Critical Capabilities for Network Services, Global

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Initiatives: Cloud and Edge Infrastructure; IT Services and Solutions

Performance, cost optimization and innovation remain at the forefront for I&O leaders as they evaluate WAN services across a variety of use cases. This research assesses providers’ offerings for MPLS, internet and broadband services, carrier-based cloud interconnect, and managed uCPE/NFV and SD-WAN.

This Critical Capabilities is related to other research:

Magic Quadrant for Network Services, Global

Overview

Key Findings

- While prices for strategic network services continue to decline annually, the COVID-19 pandemic has caused a deeper look into contract flexibility, strong exit language and cost optimization.

- Changes in data flow from increased cloud adoption are transforming WANs globally. All service providers offer carrier-based interconnect (CBI) solutions for direct connectivity into key cloud providers, though coverage varies widely.

- The market remains hesitant to adopt network function virtualization (NFV)-based WAN edge as enterprises continue to conclude that universal customer premises equipment (uCPE)-based NFV is difficult and less financially compelling, whereas WAN-based NFV nodes are more cost-effective.

- Competitive RFP processes involving multiple providers typically yield savings up to 20%, compared with incumbent-provider negotiations.

Recommendations

I&O leaders evaluating cloud and edge infrastructure services should:

- Focus on greater business outcomes than direct savings on network connectivity by prioritizing providers that offer contract flexibility, network agility and functionality, such as cloud interconnects or NFV node strategy, over those simply offering the lowest price.
Align network sourcing with your cloud application strategy by ensuring the provider's carrier-based cloud interconnect (CBCI) arrangements are both available in your regions and proven to optimize performance and minimize latency for the cloud applications that your organization uses.

Conduct a pilot to validate software-defined WAN (SD-WAN) and node-based NFV performance by connecting branches to multiple remote applications.

Improve price competitiveness by issuing RFPs to multiple bidders; by inviting nontraditional providers that meet your requirements for WAN site coverage, features, innovation, performance and support; and by informing SPVM of current market pricing for the services being purchased.

### Strategic Planning Assumptions

- By 2025, to enhance agility and support for cloud applications, 65% of enterprises will have implemented software-defined wide-area networks (SD-WANs), compared with about 30% in 2020.
- By 2025, to deliver flexible, cost-effective scalable bandwidth, 40% of all enterprise locations will have only internet WAN transport, compared with approximately 15% in 2020.
- By the end of 2024, 30% of enterprises will employ SDCI services to connect to public CSPs, up from less than 10% in 2020.
- Through 2024, less than 30% of SD-WAN solutions will be delivered on universal customer premises equipment (uCPE), due to performance, price and complexity.

### What You Need to Know

While the need for enterprise network leaders to improve network agility and meet rapidly changing business demands for new applications remains critical, this year has given credence to a few new and notable trends. Clearly the network and its reliability remain critical, now more than ever, given the fluid requirements of remote users including work at home, cloud services and digital business. As a result of the pandemic, Gartner clients have grown more concerned about cost optimization, network rightsizing, and greater flexibility both operationally and commercially in terms of sourcing network services.

Gartner defines the network services market as the delivery of fixed corporate networking services with either regional or global coverage. Critical Capabilities research gives a relative measure of a provider's ability to meet certain criteria for specific use cases during the prior year, rather than examining provider performance year over year. It reflects current predominant enterprise use cases as defined by Gartner, not simply what providers offer. Gartner finds the majority of enterprises still buy most of their transport network services from their overlay provider, especially when using a hybrid underlay, mixing Multiprotocol Label Switching (MPLS) and internet. This integrated sourcing approach is the primary focus of this Critical Capabilities. Enterprises looking for pure managed overlay services can consider most providers in this report and also those in the Critical Capabilities for Managed Network Services, which addresses stand-alone managed overlay services.
The global pandemic has also had a significant impact on network services sourcing. Naturally, enterprises are keen both to support employees and tightly manage expenses during the next six to 12 months, including WAN and internet-related expenses. Gartner has observed a few trends as a result of the pandemic:

- When technically feasible, clients are replacing dedicated services with broadband services in the hopes of finding immediate cost savings.
- Clients implemented broadband in record numbers to support telework. We see two phases: the immediate rush to quickly support teleworkers, followed by a more proactive, planned approach to acquire the most appropriate technologies and ensure adequate ongoing performance.
- Clients are eager to negotiate greater contract flexibility, including provider relaxation of spending commitments, which will enable them to scale and modify their services at will without any financial penalties to account for potentially significant shifts in business and workforces.
- While MPLS migrations have been in flight, many have found themselves accelerating their plans to move to an all-internet WAN environment. The growing use of internet-only WAN designs is increasing the demand for providers’ own internet services while partnering with local ISPs as needed to extend geographic reach.
- Others put their SD-WAN plans on pause, due to initial capital outlays needed and the shift to telework, which usually doesn’t require SD-WAN.
- Migration to cloud is on an accelerated schedule, in support of innovation, agility and growth.

In this Critical Capabilities for Network Services, we analyze five use cases:

- Regional WANs for each of the four major markets, including North America, Latin America, EMEA (Europe, the Middle East and Africa) and Asia/Pacific (APAC), that are typical in many midsize enterprises (MSEs) or larger enterprises (50 to 200 sites).
- A global WAN requirement for larger multinational organizations with over 200 sites and that span at least two continents.

Analysis

Critical Capabilities Use-Case Graphics
Vendors’ Product Scores for Intra-North America Network Use Case

Product or Service Scores for Intra-North America Network

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As of 26 February 2021

Source: Gartner (February 2021)
## Vendors’ Product Scores for Intra-EMEA Network Use Case

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Vendors

**AT&T**

AT&T is a Dallas, Texas-based network service provider (NSP) with a broad networking portfolio, including a global MPLS and internet network that supports port speeds up to 100 Gbps. Notable 2020 enhancements include:
AT&T provides a choice of three standard SD-WAN appliances and five uCPE controllers. Virtual network functions (VNFs) include routing, SD-WAN, security, WAN optimization, performance monitoring, session border controller (SBC), Internet of Things (IoT) and Wi-Fi controller. AT&T’s NetBond for Cloud offering directly connects to 13 cloud providers (CSPs) in nine countries. AT&T scored the highest in the Intra-North America use case.

Notwithstanding the improvements noted above, Gartner clients continue to express dissatisfaction with the “Day 2” AT&T experience: network quality, time to respond, time to repair and customer support. Particularly, clients interested in managed SD-WAN should inquire about AT&T’s use of third parties for Day 2 support. However, given the breadth of its portfolio and client-reported select recent improvements in select KPIs, enterprises of all sizes should evaluate AT&T for global networking services.

**BT**

Headquartered in London, BT’s Global unit offers a comprehensive set of global managed MPLS, internet, Ethernet, SD-WAN, cloud networking, uCPE and NFV services. Noteworthy 2020 enhancements to its portfolio include:

- Expanded internet services to over 90 countries through 225 direct ISP partners. The provider is extending automation to improve KPIs and reduce the prices it pays to local ISPs. As a result, it is now able to renegotiate internet prices with its customers every six months.

- Introduced a portfolio of telecommuting offers that provide a range of basic and optional services based on customer personas. Depending on the persona, the offer can include multiple access connections, SD-WAN hardware, overlay security services, monitoring services, collaboration and devices.

