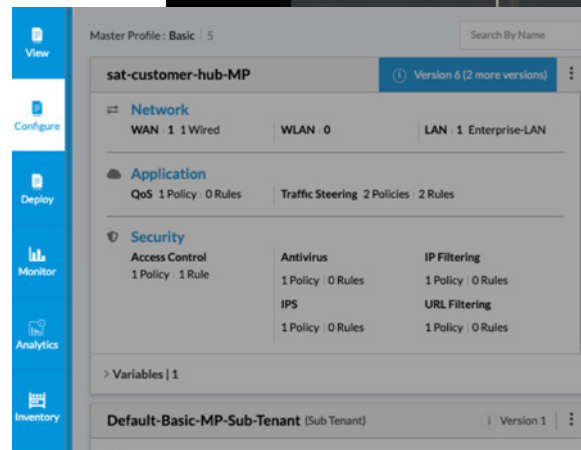


Starlink and Versa: Pioneering Global Digital Connectivity through Advanced Satellite Networks and Optimized SD-WAN Solutions

Satellite networks have emerged as pivotal infrastructure in today's age of pervasive, any-to-any connectivity, especially for areas underserved by traditional broadband. They promise global coverage, bridging digital divides that persist in remote and challenging terrains. Starlink, an ambitious venture by SpaceX, stands out in this domain by offering not just widespread coverage but also high-speed internet rivaling urban broadband connections. Its rapidly growing constellation of low-Earth orbit satellites ensures reduced latency and increased bandwidth, characteristics previously unattainable in satellite internet. Such advancements by Starlink mean that for the first time, businesses in even the most secluded areas can access reliable and fast internet.

Paired with Starlink, Versa offers businesses the tools to optimize, secure, and provide visibility across satellite connections. Its robust security features further ensure that the data traversing via satellite remains protected from potential threats. The combination of Starlink's revolutionary satellite connectivity with Versa's state-of-the-art SD-WAN solution presents a new era of global digital connectivity.



Key Use Cases

Maritime and Aviation

Satellite links are essential for long-range and mobile deployments like maritime and aviation since these vehicles move beyond the range of terrestrial radio technologies and require multiple communication networks. Large vessels, such as ships, necessitate distinct VPNs for varied purposes, and an ideal system should automatically select the optimal network path based on the vehicle's location.

Remote and Tactical

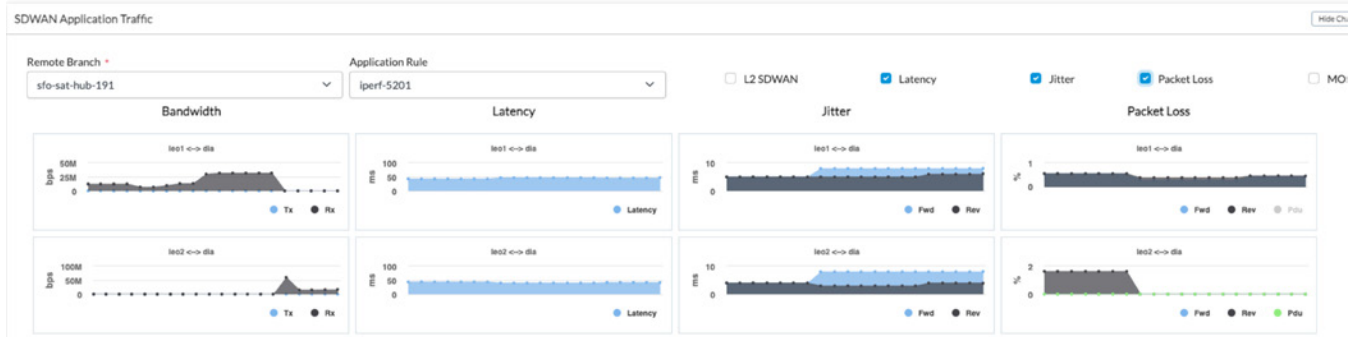
Despite the seeming ubiquity of the Internet, regions like remote islands, oil rigs, and many developing nations still lack access to standard connectivity methods due to low population density or challenging terrains. These areas, while relying on satellite networks, can greatly benefit from features like intelligent traffic steering and TCP optimization when utilizing multiple private networks over shared transport links.

Cellular Backhaul

Mobile networks require operators to install cells near users for effective wireless signals, but in remote locations lacking conventional connectivity, satellite links are used to connect cell sites. For cellular backhaul, multitenancy is crucial, necessitating a solution that swiftly and reliably establishes both L2VPNs and L3VPNs while isolating traffic from different mobile providers.

