2021 Cloud Connectivity Buyer's Guide

CLOUD CONNECTIVITY NEEDS ARE CHANGING

In 2020, the COVID-19 pandemic reinforced the substantial value and necessity of cloud technology. Business decision-makers have quickly realised that networks are "the central nervous system of their businesses" — whether the businesses are delivering critical applications, enabling a distributed workforce, or maintaining global supply chains.[1] Facing the rise of mobility, virtualisation, and the Internet of Things (IoT), now is the right time for companies to reevaluate and modernise their IT infrastructure with more intelligent hybrid and multicloud connectivity platforms.

Today, ensuring connectivity to the cloud is as critical as the cloud itself. But cloud adoption is not without its challenges. Some organisations continue to access cloud services over the public internet while others use private connections. Overall, 25% of decision-makers report that network design and architecture are key concerns to address to become truly cloud-enabled.[2]

WHY COMPANIES MUST RESPOND

As the global economy recovers from the pandemic, organisations must factor in the growing reliance on cloud-based technologies and the best future-proof practices in connecting to these evolving cloud services. By doing so, companies can achieve many successful outcomes such as enhancing customer experiences, virtualisation, scaling remote workforces, automation efficiency, optimisation of services, reduced networking costs, and even the ability to launch new products and services at the speed of now.

WHY YOU SHOULD READ THIS REPORT

This study provides IT and business decision-makers with technical and operational insights to evaluate their firms' specific needs regarding cloud networks and connectivity platforms. This research uncovers the key attributes to consider when evaluating cloud connectivity solutions, while summarising the benefits of modern software-defined network architecture, which include:

Performance, Speed, and Availability **Scalability and Elasticity** **Simple Provisioning and Upgrade** **Automation and Orchestration** **Intrinsic Security and Privacy**

61% of decision-makers plan to implement or extend the use of software-defined networking technologies (SDNs) in the next 12 months.

Source: Forrester Analytics Global Business Technographics® Network And Telecom Survey, 2020

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1. PERFORMANCE, SPEED, AND AVAILABILITY
For most workloads, the internet is not enough

Cloud-enabled digital transformation remained atop the CIO agenda in 2020. Most decision-makers indicated they use both multicloud (more than one public cloud provider) and hybrid cloud environments (operating some combination of on-premises infrastructure and public, private, and hosted clouds). To access these workloads and achieve the necessary application performance, organisations must ensure reliable connectivity to a wide array of cloud-based services no matter where their customers, employees and partners are located. This is where network performance becomes a critical component to ensuring the availability of these services.

However, organisations using traditional network architectures (such as a centralised hub and spoke) can run into performance challenges by forcing cloud traffic to traverse paths that may not be optimised to achieve the required performance and reliability for a given cloud service workload. As services stretch across different clouds and geographies, not only does network traffic greatly expand, but service quality increasingly depends on the quality of connections between components of the service.

Without the right connectivity between clouds, the links between services are often slow and unreliable. They consume excessive bandwidth and are prone to high latency, preventing services from functioning as expected and thereby impacting employee and customer experience. So while an internet connection might be fine for occasional software-as-a-service (SaaS) access or mobile applications, business-critical applications require more than the public internet's best-effort approach.

Getting better performance by using or increasing as-a-service networking is key for 38% of decision-makers.

Forrester Analytics Global Business Technographics® Network And Telecom Survey, 2020

WHAT TO LOOK FOR IN A SOLUTION

› **Solutions that offer an interconnected platform at scale.** Network design and architecture must move toward becoming a business fabric.[3] Look for solutions that privately peer between all major cloud platforms and provide you the maximum in-cloud meshing capabilities to improve performance, reduce latency, and save valuable bandwidth across your existing enterprise and carrier-provided networks.

› **Solutions and services enabling high-speed connectivity.** Modern cloud-based solutions are not monolithic executables but a composition of cloud-native services, on-premises resources, and new code that links them together. Each service may have very different points of origin, amounts of traffic flowing between them, and different security and latency issues to overcome. Check for solutions that can support both scale-out jobs with high throughput, parallel I/O, and metadata-intensive jobs with low latency and serial I/O.