- Expanded service in China to now offer nationwide domestic IP VPN and ISP services, along with a choice of SD-WAN services. Its licenses enable the joint-venture entity, BT China Communications, to contract and bill customers’ local entities for both domestic IP VPN/MPLS services and internet services.
BT’s MPLS network is nearly twice the size of its internet backbone outside North America, and offers both consumer and enterprise broadband service in over 160 countries and 4G/LTE in 28 EMEA countries. BT has announced a disposal of domestic businesses and networks in France, Spain, Italy and Latin America in order to support a more “asset light” strategy. BT now offers its customers a choice of five SD-WAN appliances. For its NFV service, BT supports two uCPE vendors and offers routing, security, SD-WAN, WAN optimization and performance-monitoring VNFs. BT also introduced home-worker SD-WAN devices into the portfolio as either a managed or direct sale option. BT has strengthened its cloud interconnect offering with direct connections to eight public cloud providers (CSPs) in 33 countries.

As a result of the divestiture of its domestic operations in some markets, BT is retaining access to domestic infrastructure via a wholesale agreement. BT has also entered into a preliminary agreement to sell two less-strategic BT business units in Italy. While BT is well-suited to serve clients with diverse connectivity needs globally, attention should be paid to specific geographic requirements being met directly by BT.

China Telecom Global

China Telecom Global (CTG) is a subsidiary of China Telecom based out of Hong Kong. In addition to excellent domestic coverage in China, CTG offers regional connectivity in Asia/Pacific and evolving connectivity in countries outside of that region. Noteworthy 2020 enhancements include:

- Refocused on a single SD-WAN vendor (Versa) for global services and expanded its SD-WAN gateway coverage.
- Improved its online self-service portal for cloud connectivity.
- Enhanced internet connectivity to its data centers.

CTG offers above-average MPLS and internet connectivity in China and across APAC, but it is not yet on par with leading providers in other regions. MPLS/cloud gateways in 15 locations across APAC, Europe and North America provide connectivity to seven major cloud providers. Internet access includes dedicated internet, enterprise broadband and 4G/LTE; however, geographical connectivity is average.

CTG offers managed SD-WAN based in eight APAC countries, seven European countries and across North America, but no coverage in Latin America. CTG does not offer any NFV-based services or any managed uCPE services; it relies on traditional CPE appliances.

CTG has less experience with large, complex and distributed global networks than its peers in this research. Therefore, it is mostly suited for midsize networks with less complex needs. For multinational corporations (MNCs) with extensive requirements in China, CTG offers a strong domestic network and local support capabilities.

Colt Technology Services
Based in London, Colt Technology Services (Colt) offers managed MPLS, Ethernet, internet, SD-WAN, uCPE and NFV services over its recently launched Colt IQ Network. Noteworthy 2020 enhancements include:

- Continued to expand bandwidth capacity access for MPLS IP VPN sites in Australia, Eastern Europe and the U.S.
- Improved its online customer portal and expanded on-demand self-service capabilities.
- Expanded its uCPE portfolio, with the addition of two firewall VNFs and one WAN optimization VNF.

Colt offers above-average MPLS connectivity in Europe and APAC, but it is not yet on par with leading providers in other regions. In early 2020, Colt launched multicloud connectivity for SD-WAN and SD-WAN VoIP support. MPLS/cloud gateways in 40 cities across APAC, Europe and North America provide connectivity to nine major cloud providers.

Colt offers managed SD-WAN based on one vendor across all regions, with six SD-WAN gateways across Europe, North America and APAC. Outside of Europe and APAC, the main SD-WAN connectivity is public internet. It has deployed 34 NFV nodes in Europe, North America and APAC, and none in other regions. uCPE is mainly in Europe and select APAC countries.

Colt has less experience with large, complex and distributed global networks than its peers in this research. Therefore, it is mostly suited for midsize networks with less complex needs. For multinational corporations (MNCs) with extensive requirements in Europe and APAC, Colt offers a strong regional network and local support capabilities.

**Deutsche Telekom**

Deutsche Telekom is a Bonn, Germany-based global network service provider with strong coverage in Europe. It offers a full breadth of MPLS, internet and SD-WAN services for enterprise customers. Noteworthy 2020 enhancements include:

- Launched a ServiceNow-based customer portal for the first very large customer for worldwide SD-WAN services.
- Introduced new technology partners: Citrix-based SD-WAN to midsize customers in Germany, and Versa, Fortinet and Cisco Meraki in select European markets.
- Added new direct cloud connectivity from Frankfurt to Amazon Web Services (AWS) and Microsoft Azure cloud for MPLS customers.

Deutsche Telekom offers highly concentrated European global MPLS and internet services, though its internet footprint outside Europe lags others in this research in terms of points of presence (POPs). Enterprise-grade broadband is widely available, whereas 4G is available only in select markets. Cloud-
based interconnect arrangements are provided through Deutsche Telekom’s universal cloud gateway, which connects to five public cloud services in seven cities in North America, Europe and Asia/Pacific. This coverage remains limited compared with most providers.

Deutsche Telekom offers two flavors of SD-WAN: IntraSelect SD-WAN and Smart SD-WAN. IntraSelect SD-WAN is based on Cisco Viptela, and its Smart SD-WAN is a portfolio of managed SD-WAN services based on multiple technology platforms across four vendors. Each technology has specific competency centers located in the U.S. and the Netherlands (Aryaka), Austria (Silver Peak), Germany (Juniper Networks), and the U.K. (VMware [VeloCloud]). First- and second-level support activities are operated in Hungary and Slovakia. Deutsche Telekom supports several VNFs in 17 markets through its own POPs, including routing, firewall, SD-WAN, WAN acceleration and monitoring. Deutsche Telekom still does not offer any native network-based NFV solutions.

Deutsche Telekom’s geographic footprint is not as expansive as some of its competitors’, making it difficult for it to address large-scale global requirements outside of its core markets. Enterprises with extensive requirements in Europe will find Deutsche Telekom suitable for their network services.

GTT

GTT is a U.S.-based network service provider with headquarters in McLean, Virginia. It has a rich set of network service offerings. Noteworthy 2020 enhancements include:

- Implemented advanced service monitoring and proactive ticketing based on site-specific performance thresholds, automatically generating alarms if performance fails to meet the SLA.
- To improve internet security, deployed Resource Public Key Infrastructure (RPKI)-based route origin validation filtering on all BGP sessions with both clients and peers throughout its global network footprint. GTT was among the first global Tier 1 operators to apply RPKI.
- Implemented a broad range of initiatives to improve the customer experience. For example, it employs a customer satisfaction index that provides a single snapshot data point of the health of the customer by incorporating historical data on order volume, trouble tickets, billing activity, survey responses and other customer touchpoints.

GTT’s MPLS and internet reach is twice the average of those included in this research, with POPs more readily available in the U.S. and Europe, and with business-class broadband service available in 13 countries. Consumer-grade broadband and 4G offerings are available in most markets. GTT offers managed SD-WAN from three appliance vendors. NFV/uCPE is available globally from both uCPE devices; VNFs include SD-WAN, security, WAN optimization and routing. NFV nodes are located in 40 cities in 14 countries.

GTT’s cloud connectivity employs a combination of direct and exchange-based connectivity. Direct connectivity is available in six countries to three public cloud providers (CSPs). Exchange-based connectivity is available in 16 countries to an additional 24 CSPs.
In 4Q20, GTT agreed to sell its Pan-European and North American trans-Atlantic subsea and fiber network and data center infrastructure, although it is preserving its global IP backbone. Clients should evaluate GTT for global networks, particularly those requiring strong coverage in North America and Europe.

