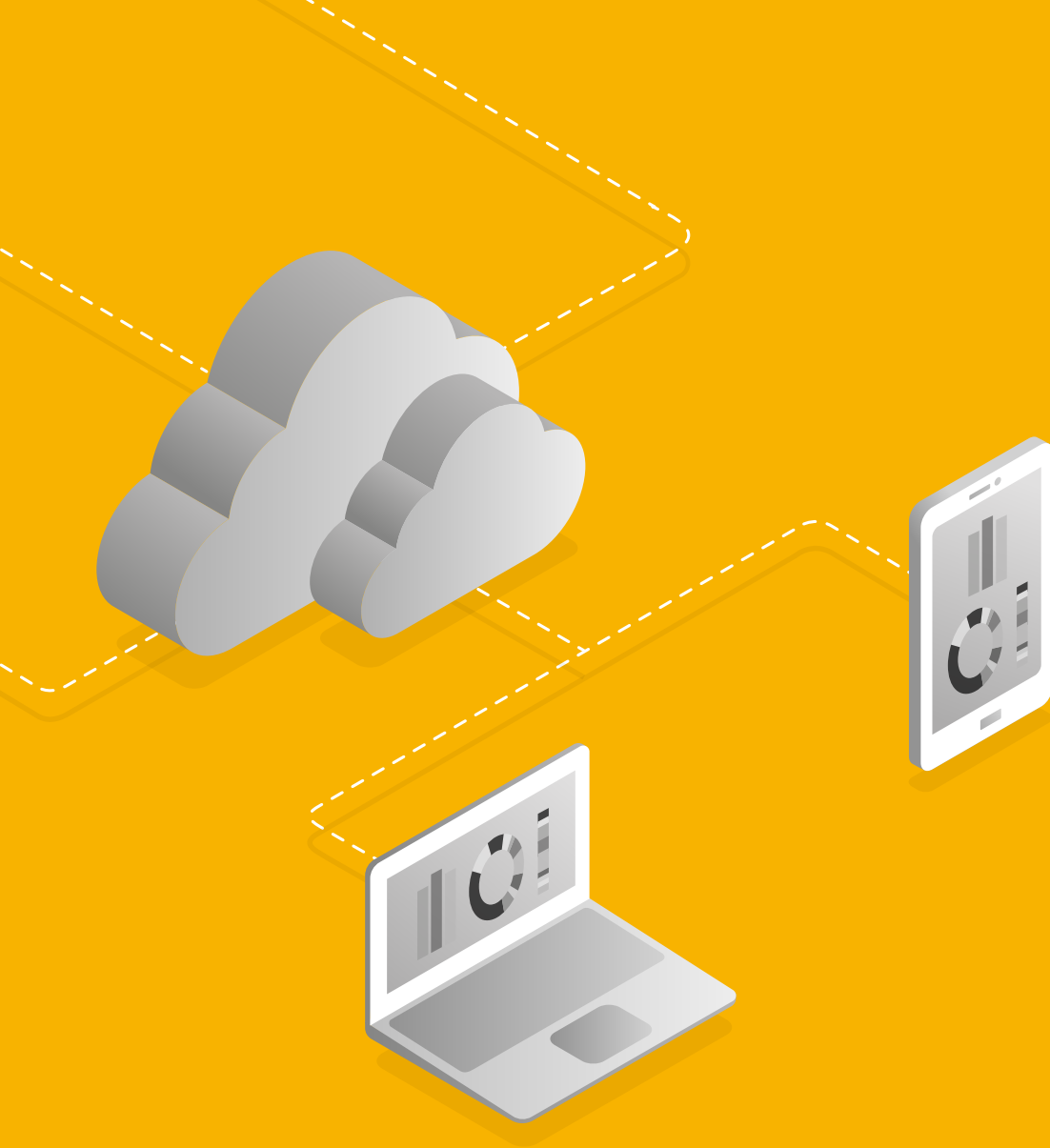
Multi-cloud networks: from SD-WAN to SASE

More than ever before, businesses are committing to the cloud. Indeed, remote access to computing resources proved an important enabler during the lockdown restrictions and social distancing requirements of the coronavirus pandemic.