Key Features

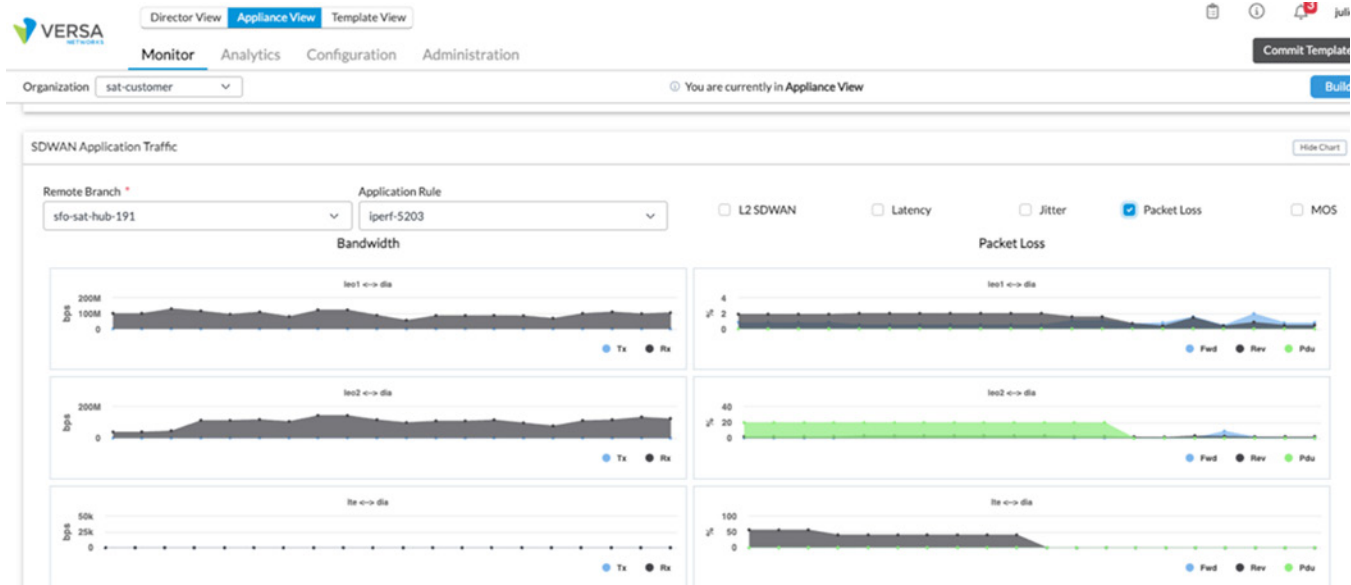
Analytics and Monitoring



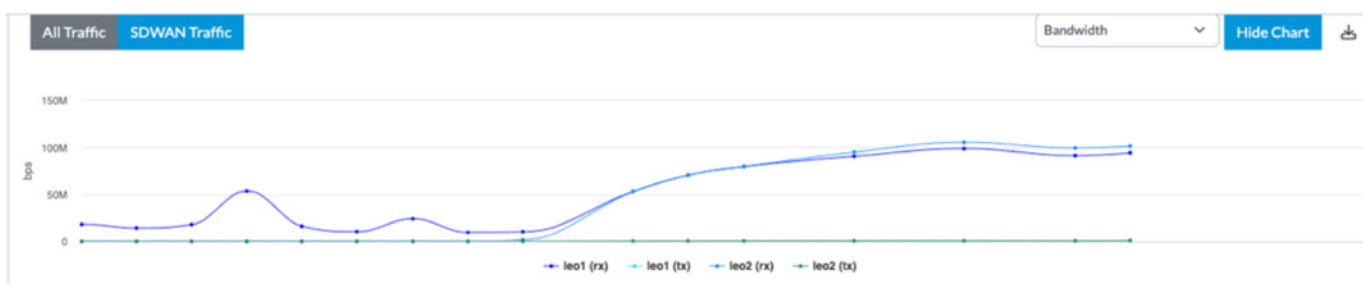
The system measures the attributes of SD-WAN traffic paths and can implement policies based on factors like jitter, latency, and packet loss to determine the optimal path for specific traffic. In hybrid environments, especially where fiber and satellite networks coexist, Starlink connections can be monitored to ensure automatic switching between transport networks for consistent connectivity.

Link Bonding in Hybrid Satellite Environments

Bond several satellite links, using Starlink connections in conjunction with MEO and GEO connections as backup, directing traffic based on sensitivity to latency and prioritizing critical applications during outages. Combine unidirectional traffic paths for bidirectional service, intelligently route specific applications, and load balance sessions across satellite links, ensuring efficient bandwidth utilization in various scenarios.



Forward Error Correction and Packet Replication



Forward error correction (FEC) and packet replication removes the need to re-transmit traffic that either has an error or has been dropped. It improves the end user's quality of experience, notably for sensitive applications that include voice traffic, collaboration tools and other mission-critical traffic. This capability has demonstrated the ability to improve performance by over threefold. Enterprises can apply FEC or packet replication to different flows using Versa's granular SD WAN rules (e.g. source, destination, applications).

Automation

Use Versa's REST API infrastructure to automatically adjust Satellite bandwidth based on telemetry, which is crucial due to bandwidth variations with mobile deployments' location or weather conditions. Additionally, using GPS to update the SD-WAN device's location to modify link or hub priorities.

QoS

Classify and prioritize essential sessions during congestion. Enable traffic classification beyond traditional methods, allowing specific applications to be prioritized, with class-of-service markings updated for transport network recognition during congestion.

TCP Optimization

Divide high latency TCP session into multiple segments, enhancing slow start convergence and loss recovery times by managing end-to-end latency in smaller, separate segments. Versa also employs advanced Congestion Control protocols based on link conditions, optimizing link performance, and accommodating device-specific limitations, such as smaller TCP buffers in handheld devices.

Security

Integrate security features like Next Generation Firewall and Intrusion Prevention, optimizing power and space while simplifying logistics compared to using separate devices. Versa hardware can be introduced as a unified SD-WAN and security solution in new deployments or to replace existing security devices in ongoing implementations.