

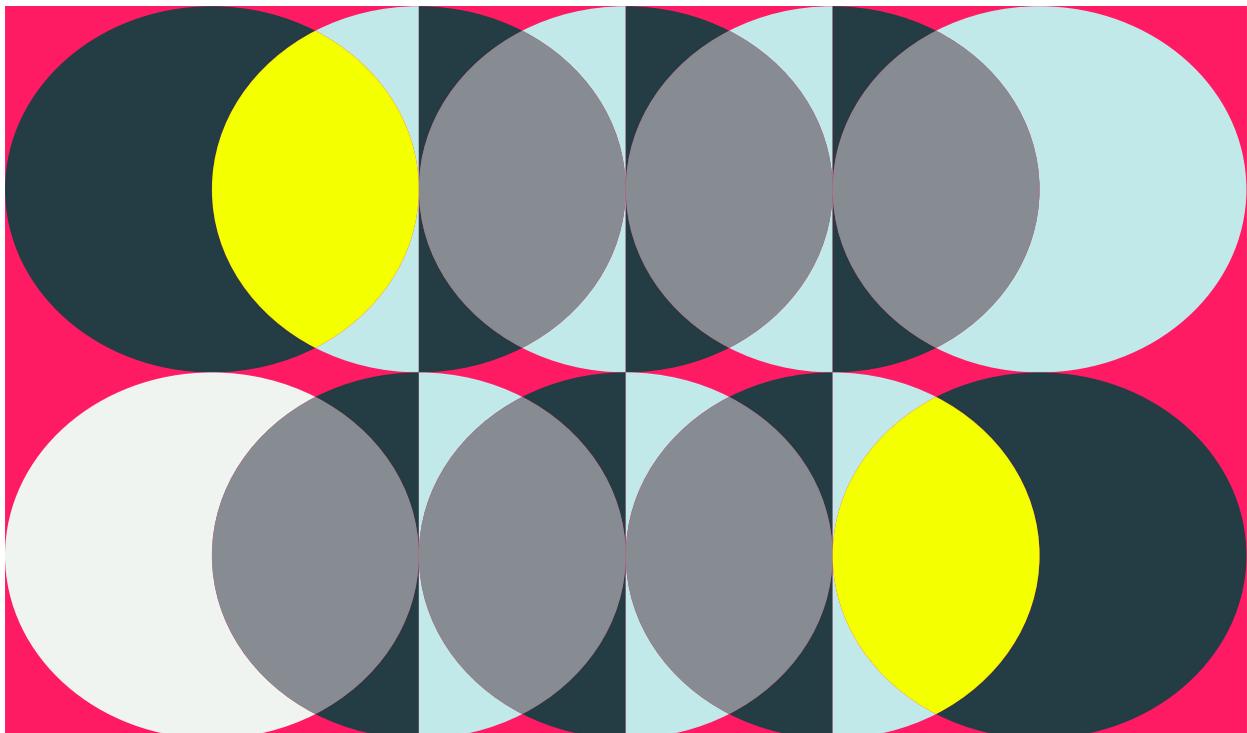


The First Network AI
for the Modern Enterprise

Manufacturing and Healthcare Industry Case Study

An Innovative Global 500 Enterprise Leverages Augtera Network AI to Detect SD-WAN Network Brownouts Before Failure

Early detection of SD-WAN connectivity issues, using machine learning, enabling pro-active operations





Challenge

International Technology Conglomerate (hereafter known as ITC) was unable to detect connection degradations in a noisy syslog environment, prior to user complaints. Growing Cisco Viptela SD-WAN network also made using thresholds to detect issues impossible.

Problem Statement

“We are not able to set thresholds in our NMS to detect instabilities of control plane and data plane connections of our SD-WAN infrastructure” said the Vice President of network Infrastructure.

ITC experienced an unexpected proliferation of SD-WAN connectivity events, while rolling out their new SD-WAN. Initially, the customer thought that something was wrong with their configurations as the system was generating 100,000s of connection event messages per day. It was later discovered that the volume of connection events is normal behavior for this SD-WAN implementation. The challenge for the customer was to determine when the events represented a real degradation or outage and should be investigated. Consequently, ITC's users were reporting performance problems before ITC's operations team realized there was even an issue.

Solution

Augtera Networks AI platform: real-time AI/ML anomaly detection and correlation using syslog messages from Viptela

Results

ITC is now able to detect SD-WAN degradations prior to users noticing, resulting in a much-improved user experience.

