

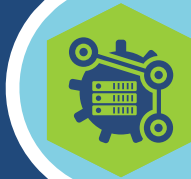
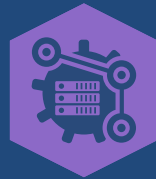
***ISG** Provider Lens™

Network - Software Defined Solutions and Services

Mobile Network (4G/5G) Additional (non-core)
Services

Global 2019

Quadrant
Report



A research report
comparing provider
strengths, challenges
and competitive
differentiators

Customized report courtesy of:



June 2019

About this Report

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The research and analysis presented in this report includes research from the ISG Provider Lens™ program, ongoing ISG Research programs, interviews with ISG advisors, briefings with services providers and analysis of publicly available market information from multiple sources. The data collected for this report represents information that was current as of June, 2019. ISG recognizes that many mergers and acquisitions have taken place since that time but those changes are not reflected in this report.

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EXECUTIVE SUMMARY

Existing managed LAN and WAN services, multiprotocol label switching (MPLS) and related technologies form the backbone of the enterprise customer installed base for telcos and other communication services providers and account for most of the revenues generated worldwide. This trend, however, is rapidly changing. The software-defined network (SDN), which is closely related to network function virtualization (NFV) and software-defined WAN (SD-WAN) technologies and services, is evolving and rapidly penetrating the market. A similar trend exists with related network services such as performance assurance (management), managed networks and devices (MND), and 4G and 5G mobility (4G/5G) with associated additional (non-core) mobile services based on those faster mobile data stream standards, along with their triggers and influences. The main factors that drive this rapid change for enterprises are:

Increasing flexibility and agility: Enterprises have become more focused on improving the integration, automation, orchestration and management of network resources and processes. This has evolved to encompass NFV and has since led onto software-defined networking in a wider sense. This trend is being driven by enterprises' desire to seamlessly add applications and network resources in order to meet business and user goals more efficiently and securely without creating silos or depending on vendors. This is often expressed by the business itself as "increasing flexibility and agility."

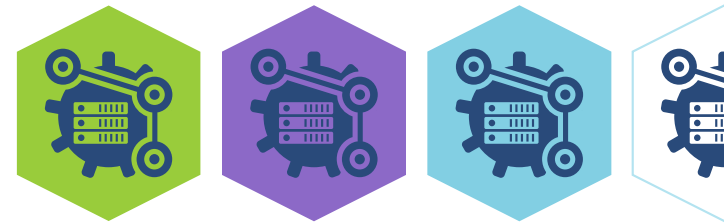
Improving customer satisfaction while boosting sales: The ability to respond quickly and seamlessly to customer queries and quickly provide (often automatically) new services via SDN helps in elevating client experience and boosting sales.

Reducing costs and improving usage efficiency: Enterprises can improve the utilization efficiency while reducing network usage costs even beyond the savings achieved by adopting an NFV strategy. This is particularly relevant with the explosion of data usage in mobile devices, often in areas that are not business critical, and while using social media applications or other related services. Traffic can be routed over lower cost connections and at reduced reliability and quality levels automatically via software-defined pathways with little or no human interaction involved.

The aforementioned factors, together with cloud networks, have been driving significant changes to networks and their operations over the past 30 years. Some telecommunication service providers, such as AT&T, have announced plans to make at least 75 percent of their networks SDN-compliant and functional by 2022. Others have introduced SD-WAN implementations to reap benefits in a shorter term.

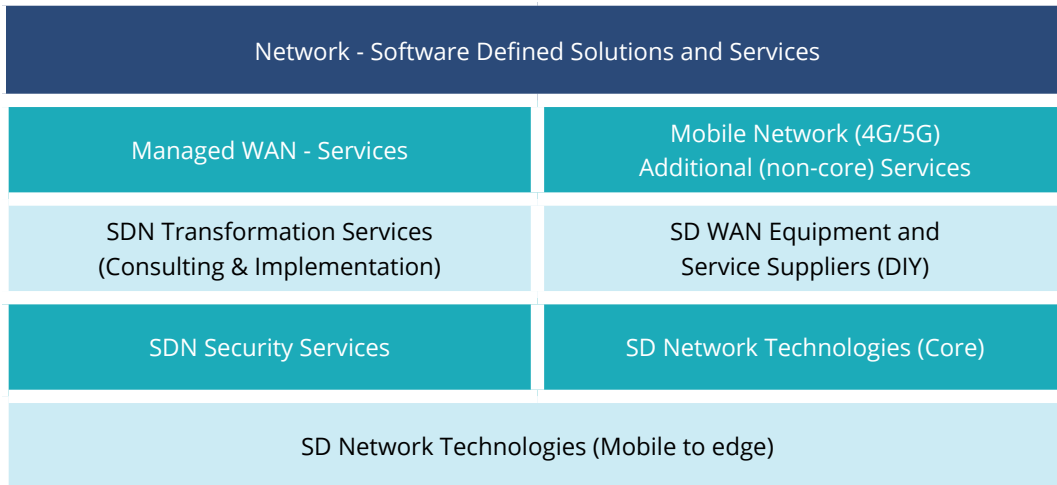
Many service providers that are reviewed in this study are involved in pilot projects and are regularly converting them into production-level deployments. Some have already completed such activities or have many demonstrated instances of doing so on behalf of their clients. This progression, coupled with the relative newness of SDN, has led ISG to expect that many of the companies that are currently categorized as Product Challengers or Market Challengers in this study will be able to improve their positioning over the course of the year to enter leadership positions in their respective segments.

It must be noted that significant volatility exists in the constellation of market providers, partly due to the multitude of mergers and acquisitions that occurred during the last 18 months. This trend is set to continue and may even increase during the remainder of 2019 as SDN becomes mainstream.