› **Solutions that can dynamically provision virtual cross-connects.** Building dedicated connections between your branch locations, data centre, and multiple clouds is expensive and complex, and installing direct private cabling between multiple clouds may not even be feasible. Look for solutions that use network virtualisation and software-defined networking to avoid reliance on data centres or on-premises infrastructure, thereby saving time, effort, and cost when creating each new cross-connection.

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2. SCALABILITY AND ELASTICITY
Being adaptable to real-time traffic patterns, data volume, and variety

Organisations are replacing core network and WAN-related technologies less often than internal distribution and LAN-related networking equipment. This, along with long-running telecommunications contracts for multiprotocol label switching (MPLS) and other traditional networking solutions, constrains firms' ability to easily increase or decrease both their network capacity (bandwidth and throughput/speed) and network reach (locations and connection options).

As most organisations now use services from a broader mix of cloud providers, shifting from traditional static cloud connectivity to a software-defined-network-as-a-service model presents a compelling means by which to dynamically connect multiple clouds without the complexity, expense, and delays associated with the provisioning of multiple physical connections.

42% of decision-makers are interested in using or increasing as-a-service network services to simplify their IT network and telco operational management.

36% are adding data centre sites or capacity to improve user experience across their networks.

Forrester Analytics' Global Business Technographics® Network And Telecom Survey, 2020

WHAT TO LOOK FOR IN A SOLUTION

› **Solutions that provide access to a wide vendor-neutral ecosystem.** Choosing cloud connectivity platforms leveraging a vast ecosystem will guarantee flexibility with a wide range of providers. Assess the level of network-neutrality and ecosystem agnosticism when selecting your cloud connectivity partner.

› **Solutions that enable a simple network as-a-service operating model.** Across cloud providers, slight differences exist in a variety of areas including the level of network automation, service-level agreements (SLAs), and managed services availability. Look for connectivity partners that are deeply integrated with service providers and have implemented a consistent layer of abstraction to simplify capacity management across public and private cloud connections, metro Ethernet, and data centre backhaul as well as internet exchange services.

› **Solutions enabling fast scalability and elasticity through dynamic network capacity.** Dedicated private connections along with traditional internet connectivity are designed to deliver a uniform level of performance and bandwidth. But organisations need the right level of flexibility and control to account for fluctuating digital demand. Look for on-demand solutions that offer scalable bandwidth and a transparent pay-as-you-use billing model.

› **Solutions enabling fast scalability and elasticity through extensive network reach.** Organisations must continue to balance traffic between public and private networks for flexibility and improved cost management. Look for providers that allow you to use their network to connect to infrastructure in any facility attached to the network, not only cloud providers but also colocation facilities, owned data centres, and edge locations such as branch offices. Leveraging the reach of a cloud connectivity partner will mean a smaller network device footprint at each point of presence, allowing you to commission and decommission sites more easily and inexpensively.

› **Solutions that can work with existing network investments.** Many organisations look to extend contracts and relationships with carrier companies — or leverage favourable cross-connects adjacent to existing infrastructure from colocation vendors — rather than work with a new provider. As businesses continue to evaluate opportunities to outsource commodity network services and use internal employees more strategically, consider cloud connectivity partners that can support interoperability of hardware and software-defined solutions. Doing so will future-proof legacy investments and allow you to transform your enterprise network over time.

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3. SIMPLE PROVISIONING AND UPGRADE
Increasing self-service access with ease of management

Network virtualisation radically transforms how organisations manage their network infrastructures by eliminating hardware purchases, upgrades, and maintenance. It also reduces associated labour costs (e.g. configuring and managing network devices, ordering capacity from telecommunications companies, designing circuits, and estimating capacity demand), generating productivity and time savings. Freeing up time for value-added activities drives higher employee engagement and encourages more innovation, ultimately delivering better business results.

Modern software-defined network architectures further simplify network provisioning. Organisations can more easily build and deploy their connectivity in their hybrid or multicloud environments while managing their connections in a single portal or via APIs.

Providing more flexibility to the business (39%) and focusing IT network teams on core competencies (37%) are top drivers for adopting as-a-service network.

Forrester Analytics' Global Business Technographics® Network And Telecom Survey, 2020

WHAT TO LOOK FOR IN A SOLUTION

› **Solutions that offer dynamic provisioning and are highly reactive to demand.** Deploying a modern software-defined network architecture helps overcome challenges associated with multi-region and intercloud connectivity. Look for fully programmable solutions with self-service capabilities (e.g., management by workload, the ability to apply policy, traffic control, and intelligent routing) to accelerate deployment and provisioning, scale up or back as needed, and reduce the time spent by network administrators on planning and provisioning, as well as researching connectivity and service provider options.

