# VMware Telco Cloud Operations

## Accelerate agility in managing enterprise SD-WAN and traditional LAN environments

**AT A GLANCE**

**Industry**: Managed enterprise services

**Product:** VMware® Telco Cloud Operations

**Challenge:** Cohesive management of both SD-WAN services alongside legacy LAN networks

**Results:**

- **Automated network discovery** across physical, virtual, SD-WAN and LAN networks
- **Multi-vendor SD-WAN support** within one monitoring and management console
- **Unified management** for multiple customers within the same UI
- **Performance analytics and anomaly alerting** based on machine learning
- **Precise network troubleshooting** with automated root cause analysis
- **Accelerated problem remediation** via full integration with ServiceNow ticketing systems

## For service providers, managed services present both opportunities and challenges

Managing enterprise networks has long been a significant, reliable revenue stream for communications service providers (CSPs). With ongoing pressure on enterprise IT budgets, high costs of network downtime and a shortage of IT talent in the marketplace, this multi-billion-dollar market will continue to grow. Enterprises large and small will increasingly rely on managed service providers (MSPs) for day-to-day network monitoring and support of their mission-critical on-premises networks.

Today, however, that task is growing more complicated. More enterprises are adopting software-defined wide-area networks (SD-WAN) to provide branch offices and home workers with high-quality, secure connectivity. For MSPs, the ability to holistically manage customer Local Area Networks (LANs) alongside their chosen SD-WAN solutions has become a business imperative.

## Challenge: Fragmented monitoring and management for SD-WAN

With tens of thousands of enterprise workers relying on SD-WAN connectivity, often under strict SLAs, MSPs must be able to monitor the health of these networks and quickly diagnose any issues. However, while there are many mature service assurance tools for conventional IP/MPLS networks, most do not provide a comprehensive approach to monitoring newer SD-WAN services. As a result, MSPs struggle to provide accurate, real-time monitoring of their customers' SD-WANs. One of the biggest issues is the basic disconnect between the IP/MPLS infrastructure and the virtual SD-WAN networks overlaid on top of it.

If MSPs don't have a holistic view of their customers' networks—both traditional LAN and SD-WAN—diagnosing issues can be a complex, time-consuming process. Simply determining whether a problem is in the IP/MPLS network, customer LAN or SD-WAN overlay often requires multiple tools. Conversely, when MSPs detect problems in the underlying infrastructure, they have no easy way to determine which customers' SD-WAN services are impacted. The lack of visibility across physical and virtual networks also leaves significant gaps in the reporting MSPs can provide. To provide performance metrics about different customers' SD-WAN networks, or show which customer sites had been down and why, they often have to manually create spreadsheets. If MSPs want to keep pace with the speed and agility needed in today's dynamic networks, they need a better approach.

**vm**ware®

## Multi-vendor, multi-tenant SD-WAN monitoring

including VMware SD-WAN by VeloCloud™ and Cisco Viptela

## Integrated management

of IP/MPLS networks and thousands of SD-WAN edge devices

## Solution: Unified management of SD-WAN and legacy networks

Now, MSPs can use VMware Telco Cloud Operations to comprehensively monitor and manage all customer network environments—IP LAN/WAN, MPLS and SD-WAN—through a single pane of glass. Using API integration with leading SD-WAN networks, MSPs gain the operational intelligence they need to holistically manage virtual, physical and SD-WAN networks as one. They can quickly resolve any network performance issues and ensure consistent delivery of services to enterprise customers. Telco Cloud Operations enables:
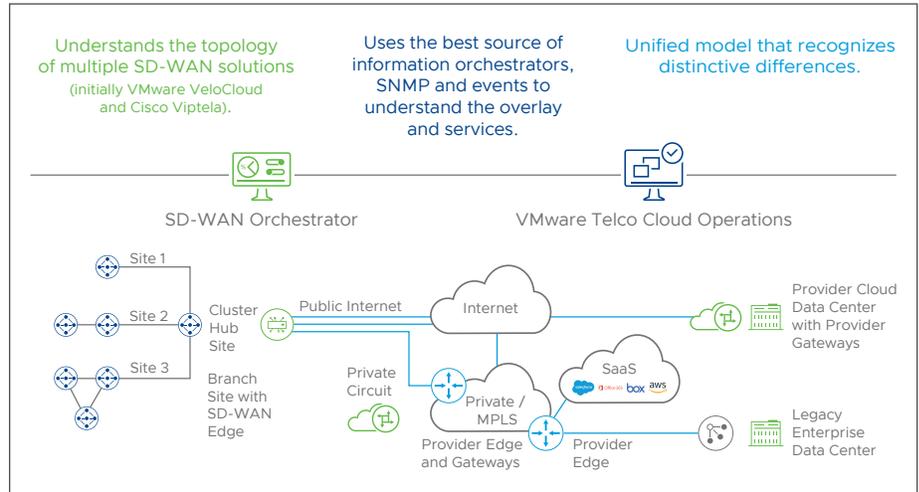