Introduction

Simplified illustration



Source: ISG 2019

Definition

The ISG Provider Lens™ study examines the different kinds of global network offerings related to SDN, SD-WAN and associated security, core-branch and mobility service offerings related to those segments. It also assesses the more traditional managed WAN market offerings. For users, both markets are extremely important. This study accounts for changing market requirements and provides a consistent market overview of the segments. It also offers concrete decision-making support to help user organizations to evaluate and assess the offerings and performance of service providers.

The areas described in the following sections are associated with SDN and more traditional managed WAN provisioning.

Definition (cont.)

Scope of the Report

Managed WAN Services

Managed WAN services cover the features and functionality that carriers offer in their WAN and at the customer point of demarcation. They are a collection of value-added services (VAS) that offer monitoring and reporting, security and outsourced customer-premises equipment (CPE) functions. Many enterprises see managed WAN services as a way to outsource IT functions and purchase them along with consulting and professional services to assess, design and implement their enterprise networks. At the basic level, the managed WAN services offered by carriers provide monitoring and alerts for critical problems such as network outages. Higher tiers of service can add configuration management, proactive troubleshooting and trouble resolution, service-level agreement (SLA) management, more sophisticated and granular monitoring and reporting, on-the ground CPE installation and hardware support to ensure that CPE software is up to date and configured correctly, and the overall lifecycle management. This section should cover all the major suppliers of managed WAN services for enterprises.

Mobile Network (4G/5G) Additional (non-core) Services

Fifth generation (5G) mobile networks and wireless systems are the next telecommunication standards after the current long-term-evolution (LTE) or 4G technology, operating in the millimeter wave bands (28, 38, and 60 GHz). 5G is aimed at a higher capacity than the current 4G, which would allow for an increased density of mobile broadband users and support more device-to-device, reliable and massive machine communications. It is also aimed at lowering latency and battery consumption compared to 4G equipment and is targeted at the internet of things (IoT). This segment covers specific mobility-targeted services or solutions, applications, management systems and methods, end-device control and management and related services. These services are either offered by service providers or suppliers as discrete solutions or as modules that will integrate with or are reliant on SDN or SD-WAN.

This section should cover all the suppliers of these additional services that make use of software-defined systems via LTE/4G or 5G delivery. **It does not cover the core licensed mobile telephony/data services themselves.**

Definition (cont.)

SDN Transformation Services (Consulting & Implementation)

SDN and SD-WAN provides the benefits of SDN technology to traditional hardware-based networking and is considered complementary to NFV. It is an overlay architecture with a networking foundation that is much easier to manage than legacy WANs. It essentially moves the control layer to the cloud and in the process, centralizes and simplifies network management. This overlay design abstracts software from hardware, enabling network virtualization and making the network more elastic. SD-WAN architecture reduces recurring network costs, offers network-wide control and visibility, and simplifies the technology with zero-touch deployment and centralized management. The key aspect of the SD-WAN architecture is its

ability to communicate with all network endpoints without the need for external mechanisms or additional protocols. Suppliers have been increasingly active as advisors/consultants as well as implementation enactors of managed services to supply complete solutions to enterprises. Consulting companies, large vendors and managed network services providers have been actively involved in offering SD-WAN as managed service packages in this space (independently or as part of partnership/consortium deals).

This quadrant should cover all the advisory/consulting, hardware and software, management/reporting tools, applications and services associated with delivering SD-WAN to enterprises, starting from consulting to managed services delivery.

Definition (cont.)

SD-WAN Equipment and Service Suppliers (DIY)

SD-WAN provides the benefits of SDN technology to traditional hardware-based networking. It has an overlay architecture with a networking foundation that is much easier to manage than legacy WANs. It essentially moves the control layer to the cloud and then centralizes and simplifies network management. This overlay design abstracts software from hardware, enabling network virtualization and making it more elastic. SD-WAN architecture reduces recurring network costs, offers network-wide control and visibility, and simplifies the technology with zero-touch deployment and centralized management. The key aspect of the SD-WAN architecture is its ability to communicate with all network endpoints without the need for external mechanisms or additional protocols. Suppliers have been active in selling directly SD-WAN solutions to enterprises for their “DIY” (enterprise owned and non-managed) implementations. They are also increasingly partnering with licensed telco/service providers to offer delivery packages in this space.

This section should cover all hardware and software, management/reporting tools, applications and services associated with delivering SD-WAN for enterprise-owned operations.

SDN Security Services

An SD-WAN is a logical overlay network that encompasses any WAN transport — public, private, even LTE/4G or 5G, and is independent of any single carrier or service provider. The overlay occurs between any two SD-WAN nodes, called edges, which can be deployed at the branches and/or data centers. A cloud-delivered variation extends the overlay to any cloud point-of-presence (PoP) or data center. A key value in security services for the network is that SD-WAN unifies secure connectivity over all transports while supporting transport independence. There is no need to use/provide a different security mechanism for different transport types or to depend on the transport provider for their secure network. The network overlay can support a wide range of security capabilities and can enhance its inherent security capabilities by adding advanced security systems in the form of discrete overlays, services or applications. It can be managed both automatically and centrally as well as at local levels.

This section should cover all suppliers of software and/or hardware associated with additional and discrete security services based on SDN or SD-WAN systems.

Definition (cont.)

Network Technologies Suppliers (Core)

SDN technology is a networking approach that eliminates the complex and static nature of legacy distributed network architectures by using a standards-based software abstraction layer between the network control plane and underlying data forwarding plane in both physical and virtual devices. It is fundamentally different from NFV in terms of end results and ability, although both approaches are mutually supportive. A network virtualization program eliminates the conventional shortcomings and provisioning tasks related to legacy network segmentation technologies, such as switched VLANs, routed subnets, and firewall access lists (ACLs). An SDN-based network virtualization application supports arbitrary assignment of IP/MAC addressing schemes, automates network configuration tasks and enforces the expected network segmentation. Data plane abstraction provides a standards-based approach to dynamically provision the network fabric from a centralized (or distributed) software-based controller or multiple controllers.