› **Solutions that automate provisioning and configurations of dedicated connections in real time.** Select a solution that automates connectivity provisioning and configurations via both an easy-to-use portal or open APIs, especially over partner and proprietary networks thereby simplifying and accelerating connectivity to any partner or vendor on their network, when you leverage their ecosystems, these providers do not require you to own equipment on both sides of a connection or to develop specialist in-house expertise.

› **Solutions that take the entire IT physical landscape into consideration.** Ultimately, the entire enterprise needs effective connectivity to critical clouds, including branches and campuses. Look for solutions whose approach is data centre-neutral and highly distributed, supporting branch office connectivity, and offering SD-WAN-enabled interconnection.

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4. AUTOMATION AND ORCHESTRATION
Software-defined networking (SDN) is the foundation for responsiveness

As enterprises continue to extend their IT footprint beyond data centres into multiple physical and virtual locations, managing integrations and orchestrating services are only going to get more complex. Increasingly, firms use infrastructure-as-code (IaC) techniques to maximise the cost benefits from the flexible, scalable, and elastic nature of as-a-service cloud offerings. Used in conjunction with other automation and continuous delivery processes — such as agile development, DevOps, and DevSecOps — as-a-service cloud offerings can drive up release velocity and innovation cycles.

With interconnection demand and growth continuing to soar, businesses will attempt to unify their complex landscapes of on-premises, cloud and branch or edge connectivity while seeking to minimise traffic though the public internet by establishing dedicated cloud connections. When it comes to managing resources and capacity, the differences between cloud networking and traditional connectivity are stark. The cloud offers on-demand capacity, auto-scaling, and pay-as-you-consume economics, all of which can be predefined, scripted, and provisioned via simple-to-use portals or API calls. In contrast, traditional connectivity exists in a physically constrained world where software-defined networking-as-a-service concepts are understood but not widely adopted.

Cloud-enabled projects that are based on traditional connectivity models will inevitably face delays when adjusting network services and security controls for production release, particularly if that implementation requires modification of dedicated, physical circuits built with traditional hardware and telecommunication services. The benefits of cloud automation and orchestration will quickly erode due to a lack of complementary cloud-equivalent network-as-a-service capabilities.

82% of decision-makers say that software defined WAN (SD-WAN) is a top organisational priority in 2021.

Forrester Analytics' Global Business Technographics® Network And Telecom Survey, 2020

WHAT TO LOOK FOR IN A SOLUTION

› **Solutions enabling a multicloud environment.** Providing public cloud interoperation is a key component of network orchestration. For greater responsiveness and agility, abstract the need for deploying and configuring physical equipment by prioritising virtual infrastructure through a single network interface to data centres, cloud providers, and internet exchanges all around the world.

› **Solutions that offer open APIs.** Ultimately, the entire network will need to be automated and orchestrated. But it is unrealistic to have one solution control your business fabric. Sections of networks or services will come from various parties, including carriers. Look for solutions that offer APIs and adapters between different controllers, orchestrators, and managers.

› **Solutions that help realise a Virtual Network Infrastructure (VNI) vision.** Like cloud computing, VNI heavily emphasises software, and it binds the full technology ecosystem in ways never before possible, connecting on-premises infrastructure, cloud, partners, and customers. Various elements of next-generation networks are available now, but you can't assemble them in the same way, so look for solutions that can connect the wide variety of technology elements in the extended enterprise (including local WAN providers) and supports Network Functions Virtualisation (NFV) such as virtual routers and SD-WAN device hosting.

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5. INTRINSIC SECURITY AND PRIVACY
Native security features designed into the network infrastructure

As organisations rapidly adopt cloud-based infrastructure, platform, and application services, cloud security continues to be a major concern. Indeed, addressing security and privacy are the top challenges when deploying and using multiple cloud platforms. As a result, organisations need to not only validate the security posture of their cloud providers' environments (security in the cloud) but also provide a way of securely connecting to cloud services and infrastructure (security to the cloud).

Many of the world's biggest cloud providers have security capabilities far beyond those typically adopted by the businesses they serve, thereby ensuring a high level of security in the cloud. As a result, any apprehensions organisations might have regarding the notion of their data residing at rest within the cloud have diminished.

