ISG Provider Lens™

Network - Software Defined Solutions and Services

SD Network Technologies (Mobile to Edge)

Global 2019

Quadrant
Report

A research report comparing provider strengths, challenges and competitive differentiators

Customized report courtesy of:

orange **Business Services**

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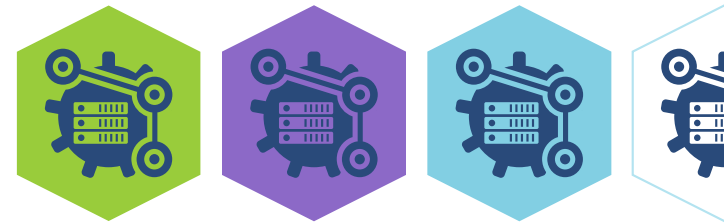
Improving customer satisfaction while boosting sales: The ability to respond quickly and seamlessly to customer queries and quickly provide (often automatically) new services via SDN helps in elevating client experience and boosting sales.

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.

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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

Network - Software Defined Solutions and Services

Managed WAN - Services	Mobile Network (4G/5G) Additional (non-core) Services
SDN Transformation Services (Consulting & Implementation)	SD WAN Equipment and Service Suppliers (DIY)
SDN Security Services	SD Network Technologies (Core)

SD Network Technologies (Mobile to edge)
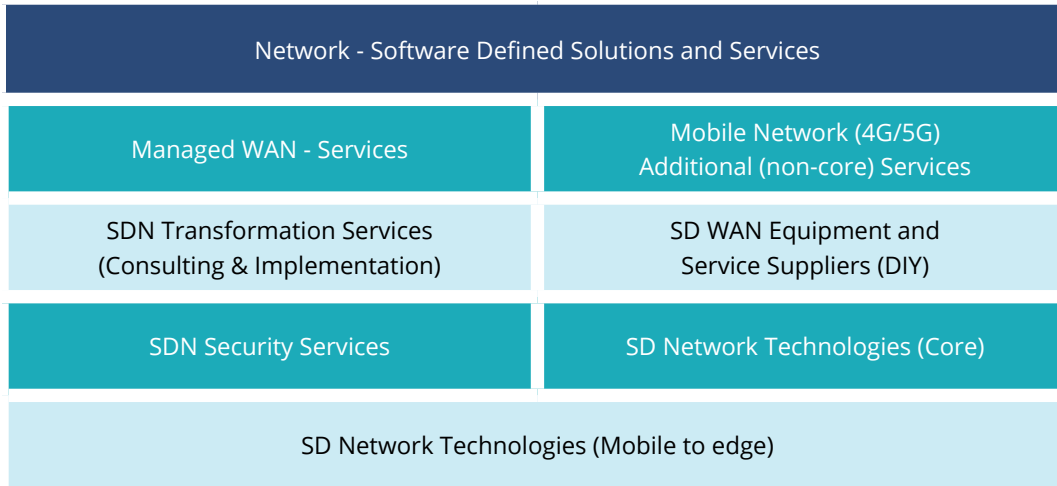
Source: ISG 2019

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.

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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.

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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

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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

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Network - Software Defined Solutions and Services Quadrants

SD NETWORK TECHNOLOGIES (MOBILE TO EDGE)

Definition

SDN technologies enable improvements in network agility and automation, while substantially reducing the cost of network operations compared to traditional network deployments. Deploying 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. Such a protocol allows for a dynamic and automatic provisioning of virtual network segments and virtual routing services on both physical and virtual networking devices. Additionally, with SD access in branch/edge, including all customer premises equipment (CPE, referenced as virtual CPE or vCPE in SDN terms) and associated WiFi networks, access points (APs), software-defined mobile network (SDMN), software-defined local area network (SD-LAN), which includes both wireless (SD-WLAN) or mobile (SD-WMLAN), the management protocol can be further improved.