**Lumen**

In 3Q20, CenturyLink was rebranded as Lumen. Headquartered in Monroe, Louisiana, Lumen is a major U.S. network service provider with extensive global networking capabilities. Noteworthy 2020 enhancements include:

- A Delivery Accelerator program to process configurable, on-network bandwidth upgrades within hours, and extended this capability to a completely automated process that all customers can use to upgrade their bandwidth.
- A completely automated capability called the “digital buying experience” that allows customers to design their own network, including circuit paths and diverse implementation.
- Automated portal enhancements to enable customers to connect and modify their entire WAN to cloud environments in real time via self-service.

Lumen's MPLS and internet services offer substantially greater reach versus its peers in this research, especially in North America and Latin America. Lumen also launched Remote Connect to support home workers. Wireless LTE (4G) is offered as a backup/rapid deploy access option, while a broad range of broadband services, enterprise and consumer grade are also available. Lumen offers managed SD-WAN from two appliance vendors. Its NFV/uCPE is available globally on both uCPE platforms; VNFs include SD-WAN, security, monitoring, analytics and SBC. NFV nodes are located in 29 countries.

Its direct cloud connectivity is available in 21 countries across 59 cities to six public cloud providers (CSPs) via MPLS and/or Ethernet, depending on the city. Lumen scored the highest for the Intra-Latin America use case.

Its network-on-demand service is among the strongest of providers studied in this report. Multinational enterprises with global or numerous geographic requirements should evaluate Lumen.

**Masergy**

Masergy is a U.S.-based solution provider with corporate headquarters in Plano, Texas. It offers hybrid networking solutions globally that leverage proprietary and third-party vendor hardware to deliver integrated managed SD-WAN, MPLS and internet solutions. Noteworthy 2020 enhancements include:

- Masergy’s SD-WAN Orchestrator offers capabilities through the portal to enable centralized real-time management of the network and security policies related to the customer’s SD-WAN deployment. It can perform move, add, change or deletes (MACDs) on Layers 4 through 7. It also configures firewall...
Masergy’s MPLS and internet presence are much smaller compared to other providers in this research, with its concentration of points of presence in North America and Europe and with limited support for enterprise broadband and 4G. Masergy's secure, fully managed SD-WAN solution includes built-in security combining Fortinet edge devices for a scalable enterprise WAN solution. It is backed by industry-leading SLAs and a differentiated customer portal for 24/7 engineering resources.

Masergy delivers NFV services from uCPE devices, or from 57 NFV service nodes. Masergy's managed network functions — routers, firewalls, enterprise session border controllers (eSBCs), WAN optimization and WAN encryption — are available on x86-based uCPE devices. These devices can be mixed and matched with on-premises and cloud implementations to drive price- and performance-optimized designs.

Masergy's Direct Cloud Connect solution offers secure, private global connections to many cloud providers, including 11 primary cloud providers and more than 200 smaller providers in 33 cities directly, with another nine cities leveraging exchanges. Gartner finds Masergy a suitable provider for midsize-to-large, highly distributed enterprises in major metropolitan markets.

NTT

Headquartered in Tokyo, NTT is one of the leading network service providers in Asia/Pacific. It keeps expanding its infrastructure and support capabilities outside of the region and has become one of the leading global network and communications service providers. Noteworthy 2020 enhancements include:

- Improvements in its core network services that add more MPLS POPs, more NFV nodes and SD-WAN gateways, and more direct connectivity to local ISP partners.
- Enhanced cloud-based secure web gateway/SASE security services for secure SD-WAN, including zero-trust network access service and a CASB service for securing access to public clouds.
- Enhanced self-management and real-time application reporting service are available via NTT’s portal to provide end-to-end visibility of end-user application experience for work-at-home users.

NTT offers above-average MPLS connectivity in APAC, North America, the Middle East and Africa, but it is not yet on par with leading providers in Europe and Latin America in terms of network nodes. NTT runs one of the largest global internet backbones, which connects to the regional and national ISPs and also supports enterprise-grade and consumer-grade broadband (both customer-provided and NTT-provided).
and 4G. MPLS/cloud gateways in 50 locations across APAC, Europe, North America and Latin America provide connectivity to 10 major cloud providers.

NTT offers managed SD-WAN across all regions based on five vendors, and 139 SD-WAN gateways in 52 cities across all vendors. NTT also offers work-from-home SD-WAN users enhanced performance over the backbone for accessing SaaS/cloud applications including automatic rerouting in the case of performance issues. NTT operates 103 NFV nodes across the four regions, as well as a regionwide managed uCPE service. NTT scored the highest across the Intra-EMEA, Intra-APAC and global network use cases.

NTT is experienced in building large distributed networks, and customer satisfaction is consistently high. It is suitable for most enterprise needs, and is especially strong in Asia, Western Europe and Africa. It is also getting stronger in the U.S.

**Orange Business Services**

Orange Business Services (Orange) is based in Paris and offers global managed MPLS, internet, SD-WAN, uCPE and NFV services. Noteworthy 2020 enhancements include:

- Network-on-demand enhancements including support for new cloud connections and higher bandwidth thresholds and changes handled in real time,
- Usage-based billing models to support VPN bandwidth elasticity while ensuring budget capping across different use cases.
- APIs that have extended their capabilities most commonly support ordering, incident, network, maintenance and billing. The Orange API for Business has integrated multiple products, including SD-WAN, and Orange has also exposed vendor APIs for customer LiveAction purposes.

Orange Business Services offers the broadest global coverage of any provider in this research in terms of MPLS and internet POPs, including all emerging regions. However, its internet POPs in Europe are six times the size of its MPLS presence in Europe. The internet service is also offered via enterprise broadband, consumer grade and 4G.

Orange offers SD-WAN services based on three primary SD-WAN products with other vendors supported on a custom basis, with 29 network-based SD-WAN gateways for its Cisco Viptela offer. Through a combination of its own infrastructure and partner infrastructure, Orange has CBCI arrangements with 10 major cloud service providers in 20 cities. Cloud connectivity is now supported via Orange’s MPLS and internet with SD-WAN overlay. It currently offers two uCPE options and three vendor options for each of its three VNFs (SD-WAN, routing and WAN optimization). It also offers a choice of three SD-WAN appliances, and its NFV service currently reaches 19 countries from 30 nodes.

Orange has broad network coverage in terms of countries connected to its own network, with strong coverage in all the major emerging regions. Orange is well-suited to serve clients with diverse
connectivity needs on a global basis, but who may find Orange less competitive than domestic providers in North America.

**PCCW Global**

PCCW Global is the incumbent provider of Hong Kong, and a strong APAC regional provider. Its key focus is to provide network services across the Asia/Pacific region, with a gradual extension into Europe and North America. PCCW Global has deployed extensive submarine cabling across the APAC region, enabling it to deliver a range of connectivity services. Noteworthy 2020 enhancements include:

- End-to-end network monitoring across MPLS, internet and cloud services for proactive fault resolution.
- Improved online Console Connect portal with more self-service capabilities, such as ordering and bill management.
- Increased cloud connectivity with more points of presence and more cloud providers.

PCCW Global offers above-average MPLS connectivity in APAC, the Middle East and Africa, but below-average connectivity in all other regions. MPLS and cloud gateways in 27 locations across APAC, Europe, North America and Latin America provide connectivity to eight major cloud providers. PCCW Global offers managed SD-WAN across all regions based on two vendors, and has 14 SD-WAN gateways across APAC, Europe and North America.