SDN technologies enable improvements in network agility and automation and can substantially reduce the cost of network operations compared to traditional network deployments. The implementation of an industry-standard data plane abstraction protocol (such as OpenFlow) allows the use of any type and brand of data plane devices as all the underlying network hardware is addressable through a common abstraction protocol. It allows the dynamic and automatic provisioning of virtual network segments and virtual routing services on both physical and virtual networking devices. Security policies can be automatically provisioned via a cloud orchestration platform, such as OpenStack, or through workloads assigned according to attributes, such as MAC, subnet, VLAN and IP protocol, in an automated manner.

The main companies covered in this segment of this study will be vendors of SDN and NFV equipment and core services that are purchased either directly by enterprises or by service providers for specific enterprise projects.

Definition (cont.)

Network Technologies Suppliers (Mobile to Edge)

SDN technologies enable improvements in network agility and automation and can substantially reduce the cost of network operations when compared to traditional network deployments. The implementation of an industry-standard data plane abstraction protocol, such as OpenFlow, allows the use of any type and brand of data plane devices as all the underlying network hardware is addressable through a common abstraction protocol. It also allows for the dynamic and automatic provisioning of virtual network segments and virtual routing services on both physical and virtual networking devices. All edge components may be managed in the same manner as core and SD-WAN components. With software-defined access out to branch/edge, including all customer premises equipment (CPE, referenced as virtual CPE or vCPE in SDN terms) and associated Wi-Fi networks, access points (APs), software-defined mobile networks (SDMN), and SD-LAN

(includes both wireless [SD-WLAN] or mobile [SD-WMLAN], the management protocol can be further improved.

This segment assesses all the main vendors and service providers (such as telcos) in the SD-LAN space, including vCPE, SDMN and SD-LAN specific vendors.

In this independent study, following the format of the internationally successful Provider Lens™ series, ISG sets out to deliver a comprehensive but defensible research program based on an extensive evaluation of criteria that cover all major telcos and service providers of relevance in the global, Germany, the Nordics, the U.K. and the U.S. regions.

Provider Classifications

The ISG Provider Lens™ quadrants were created using an evaluation matrix containing four segments, where the providers are positioned accordingly.

Leader

The “leaders” among the vendors/providers have a highly attractive product and service offering and a very strong market and competitive position; they fulfill all requirements for successful market cultivation. They can be regarded as opinion leaders, providing strategic impulses to the market. They also ensure innovative strength and stability.

Product Challenger

The “product challengers” offer a product and service portfolio that provides an above-average coverage of corporate requirements, but are not able to provide the same resources and strengths as the leaders regarding the individual market cultivation categories. Often, this is due to the respective vendor’s size or their weak footprint within the respective target segment.

Market Challenger

“Market challengers” are also very competitive, but there is still significant portfolio potential and they clearly lag behind the “leaders.” Often, the market challengers are established vendors that are somewhat slow to address new trends, due to their size and company structure, and have therefore still some potential to optimize their portfolio and increase their attractiveness.

Contender

“Contenders” are still lacking mature products and services or sufficient depth and breadth of their offering, while also showing some strengths and improvement potentials in their market cultivation efforts. These vendors are often generalists or niche players.

Provider Classifications (cont.)

Each ISG Provider Lens™ quadrant may include a service provider(s) who ISG believes has a strong potential to move into the leader's quadrant.

Rising Star

Rising stars are mostly product challengers with high future potential. When receiving the “rising stars” award, such companies have a promising portfolio, including the required roadmap and an adequate focus on key market trends and customer requirements. Also, the “rising stars” has an excellent management and understanding of the local market. This award is only given to vendors or service providers that have made extreme progress towards their goals within the last 12 months and are on a good way to reach the leader quadrant within the next 12-24 months, due to their above-average impact and innovative strength.

Not In

This service provider or vendor was not included in this quadrant as ISG could not obtain enough information to position them. This omission does not imply that the service provider or vendor does not provide this service.

Network - Software Defined Solutions and Services - Quadrant Provider Listing 1 of 5

	Managed WAN Services	Mobile Network (4G/5G) Additional (non-core) Services	SDN Transformation Services (Consulting & Implementation)	SD-WAN Equipment and Services (DIY)	SDN Security Services	SD Network Technologies (Core)	SD Network Technologies (Mobile to Edge)
Aerohive	● Not in	● Market Challenger	● Not in	● Not in	● Not in	● Not in	● Not in
America Movil	● Not in	● Contender	● Not in	● Not in	● Not in	● Not in	● Not in
Apcela	● Not in	● Rising Star	● Rising Star	● Rising Star	● Contender	● Rising Star	● Rising Star
Arista	● Not in	● Not in	● Not in	● Contender	● Not in	● Product Challenger	● Not in
Aryaka	● Not in	● Not in	● Market Challenger	● Market Challenger	● Not in	● Not in	● Not in
AT&T	● Leader	● Leader	● Leader	● Not in	● Product Challenger	● Leader	● Leader
ATOS	● Not in	● Not in	● Not in	● Not in	● Contender	● Not in	● Not in
Belkin	● Not in	● Not in	● Not in	● Not in	● Not in	● Not in	● Contender
BT	● Leader	● Leader	● Product Challenger	● Not in	● Leader	● Product Challenger	● Leader
Cato Networks	● Not in	● Product Challenger	● Product Challenger	● Product Challenger	● Not in	● Product Challenger	● Product Challenger
Centrify	● Not in	● Product Challenger	● Not in	● Not in	● Product Challenger	● Not in	● Not in

Network - Software Defined Solutions and Services - Quadrant Provider Listing 2 of 5

