CASE STUDY

Spirent SD-WAN Underlay Assurance Solution

MSO Prepares for SD-WAN with Automation and Virtual Active Testing

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CASE STUDY

Customer Profile

A tier 1 U.S. service provider, providing services across multiple legacy Ethernet networks resulting from a merger, prepared to scale up their enterprise services offering while laying a foundation for future virtualization and SD-WAN capabilities that would position its consolidated network favorably for the future.

Solution Explanation

Following a merger, a major service provider looked to scale up its Enterprise services business and lay a foundation for SD-WAN. The service provider needed to be able activate services for new Enterprise customers faster and at significantly lower cost while ensuring a high level of quality. At the same time, virtualization of the network was underway, and the provider was also planning a future rollout of SD-WAN services.

With legacy systems from multiple pre-merger companies, our client needed to determine which systems to keep and what new systems were needed, while ensuring support for both current and future services. The provider's legacy systems utilized both passive and active assurance but only covered layer 2 Ethernet services, leaving them blind to the performance of layer 3 IP services.

Assessing its current resources and future needs, the client leaned toward staying with legacy passive assurance systems for layer 2 services, where SLAs (service level agreements) were already in place. For layer 3 services, the client realized that success with Enterprise customers would require proactive, continuous monitoring – so they chose an active assurance approach. Unlike passive assurance, which relies on actual user traffic, active assurance uses synthetic traffic to evaluate performance, making it ideal for detecting subtle performance degradations before they become severe, customer-impacting issues.

In addition, the client determined that the active assurance system needed to be integrated with back office and network management systems to automate turn-up and troubleshooting workflows, ensuring speed and costs objectives could be met.

A final challenge was topology management. The current file-based approach for was taking 1-2 hours for updates, hindering use of topology data for troubleshooting and other urgent needs. Finding a way to accelerate topology updates, with more flexibility and less cost was essential.

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Benefits

- OPEX savings of millions each year by automating manual service activation, SLA monitoring and troubleshooting workflows.
- Reduced SLA violations due to accelerated problem resolution, saving millions in penalties per year.
- CAPEX savings of over $10,000,000 by using low-cost Virtual Test Platforms in lieu of physical probes.
- Topology updates completed in real time (instead of hours).

Spirent Solution

As the client consulted with Spirent experts to determine the best path forward, they developed a working relationship that included discussions about what the client wanted to achieve and how it wanted to evolve.

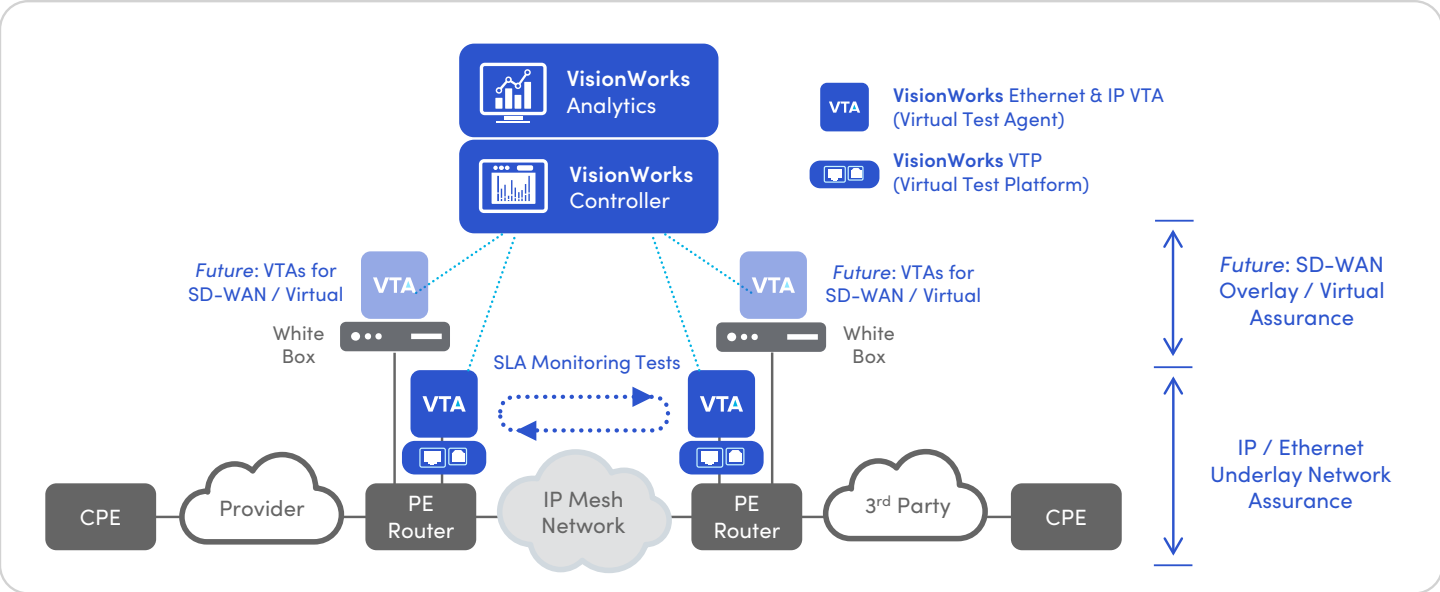
Ultimately, two factors led the client to choose partnering with Spirent. One was Spirent's virtualized cloud-native vision of the future which promised support for the client's legacy physical network and future virtualization plans. In addition, Spirent was able to demonstrate how cloud-native assurance would enable rapid integration with the client's back office systems, making automation of key service activation and troubleshooting workflows cost-effective.