An inevitable result of this trend has been an increasing reliance upon multiple cloud-based service providers.

Consequently, the future of networking calls for support for multi-cloud and hybrid-cloud (public and private) environments, which can include Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS) applications.

Traditional WAN (wide area network), hub-and-spoke architectures were designed to support applications that reside within corporate data centers, rather than supporting the vast amounts of traffic accessing cloud services.

New network solutions are therefore required. Enter stage left, SD-WAN - a software-defined approach to managing the WAN.

SD-WAN technology creates an overlay across the network, decoupling data and networking hardware from its control mechanisms. This enables software to determine the most effective way of routing traffic.

Although the technology may not be new, its ability to solve congestion and latency issues has led to MSPs starting to accelerate its roll-out.

Moreover, it can be coupled with remote, cloud-based internet monitoring and testing solutions that can be deployed cost-effectively across LANs and WANs.

The increasing opportunities for MSPs to offer optimized data connectivity at lower costs across customers' business networks means the trend to multi-cloud and SD-WAN is likely to continue apace.

Gartner's vision for the evolution of SD-WAN sees its capabilities combined with security and delivered as a cloud service. By doing so, Secure Access Service Edge (SASE) network architecture promises to cut complexity and cost yet further. Watch this space.

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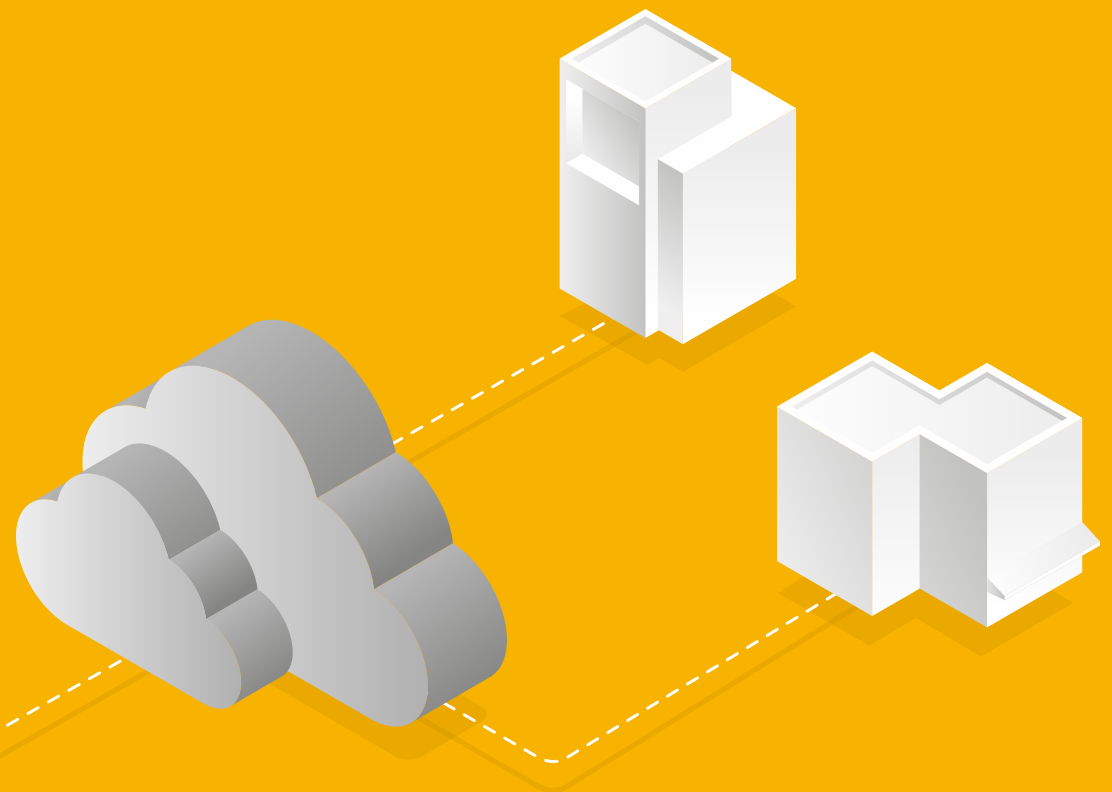
The user will increasingly demand uninterrupted, untethered availability, super-fast browsing and a jitter-free, crystal-clear digital experience.
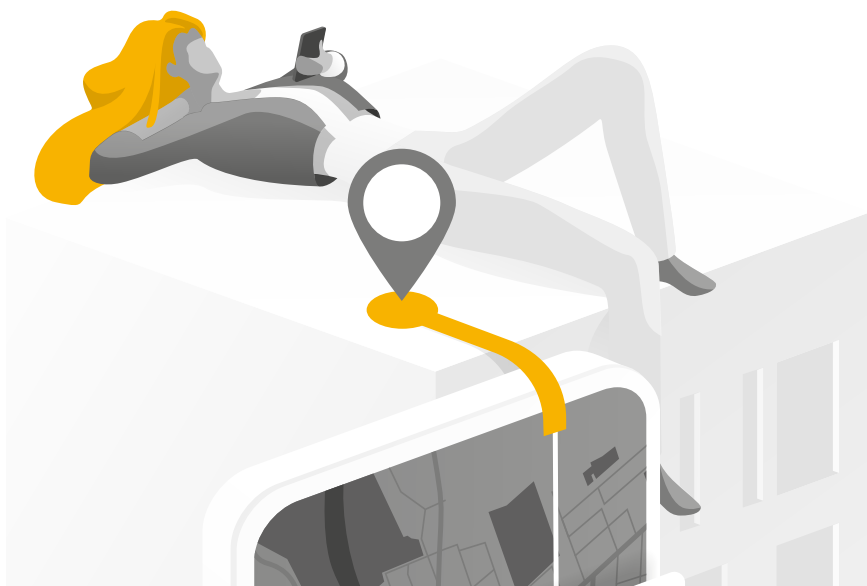
Seamless secure roaming between networks