**FIGURE 1:** Multi-Vendor SD-WAN Management

### Dynamic discovery

Telco Cloud Operations makes it easy for MSPs to visualize and troubleshoot their customers' entire networks, including SD-WAN solutions from VMware and Cisco. Using API integration with the VMware SD-WAN Orchestrator and Cisco Viptela vBond Orchestrator, Telco Cloud Operations automatically discovers SD-WAN physical and virtual edge devices, gateways, networks, overlay tunnels, customers/ tenants and services and their interactions. It creates a detailed representation of the SD-WAN network, including how it relates to the infrastructure of physical devices and networks underpinning it. For example, when MSPs have visibility into the MPLS core network, Telco Cloud Operations will correlate faults in MPLS provider edge routers with issues in specific customers' VeloCloud SD-WAN tunnels. Even when MSPs don't have visibility into the MPLS core, Telco Cloud Operations correlates customer SD-WANs with LANs, making it easy to identify the source of any problem. It automatically determines and maps the interrelation between devices and networks within and outside the SD-WAN service, and continuously updates that information as the network topology changes.
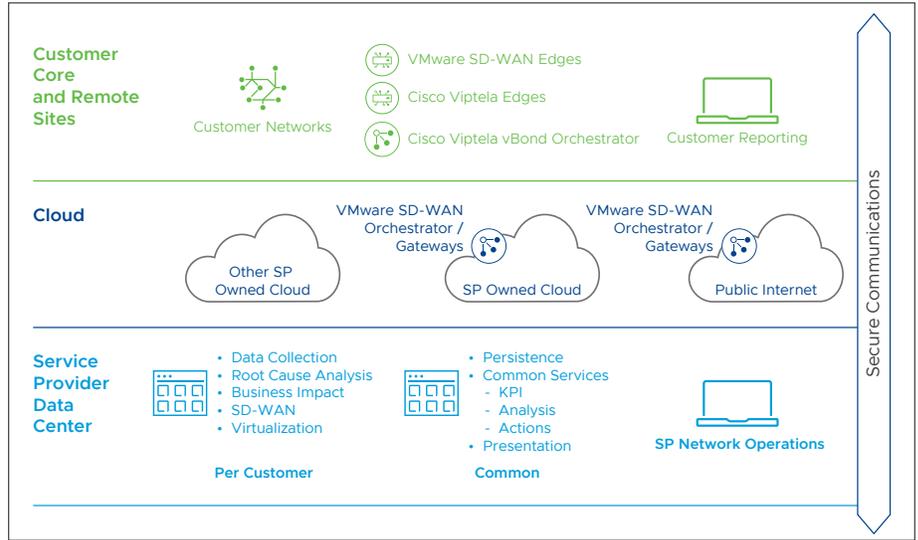
**Holistic visibility**
across all network domains



FIGURE 2: Secure Communications

## Model-based analysis

Telco Cloud Operations makes it possible to quickly add new devices to CSP and customer networks, without having to change the analysis. It does this via an advanced, object-oriented data model that abstracts the common properties and behaviors for different device types. For SD-WAN, this means that the topology can present solutions from multiple vendors—using different features and functions— in the same way, even as it incorporates each solution's distinctive differences. This reduces training for operations staff and ensures consistent operations.