	Managed WAN Services	Mobile Network (4G/5G) Additional (non-core) Services	SDN Transformation Services (Consulting & Implementation)	SD-WAN Equipment and Services (DIY)	SDN Security Services	SD Network Technologies (Core)	SD Network Technologies (Mobile to Edge)
CenturyLink	● Leader	● Not in	● Leader	● Not in	● Product Challenger	● Not in	● Leader
China Telecom	● Contender	● Not in	● Not in	● Not in	● Not in	● Product Challenger	● Not in
Cisco	● Not in	● Not in	● Product Challenger	● Leader	● Product Challenger	● Leader	● Leader
Citrix	● Not in	● Product Challenger	● Not in	● Not in	● Product Challenger	● Not in	● Not in
Cloudgenix	● Not in	● Not in	● Not in	● Not in	● Not in	● Product Challenger	● Not in
Colt	● Product Challenger	● Not in	● Not in	● Not in	● Not in	● Not in	● Not in
Computacenter	● Not in	● Not in	● Product Challenger	● Not in	● Not in	● Not in	● Not in
Datto	● Not in	● Not in	● Not in	● Not in	● Contender	● Not in	● Not in
Dell EMC	● Not in	● Not in	● Market Challenger	● Leader	● Not in	● Leader	● Market Challenger
D-Link	● Not in	● Not in	● Not in	● Not in	● Not in	● Not in	● Market Challenger
DXC	● Not in	● Not in	● Not in	● Not in	● Product Challenger	● Not in	● Not in

Network - Software Defined Solutions and Services - Quadrant Provider Listing 3 of 5

	Managed WAN Services	Mobile Network (4G/5G) Additional (non-core) Services	SDN Transformation Services (Consulting & Implementation)	SD-WAN Equipment and Services (DIY)	SDN Security Services	SD Network Technologies (Core)	SD Network Technologies (Mobile to Edge)
Ericsson	● Not in	● Not in	● Not in	● Product Challenger	● Not in	● Product Challenger	● Product Challenger
Extreme Networks	● Not in	● Product Challenger	● Product Challenger	● Product Challenger	● Product Challenger	● Product Challenger	● Product Challenger
Fortinet	● Not in	● Not in	● Not in	● Not in	● Product Challenger	● Not in	● Not in
GTT	● Product Challenger	● Not in	● Contender	● Not in	● Not in	● Not in	● Product Challenger
Harman	● Not in	● Not in	● Not in	● Product Challenger	● Not in	● Product Challenger	● Product Challenger
HCL	● Product Challenger	● Not in	● Product Challenger	● Leader	● Market Challenger	● Leader	● Not in
HPE	● Not in	● Not in	● Contender	● Contender	● Not in	● Contender	● Product Challenger
Huawei	● Not in	● Not in	● Not in	● Contender	● Not in	● Product Challenger	● Not in
IBM	● Leader	● Product Challenger	● Leader	● Leader	● Leader	● Leader	● Leader
Infosys	● Not in	● Not in	● Product Challenger	● Leader	● Product Challenger	● Product Challenger	● Product Challenger
Juniper	● Product Challenger	● Not in	● Leader	● Leader	● Not in	● Market Challenger	● Not in

Network - Software Defined Solutions and Services - Quadrant Provider Listing 4 of 5

	Managed WAN Services	Mobile Network (4G/5G) Additional (non-core) Services	SDN Transformation Services (Consulting & Implementation)	SD-WAN Equipment and Services (DIY)	SDN Security Services	SD Network Technologies (Core)	SD Network Technologies (Mobile to Edge)
Logicalis	Rising Star	Not in	Contender	Not in	Not in	Contender	Not in
Masergy	Market Challenger	Market Challenger	Not in	Market Challenger	Leader	Not in	Not in
Microsoft	Not in	Product Challenger	Not in	Not in	Product Challenger	Not in	Not in
NTT	Product Challenger	Product Challenger	Product Challenger	Product Challenger	Market Challenger	Product Challenger	Product Challenger
Nuage Networks (Nokia)	Not in	Product Challenger	Product Challenger	Product Challenger	Not in	Contender	Not in
Orange Business Services	Leader	Leader	Leader	Leader	Leader	Not in	Leader
PCCW	Market Challenger	Product Challenger	Not in	Not in	Not in	Market Challenger	Not in
Pica8	Not in	Contender	Not in	Not in	Not in	Not in	Not in
Prodapt	Not in	Not in	Product Challenger	Not in	Not in	Not in	Not in
Riverbed	Not in	Not in	Not in	Product Challenger	Not in	Not in	Not in
Silver Peak	Not in	Product Challenger	Product Challenger	Product Challenger	Not in	Not in	Not in

Network - Software Defined Solutions and Services - Quadrant Provider Listing 5 of 5

	Managed WAN Services	Mobile Network (4G/5G) Additional (non-core) Services	SDN Transformation Services (Consulting & Implementation)	SD-WAN Equipment and Services (DIY)	SDN Security Services	SD Network Technologies (Core)	SD Network Technologies (Mobile to Edge)
SingTel	● Product Challenger	● Leader	● Product Challenger	● Not in	● Not in	● Product Challenger	● Not in
Sprint	● Product Challenger	● Product Challenger	● Product Challenger	● Product Challenger	● Not in	● Not in	● Not in
Swisscom	● Market Challenger	● Product Challenger	● Product Challenger	● Not in	● Not in	● Not in	● Not in
Symantec	● Not in	● Not in	● Not in	● Not in	● Leader	● Not in	● Not in
Talari Networks	● Not in	● Not in	● Not in	● Product Challenger	● Not in	● Product Challenger	● Not in
TCS	● Product Challenger	● Product Challenger	● Product Challenger	● Product Challenger	● Product Challenger	● Not in	● Product Challenger
Tech Mahindra	● Leader	● Not in	● Leader	● Not in	● Not in	● Not in	● Product Challenger
Telstra	● Product Challenger	● Not in	● Product Challenger	● Not in	● Not in	● Not in	● Not in
Telus	● Contender	● Not in	● Not in	● Not in	● Not in	● Not in	● Not in
TP-Link	● Not in	● Not in	● Not in	● Not in	● Not in	● Not in	● Contender
Trend Micro	● Not in	● Not in	● Not in	● Not in	● Product Challenger	● Not in	● Not in