Network - Software Defined Solutions and Services
SD Network Technologies (Mobile to edge)

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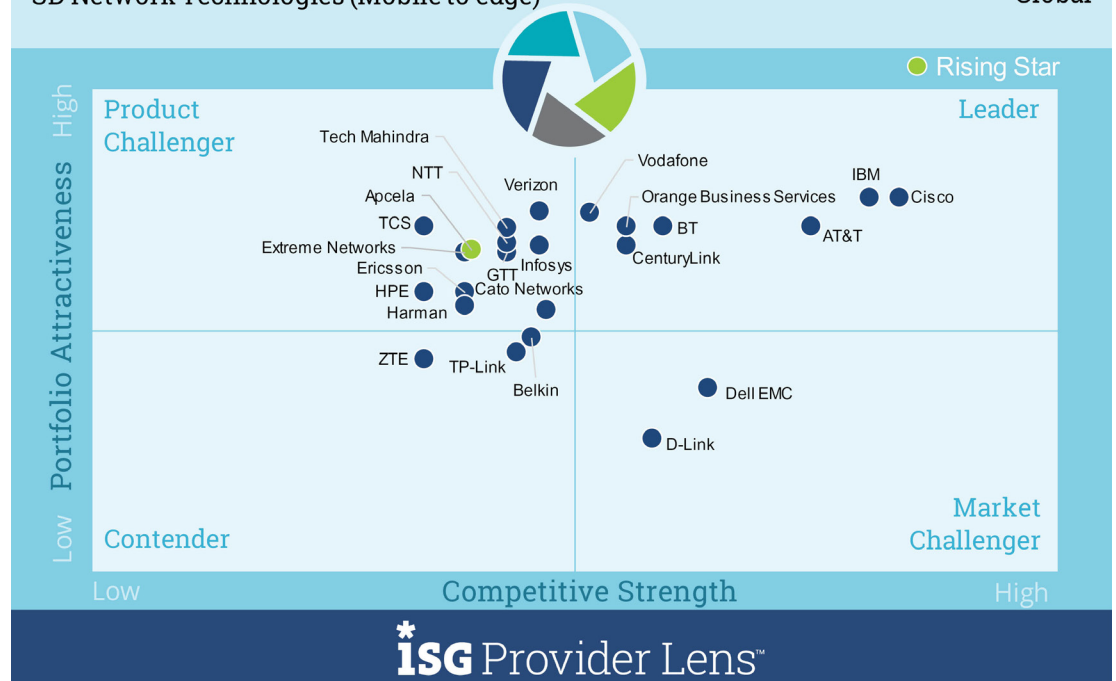
Source: ISG Research 2019

SD NETWORK TECHNOLOGIES (MOBILE TO EDGE)

Definition (cont.)

vCPE

The traditional CPE deployment model, which requires multiple specialized devices at customer premises with each involving complex installation and possibly pre-installation of enterprise-specific codes or software, is extinct. vCPE is replacing multiple hardware appliances with a generic CPE that is vendor independent and based purely on performance points, utilizing SDN and/or SD-LAN and delivery capabilities rather than branding. This enables enterprises to provide services on-demand with the required flexibility to rapidly scale up/down services at high reliability and quality levels without the need for trained technical or support staff.

SDMN

SDMN is relatively new and stems from the complexity of network management in 5G mobile networks and beyond, driven by the growing mobile traffic demand, heterogeneous wireless environments, and diverse service requirements. This environment has driven a perceived need to introduce new radio network architecture by taking advantage of software-oriented design, the separation of the data and control planes, and network virtualization to manage complexity and offer flexibility in 5G networks. SDN in mobile networks is fundamentally different from SDN for the internet. Mobile networks deal with the wireless access problem in complex radio environments, while the internet mainly addresses the packet-forwarding problem. Specific requirements in mobile networks shape the development of SDMN. As the proposed micro networks and enterprise-specific networks within 5G move towards reality and piloting, SDMNs (as part of the enterprise managed portfolio) are gaining prominence.

SD NETWORK TECHNOLOGIES (MOBILE TO EDGE)

Definition (cont.)

SD-LAN

SD-LAN is an emerging solution built on the principles of software-defined networking. However, there are key differences in topology, network security, application visibility and control, management and quality of service compared to a wider reaching SDN or SD-WAN system. SD-LAN is similar in concept to cloud managed LAN systems. It decouples control management and data planes to enable a policy-driven architecture for wired and wireless LANs. SD-LANs are characterized by their use of a cloud management system and wireless connectivity without the presence of a physical controller. They may be found both in more traditional network environments with cloud management services, or as part of overreaching SDN/SD-WAN deployments and strategies.

SD-LAN builds an application and policy-driven wired and wireless access architecture, offering self-organizing and centrally managed networks that are simpler to operate, integrate and scale. It can prioritize and change the behavior of the network based on application requirements and policies of what can be accessed by users, clients and IoT. Typically, it has self-optimizing, self-healing and self-organizing wireless access points and access switches and is cloud managed. It has fully open APIs that allow tight integration of network and applications infrastructures that are not vendor dependant.