However, when it comes to addressing security to the cloud, it is an organisation's chosen connectivity option that ultimately determines how safe data is while in transit. Although the public internet can be a cost-effective means to access many clouds simultaneously, it comes at the expense of lower reliability and performance, a lack of control, and being more vulnerable to security risks. For example, running applications through a VPN tunnel over an internet connection to the cloud can hide indicators the network needs to identify malicious activity.

Implementing private connectivity between an organisation and its many cloud providers strengthens network security intrinsically, through the use of reliable dedicated connections that are closed to the public. Private connections also offer optimal network design by enabling direct paths to cloud environments, avoiding the public internet, which is highly vulnerable to cyberattacks, malware, and other infosec risks. However, the underlying architecture of private connectivity will impact the management, flexibility, and cost characteristics of the connection, with modern software-defined networks delivered as-a-service providing the most operational advantages.

29% report security concerns in deploying and using multiple cloud platforms and environments.

Forrester Analytics' Global Business Technographics® Network And Telecom Survey, 2020

WHAT TO LOOK FOR IN A SOLUTION

› **Solutions that provide freedom and control.** Direct connections to a single cloud provider only connect to that provider's services, limiting your freedom to access a broad range of vendors without additional direct connections. Look for solutions that offer flexible connectivity to multiple clouds, blended with the reliability and control offered by direct connections to a single cloud provider.

› **Solutions that can support hybrid cloud architectures.** Organisations don't only need connectivity to the cloud, but also to and from external hosted private clouds, existing data centres, and colocation facilities. Check that the cloud connectivity provider can support these different use cases through all points of presence.

› **Solutions that enable local connections to country-compliant cloud on-ramps that achieve data sovereignty requirements.** Countries around the world are moving beyond data sovereignty. They aim at delivering a sovereign public cloud by enacting legislations and information security standards for improved cloud computing such as the 2018 CLOUD Act in the US, and the UK's Crime (Overseas Production Orders) Act, 2019. To respond to these shifting legal positions, and to the rapid changes happening in the market through the widespread adoption of microservices, serverless computing and containers, it is critical that you partner with service providers who can guarantee access to your data would only occur within the legal framework of the jurisdiction in which your data physically resides.

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Conclusion

Cloud adoption is straining the definition of the enterprise network. Rather than a tightly controlled, fully private network, organisations now face more complex multisourcing and management issues. But firms can address many of these challenges by selecting the right connectivity option and provider, thereby simplifying network management and bringing the benefits of cloud computing to the network.

Due to latency sensitivity of workloads driving the need for private connections, organisations should evaluate providers based on peering location, required bandwidth, and accessibility of additional resources.

Cloud connectivity providers over time have expanded interconnection services into a variety of cloud service providers as well as infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), and software-as-a-service (SaaS) solutions providing storage, security, disaster recovery, unified communications, and more.

Having access to a wide array of providers and services through one low-latency software-defined network creates more opportunities for organisations and providers alike to control traffic costs, simplify integrations, and make the most of dynamic network provisioning.

The flexibility organisations gain from this type of approach lets them make business decisions quickly and then act on them at cloud speed. While your competitors are wrestling with outdated sourcing models, you can be providing your customers with faster, more capable services — leaving your competition defeated and likely falling further behind.

The network matters more than ever. No longer just a commodity, it has become the fabric of digital business.

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Appendix A: Methodology

In October 2020, Megaport commissioned Forrester Consulting to conduct research regarding companies' current usage and requirements for cloud connectivity solutions. Megaport commissioned the use of Forrester's Business Technographics® data to pull insights specific to network and cloud connectivity. Surveys used include the Forrester Analytics Global Business Technographics Infrastructure Survey, 2019 and 2020, and Networks And Telecommunications Survey, 2020.

Appendix B: Endnotes

[1] Source: "Adapt Your Network Strategy To Thrive In A Shifting Ecosystem," Forrester Research Inc., July 28, 2017.

[2] Source: Forrester Analytics Global Business Technographics® Global Infrastructure Survey, 2019.

[3] Business fabric: A business networking fabric is a combination of network components interweaving layer 1 through layer 7 network hardware, software, and services to interconnect users, data, and applications throughout the entire business, based on business policies through a networking orchestration system.

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