Network Programmability at the Software-Defined Edge

What is the software-defined edge?

Distributed digital infrastructure for connecting, securing, and running workloads across dispersed locations, close to endpoints that produce or consume data.

Where is the edge?

The edge is where business gets done. Examples include offices, work-from-anywhere locations, cell sites, retail stores, factory floors, medical centers, wind turbines, a first-responder vehicle on the move. Endpoints are connected by SD-WAN and communications service provider networks.

What are the three essential characteristics of VMware software-defined edge?

- Network programmability
- Right-sized infrastructure
- Zero-touch orchestration

Learn more

vmware.com/solutions/software-defined-edge.html

Organizations are modernizing operations in diverse, distributed locations, and the edge is undergoing significant transformation. As edge locations increase in number—and demand more, smarter, and faster infrastructure—enterprises encounter challenges such as scaling, network limitations, specialized hardware, lack of onsite technical staff, and the need for unique security measures. To effectively address these challenges, a purpose-built operational technology (OT) software infrastructure is essential for successful edge deployments. The software-defined edge meets these challenges with solutions that address three essential characteristics.

Network programmability

Network programmability ensures the network is aware of edge workload needs and can optimize for or provision the right blend of resources when needed. A programmable network exposes the connectivity—wired, wireless or non-terrestrial—to each edge location via open APIs. Applications can then program the edge to provide the right resources to each workload, in real time.

With real-time data and analytics and an intelligent overlay to manage resources, enterprises can proactively identify changes in workload demand, traffic patterns, and potential congestion points, enabling them to make informed, automated adjustments. This creates a responsive and agile network ecosystem that not only meets but anticipates the requirements of edge workloads, delivering reliability, low latency, and connectivity, even in unpredictable conditions.

How does a programmable network benefit your business?

- Apply existing business rules to easily recognize and prioritize edge workloads over any network
- Enable real-time communication among edge devices with guaranteed quality of service

- Maximize bandwidth and quality of experience by aggregating multiple network sources, detecting network conditions, and choosing the best circuit path
- Program the communications service provider network to reserve application network requirements such as high bandwidth and ultra-low latency
- Simplify operations by hiding the complexity of the underlying network
- Dynamically enforce security policies and controls close to device and data sources
- Develop and deploy new edge apps and services quickly using network capabilities exposed by APIs

VMware VeloCloud SD-WAN

VeloCloud SD-WAN is the intelligent overlay for the software-defined edge. It provides services on top of any circuit, including private line, cable, DSL, 4G-LTE, 5G, fixed wireless, or satellite. Dynamic Multipath Optimization™ (DMPO) and deep application recognition improve delivery reliability.

The intelligent overlay hides network complexity from enterprises, providing resiliency, connectivity, and security over whichever underlay or combination of underlays best serves the business. It can program the underlay to understand the application running on it and obtain the appropriate level of connectivity based on business policy and security needs. This allows enterprises to assign priority to critical services across a distributed network, and allows CSPs to monetize new, differentiated services.

VMware Telco Cloud Platform

VMware Telco Cloud Platform is the programmable network foundation for the software-defined edge. It facilitates network programmability by enabling telco networks to speak the same cloud-native language as the enterprise applications running on them. Now, the network can expose the compute, connectivity, and RAN resources available to each edge location via APIs. Applications can then program the edge to provide the right resources to each workload, in real time.

With the modern digital infrastructure of the software-defined edge, enterprises can focus on transforming business operations while telco partners manage compute, connectivity, and intelligent orchestration—along with add-ons such as security, collaboration, managed Wi-Fi, or fixed wireless access—on their behalf. CSPs can optimize their networks, differentiate their offerings, and deliver more value to their customers' businesses.

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