Network - Software Defined Solutions and Services - Quadrant Provider Listing 6 of 6

	Managed WAN Services	Mobile Network (4G/5G) Additional (non-core) Services	SDN Transformation Services (Consulting & Implementation)	SD-WAN Equipment and Services (DIY)	SDN Security Services	SD Network Technologies (Core)	SD Network Technologies (Mobile to Edge)
T-Systems	● Product Challenger	● Leader	● Leader	● Not in	● Leader	● Not in	● Not in
Verizon	● Product Challenger	● Leader	● Leader	● Not in	● Not in	● Not in	● Product Challenger
Versa	● Not in	● Not in	● Not in	● Not in	● Not in	● Product Challenger	● Not in
Vmware	● Not in	● Not in	● Not in	● Leader	● Product Challenger	● Not in	● Not in
Vodafone	● Product Challenger	● Leader	● Product Challenger	● Not in	● Leader	● Leader	● Leader
Wipro	● Leader	● Not in	● Leader	● Not in	● Rising Star	● Not in	● Not in
ZTE	● Not in	● Not in	● Not in	● Not in	● Not in	● Not in	● Contender



Network - Software Defined Solutions and Services Quadrants

MOBILE NETWORK (4G/5G) ADDITIONAL (NON-CORE) SERVICES

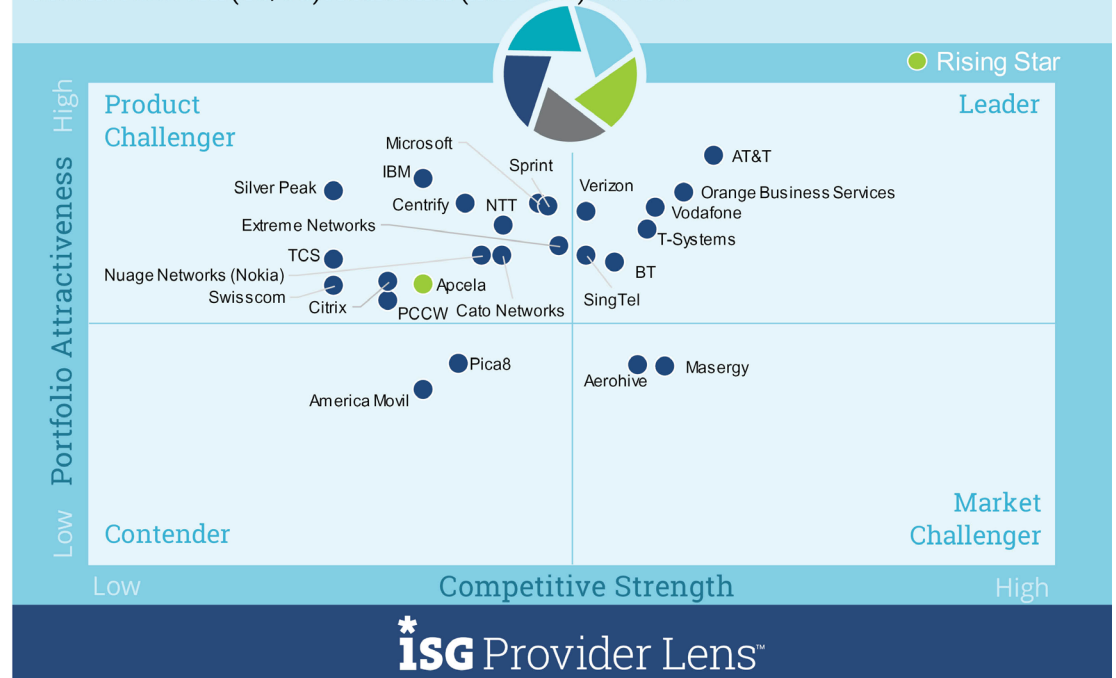
Definition

5G mobile networks or wireless systems are the next telecommunications standards after the current long-term evolution (LTE) or fourth generation (4G) wireless system technology, operating in the millimeter wave bands (28, 38, and 60 GHz). It is aimed at providing higher capacity than current LTE/4G, thereby allowing a higher density of mobile broadband users, increased reliability and support for device-to-device and massive machine communications. It is also aimed at lowering latency and battery consumption compared to LTE/4G equipment and is targeted for mass internet of things (IoT) implementations.

However, this next-generation standard is being challenged by the increase in both speed and functionality of LTE/4G networks and equipment and their current rather than future availability. 5G coverage is planned to reach almost 73 percent of the European population by the end of 2025, although these plans are currently far from concrete. Capex spending is not expected to be a priority for most carriers before 2020–2021. Many pilots and proof of concept (POC) projects for specific use cases are planned for 2019–2021, resulting in most enterprises considering 5G for only long-term strategic planning.

Network - Software Defined Solutions and Services
Mobile Network (4G/5G) Additional (non-core) Services

2019
Global



Source: ISG Research 2019

MOBILE NETWORK (4G/5G) ADDITIONAL (NON-CORE) SERVICES

Definition (cont.)

The combination of improved network coverage, connected device proliferation (including IoT-type devices), higher speed demands and capabilities, enhanced service quality and reliability plus attractive package price points for users continues to drive the growth of mobile products and services. Mobility is also becoming increasingly important for enterprises.