Network convergence is gaining traction.

With the advent of 5G and Wi-Fi 6, the longstanding capability for cellular and Wi-Fi networks to work together for an enhanced user experience has now become more compelling than ever.

Wi-Fi 6 and public 5G networks are promising dramatic performance improvements to support the wealth of mobile applications and innovations, including high-definition video, AR, VR and future digital initiatives.

The user will increasingly demand uninterrupted, untethered availability, super-fast browsing and a jitter-free, crystal-clear digital experience.

The Wireless Broadband Alliance (WBA) – an international industry organization dedicated to improving interoperable Wi-Fi services – has a vision of making the world a "a single, giant Wi-Fi network, allowing billions of people and their devices to connect automatically and securely to millions of Wi-Fi networks".

The official launch of OpenRoaming last year by the WBA is set to play a big role here.

OpenRoaming, underpinned by industry standards such as the Wi-Fi Alliance's Passpoint, automates secure device roaming between different Wi-Fi networks that adhere to its framework. OpenRoaming automatically authenticates devices by using established identity providers, such as a service provider, device manufacturer or cloud ID.

The interoperable network also bridges the gap between Wi-Fi and cellular networks by allowing operators to offload traffic.

Other technologies supporting Wi-Fi roaming include Google's Orion Wifi, a Wi-Fi offload scheme that allows privately-owned public venues to monetize their W-Fi by selling capacity to cellular carriers. Orion Wifi will inform local networks of the carrier's price and quality and, where appropriate, automatically and securely connect the user.