It operates 102 NFV nodes across APAC, Europe, North America, the Middle East and Africa regions, as well as a regionwide managed uCPE service.

PCCW Global is especially suitable for APAC regional connectivity with high-reliability requirements, but it has less experience with large, complex networks. Its large investment in submarine cable infrastructure makes it suitable for high-capacity transport services.

**Riedel Networks**

Riedel Networks is a privately held global service provider based in Butzbach, Germany. As a newly added provider to this research, its noteworthy differentiators include:

- The operation of a 100% homogeneous, Cisco-based software-defined network (SDN) with more than 40 points of presence in North America, Europe and Asia/Pacific.
- Transparent network monitoring of all connectivity and CPE status, usage and performance for customers with Paessler PRTG on smartphones and tablets, providing full access to performance data, utilization and alarming.
- Dedicated project managers assigned to each engagement.
Riedel is focused primarily on global, midsize enterprises, while specifically targeting events and media outlets. It offers a global MPLS and internet backbone, though smaller in footprint than the other providers in this research. Riedel also supports enterprise- and consumer-grade broadband, 4G, third-party access, and “bring your own app” (BYOA) with its internet offering. Its managed SD-WAN is delivered through 24 network-based gateways supporting only Cisco for its enterprise customers. While Riedel doesn’t offer a network-based NFV service as do its peers in this research, it does offer the platforms to enable customers to add functionality such as wireless LAN controllers, file servers and third-party firewalls to the CPE. Therefore, its uCPE offer is limited to the Cisco Enterprise Network Compute System (ENCS) platform for its customers. Riedel also lacks network on demand for its services. Its cloud connectivity strategy is limited to 17 cities globally, which are predominantly connected to AWS, Google and Microsoft, and only delivered via exchanges such as Equinix, Interxion, Megaport and Epsilon.

While experienced in delivering global services, Riedel is ideal for midsize networks embedded with Cisco and aligned with Cisco’s network footprint or have specific network needs in North America, Europe and Asia where their network assets are in alignment.

Singtel

Based out of Singapore, Singtel is one of the leading providers in the Asia/Pacific region. Its key focus is providing network and communications services across APAC. Noteworthy 2020 enhancements include:

- Enhanced its online portal with richer self-service, such as improved service monitoring, trouble-ticket management and cloud connectivity.
- Expanded number of NFV nodes and SD-WAN gateways, as well as its cloud connectivity across APAC, North America and Europe.
- Expanded internet service coverage through direct partnership with more than 50 local ISPs globally, as well as optimized internet with predictable routing through its network backbone.

Singtel offers above-average MPLS connectivity in APAC, but below average in all other regions. Singtel’s global internet service has extensive reach to more than 215 countries, with more than 50 direct partners globally. MPLS/cloud gateways in 36 locations across APAC, Europe and North America connect to six major cloud providers and serve enterprises in Latin America through strategic partnerships.

Singtel offers managed SD-WAN across all regions based on four appliances, and SD-WAN gateways across APAC, Europe, North America and Latin America in 26 countries.

It operates 17 NFV nodes across APAC, Europe, and North America, as well as a regionwide managed uCPE service.

Singtel is suitable for all Asia/Pacific regional enterprise needs. However, it has less experience with large globally distributed networks than leading providers in this research.
**Tata Communications**

Part of the Tata Group, Mumbai- and Singapore-headquartered Tata Communications (Tata) is a leading global provider of telecommunications solutions and services. Noteworthy 2020 enhancements include:

- Expanded IZO internet WAN in additional 24 countries covering 149 countries globally. The new IZO Internet WAN Basic (broadband) variant is now available in 30 countries.
- Expanded NFV and SD-WAN gateway reach with more points of presence, as well as support of more virtual functions for both its NFV and uCPE services.
- Expanded the self-service portal with real-time views and scheduled reports with CPE and site-level information. The portal also enables policy changes, such as routing and quality of service (QoS).

Tata offers superior MPLS connectivity in India, but average MPLS connectivity in APAC, and below average in all other regions. Its IZO Internet WAN is an enhanced internet service option, and a variety of access options are available, including enterprise- and consumer-grade broadband, 4G, and BYOA. In addition, Tata offers MPLS/cloud gateways in 23 locations across APAC, Europe and North America, but none in Latin America, providing connectivity to eight major cloud providers.

Tata offers managed SD-WAN across all regions based on two vendors, and has 45 SD-WAN gateways across APAC, Europe, North America and Latin America. It operates 45 NFV nodes across APAC, Europe, North America and Latin America, as well as a regionwide managed uCPE service.

Enterprises with extensive requirements in India will find Tata's domestic capabilities particularly valuable. With experience in supporting large distributed networks, Tata Communications is suitable for all enterprise WAN needs.

**Telefonica**

Telefonica is based in Madrid, and offers global managed MPLS, internet, SD-WAN, uCPE and NFV services. Noteworthy 2020 enhancements include:

- Additional direct cloud connectivity added for Oracle in three cities, as well for AWS and new Google sites.
- The introduction of a private internet service modality and an underlay connectivity over public internet, allowing for faster deployment, predictable IP transit routing, consistent network performance, reporting and end-to-end SLAs. These SLAs reduce network total cost of ownership (TCO) by up to 30%.
- Network-on-demand automation improvements for new bandwidth and faster change request response times.
Its global MPLS and internet service footprint are strongest in Europe and Latin America. It offers internet service support for enterprise- and consumer-grade broadband, third-party internet access, BYOA with 3G/4G/LTE cellular as a backup, and rapid delivery or temporary site solution. Service offerings support on-demand bandwidth management, direct cloud connectivity, customer portals and SLAs, in over 200 POPs (MPLS plus internet POPs) globally. Telefonica has cloud gateways in only eight cities across Europe, North America and Latin America — fewer than its peers in this research — connected to five global cloud providers.

Telefonica has 10 SD-WAN gateways (network-based) in Latin America and Spain. Cisco software is delivered on a separate hardware platform in more than 100 countries, plus regional/local solutions, such as Nokia and Netcracker. uCPE is either delivered on-premises (S, M, L, XL device sizes) with the underlay and overlay integrated for seamless experience or as a cloud uCPE option in a network node. Telefonica’s NFV/uCPE service offering includes standardized x86 CPE using three vendors. In addition, the offering includes virtual firewall, virtual remote access, intrusion detection system and prevention system, and network address translation functions, which are available both on uCPE devices and from 26 NFV service nodes.

Telefonica is well-suited for enterprises with significant Europe and Latin America requirements, and will serve multidomestic requirements across this footprint well.

**Telia**

Based out of Stockholm, Sweden, Telia is the leading NSP in the Nordics and Baltics and offers global network services. Beyond its sizable ISP backbone — especially in the U.S. and Europe — Telia’s key focus is providing network and communications services globally to enterprises. Notable 2020 enhancements include:

- The launch of Infovista for WAN optimization (Ipanema VNF) using Nuage Networks.
- Expansion of its MPLS footprint by 20% with most of its growth in North America, Latin America and Europe.
- Extended MPLS reach into Africa through a partner offering.

Telia’s network provides both MPLS and internet services to all the major markets via 373 POPs in over 113 cities and 34 countries, though only five POPs in three Asia/Pacific cities. Enterprise- and consumer-grade broadband is available, as well as 4G through its own network as well as through aggregators. Telia offers direct cloud connectivity to five major cloud service providers in 25 cities. Telia connects directly to top cloud security providers, such as Zscaler, in over 10 cities across Europe and North America.