The second was Spirent's future capability to extend IP / Ethernet active assurance to SD-WAN, which would allow the client to successfully work with multiple vendors without making any changes to the assurance system.

The strategic solution that emerged centered on deploying VisionWorks Virtual Test Platforms (VTPs) to more than a thousand of the client's points of presence (POPs) across the country. Each POP includes a white box for future virtualization needs and a performance edge (PE) router supporting service delivery via both on-net (client-owned access network) and off-net (3rd party access) approaches.

The VTP is a low-cost compute node for hosting VisionWorks Virtual Test Agents (VTAs) in hybrid physical/virtual networks. The VisionWorks VTAs generate synthetic traffic and measure the performance of layer 3 services for both on-net and off-net scenarios. VTAs are managed by VisionWorks Controller which also integrates with the client's inventory, topology and trouble-ticketing back office systems to automate key tasks.

As SD-WAN services and virtualized routers are rolled out, the customer plans to deploy VisionWorks VTAs alongside these functions on the white box, enabling assurance of both underlay and overlay networks.

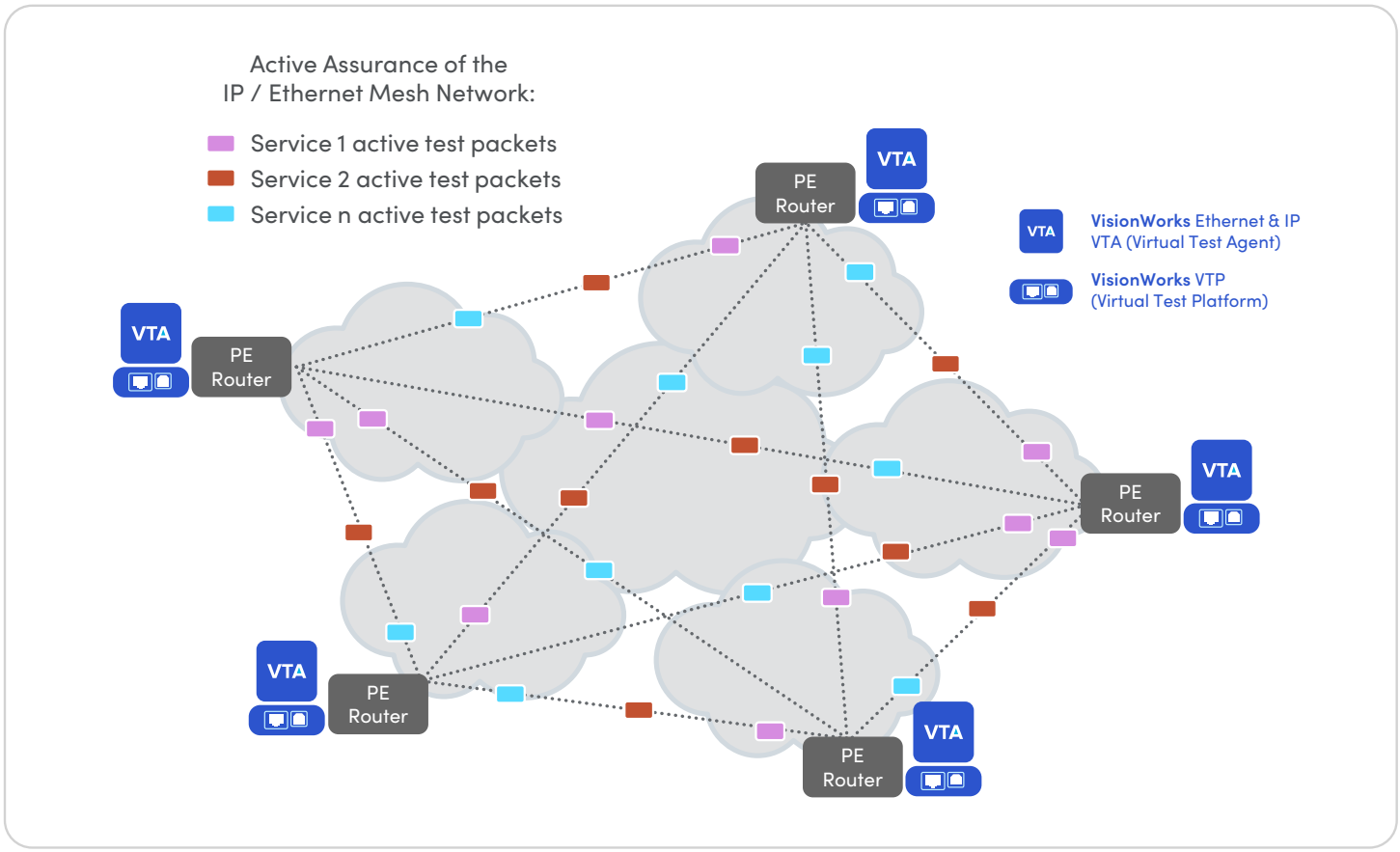


VisionWorks Active Assurance for SLA monitoring of underlay IP / Ethernet mesh network and future SD-WAN overlay.

Due to the VisionWorks VTP's small footprint and plug-n-play setup capabilities, the customer was able to deploy the VTPs to each POP without requiring any specialized training or expensive deployment services. Once powered up, the VTP automatically finds VisionWorks Controller and configures itself with the appropriate VTAs to begin testing. The VTP can test multiple services simultaneously by generating small amounts of synthetic IP traffic, transmitting these packets across each link in the network and measuring the performance.

SD-WAN Underlay Assurance: VisionWorks VTAs running on VTPs generate small amounts of synthetic traffic to test services with various QoS requirements across the SD-WAN underlay IP mesh network.

The test results from each VTA are uploaded to the Controller, which then uploads the aggregated results to VisionWorks Analytics. VisionWorks Analytics compiles KPIs from the results and applies rules and thresholds to intelligently detect service issues.