Supported by easy to deploy network monitoring tools to help ensure optimal performance, integrated Wi-Fi 6 and 5G access architectures are the future, allowing users to seamlessly roam from airport to airport, or from office to hotel to restaurant or coffee shop without having to manually enter a single network credential.
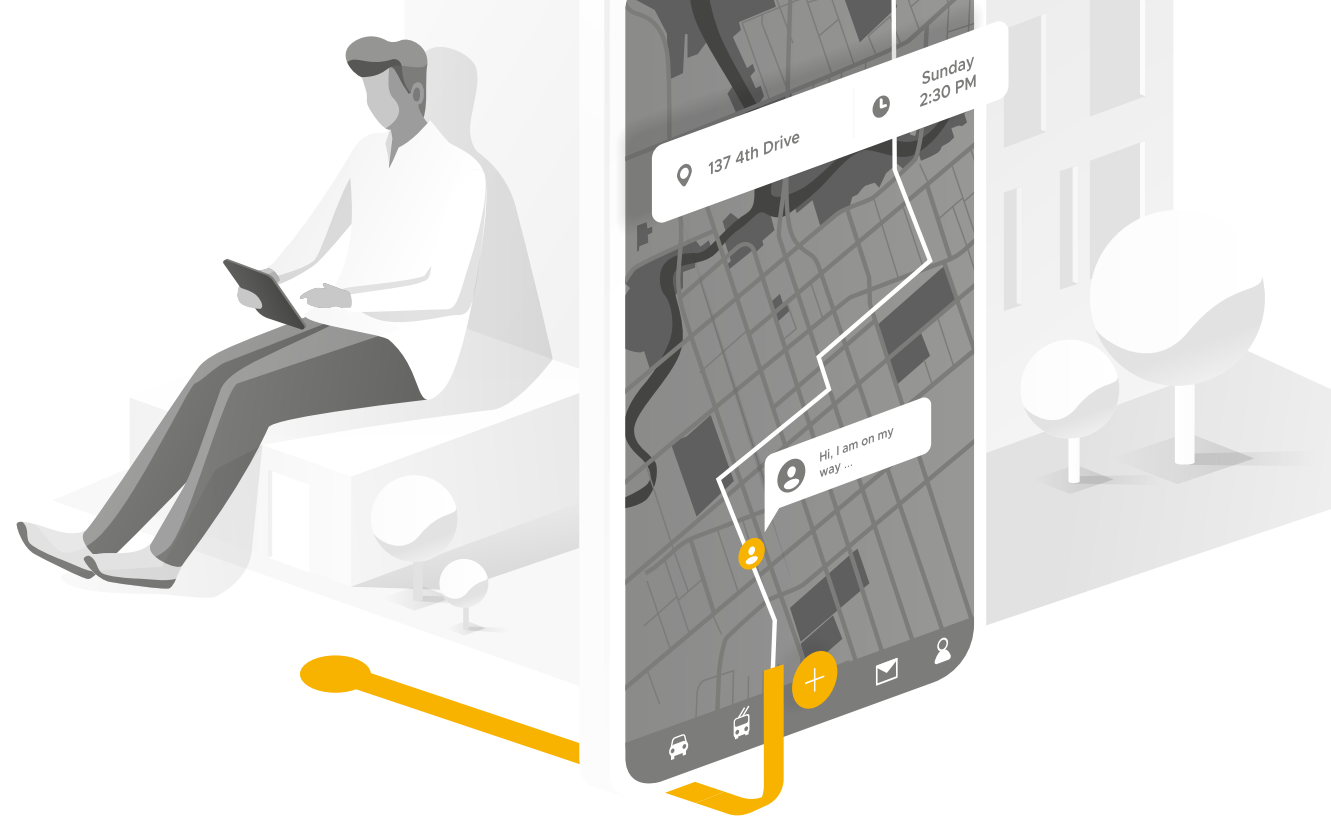
"There was a time, not so long ago, that when we discussed the potential for Wi-Fi roaming or the convergence of Wi-Fi 6 and 5G, we were met with blank stares," said WBA CEO Tiago Rodrigues. "Now, it's the complete opposite. Across the comms industry, we're seeing excitement building around these trends."
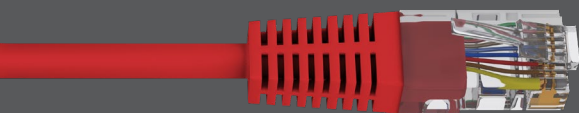
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