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

SD NETWORK TECHNOLOGIES (MOBILE TO EDGE)

Eligibility Criteria

- Product portfolio coverage, focus areas, completeness of broader solutions

- Ability to deliver equipment and service to customer, inclusive of prerequisite training

- Understanding of overall market area, technology environment and evolutions and contributions to that area

- Scope of partnerships and offerings, management capability for the needed orchestration within a customer project

- Openness of offering to avoid vendor lock-in

- Completeness of customer support and assistance post delivery

- Stability and roadmap planning of the provider

- Reference customer/solutions in post pilot/commercial deployment

- Competitiveness of offering and types of commercial terms

Observations

- **AT&T** FlexWare℠ covers the SD-WAN area and is responsible for core-to-edge functions. AT&T vCPE services under FlexWare℠ shifts control intelligence from CPE or edge devices into a centralized software-based controller.

- **BT** has set up its Connected Edge platform that is based on open technology (x.86 devices with future-proofed solutions utilizing established providers, with global logistics capability and migration path for existing Cisco infrastructure).

- **Cisco** solutions, which are based on Meraki, are innovative for SME business on a larger scale than Viptela SD-WAN offerings. Both invoke and utilize intelligent edge functionality, control and capabilities.

- **CenturyLink** offers adaptive networking solutions, SD-WAN as a service, and application and performance-aware routing with full flexibility in appliance deployments based on uCPE.

- **IBM** has put significant focus on its network engineering, integration and innovation services within GTS over the last two years. It also offers SD-LAN, intelligent edge and u/vCPE devices and virtualized devices at the edge. The firm has a strong portfolio of its own technology and solutions together with those from a vast partner ecosystem.

SD NETWORK TECHNOLOGIES (MOBILE TO EDGE)

Observations (cont.)

- **Orange Business Services** uCPE is a key enabler for flexible SD-WAN and covers VNF primary functional areas (VNF vRouter, VNF SD-WAN, VNF Security, VNF WAN Op), orchestration (deployment and chaining of VNF, Ciena, BluePlanet), middleware (operating system supporting virtualized functions) (Cisco, Juniper) and hardware, x86 platform, uCPE vendor platform (Cisco ENCS, Juniper NFX) or whitebox.

- **Vodafone** has made significant investments in edge technologies and services and has many developments of its own. The packaging of solutions, support and consulting services on those service-wrapped items are its focus of delivery. It relies on key partners to deliver the individual VNF and edge/branch product and technology sets.

- Rising Star **Apcela** has a strong base in high-performance/low-latency networks, hybrid networks and multi-cloud and SD networking. It is particularly known for allowing smooth and accelerated application use and delivery. It has gained recognition in this segment by utilizing its in-house development to create a range of important NaaS-oriented products.
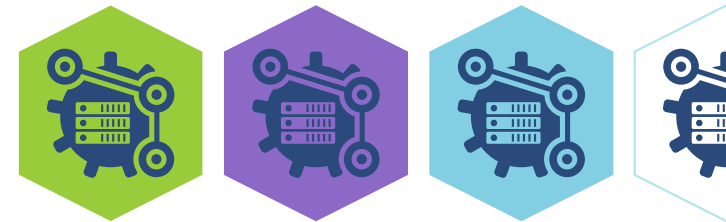
AT&T

Overview

AT&T has a vast array of business and technology streams in the networking space and was early to realize the potential benefits of SDN and SD-WAN, with internal and external POCs taking place ahead of most of the other suppliers. This has evolved to form a distinct focus and provisioning areas in SDN, SD-WAN and access, with AT&T FlexWare℠ covering the SD-WAN area and becoming responsible for core to edge functions. AT&T vCPE services under FlexWare℠ shifts control intelligence from CPE or edge devices into a centralized software-based controller.

Strengths

Strong capabilities: Through its business units, AT&T is positioned to supply intelligent edge vCPE products and branch control, utilizing FlexWare℠ to manage provisioning and deployment of CPE functions.

Portfolio scale, depth and breadth: AT&T has a vast internally developed portfolio of products and services that can address many enterprise requirements. It also has best-of-breed products and services from its extensive partner ecosystem.

Vendor agnostic: FlexWare℠ uses open interface control to enable the installation of CPE and vCPE elements from multiple vendors.

Caution

AT&T is seen as a supplier for only large enterprises in many regions. It must make significant efforts to change this image in order to attract the SME marketplace in all regions.

