

SD-WAN Topology Viewer

Graduate



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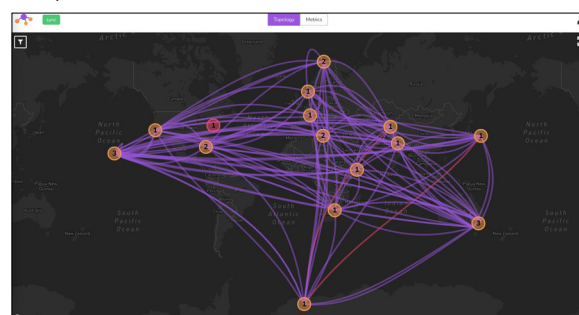
Introduction: Software defined WAN (SD-WAN) is a fast emerging and trending new technology to interconnect worldwide distributed company branches or customers. Many of the market leading network equipment providers, like CISCO, have developed their own SD-WAN solution. IT professionals using SD-WAN solutions in global companies can quickly lose the overview of the topology of the SDN network.

Problem: CISCO's SDWAN solution VManage is a web application shipped alongside their SD-WAN technology and is primarily designed for configuration purposes. Although it provides a simple graphical overview of the distribution of the individual routers on a world map, it is not really designed for active monitoring of the infrastructure and does not display the IPsec tunnels. With the rise of SD-WAN and its products, our application is a good fit to help network operators improve the visibility into their SDN network.

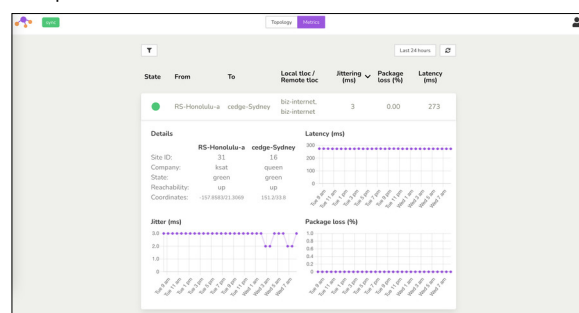
Approach: The SDWANTV application puts the focus on a clean visual representation of the topology and a historical view of the metrics. As the foundation of the bachelor thesis, we have taken the result of a previous semester thesis. We extended the existing software with much needed new functionalities and dramatically improved the software architecture. With a historical metric dashboard and a customized view, the SDWANTV becomes a key tool for end customers as well as for network administrators alike.

Our system fetches all information from CISCO's Vmanage API with a scheduled task runner. The tasks then propagate the collected data to a timescale database and via active websocket connections directly to state-of-the-art single page application written in React. Due to the strict separation between frontend and backend a user can enjoy real time state updates of the topology and observe the latest as well as historical tunnel metrics via a REST API in one single cloud ready application shipped with a helm chart for easy installation.

Topology overview Own presentation



Connection metrics overview Own presentation



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Subject Area
Networks, Security & Cloud Infrastructure, Software

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