Network Optimization Overview

The Viptela network optimization solution includes the following:

- Cloud OnRamp for IaaS
- Cloud OnRamp for SaaS
- TCP Optimization

Cloud OnRamp for IaaS

Cloud OnRamp for IaaS extends the fabric of the Viptela overlay network into public cloud instances, allowing branches with vEdge routers to connect directly to public-cloud application providers. By eliminating the need for a physical data center, Cloud OnRamp for IaaS improves the performance of IaaS applications.

The connection between the overlay network and a public-cloud application is provided by two redundant vEdge Cloud routers, which act together as a transit between the overlay network and the application. Using two routers to form the transit offers path resiliency to the public cloud. In addition, having redundant routers assists in brownout protection to improve the availability of public-cloud applications. Together, the two routers can remediate link degradation that might occur during brownouts.

Cloud OnRamp for IaaS discovers any already existing private cloud instances in geographical cloud regions and allows you to select which of them to make available for the overlay network. In such a brownfield scenario, Cloud OnRamp for IaaS allows simple integration between legacy public-cloud connections and the Viptela overlay network.

You configure and manage Cloud OnRamp for IaaS through the vManage NMS server. A configuration wizard in the vManage NMS automates the bring-up the transit to a your public cloud account and automates the connections between public-cloud applications and the users of those applications at branches in the overlay network.

The Cloud OnRamp for IaaS works in conjunction with AWS virtual private clouds (VPCs) and Azure virtual networks (VNet).

Cloud OnRamp for SaaS

Enterprise software providers deliver many applications as Software as a Service (SaaS) cloud applications, such as Dropbox, Microsoft Office365, and Salesforce. Latency and packet loss impact the performance of these applications, but in legacy networks, network administrators have little visibility into network characteristics between end users and SaaS applications. When a path is impaired in a legacy network, the manual process of shifting application traffic to an alternate path is complex, time consuming, and error prone.

Cloud OnRamp for SaaS (formerly called CloudExpress service) addresses these issues by optimizing performance for SaaS applications in the Viptela overlay network. From a central dashboard, Cloud OnRamp for SaaS provides clear visibility into the performance of individual cloud applications and automatically chooses the best path for each one. It responds to changes in network performance in real-time, intelligently re-routing cloud application traffic onto the best
Cloud OnRamp for SaaS calculates a value called the Viptela Quality of Experience (vQoE). The vQoE value weights loss and latency using a formula customized for each application. For example, email applications tolerate latency better than video applications, and video applications tolerate loss better than email applications. The vQoE value ranges from zero to ten, with zero being the worst quality and ten being the best. Cloud OnRamp for SaaS computes vQoE values for applications and paths, then assigns applications to the paths that best match their vQoE value. Cloud OnRamp for SaaS periodically recalculates vQoE values for paths to ensure ongoing optimal application performance.

**TCP Optimization**

TCP optimization fine-tunes the processing of TCP data traffic to decrease round-trip latency and improve throughput. You can optimize TCP traffic in service-side VPNs on vEdge routers. Optimizing TCP traffic is especially useful for improving TCP traffic performance on long-latency links, such as transcontinental links and the high-latency transport links used by VSAT satellite communications systems. TCP optimization can also improve the performance of SaaS applications.

TCP optimization is available on vEdge 1000, vEdge 2000, and vEdge 5000 hardware routers.

**Additional Information**

- Configuring Cloud OnRamp for IaaS
- Configuring TCP Optimization
- Using Cloud OnRamp for SaaS