

Service Fact Sheet

SD-WAN-as-a-Service Developed for Service Providers

Subscription-based, pay-as-you-grow service substantially reduces your investment and time-to-market

In today's business environment, enterprises are looking for ways to optimize their existing wide area networks (WANs) that frequently include headquarters, multiple branch offices, data centers and even kiosks. These distributed networks were designed long before applications like SAP and Microsoft Office started migrating to the cloud, or enterprises began purchasing cloud-based services from Amazon Web Services (AWS) and Microsoft Azure.

Based on industry projections, Software-as-a-Service (SaaS), Infrastructure-as-a-Service (IaaS) and the need to access public and private clouds are going to continue to increase exponentially. Unfortunately traditional WAN technology lacks the intelligence and flexibility to adapt to network traffic patterns needed to support increasing reliance on the Internet.

In response to these changing dynamics, enterprises are re-evaluating their WAN needs and shifting to software-defined WANs (SD-WANs.) Adoption of this new technology improves user experience, increases business productivity, and reduces costs. SD-WAN technology also enhances network performance, flexibility, control and security.

SD-WAN Overview

SD-WAN is a fundamental change in the way enterprise WAN's operate and shifts the focus from the network (hardware and connections) to the applications. Using a virtual network overlay, SD-WAN classifies and prioritizes how each application goes through the network based on business priority, quality of service, service-level agreements (SLAs) and security requirements.

Headquarters, branch offices, kiosks, data centers and cloud service providers are connected via the highest performance and the most cost-effective transport mode, which can be broadband Internet, MPLS, Ethernet, cable, DSL, 4G/LTE wireless, or private lines. In fact, SD-WAN has the flexibility to mix and match and even combine transport modes to achieve the best results and maximize network performance, reliability and bandwidth.

Traffic is sent over secure encrypted links to geographically distributed locations within the enterprise network. One of the major advantages of SD-WAN is that it is "transport-agnostic," meaning the network can utilize any transport mode, regardless of who provides it or where the network edges are located.



SD-WAN is controlled and monitored from a single central location that has a holistic view of the distributed locations, applications, bandwidth utilization, quality of service and performance metrics (such as latency and loss). Centralized management is where the network is configured, traffic is prioritized, policies are defined and new locations are added using simple drop-down menus.

The ability to control all sites from a "single pane of glass" view makes it easier for the network manager to define, update and monitor distributed network sites. Based on real-time metrics, changes can quickly be made to ensure the network is operating in the most efficient and cost-effective manner. Software updates and traffic policy changes are pushed out across the distributed network.

Adding new locations such as a branch office or kiosk is an easy process based on zero-touch provisioning. This plug-and-play capability connects a new site's local area network (LAN) to the WAN via a SD-WAN edge CPE. These are either physical devices or virtualized network functions (VNF) running on servers or cloud-based environments with speeds ranging from 2 Mbps to 10 Gbps.

Once the CPE is installed, configuration information is pushed from centralized management to the device and the site becomes part of the network. Zero-touch provisioning streamlines and simplifies new branch deployments, minimizes configuration errors and decreases the time required to turn-up new sites. No truck rolls are required.

Delivering the best user experience

Fujitsu SD-WAN-as-a-Service (SD-WANaaS), Created for Service Providers

The Fujitsu SD-WAN managed service was developed specifically for service providers. We spent months researching SD-WAN technologies, analyzing the differences between the various features and functionalities and learning what it takes to design, install, operate and maintain a SD-WAN solution.

Simply put, we did the technology selection process and created the service so you don't have to. Instead, you can focus on acquiring customers and generating revenue.

By design, our SD-WANaaS uses a subscription-based, pay-as-you-grow model that minimizes your investment and operational costs. There is no CAPEX for you or your customers. Fujitsu owns the SD-WAN solution and provides the managed service. You offer SD-WANaaS to your customers and you maintain the relationship, the billing service, and first-line technical support.

Our SD-WANaaS is managed by the Fujitsu Network Operations Center (NOC) and is monitored 24 × 7 × 365. It is staffed by experienced personnel trained in traditional WAN architectures (multivendor routers, switches and network topologies) as well as all the features and functionalities of SD-WAN. As an extension of your company, we will work with your customers to design a customized SD-WAN solution based on their overall network and individual site objectives.

Fujitsu creates customized solutions for your customers by:

- Performing engineering survey (local, regional and network-wide)
- Analyzing traffic patterns based on sites and available WAN transport modes (Internet, MPLS, 4G, DSL, etc.)