SD-WAN Underlay Assurance: VisionWorks VTAs running on VTPs generate small amounts of synthetic traffic to test services with various QoS requirements across the SD-WAN underlay IP mesh network.

Results

The Spirent active assurance solution immediately delivered visibility into the performance of layer 3 services – removing a former network blind spot for the client. Before contacting Spirent, the client had considered extending their existing probe-based assurance system to support thousands of new 10G links being deployed across their network. By deploying VisionWorks VTPs and VTAs in lieu of hardware probes, the client was able to save more than $10,000 per 10G link – a total savings of more than $10,000,000 dollars.

Additionally, layer 3 active testing has enabled workflows for service activation and SLAs to be highly automated, saving millions in operational and SLA penalty costs each year.

The client has also successfully prepared its network for future virtualization and SD-WAN initiatives. As new network capabilities are deployed, their active assurance solution can easily be scaled to support SD-WAN underlay and overlay testing, assurance of virtualized PE switches and multi-vendor SD-WAN environments.

Conclusion

The investments made in upgrading the client's ability to scale their Enterprise services business have proven to be both profitable and future-proof.

With Spirent's help, the client has created and implemented a solid, flexible foundation for SD-WAN expansion that, at the same time, has consolidated the underlying network assurance approach, increased its efficiency and effectiveness, and generated enormous cost savings.

The infrastructure now in place has the capacity to successfully test expanded SD-WAN services as they evolve. Spirent will continue to partner with the client in testing the network's enterprise services, including current and new SD-WAN features.

The client is now on course to ensure that every SLA promise made to its customers is met and that key growth-driving SD-WAN services are seamlessly monitored and cost-effectively delivered for years to come.

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