2019 ISG Provider Lens™ Leader

AT&T has an innovative edge roadmap and ability built around its FlexWare℠ capabilities.

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BT

Overview

BT is a longstanding leader in network services. It provides consulting, managed services, cloud, network and enterprise improvement services and technology to its vast enterprise customer base. Most of these services are offered under the Global Services banner. The company has an extensive partner constellation as well as its own products and services, often in integrated ecosystems of delivery. In the SD-WAN and edge areas, BT has set up its Connected Edge platform based on open technology (x.86 devices with future-proofed solutions utilizing established providers with global logistics capability and migration path for existing Cisco infrastructure). Current versions are running on Cisco 5000 Series EENCS. This is in conjunction with virtualized network functions (VNFs), which are equivalent to BT's managed solutions.

Strengths

Client requested focus on intelligent edge: BT has taken customer feedback to enable and develop its edge strategy, leading to a customer take-up.

Model simplicity: BT is focused on the simplicity of its x.86 hardware for most of its clients' deployments. It offers easy-to-understand service wrappers that use the same service offerings in SD-WAN.

Caution

BT has an advanced SD-WAN proposition with intelligent edge. However, it should provide more clarity to clients on the available offerings as well as future developments.

2019 ISG Provider Lens™ Leader

BT is a well-performing company with excellent intelligent edge products that are offered with managed service wrappers.

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CISCO

Overview

Cisco offers a broad array of infrastructure hardware and software, including core SD network technologies. It provides switches, routers, network optimization support (NOS), SD-WAN, Intelligent WAN (IWAN), WAN hardware and software, and the requisite control, management and automation capability covering core technology to CPE edge. Its Meraki-branded solutions are innovative for SME business. On a larger scale, its SD-WAN offerings (based on Cisco Viptela) are highly scalable. Both invoke and utilize intelligent edge capabilities.

Strengths

Extensive portfolio: Cisco has a full portfolio of SD-WAN hardware (ASR/ISR 1000, ISR 4000, routers, vEdge routers), management systems (such as vManage), and Cisco SD-WAN (Viptela and Meraki) solutions. It has strong references for vCPE and intelligent edge deployments at enterprises.

Mature and innovative offerings: Cisco was one of the first companies to produce edge and vCPE/vManage technologies and services for the SDN and SD-WAN market, giving it a leading edge over other providers.

Caution

Cisco appears to be working in all supply areas of the market, sometimes in direct competition to key (partner) clients within the same RFI/RFQ/bids. This is historically a dangerous situation for vendors.

2019 ISG Provider Lens™ Leader

Cisco is a key supplier of SD-WAN and intelligent edge hardware and services globally.

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CENTURYLINK

Overview

CenturyLink has been ranked consistently as one of the most dynamic and delivery-oriented WAN and SD-WAN companies with an impressive portfolio of its own assets. It has recently made various announcements on ethernet-LAN, SD-WAN, uCPE, internet applications, including access extensions and management that are highly relevant to edge. CenturyLink offers adaptive networking solutions, SD-WAN as a service, and application and performance-aware routing with full flexibility in appliance deployments based on uCPE". The company can host multiple virtual network functions (VNF) with a virtual appliance that can consolidate multiple functions on a single device, thus bringing immense operational and cost efficiencies to the enterprise WAN edge.

Strengths

uCPE edge with managed capabilities in SD-WAN: CenturyLink offers SD-WAN as a service to cover both core and edge, including uCPE functionality and control.

Client and end-customer centric: The firm has implemented a slew of new tools and methods to improve customer experience, both for its clients and end users. It incorporates AI, fault and engineering fix information, order and remedial management as well as billing and usage systems, making edge or branch accounting simple.

Caution

CenturyLink has a strong foothold in Europe and the Americas but lacks a deep presence in APAC and Africa.

The company is well known for its managed service delivery as opposed to providing solutions, which may deter those wanting non-managed solutions.

2019 ISG Provider Lens™ Leader

CenturyLink is a highly capable global provider of uCPE and branch offerings.

IBM

Overview

IBM has been at the forefront of enterprise network and digital transformation for some time. Its software-defined network offerings are led by its IBM Global Technology Services (GTS) division. IBM has put significant focus on its network engineering, integration and innovation services in GTS over the last two years. It is also focused on offering SD-LAN and intelligent edge as well as u/vCPE and virtualized devices at the edge. IBM has a strong portfolio of its own core technologies along with a vast partner ecosystem of leading players and best-of-breed solutions for SD networks and edge management.