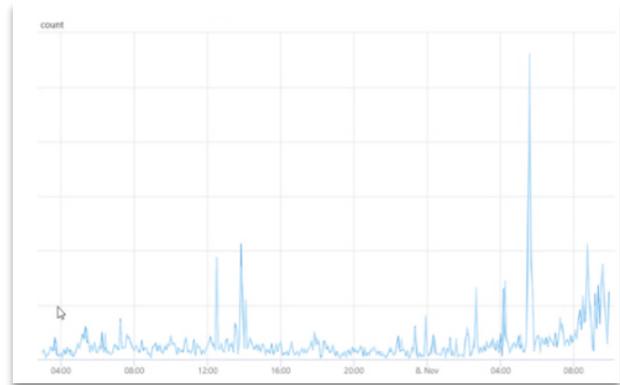


Figure 1: Noisy Rate of Syslog Connection Event Messages

Company Profile

A Fortune Global 500 conglomerate focused on industry, transport, and healthcare, with more than 1000 locations in over 100 countries. The company deployed Cisco's Viptela SD-WAN, to more rapidly deploy new network services and to reduce the cost of expensive MPLS circuits.



ITC needed a way to quickly determine when there is an actual actionable event, out of the large volume of connectivity events. They were unable to detect and troubleshoot using their existing syslog and NMS tools. It actually proved futile, as they found it's impossible to set a relevant threshold to detect failures.

The fundamental problem is establishing pre-defined static thresholds for the connection events. ITC attempted to manually tune their threshold settings but found that a threshold set too low meant too many false alarms, while setting a threshold too high resulted in real problems not being detected. Moreover, compounding the problem was that any previously set threshold was soon out-of-date, due to the rapid growth of their SD-WAN. As ITC added more edge locations, more connection events were generated and the old thresholds were no longer accurate.

ITC wanted a detection solution that automatically learns, as their SD-WAN network grows without manual tuning.



Deployment details

The ITC SD-WAN architecture is based upon the Cisco Viptela platform. The main components are the vSmart Controller, vManage dashboard, vEdge Routers, and vBond Orchestrator.

- The **vSmart** controller is responsible for managing control plane and data plane policies by using the Overlay Management Protocol (OMP).
- **vManage** NMS is a centralized network management system that provides a GUI to monitor, configure, and maintain all Viptela devices and links.
- **vEdge** routers allow customers to connect their branch and data center locations in a multi-cloud environment.
- **vBond** Orchestrator ensures SD-WAN fabric on-boarding, by authenticating vEdges that join the fabric.

The data plane uses the BFD (Bidirectional Forwarding Detection) protocol to detect service faults between two connected devices. BFD is

used by Viptela to detect data plane connectivity issues and is enabled by default on all vEdge routers. Viptela Syslog messages contain the connection up and down events, both for the control plane and data plane (e.g. BFD events).

ITC forwards the Viptela syslog messages to their Augtera Network AI platform. Augtera, in real-time, performs machine learning on the data and detects anomalies with context (for example, the anomaly context tells the operator if the issue is isolated to a site, specific service, or is affecting a large part of the SD-WAN infrastructure).

Augtera also continually learns the patterns of connection events. This allows Augtera to detect anomalies even as the SD-WAN infrastructure continues to grow. In addition to connection events, Augtera can detect anomalies on a wide variety of SD-WAN data, such as performance and environmental metrics.



Results

Using Augtera machine learning, ITC is able to reduce ~ 1,000,000 events per day, to a handful of actionable tickets. An example is provided in figure 2. ITC is now able to detect SD-WAN degradations prior to users noticing, resulting in a much-improved user experience.



Figure 2: Left chart shows the volume of connection events in a time series and highlights the challenge of using thresholds to detect service degradations/outages in a noisy syslog environment. The red arrows are where Augtera identified an anomaly in the connection event rate. The right chart shows the number of Augtera anomalies (2 only) for the same period of time, thus cancelling all the noise.

Benefits of Augtera

- Early detection of issues by Augtera allowed for remediation during regularly scheduled maintenance windows.
- Improved customer experience as SD-WAN issues were detected and remediated before user complaints.
- Elimination of syslog noise and manual configuration rules, as a result of Augtera ML that continually learns, dramatically improved operational productivity.
- Real-time and customizable heatmaps and analytics of the SD-WAN environment enabled deep and dynamic observability.

Augtera Networks is changing the way organizations operate their networks. Please see our online [demos](#) and [contact us](#) to see what Augtera can do to improve your network operations.