ISG research has showed that around 85 percent of all employed adults in the U.S. and EMEA use their mobile services and devices for both business and personal purposes. However, recent multi-operator surveys in those regions have indicated that only 41 percent of mobile users were aware that they require enterprise-specific security and policy applications or enterprise software. This statistic is increasing rapidly due to the increase in enterprise-specific use cases and innovations based on new technologies and services. According to the GSMA, mobile data traffic is expected to grow at a CAGR of 42 percent to 15.5–16 exabytes per month during 2016–2022, partly attributed to these trends.

Operators are still investing heavily in LTE/4G and are actively rolling out LTE/4G to populations globally. In many circumstances, LTE/4G applications and bandwidth are already beginning to deliver results similar to those that are expected to be available in 5G. This has raised many questions among companies and analysts on when (or whether) the enterprise adoption of 5G will become a reality.

This segment covers specific mobility-targeted services or solutions, applications, management systems and methods, end-device control and management and related services. These services are either provided by service providers or suppliers as discrete solutions or as modules that will be integrated with or rely on SDN or SD-WAN. **This section does not cover the core licensed mobile telephony/data services themselves.**

MOBILE NETWORK (4G/5G) ADDITIONAL (NON-CORE) SERVICES

Eligibility Criteria

- Product/service portfolio coverage and scope
- Ability to deliver as a value-added service in a 4G/5G environment using software-defined methods
- Understanding of the overall market area and innovations/contributions to that area
- Scope of partnerships and offerings integration into a coherent solution delivery to customer
- Stability and roadmap planning
- Reference customer/solutions in POC/post pilot/commercial deployment
- Competitiveness of offering and types of commercial terms

Observations

- **AT&T** has a vast array of mobile applications such as dynamic traffic management, enhanced push to talk, messaging and enterprise app traffic management. Its business focus areas, such as field management, remote access mobile workplace, are regularly refreshed. Its offerings include SDN, NFV and SD-WAN capabilities and integration.
- **BT** has a global and high-quality network along with an impressive portfolio of solutions for many industry verticals. It offers enterprise-wide mobile business applications and value-added solutions. It also has a strong partner program along with its own offerings.
- **Orange Business Services** has a plethora of value-added mobile applications that are self-developed or offered by its partner ecosystem with an Orange-branded wrapper for enterprise clients.
- **Singtel** has a seemingly traditional mobile enterprise offering in terms of separation (for e.g. enterprise mobility and mobile device management). The services are highly robust and advanced. The firm has also integrated its services with some business-specific packaged solutions such as push to talk, mobile call recording, message retrieval and unified communications.

MOBILE NETWORK (4G/5G) ADDITIONAL (NON-CORE) SERVICES

Observations (cont.)

- **T-Systems** delivers comprehensive enterprise mobility management (EMM), including all the functionalities expected within a mobile device management (MDM) delivery. It also offers applications and services in the value-added service (VAS) category, such as expenses management, BYOD/COPE/COBO management and functionality, multi-level security add-ons and unified endpoint management (UEM).
- **Verizon** offers an array of mobile business solutions that give enterprises access to some of the industry's most innovative products and services, with the added benefit of working with one source and one bill. In addition to having its own consulting resources, the company works with more than 40 professional service companies globally.
- **Vodafone** along with its Vodafone Global Enterprise division provides telecommunication and IT services to corporate clients in 150 countries. It is a strong proponent of NFV/SDN and SD-WAN and is focused on offering enterprise-focused services in those areas. The group also offers mobile products with value-added services to enterprises.
- Rising Star **Apcela** is continuing its impressive transformation into an enterprise-centric provider of deterministic networking services, aligning enterprise application and network performance requirements. The firm has network as a service (NaaS)-oriented products that are based on its AppHUB platform. It also offers low latency with high frequency SD-WAN as a service based on its modular Alpha platform.

AT&T

Overview

AT&T has a competitive range of offerings in mobile, edge, access and application accelerators, security, cloud and SDN integration with extensive global business coverage. It has its own range of products and services such as AT&T FlexWareSM that is delivered via AT&T Enterprise Mobility Management solutions. The company has an extensive partner network to deliver best-of-breed solutions that can be customized for specific client requirements.

Strengths

Continued SDN/NFV and SD-WAN implementation across own network and business centers: AT&T has 4G/LTE infrastructure and is also involved in extensive 5G trials. It has a range of new and advanced mobile applications to take advantage of these features present and more are expected to be rolled out in the future.

Portfolio size: AT&T has a vast array of mobile applications, including dynamic traffic management, enhanced push to talk, messaging and enterprise app traffic management. Some of its business focus areas are field management and remote access mobile workplace. The company has many industry verticals in various regions.

A-Z supplier: Through its business and government units, AT&T supplies partial or complete network solutions and replacements as well as upgrades/transitions to traditional network enterprises. It also offers discrete or integrated mobility value-added solutions.

Caution

AT&T must overcome the perception of many enterprises, particularly (but not exclusively) mid-sized businesses, that its solutions are only applicable to those with large staff and in-house technical solutions which they want to maintain.



2019 ISG Provider Lens™ Leader

AT&T has an impressive global reach and a deep understanding of customer requirements, coupled with an extensive range of mobility products and solutions.

BT

 Overview

BT has a robust high-quality network with a pantheon of partner providers around the world in both the wire-line and mobile solution space. It delivers a range of value-added mobile solutions such as DyNS, BT Connect Acceleration, BT UC, BT Branch UC, Connect Cisco SD-WAN, Connect Meraki SD-WAN, Connect Intelligence IWAN, Connect Intelligence InfoVista, Connect Intelligence Riverbed and Agile Connect. BT was the first provider to market Cisco SD-WAN in 69 countries with a BT service wrap to help clients migrate from dedicated Cisco estates to managed SD-WAN operations.