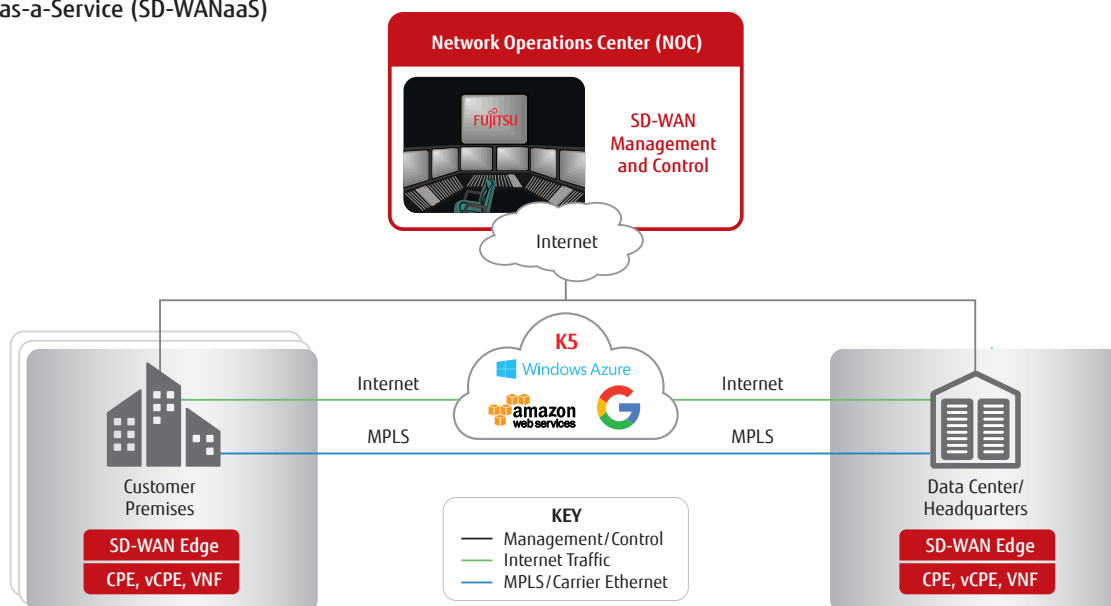
- Defining policies for handling applications including transport mode and priority
- Establishing quality of service (QoS) requirements based on service level agreements (SLAs)
- Managing edge-to-edge security policies and updates
- Adding new sites and determining the size of the SD-WAN edge CPE ranging from 2 Mbp to 10 Gbps
- Evaluating network resiliency and enhanced optimization requirements (high availability, tunnel bonding, WAN optimization)

The Fujitsu NOC manages, deploys and monitors your customer's SD-WAN service through its centralized management system. The NOC's optimizes your customer's network experience and makes sure their WAN provides the highest level of performance.

To achieve these goals, we continually monitor the behavior of the distributed sites and applications, in addition to bandwidth utilization, quality of service, security and network performance (latency and loss). Additionally, we use real time monitoring and historical reporting to determine if changes to the traffic policies will improve the performance of application delivery.

We also provide a customized dashboard, which you and your customer can use to monitor network performance and provide feedback. We never lose sight of the fact this is your customer's network and we never stop working with you to deliver the best user experience.

Fujitsu SD-WAN-as-a-Service (SD-WANaaS)



Features that make Fujitsu stand out above the competition

Feature-rich SD-WAN Technology Overview

When evaluating SD-WAN solutions, it is important to look beyond the basic capabilities and seek features that enhance network and application performance, improve quality of service, optimize the WAN network, and provide edge-to-edge security. Here are some of the features that make us stand out above the competition.

Centralized Management

- **Configuration management:** Controls, optimizes and administers the SD-WAN from a single location. Updates and changes are pushed from centralized management to the network sites for application policy handling procedures, site and network configuration, traffic and security management and.
- **Zero-touch provisioning:** Allows new sites to be added by simply installing a SD-WAN edge CPE that links the LAN to the WAN. Once the device is installed, configuration information is pushed from centralized management to the CPE and the site becomes part of the network.
- **Real time monitoring:** Provides a quick and easy way to monitor real time traffic. Specific details about applications, connectivity paths, locations and network statistics are used to improve network efficiency and quality of service.

Flexibility

- **WAN connectivity:** Enables organizations to utilize their existing WAN connectivity. SD-WANaaS is access agnostic and can be delivered over any type of wired or wireless WAN including MPLS, Internet (broadband or dedicated), carrier Ethernet, WiFi and LTE.
- **SD-WAN edge CPE:** Links the LAN in each branch office, kiosk, data center and headquarters to the WAN. These are either physical devices (CPE) or virtualized network functions (VNF) running on the server or in the cloud environment with speeds ranging from 2 Mbps to 10Gbps.

Network Reliability

- **High availability:** Provides robust resiliency in a site by clustering two SD-WAN edge CPEs together in active-active mode so they operate as a single device. If one device fails, the other CPE continues to operate and carry the traffic. *Optional feature*
- **Tunnel bonding:** Supports load sharing and higher reliability by bonding two or more physical WAN links to form a single logical overlay connection. If one link within the tunnel fails, the other link will continue to carry the traffic.

- **Business intent overlays:** Manages application groups (VOIP, guest Wi-Fi, credit card processing) based on application QoS, SLAs, topology, security policies and priorities for different applications based on business requirements. Automatically mapping applications to appropriate overlay optimizes traffic routing decisions and ensures application consistency across the SD-WAN.

Performance Optimization

- **Path conditioning:** Forward error correction (FEC) and packet order correction (POC) correct lost or out-of-order packets. When FEC and POC are combined with tunnel bonding on a per-packet basis, the Internet performs like a private line resulting in higher application performance.
- **Dynamic path control:** Steers traffic across multiple paths based on defined criteria including application QoS requirements and real-time measurements of packet loss and latency.
- **WAN optimization:** Boosts performance for specific latency-sensitive and data-intensive applications or sites with low bandwidth that may experience data degradation. WAN optimization is fully integrated into the existing SD-WAN edge device, is available when and where it is needed and can be assigned on a per-site or per-application basis. *Optional feature*
- **First-packet IQ:** Identifies 10,000+ applications and 300+ million Web domains and automatically maps them to the overlay based on compliance requirements including – quality of service, security policy and bandwidth optimization. Trusted SaaS and Web traffic is steered directly to the Internet while suspicious traffic is routed for further security analysis.

Security

- **Edge-to-edge security:** Provides 256-bit AES encrypted tunnels linking every site to prevent unauthorized outside traffic and protect against security vulnerabilities and threats. It also takes advantage of SSL security provided by cloud-based applications for traffic from the branch to the cloud via the Internet.
- **Security updates:** Manages all security policies and patches from centralized policy management. Updates are simultaneously pushed to all sites.

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