Telia offers managed SD-WAN based on three SD-WAN products via 36 Cisco network-based gateways in 27 countries and 24 Nokia gateways in 10 countries, though its SD-WAN node presence outside Europe is very light. Telia has a total of 26 NFV nodes to support WAN optimization and firewall (both
Check Point Software Technologies and Palo Alto Networks) — two in APAC, 20 in Europe and two in North America, and two in Latin America. It also offers uCPE support in all three regions. Telia supports dual vendors for router and security capabilities.

Telia is particularly suitable for enterprises with significant requirements across Europe and the U.S. and lesser needs in APAC.

Telstra

Based out of Melbourne, Australia, Telstra is one of the largest providers in Asia/Pacific. Its key focus is to provide network services across the Asia/Pacific region, with a gradual extension into Europe and the U.S. Notable 2020 enhancements include:

- The expansion of MPLS and internet footprints and an increase in the number of POPs in China by three for MPLS and 20 for internet.
- The launch of Adaptive Networks in Australia. This offers multiple network services (IPVPN, internet), consumption over the same access to swap products, change bandwidths or deploy other changes to networks with minimal impact.
- The Telstra Programmable Network (TPN) VNF Marketplace, which enables customers to purchase virtual appliances (vApp) and packages, including Telstra Cloud Router. Routers, firewalls and load balancers support additional connectivity options in minutes, with 60-second configuration change deployment.

Telstra’s MPLS and internet coverage is strong across APAC, especially in China via Telstra PBS (Telstra’s joint venture with Zhong Ren Xin Telecom), but limited across other regions. It offers cloud connectivity in 31 cities globally, with direct connections to three leading cloud providers (AWS, Azure and Google) and connections to another 100-plus providers via cloud exchanges. TPN provides on-demand support for MPLS, internet and the cloud ecosystems with granular changes via a fully automated self-service portal. Telstra offers SD-WAN service based on three SD-WAN products across all regions and SD-WAN gateways only in Australia and China for its VMware offer. Telstra offers NFV services from its eight NFV POPs (five cities in APAC, one in the U.K. and two in the U.S.). However, it offers a very limited set of VNFs and is just one of two providers that has not yet launched a managed uCPE service.

Telstra is suitable for most enterprise WAN needs. Enterprises with extensive requirements in China will find Telstra’s domestic capabilities particularly strong. Telstra’s extensive submarine cable infrastructure in the APAC region, as well as to North America and Europe, make it suitable for high-capacity and low-latency services.

Verizon

Headquartered in New York City, Verizon offers global managed MPLS, internet, Ethernet, SD-WAN, uCPE and NFV services. Noteworthy 2020 enhancements include:
Verizon offers managed SD-WAN from three appliance vendors and is available as fully managed, co-managed or self-managed services, with 32 network-based SD-WAN gateways to support two of the three offers. Its NFV/uCPE is available globally on both uCPE platforms; VNFs include SD-WAN, security, routing, unified communications and SBC. NFV nodes are located in 32 cities across 18 countries.

Verizon's direct cloud connectivity is available in 12 countries in 27 cities to nine public cloud providers (CSPs) via MPLS. Verizon's enterprise broadband services are available in 144 countries through third parties. Its network-on-demand service and NFV portfolio are among the strongest of providers in this report.

Large U.S. domestic and global enterprises should evaluate Verizon's networking services.

Vodafone

Vodafone, based in Newbury, U.K., offers global managed MPLS, internet, Ethernet, SD-WAN, uCPE and NFV services. Noteworthy 2020 enhancements include:

- Introduction of a fixed price 90-day trial agreement in eight countries for up to five sites that employ internet access with an on-premises SD-WAN appliance with integrated next-generation firewall.

- MPLS customers can now reuse managed Cisco CE routers with IOS XE to upgrade to SD-WAN at their own pace, and reuse router assets without the need for site visits. This enables customers to renew their MPLS contracts and upgrade to SD-WAN when they wish.

- Expanded internet aggregation to 116 countries (17 Vodafone domestic markets, 99 indirect), further extending internet coverage via resale to an additional 68 countries.

Vodafone has a sizable MPLS presence in Europe, the Middle East, Africa and APAC, and the largest number of internet POPs of any provider in Europe. Enterprise-grade broadband and 4G are available in 14 countries in Europe, while consumer-grade broadband is only offered for home workers in these countries.
Vodafone offers managed SD-WAN from three appliance vendors using 24 network-based gateways, though not all vendors are supported on all gateways. It also provides uCPE on three platforms. VNFs include SD-WAN, security, routing and WAN optimization. Its NFV service lags peers in that Vodafone has gateway platforms in a total of nine countries. It uses one vendor for its own gateways and uses another vendor’s gateways exclusively in three countries. Prospective Vodafone SD-WAN clients should validate whether Vodafone or the OEM is monitoring and managing the SD-WAN appliance.

Vodafone’s cloud connectivity is available in 15 countries to seven public cloud providers (CSPs) via MPLS in 15 cities and Ethernet in 25 cities. Nine cities only have cloud connectivity via an exchange, and the other 31 cities employ direct connectivity to CSPs. Before acquiring these services, clients should validate which CSPs are served directly versus through an exchange; particularly when also using SD-WAN gateways.

Well-balanced geographically, Vodafone is a suitable provider for enterprises with global connectivity requirements in general, but without deep coverage requirements in Latin America.

Context

The increased adoption of public cloud, data-intensive enterprise applications and media-rich data services (including video, voice and collaboration) continues to fuel rising bandwidth demand and the need for greater agility, granular application control and visibility. In response to evolving enterprise needs and a spate of new WAN technologies, the landscape of service providers continues to change. Many large providers are trying to be everything to everyone, by way of portfolio breadth, geographic reach and in-country support. By contrast, the smaller providers, which may have less product breadth, potentially offer greater access options, lower prices or improved geographic footprints in focused areas while offering greater willingness to negotiate flexible terms and conditions. Enterprises must methodically determine the optimal number of partners based on their technical requirements and the perceived total hard- and soft-dollar cost benefits.

This evolution in enterprise WAN strategy means that, in addition to a continued focus on controlling WAN expenses, there remains a strong focus on designing agile, hybrid WANs to meet such dynamic environments. These WANs leverage Ethernet, MPLS and internet services to support enterprise cloud adoption, and to offload traffic from MPLS to lower-cost internet services. Most of the remaining enterprise WANs for midsize and large enterprises will use solely the internet, while MPLS-only WANs will be an exception.

Top-of-mind concerns for I&O leaders remain threefold: workforce-related shifts due to the pandemic, site reliability for improved resilience and WAN cost optimization. In addition, Gartner clients remain concerned that traditional network services are too slow in meeting these evolving needs. Network leaders require alternative solutions that can meet their evolving needs faster, with quicker turn-up, speedier changes and diverse access availability. Compared with traditional WAN services, managed SD-WAN services (including diverse WAN connectivity services) can offer greater agility, flexibility, control and cost-efficiency.
These drivers are fueling rapid SD-WAN adoption, which is cannibalizing spending on routers, stand-alone firewalls and MPLS services. However, Gartner interactions with enterprise clients reveal that, as they seek to modernize their WANs, they can gain greater performance and improved SLAs with carrier-based interconnect services.

The intent of this research remains to highlight the primary providers that meet the criteria, while showcasing which may be stronger in certain use cases or geographies. For example, a provider may be among the leading providers in a specific region, yet it still might score low within a global use case after all its reach and global capabilities are considered. Clearly, some enterprises may be more inclined to leverage a provider based in their home region/country to garner better pricing and more attentive local support, which is an effective and recommended strategy. Clients may choose a single provider or utilize more than one based on technology, geography or suitability.