 Strengths

Portfolio strength: BT has a strong portfolio of its own offerings as well as from partners to deliver tailored client solutions within SDN and the “mobile first” enterprise space, often with the BT service wrap as the leading proposition. The company uses world-class solutions from Cisco, Nuage, Riverbed, Infovista and many other partners.

Application aware: BT is focused on providing application-aware services directed towards mobile management and application (mobile enterprise) solutions. The company is continuing to innovate its network services and actively positions SDN migration as the underlying enabler for clients to use many of these services.

Standards driven: The company is future focused and has strong ties to many global associations and standard groups, which it leverages to adjust its roadmap.

 Caution

BT has a larger portfolio than many of its competitors. However, the absence of a dedicated mobile network arm has created a perception in some markets that the company is holding back its fully converged service offerings, unlike some of its global competitors.

Many mobile operator and mobile-centric companies are expanding their market presence in specific regions to lure enterprise network customers into full network service propositions by offering mobile worker applications and solutions along with SD-WAN partner offerings.



2019 ISG Provider Lens™ Leader

BT is a longstanding leader in industry verticals and mobile workspace value-added solutions, backed by an innovative network and product portfolio.

ORANGE BUSINESS SERVICES

Overview

Orange Business Services has 25,000 employees and 4 regional operation centers with a presence in over 100 countries. It caters to more than 3,000 multinational enterprise customers. The company covers a large range of network services with highly capable consultants leading most engagements that require customized solutions. It has a plethora of value-added mobile applications that are self-developed or offered by its partner ecosystem with an Orange-branded wrapper to enterprise clients.

Strengths

Excellent VAS mobile portfolio and partnership constellation: Orange Business Services has a large coverage of core networks and partnerships, delivering value-added services (VAS) such as Shape & Fix (mobile solutions modelling), fleet management (MDM), enterprise messaging, team management (Aidoo mobile), Xpenditure (expense claims management) and PictBase Air (field service/customer intervention services application).

Well-known mobile and converged solutions: Orange Business Services has been ranked consistently among the top 10 mobile telephony application providers across the globe. It is also well known for its innovative and bundled approaches in this field.

Feature-rich advanced solutions: Feature sets are given for standard-level users, advanced level/requirement users as well as in customized mixes of applications as a client-specific bundle.

Caution

Orange Business Services is strongly positioning itself as the next-generation SDN service provider of the future. The perceived divide between its mobile and software-defined business units should be eliminated in order to shed light on its full convergence and usability for many enterprises.



2019 ISG Provider Lens™ Leader

The company is strongly positioned and well known for its wide range of VAS mobile services that are available globally.

SINGTEL

Overview

Singtel has 75 global offices in 29 countries with 428 point of presence (POPs) in 362 cities. It is one of the longest continuously running telephony service providers globally. It was also rated as one of the top three telco providers in APAC, India and Africa, serving 706 million mobile subscribers and more than 1,500 international enterprise clients. Singtel covers a large range of network services with a team of highly capable consultants to address specific client requirements. The company has a plethora of value-added mobile applications that are self-developed or offered by its partner ecosystem.

Strengths

Mature and capable: Singtel has a long history of delivering advanced and innovative network products and services, including solutions in the mobile business area, for enterprise customers around the world. Some of the applications and solutions in its VAS mobility portfolio are enterprise mobility, mobile device management, Corporate BRN, CIS, Connected Workforce, mobile and message recording, and mobile security.

Combination of features: Singtel combines a strong networking portfolio with professional monitoring and service-level agreement (SLA) fulfilment services across all network fulfilment areas from core to edge, including mobile end device. Some of these mobile and edge offerings, including mobile business enablement, are incorporated with SDN features.

Caution

Singtel is perceived as a more traditional provider in mobile enterprise compared to many of its competitors. Despite being known to be reliable, a more advanced portfolio may be required to ensure Singtel's leadership position for the next 12 months.



2019 ISG Provider Lens™ Leader

Singtel has a strong pedigree of innovative and reliable network delivery for enterprises, particularly in APAC.

T-SYSTEMS

Overview

T-Systems has a comprehensive portfolio of business mobility VAS products, particularly in the management and security areas, which are developed in-house as well as in conjunction with its wide partner network. EMM has all the functionalities that are expected in an MDM delivery. It also includes applications and services in the VAS category, such as expenses management, BYOD/COPE/COBO management and functionality, multi-level security add-ons, and unified endpoint management (UEM) by Workspace ONE (helps companies intelligently manage all endpoints, operating systems and applications).

Strengths

Consultative-led customized solutions: T-Systems can identify the most suitable components of EMM during an in-depth consultation process. It helps clients choose the provider and services that best fit their individual requirements.

Flexible device ownership models: From bring your own device (BYOD), corporate owned, personally enabled (COPE) and corporate owned, business only (COBO) to Extended Enterprise in a model allows clients to provide business partners with secure access (from their devices) to parts of the backend network via managed containers.

Vendor agnostic with different delivery models: The firm can choose among many differing technology leaders to ensure neutrality, with a choice of an optimum delivery method (including public cloud, private cloud, or on-premises) to address client requirements.

Caution

T-Systems has a significant and advanced portfolio of solutions. However, few of its off-the-shelf options appear available for light customization, with few use cases quoted. As a result, many enterprises tend to believe that the consulting and selection process is more time consuming than the implementation itself.



2019 ISG Provider Lens™ Leader

T-Systems provides a comprehensive mobile enterprise service portfolio (VAS), coupled with significant and deep consulting expertise for selection and implementation.

VERIZON

Overview

Verizon has a truly global operation with on-premises coverage in 184 global locations in 67 countries. Verizon has a long history of competing for enterprise market share by offering discrete and mobile value-added solutions (VAS) to enterprises. Although not initially an early adopter of SDN, the firm has embraced it as a delivery and enabling mechanism to support its network services mobility VAS offerings.