## Performance analytics

Telco Cloud Operations makes it easy for managers to understand how the network is performing and make better decisions about future deployments and capacity planning. It presents operations teams with in-depth SD-WAN performance data such as throughput, packet jitter, latency and loss. It also provides link statistics between SD-WAN sites, including bits per second (BPS) of best path and packets transferred and received. Using machine learning, Telco Cloud Operations automatically establishes dynamic baselines, identifies anomalies and alerts operators when anomalous behavior is detected. Because Telco Cloud Operations has a holistic view of both the underlay and overlay network, operators can accurately triage situations and take proactive measures to prevent serious impacts to application performance.

## Automated root cause analysis

By understanding cross-domain relationships, Telco Cloud Operations lets MSPs monitor and manage the health and performance of the customer's entire network as one entity. That includes physical and virtual networks and SD-WAN, along with the CSP's MPLS/VPN, when available. When problems arise, the self-adapting engine correlates events across all exposed networks to quickly identify where the issue lies, so MSP teams don't have to spend valuable time trying to pinpoint the source of the problem. Telco Cloud Operations also correlates all alarms, alerting MSP engineers only to real issues that impact services. And it integrates with customer relationship management (CRM) and service management tools such as ServiceNow. With the ability to automatically generate tickets for identified issues and quickly notify customers, Telco Cloud Operations enables true closed-loop actions.

**Reduces time to remediate issues**
by automatically identifying 95%+ of problems
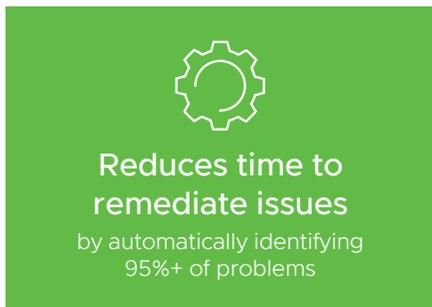
**Increase customer satisfaction**
by monitoring performance of SD-WAN services

**Save countless hours**
bouncing between network monitoring tools

## Customer prioritization to better manage SLAs

By correlating events across SD-WANs and the underlying infrastructure, Telco Cloud Operations makes it possible to quickly identify when a problem is affecting higher-value customers with more stringent SLAs. Combining information from the SD-WAN Orchestrator and the Telco Cloud Operations's business impact manager tool, the MSP can assign each customer and service—and even different SD-WAN edge locations for the same customer—a unique business impact and cost score. When a network incident affects mission-critical services or sites that fall under higher-tier SLAs, the system automatically flags it as top priority for immediate resolution. In this way, MSPs can offer higher SLAs to SD-WAN customers, which in turn drives higher revenues.

## Faster time to market and increased agility

By using one comprehensive management solution rather than multiple disparate tools, MSPs can offer new, enhanced services more quickly and provide enterprise customers with richer information and analytics. MSPs need not waste time and resources configuring back-end integrations. Telco Cloud Operations integrations come pretested and verified to not affect the performance of SD-WAN networks. As MSPs add new enterprise customers (tenants), they can simply spin up new VMs and remotely initiate the automatic discovery of the customer's SD-WAN and various LAN networks.

## Comprehensive analytics and reporting

With Telco Cloud Operations, MSPs can share detailed reports with enterprise customers, giving them the confidence that their high-value SLAs are being met. MSPs can share network analytics on a per-tenant basis, providing each tenant with access to their own detailed network statistics, while protecting the privacy of other customers' data.

## Make the most of the managed services opportunity

In the coming years, enterprises in every sector will rely more heavily on advanced network technologies to connect the mission-critical applications that power their business. More and more, they will look to MSPs to help them do it. If MSPs have to use multiple non-integrated tools to monitor customers' diverse LAN and SD-WAN infrastructures, they won't be able to visualize the full network. This means they can't quickly diagnose issues, and they can't support the highest-value SLAs.

Telco Cloud Operations provides the holistic visibility MSPs need to manage their customers' entire networks—LAN, SD-WAN, IP and MPLS—from a single pane of glass. They can automatically discover customer network topologies across multiple domains and vendors, and abstract away the complexity of manually integrating standalone tools. They can position their business to deliver more reliable, better-performing enterprise services and reap the rewards that come with them.