Product/Service Class Definition

This research assesses an NSP’s ability to provide these services directly to midsize and large enterprises, both in single-service and multiservice WAN environments on a local, regional or global scale. For this Critical Capabilities research, Gartner defines the global network service market as the provision of fixed corporate networking services with worldwide coverage such as:

- **WAN transport services**: MPLS service and both broadband/DSL and dedicated internet access (DIA) services are available globally. DIA should be offered as the provider’s own service. Broadband internet can be a resold solution, but must be generally available on a global basis.

- **Carrier-based cloud interconnect**: This is a direct connection between a service provider’s enterprise network services, such as MPLS and/or Ethernet services, and the private connection option of one or more cloud service providers. CBCI must be established directly between the network service provider and the cloud provider. CBCI is mandatory on a global basis.

- **Managed WAN services**: These must include managed SD-WAN and are required to be offered globally. Although a minority of enterprises are renewing their managed router networks, most new managed global network deployments are now based on managed SD-WAN networks, using a mix of MPLS and internet transport. This is a trend Gartner expects to continue. An option for managed SD-WAN services is for the provider to deploy network-based SD-WAN gateways to facilitate interconnection between SD-WAN and non-SD-WAN networks, improve scalability, and avoid the need for traffic to traverse long distances over the internet.

- **Network on demand**: Network-on-demand services from NSPs enable enterprises to make real-time changes to access/port bandwidth, change the WAN service types delivered over a network port and, in some cases, add and remove endpoints (e.g., connections to cloud providers). This occurs under software control, via the provider’s web portal or APIs.

- **Network function virtualization (NFV)**: NFV is an architecture to deliver multiple network functions as software, which commonly include routing, firewall, SD-WAN, WAN optimization and performance visibility. These software-based functions are known as virtual network functions (VNFs). NFV
In addition, it is highly desirable for providers to offer related network services including managed WAN optimization, managed application visibility, and managed, network-related security services. Integrators, virtual operators and carriers may be included, but only if they will bid for stand-alone WAN deals and provide and manage offerings that include WAN connectivity.

**Critical Capabilities Definition**

**WAN Services, North America**

The WAN services category includes both MPLS and internet services within the U.S. and Canada.

Dedicated internet includes traditional POP internet capacity from a carrier's public IP backbone with port speeds ranging from T1 to more than 10 Gbps. Many providers also support internet services using enterprise and consumer-grade broadband. All the providers in this report are long-standing internet service providers, while spending is increasing by 2.4% through 2023 (see Forecast Analysis: Enterprise Networking Connectivity Growth Trends, Worldwide). Scores for internet services are heavily influenced by the number of points of presence in each region (with deductions for no, or a small number of, regional POPs). The scores have also been influenced by a filter related to availability of features such as high-speed options, comprehensive SLAs, pricing options, network-on-demand support and cellular backup.

MPLS is a legacy, private, Layer 3 IP networking service based on label-switched paths that offers CoS attributes. It employs multiple access types, such as TDM, fiber- and copper-based Ethernet, broadband/DSL, and wireless 3G/4G/5G. All the providers in this report have long-standing, mature MPLS services, although spending on MPLS is declining by 4% through 2024 (see Forecast Analysis: Enterprise Communications Services, Worldwide). Scores for MPLS are heavily influenced by the POP count in North America (with deductions for no, or a small number of, regional POPs). The scores have also been influenced by a filter related to availability of features such as network-on-demand or portal support.

**WAN Services, Latin America**

The WAN services category includes both MPLS and internet services within Latin America. Enables providers to rapidly (in minutes) deploy network functionality to enterprise locations. NFV can be implemented on universal customer premises equipment (uCPE), which are industry-standard x86 devices used in place of function-specific appliances. They can also be implemented in NFV service nodes located in the provider's network, or in colocation facilities. NFV enables network functions to be activated on demand (and deactivated when no longer required) and consumed on an "as a service" basis. This can improve the agility of the enterprise and be cost-effective. However, NFV functionality and performance lag what is found in vendor-specific SD-WAN appliances. In addition, the level of multivendor automation and orchestration required essentially forces this architecture to be offered as a managed service. Unlike SD-WAN appliances, it is unrealistic for the majority of enterprise clients to employ this type of solution on a DIY basis.
Dedicated internet includes traditional POP internet capacity from a carrier’s public IP backbone with port speeds ranging from T1 to more than 10 Gbps. Many providers also support internet services using enterprise and consumer grade broadband. All the providers in this report are long-standing internet service providers, while spending is increasing by 2.4% through 2023 (see Forecast Analysis: Enterprise Networking Connectivity Growth Trends, Worldwide). Scores for internet services are heavily influenced by the number of points of presence across the region (with deductions for no, or a small number of, regional POPs). The scores have also been influenced by a filter related to availability of features such as high-speed options, comprehensive SLAs, pricing options, network-on-demand support and cellular backup.

MPLS is a legacy, private, Layer 3 IP networking service based on label-switched paths, which offers CoS attributes. It employs multiple access types, such as TDM, fiber- and copper-based Ethernet, broadband/DSL, and wireless 3G/4G/5G. All the providers in this report have long-standing, mature MPLS services, although spending on MPLS is declining by 4% through 2024 (see Forecast Analysis: Enterprise Communications Services, Worldwide). Scores for MPLS are heavily influenced by the POP count in Latin America (with deductions for none, or only a small number of regional POPs). The scores have also been influenced by a filter related to availability of features such as network-on-demand or portal support.

WAN Services, EMEA

The WAN services category includes both MPLS and internet services within Europe, the Middle East and Africa.

WAN Services, Asia/Pacific
The WAN services category includes both MPLS and internet services within Asia/Pacific.

Dedicated internet includes traditional POP internet capacity from a carrier’s public IP backbone with port speeds ranging from T1 to more than 10 Gbps. Many providers also support internet services using enterprise and consumer grade broadband. All the providers in this report are long-standing internet service providers, while spending is increasing by 2.4% through 2023 (see Forecast Analysis: Enterprise Networking Connectivity Growth Trends, Worldwide). Scores for internet services are heavily influenced by the number of points of presence across the regions (with deductions for no, or a small number of, regional POPs). The scores have also been influenced by a filter related to availability of features such as high-speed options, comprehensive SLAs, pricing options, network-on-demand support and cellular backup.

MPLS is a legacy, private, Layer 3 IP networking service based on label-switched paths, which offers CoS attributes. It employs multiple access types, such as TDM, fiber- and copper-based Ethernet, broadband/DSL, and wireless 3G/4G/5G. All the providers in this report have long-standing, mature MPLS services, although spending on MPLS is declining by 4% through 2024 (see Forecast Analysis: Enterprise Communications Services, Worldwide). Scores for MPLS are heavily influenced by the POP count in Asia/Pacific (with deductions for no, or a small number of, regional POPs). The scores have also been influenced by a filter related to availability of features such as network-on-demand or portal support.

WAN Services, Global

The WAN services category includes both MPLS and internet services around the globe or spans, at a minimum, two continents.