Strengths

Portfolio coverage and scope: Verizon has a comprehensive portfolio of mobility VAS focused on enterprises, covering critical areas such as mobile device management, voice cypher, (security) wireless private networks and business continuity. Discrete products such as push to talk, field force manager and business messaging are offered across industries.

Pantheon of partner and in-house solutions in business mobility applications: Verizon offers an array of mobile business solutions that gives enterprises access to some of the industry's most innovative products and services, with the added benefit of working with one source and one bill. With 15 partners as well as its own Verizon Connect product, the company covers spectrum of requirements, from MobileIron to Office365.

Strong in-house and partner consultancy-led engagement principle: Verizon advisors can help build a comprehensive digital strategy that prioritizes mobility, business security and productivity, and supports automated device deployments. The company has also partnered with more than 40 professional services companies, offering a broad variety of service specialties, geographic strengths and certifications.

Caution

Verizon must sustain its leadership position in the overall market. It must effectively fend off competitors, particular those from Asia which offer strong product portfolios from their partners, many of which are part of Verizon's network.



2019 ISG Provider Lens™ Leader

Verizon has a solid, innovative portfolio that is enhanced significantly by its partner offerings under the Verizon management banner.

VODAFONE

Overview

Vodafone primarily operates services in the regions of Asia, Africa, Europe and Oceania. Among the mobile operator groups globally, it has been ranked fourth in terms of mobile customer base (circa 650 million) as of 2018. The firm owns and operates networks in many countries and has partner networks in others. Its Vodafone Global Enterprise division provides telecommunications and IT services to corporate clients in 182 countries with own PoPs in 74. It is a strong proponent of NFV/SDN and SDN and supplies enterprise-focused services in those areas as well as mobile and VAS mobile products and services.

Strengths

Expert practitioners for customized solutions: Vodafone can identify the most suitable components of EMM for clients during an in-depth consultation process led by its professional services group. It does not apply a “one size fits all” approach.

Flexible applications and VAS groupings: The group applies different models to ensure that specific enterprise needs are met with VAS deployments. The practice areas of EMM, device lifecycle management, Vodafone device manager cloud (VDM Cloud), Red Flex, central ordering, global telecoms reporting and telecoms lifestyle assessment widely cover enterprise requirements.

Vendor agnostic with different delivery models: Many differing technology leaders can be chosen to ensure neutrality, with a choice of an optimum delivery method to suit the client.

Caution

Vodafone has an extensive and advanced portfolio of solutions but has few use cases and examples for reference. As a result, many enterprises believe that the consulting and customization process is demanding and time consuming.

Vodafone still lacks coverage (covers 25 cities directly, with partnering to reach others) and visibility in the critical North American region.



2019 ISG Provider Lens™ Leader

Vodafone provides a comprehensive mobile enterprise (VAS) service portfolio, coupled with deep professional services ability and industry vertical knowledge.

RISING STAR: APCELA

Overview

Apcela is continuing its impressive transition into an enterprise-centric provider of deterministic networking services, aligning enterprise application and network performance requirements. The firm offers NaaS-oriented products that are based on its AppHUB platform. It also offers low latency with high frequency SD-WAN as a service based on its modular Alpha platform. The company has an impressive private network ability and operates in 185 locations across 43 countries with more than 70 cloud hubs. Apcela's strong partnering capabilities with other providers and gateways enable it to efficiently deliver managed SD-WAN solutions including mobile accelerators and secure applications on mobile.

Strengths

Expanding products and service range: Apcela has expanded its range of offerings and services to include application acceleration for Office 365 and distributed security. This is further supported with Apcela's AppHub Platform, global network services and professional services practices, and mobility products accelerating applications.

Impressive growth and coverage: Apcela has a smaller revenue share compared to many leaders in the SDN transformation services space. However, its enterprise business units are growing rapidly at a 35 percent CAGR, accounting for over 60 percent of all revenues with 35 percent YoY growth in new enterprise clients. This has led to new practices and many new clients being added in new global locations.

Caution

The new SD reference cases (while mobility enabled) often move further away from mobile-focused trading or secure mobile accelerated applications, which were previously a delivery focus area for the company.



2019 ISG Provider Lens™ Rising Star

Apcela is rapidly gaining prominence in the SD-WAN and SD networking space, including mobile VAS globally.



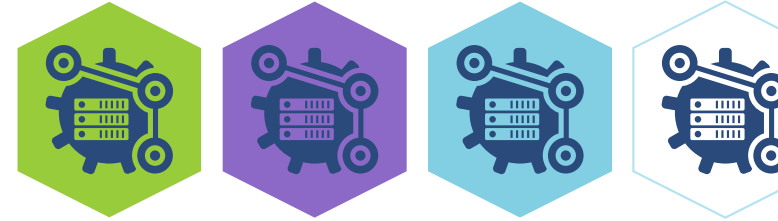
Methodology

METHODOLOGY

The ISG Provider Lens™ 2019 - "Network - Software Defined Solutions and Services" research study analyses the relevant software vendors and service providers in the Global market, based on a multi-phased research and analysis process, and positions these providers based on the ISG Research methodology.

The study was divided into the following steps:

1. Definition of Network - Software Defined Solutions and Services
2. Use of questionnaire-based surveys of service providers/vendor across all trend topics
3. Interactive discussions with service providers/vendors on capabilities & use cases
4. Leverage ISG's internal databases & advisor knowledge & experience (wherever applicable)
5. Detailed analysis & evaluation of services & service documentation based on the facts & figures received from providers & other sources.
6. Use of the following key evaluation criteria:
 - Strategy & vision
 - Innovation
 - Brand awareness and presence in the market
 - Sales and partner landscape
 - Breadth and depth of portfolio of services offered
 - Technology advancements



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