Strengths

Strong portfolio: IBM has a strong portfolio of edge technology and management services for SD-WAN, along with a partner ecosystem of leading players in the networking products market. This enables the firm to deliver a comprehensive solution portfolio.

Unrivaled global coverage and local presence: IBM has an almost unrivaled global footprint and is a well-established provider of network and technology infrastructure, integration and operation services globally with local delivery and support capabilities.

Caution

IBM has not published a compelling portfolio of use cases regarding SD-LAN or intelligent edge this time. It is expected to make announcements related to this over the course of the year.

2019 ISG Provider Lens™ Leader

IBM has global credibility in delivering advanced intelligent edge and SD-LAN solutions that are enterprise ready.

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ORANGE BUSINESS SERVICES

Overview

Orange Business Services covers a large range of network services, including SD-WAN (flexible SD-WAN) and uCPE services, which can be provided either on appliance or on VNF. Orange uCPE is a key enabler for Flexible SD-WAN and includes VNF primary functional areas (VNF vRouter, VNF SD-WAN, VNF Security), VNF WAN Operations Orchestration (deployment and chaining of VNF, Ciena, BluePlanet), middleware (operating system supporting virtualized functions; Cisco, Juniper), hardware, x86 platform, uCPE vendor platform (Cisco ENCS, Juniper NFX) or whitebox. Orange Business Services offers extensive consulting capabilities to ensure that client requirements are fully met.

Strengths

Excellent capabilities and partnerships: Orange Business Services offers wide coverage through its own capabilities and partnerships. Its uCPE services are fully compatibility with Flexible SD-WAN through virtual gateways and universal management, allowing easy migration from traditional LAN to intelligent edge.

Out-of-the-box ease: Flexible SD-WAN is an automated, intelligent global solution with on-demand virtualized services. It is centrally orchestrated for end-to-end performance and control via uCPE of edge functionality and inventory.

Consultative services covering POC to commercial roll-out: Orange Business Services provides a highly collaborative, open and consultative approach, together with a network of labs and innovation centers to allow for rapid PoC developments.

Caution

Intelligent edge advantages must be clearly marketed as separate use cases and examples, even if they are part of the Flexible SD-WAN offering, in order to bring clarity to enterprises.

2019 ISG Provider Lens™ Leader

Orange Business Services has excellent edge capabilities for addressing clients' needs. It also has a strong consulting-led implementation program.

VODAFONE

Overview

Vodafone Global Enterprise is a strong proponent of SDN and intelligent edge solutions. Vodafone extensively supplies enterprise-focused services in those areas as well as SD-WAN products and services to enterprises. The firm has made significant investments in developing its own edge technologies and services. However, it is mainly focused on the packaging of solutions, support and consulting around those service-wrapped items, relying on its key partners to deliver the individual VNF and edge/branch product and technology sets required. Edge technology and service deliveries are part of the Vodafone SD-WAN, Cisco Viptela and Cisco Meraki product sets, together with edge items such as vCPE.

Strengths

Expert practitioner-led customized solutions: Vodafone can identify the most suitable components of solutions for clients. It advises them on the SD-LAN and intelligent edge areas that need coverage and which package or components of packages are most suitable for their needs.

Vendor agnostic with different delivery models: The firm can choose among different technology leaders to ensure neutrality, with a choice of an optimum delivery method to suit the client.

Caution

Vodafone relies primarily on service-wrapped edge technologies and solutions from other providers. Many of Vodafone's competitors use the same approach and this may blur its differentiation for clients.

2019 ISG Provider Lens™ Leader

Vodafone provides a comprehensive edge technologies and services delivery with high-quality service wrappers.

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RISING STAR: APCELA

Overview

Apcela has a strong basis in high performance/low latency networks, hybrid networks and multi-cloud and SD networking. It is particularly known for allowing smooth and accelerated application use and delivery. It has gained recognition in this segment by utilizing its in-house development capabilities to create a range of important NaaS-oriented products that are based on its AppHUB platform, as well as low latency with high frequency SD-WAN as a service based on its modular Alpha platform. Apcela's strong partnering capabilities with many other providers and gateways enable it to efficiently deliver its managed SD-WAN solutions and technology in the mobile and edge space.

Strengths

Expanding products and service range: Apcela has expanded its range of offerings and services over the year to include managed SD-WAN services, network analytics platform, application acceleration for Office 365 and distributed security, while retaining its secure trading and mobile acceleration offerings.