Dedicated internet includes traditional POP internet capacity from a carrier’s public IP backbone with port speeds ranging from T1 to more than 10 Gbps. Many providers also support internet services using enterprise and consumer grade broadband. All the providers in this report are long-standing internet service providers, while spending is increasing by 2.4% through 2023 (see Forecast Analysis: Enterprise Networking Connectivity Growth Trends, Worldwide). Scores for internet services are heavily influenced by the number of points of presence across the regions (with deductions for no, or a small number of, regional POPs). The scores have also been influenced by a filter related to availability of features such as high-speed options, comprehensive SLAs, pricing options, network-on-demand support and cellular backup.

MPLS is a legacy, private, Layer 3 IP networking service based on label-switched paths, which offers class-of-service attributes. It employs multiple access types, such as TDM, fiber- and copper-based Ethernet, broadband/DSL, and wireless 3G/4G/5G. All the providers in this report have long-standing, mature MPLS services, although spending on MPLS is declining by 4% through 2024 (see Forecast Analysis: Enterprise Communications Services, Worldwide). Scores for MPLS are heavily influenced by the POP count globally (with deductions for no, or a small number of, regional POPs). The scores have also been influenced by a filter related to availability of features such as network-on-demand or portal support.
Carrier-Based Cloud Interconnect

Purpose-built CBCI offers a direct connection from the carrier node to the data center of a public cloud service provider, such as AWS, Azure or Google. All the providers in this report offer CBCIs, but the numbers of public cloud partners and locations per provider vary.

Scores for CBCI are influenced by the number of public cloud providers, with a minimum of AWS, Azure and Google established and generally available. The scores have also been influenced by a feature filter related to the availability of both MPLS and internet to support the cloud connectivity offering, direct connectivity versus relying on an exchange, and portal support.

Managed SD-WAN, North America

Managed SD-WAN services use centrally managed WAN edge devices in branch offices to establish logical connections with other branch-edge devices across the WAN and to sites remote from the branch. These logical connections create secure paths across multiple WAN connections.

Scores were influenced by the breadth of vendors offered, depth of customer web portal, and SD-WAN gateway hub locations in addition to monitoring agents available for services within the U.S. and Canada.

Managed SD-WAN, Latin America

Managed SD-WAN services use centrally managed WAN edge devices in branch offices to establish logical connections with other branch-edge devices across the WAN and to sites remote from the branch. These logical connections create secure paths across multiple WAN connections.

Scores were influenced by the breadth of vendors offered, depth of customer web portal, and SD-WAN gateway hub locations in addition to monitoring agents available for services within Latin America.

Managed SD-WAN, EMEA

Managed SD-WAN services use centrally managed WAN edge devices in branch offices to establish logical connections with other branch-edge devices across the WAN and to sites remote from the branch. These logical connections create secure paths across multiple WAN connections.

Scores were influenced by the breadth of vendors offered, depth of customer web portal, and SD-WAN gateway hub locations in addition to monitoring agents available for services within Europe, the Middle East and Africa.

Managed SD-WAN, Asia/Pacific

Managed SD-WAN services use centrally managed WAN edge devices in branch offices to establish logical connections with other branch-edge devices across the WAN and to sites remote from the branch. These logical connections create secure paths across multiple WAN connections.
Scores were influenced by the breadth of vendors offered, depth of customer web portal, and SD-WAN gateway hub locations in addition to monitoring agents availability available for services within Asia/Pacific.

**Managed SD-WAN, Global**

Managed SD-WAN services use centrally managed WAN edge devices in branch offices to establish logical connections with other branch-edge devices across the WAN and to sites remote from the branch. These logical connections create secure paths across multiple WAN connections.

Scores were influenced by the breadth of vendors offered, depth of customer web portal, and SD-WAN gateway hub locations in addition to monitoring agents available for services globally.

**vCPE/NFV Services**

Providers offer an array of technologies as software-based virtual network functions (VNFs), running on third-party x86 server platforms using Linux with the KVM hypervisor (uCPE). VNFs may reside in premises hardware or provider nodes.

Nearly all the providers in this report have generally available VNFs; but for many providers, the functional breadth lags managed SD-WAN, concentrated in routing, SD-WAN, WAN optimization, and basic and advanced security (typically firewall, IDS/IPS and unified threat management [UTM]). A minority of providers also offer encryption, e-SBC and performance management functionality.

All NSPs in this research provide managed SD-WAN to the market, while most offer NFV services as well. NFV services remain in the early stages of implementation, and service availability and features differ significantly. Given the wealth of other alternatives in the global market, adoption of VNFs could remain muted through 2024.

Scores for managed uCPE and NFV services are heavily influenced by broad geographical availability. Not all the providers offer a uCPE/NFV solution to enterprises in all four regions, and half scored a 2 or lower for this critical capability. In addition, scores are influenced by providers offering a wide range of virtual network functions from multiple vendors. Higher ratings are also influenced by the availability of customer web portals for self-service, service reporting functionality, multiple preintegrated and tested service chains, and other customer experience aspects. Seventy-five percent of providers who support uCPE/NFV also support customer-provided VNFs on an individual case basis.

**Network on Demand**

Network-on-demand services are WAN transport service features provided from network service providers, controlled via the provider’s web portal and/or APIs. Network-on-demand services enable enterprises to make near-real-time changes to access/port bandwidth.

They may also allow changes to transport service features (such as QoS or VLAN), the addition/deletion of different WAN services (such as MPLS, internet, CBCI or managed SD-WAN) on each network port and
even the addition/deletion of network endpoints. Scores were influenced by a provider’s ability to support multiple services and platforms, support self-service via a portal, or support via API.

Use Cases

**Intra-North America Network**
This type of enterprise has more than 500 North America-based employees, and buys a combination of wireline voice and data services to support them.

The North America region for this research includes the U.S. plus Canada. This report examines how well NSPs’ WAN services, along with CBCI, managed SD-WAN and uCPE/NFV services, support this use case.

**Intra-Latin America Network**
This type of enterprise has more than 1,000 employees based in the Latin America region, and buys a combination of wireline voice and data services to support them.

Latin America, for the sake of this research includes Central America, South America and the Caribbean. This report examines how well NSPs’ WAN services, along with CBCI, managed SD-WAN and uCPE/NFV services, support this use case.

**Intra-EMEA Network**
This type of enterprise has more than 1,000 employees based in EMEA, and buys a combination of wireline voice and data services to support them.

The EMEA region includes Europe, the Middle East and Africa regions. This report examines how well NSPs’ WAN services, along with CBCI, managed SD-WAN and uCPE/NFV services, support this use case.

**Intra-Asia/Pacific Network**
This type of enterprise has more than 1,000 employees based in the Asia/Pacific region, and buys a combination of wireline voice and data services to support them.

This report examines how well NSPs’ WAN services, along with CBCI, managed SD-WAN and uCPE/NFV services, support this use case.

**Global Network**
This type of enterprise has more than 1,000 employees deployed across the four regions, and buys a combination of wireline voice and data services to support them.

This report examines how well NSPs’ WAN services, along with CBCI, managed SD-WAN and uCPE/NFV services, support this use case.

Vendors Added and Dropped
Added

Riedel Networks met the inclusion criteria and has been added for this year's research. This addition aligns with the Magic Quadrant for Network Services, Global.

Two service products underwent a name change: CenturyLink has rebranded under the name of Lumen, and T-Systems is now doing business as Deutsche Telekom after Deutsche Telekom reorganized, transferring responsibility for global enterprise networking from T-Systems to Deutsche Telekom.

Dropped

Sprint (now T-Mobile) and Global Cloud Xchange were dropped because they did not meet the inclusion criteria for this year's research.