Heritage leveraged: Apcela has a highly reputable heritage in the financial services and trading markets. It also has an enviable track record of delivering managed trading platforms and mobile-focused solutions in this critical and secure industry. The firm has effectively utilized and leveraged this into new industry verticals and new markets.

Caution

Compared to the overall managed solutions portfolio, Apcela's mobile and edge solutions are not well understood by enterprises. The firm should address this concern in order to drive further growth in this area.

2019 ISG Provider Lens™ Rising Star

Apcela is a prominent company known for its innovative solutions for mobile application acceleration and mobile-to-edge solutions delivery.
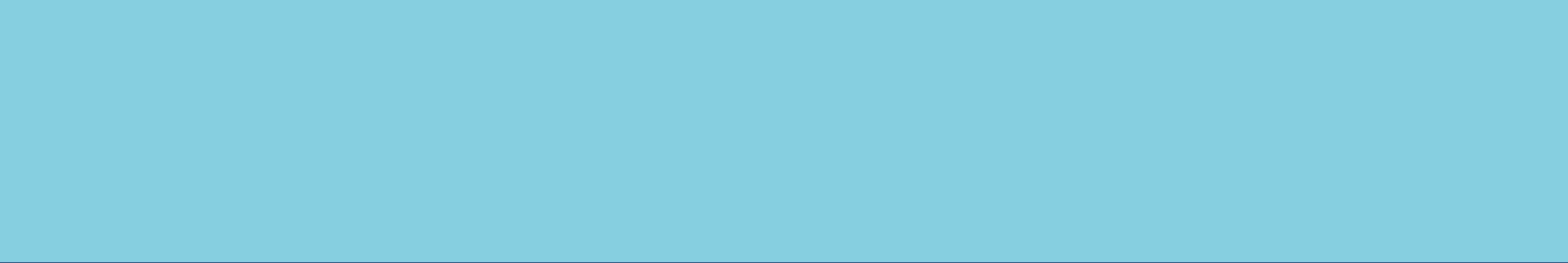
Methodology

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
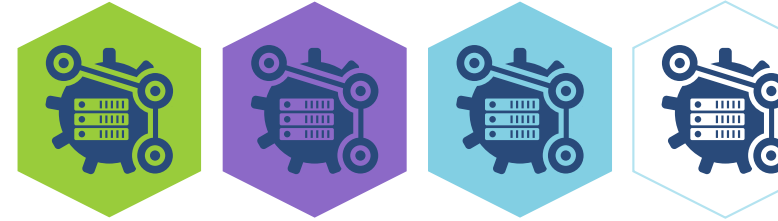
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Kenn is a thought leader and practitioner in networks, smart infrastructure and services and application of advanced technologies globally. Authoring and lead analyst of Software Defined Networking and Digital Transformation IPLs, as well as authoring multiple ISG Insights. He supports clients with customer engagement activities and events on SDN, Future Networks, ICT Network Services, IoT, Smart Cities and Infrastructure, Mobile Enterprise client strategies, Digital Transformation, market development and trends. Kenn is a known expert in these fields in many countries internationally, with over 40 years of experience in the ICT sector.

Jan Erik Aase, Editor
Director

Jan Erik Aase is a director and principal analyst for ISG. He has more than 35 years of collective experience as an enterprise client, a services provider, an ISG advisor and analyst. Jan Erik has overall accountability for the ISG Provider Lens™ reports, including both the buyer-centric archetype reports and the worldwide quadrant reports focused on provider strengths and portfolio attractiveness. He sets the research agenda and ensures the quality and consistency of the Provider Lens™ team.

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June 2019

ISG (Information Services Group) (Nasdaq: III) is a leading global technology research and advisory firm. A trusted business partner to more than 700 clients, including more than 70 of the top 100 enterprises in the world, ISG is committed to helping corporations, public sector organizations, and service and technology providers achieve operational excellence and faster growth. The firm specializes in digital transformation services, including automation, cloud and data analytics; sourcing advisory; managed governance and risk services; network carrier services; strategy and operations design; change management; market intelligence and technology research and analysis. Founded in 2006, and based in Stamford, Conn., ISG employs more than 1,300 digital-ready professionals operating in more than 20 countries—a global team known for its innovative thinking, market influence, deep industry and technology expertise, and world-class research and analytical capabilities based on the industry's most comprehensive marketplace data. For more information, visit www.isg-one.com.