Inclusion Criteria

Gartner defines the global network services market as the delivery of fixed corporate networking services with broad coverage on a global basis. Services include WAN services, both MPLS and dedicated and broadband internet, carrier-based cloud interconnect (CBCI), managed SD-WAN, network on demand and NFV/uCPE.

The Critical Capabilities document assesses suppliers that deliver wireline networking services globally. They must offer the following WAN network services on a global basis as a standard offer:

- **MPLS services**: A private, Layer 3 IP networking service, based on label-switched paths, MPLS offers class-of-service attributes. It can be delivered over last-mile access types, which include TDM, fiber and copper-based Ethernet access, broadband/DSL and wireless/3G/4G. This category will include public cloud connectivity whereby the CSPs MPLS network has a direct to cloud providers, such as Amazon and Microsoft.

- **Internet services**: Dedicated internet includes traditional POP internet capacity from a carrier's public IP backbone and port speeds from T1 to 10 Gbps. Eighty percent of large enterprises centralize internet connectivity through data centers, which tend to be located in top metropolitan service areas (MSAs). Enterprise-grade broadband/DSL internet includes either provider-native or resold services sold with speeds starting at 3 Mbps.

- **Carrier-based cloud interconnect (CBCI)**: This is a direct connection between a service provider’s enterprise network services, such as MPLS and/or Ethernet services, and the private connection option of one or more cloud service providers. CBCI must be established directly between the network service provider and the cloud provider. CBCI is also mandatory on a global basis.

- **Managed SD-WAN**: Managed SD-WAN solutions use centrally managed WAN edge devices in branch offices to establish logical connections with other branch-edge devices across the physical WAN. These logical connections create secure paths across multiple WAN connections and carriers. Alternative access availability such as broadband and 4G/LTE will also be considered.
To qualify for inclusion, service providers must:

- Sell MPLS and internet (both dedicated and broadband/DSL) services to enterprise customers. All services must be generally available and not offered on an individual customer (one-off) basis or only in limited markets. Broadband services can either be inherent to the provider's core network offering, or offered in a resale model, but the broadband services must be available on a global basis.

- Have a minimum of five MPLS and internet POPs in each of the following geographic regions: APAC, EMEA and North America.

- Connect to at least three cloud providers (CBCI) in each of the following geographic regions: APAC, EMEA and North America.

- Must have signed at least one contract, for global enterprise network services, as a net new account, in the last 12 months, in each of the following geographic regions: APAC, EMEA and North America.

- Providers must provide their own global network services, not simply resell the services of other global or regional network providers.
### Table 1: Weighting for Critical Capabilities in Use Cases

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<table>
<thead>
<tr>
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<td>15%</td>
<td>25%</td>
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<td>20%</td>
</tr>
</tbody>
</table>

Source: Gartner (February 2021)

This methodology requires analysts to identify the critical capabilities for a class of products/services. Each capability is then weighed in terms of its relative importance for specific product/service use cases.

**Critical Capabilities Rating**

Each of the products/services has been evaluated on the critical capabilities on a scale of 1 to 5; a score of 1 = Poor (most or all defined requirements are not achieved), while 5 = Outstanding (significantly exceeds requirements). Table 2 shows the scores across each Critical Capabilities for each provider.
Table 2: Product/Service Rating on Critical Capabilities

<table>
<thead>
<tr>
<th>Critical Capabilities</th>
<th>AT&amp;T</th>
<th>BT</th>
<th>China Telecom Global</th>
<th>Colt Technology Services</th>
<th>Deutsche Telekom</th>
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<td>Carrier-Based Cloud Interconnect</td>
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<td>3.3</td>
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</tbody>
</table>

Source: Gartner (February 2021)
Table 3: Product Score in Use Cases
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<table>
<thead>
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<th>Use Cases</th>
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<th>Colt Technology Services</th>
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<td>2.78</td>
<td>2.54</td>
<td>2.72</td>
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</table>

Source: Gartner (February 2021)

To determine an overall score for each product/service in the use cases, multiply the ratings in Table 2 by the weightings shown in Table 1.

Evidence

Gartner developed this research based on the following sources of information:

- Gartner inquiry data on network services, collected over a 12-month period. Inquiries with Gartner analysts about network services have increased every quarter by at least 5% for the last four quarters.

- Large number of enterprise inquiries on SD-WAN over the last 18 months — a clear signal of customers’ interest in the technology and services.

- Analyst-reviewed Gartner Peer Insights data for this market.
The Latin America region includes the following countries: Argentina, Belize, Bolivia, Brazil, the Caribbean, Chile, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana, Guadeloupe, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Uruguay and Venezuela.

Critical Capabilities Methodology

This methodology requires analysts to identify the critical capabilities for a class of products or services. Each capability is then weighted in terms of its relative importance for specific product or service use cases. Next, products/services are rated in terms of how well they achieve each of the critical capabilities. A score that summarizes how well they meet the critical capabilities for each use case is then calculated for each product/service.

"Critical capabilities" are attributes that differentiate products/services in a class in terms of their quality and performance. Gartner recommends that users consider the set of critical capabilities as some of the most important criteria for acquisition decisions.

In defining the product/service category for evaluation, the analyst first identifies the leading uses for the products/services in this market. What needs are end-users looking to fulfill, when considering products/services in this market? Use cases should match common client deployment scenarios. These distinct client scenarios define the Use Cases.

The analyst then identifies the critical capabilities. These capabilities are generalized groups of features commonly required by this class of products/services. Each capability is assigned a level of importance in fulfilling that particular need; some sets of features are more important than others, depending on the use case being evaluated.

Each vendor's product or service is evaluated in terms of how well it delivers each capability, on a five-point scale. These ratings are displayed side-by-side for all vendors, allowing easy comparisons between the different sets of features.

Ratings and summary scores range from 1.0 to 5.0:

1 = Poor or Absent: most or all defined requirements for a capability are not achieved

2 = Fair: some requirements are not achieved
3 = Good: meets requirements

4 = Excellent: meets or exceeds some requirements

5 = Outstanding: significantly exceeds requirements

To determine an overall score for each product in the use cases, the product ratings are multiplied by the weightings to come up with the product score in use cases.

The critical capabilities Gartner has selected do not represent all capabilities for any product; therefore, may not represent those most important for a specific use situation or business objective. Clients should use a critical capabilities analysis as one of several sources of input about a product before making a product/service decision.

**Document Revision History**

Critical Capabilities for Network Services, Global - 27 February 2020

Critical Capabilities for Network Services, Global - 27 March 2019

**Recommended by the Authors**

How Products and Services Are Evaluated in Gartner Critical Capabilities

Magic Quadrant for Network Services, Global

Magic Quadrant for Managed Network Services

Critical Capabilities for Managed Network Services

Magic Quadrant for Public Cloud Infrastructure Professional and Managed Services, Worldwide

Use Gartner’s Market Price Movement Data to Save Money on Your Next Contract Negotiation for Network Services

Top 3 Strategies to Improve WAN SLAs

Toolkit: RFP Template for Managed Network Services

Five Key Factors to Prepare Your WAN for Multicloud Connectivity

Extend Managed WAN Solutions Across Remote Workers for Best Cloud Connectivity

Innovation Insight for Software-Defined Cloud Interconnection

Market Guide for Global SIP Trunking Services

Tool: Remote Work TCO Calculator

SD-WAN Economics: Shift From Tactical to Strategic Thinking

Forecast: Enterprise Communications Services, Worldwide, 2017-2023, 4Q19 Update

Forecast Analysis: Enterprise Networking Connectivity Growth Trends, Worldwide