Introduction

With the advent of cloud computing, the model for applications and workloads has also evolved. Applications are now loosely coupled and late-binding, consuming services from a variety of other systems. Service Providers are moving cloud centers to the edge of their global networks to mitigate latency issues and place new valued-added services closer to their customers. And Enterprises are placing workloads in specific geographic locations for personally-identifiable information compliance, and follow-the-sun operational models.

The broad distribution and granularity of applications is driving the need for seamless connectivity between a variety of infrastructure topologies and service models. Therefore, the need for vendor-independent gateway services to bridge between the OpenStack virtual overlay networks (i.e., VXLAN) and external resources has quickly arisen.

CPLANE delivers a lightweight, yet high-performance gateway solution that utilizes x86 technology. Overlay Gateway Router (OGR) provides VXLAN to external network connectivity utilizing the industry-standard Border Gateway Protocol (BGP).

A software-only solution, OGR can quickly be deployed as part of CPLANE’s Dynamic Virtual Networks – Data Center (DVNd) solution, either through a few simple UI steps, or programmatically through APIs.

Enterprises and Solution Providers are rapidly adopting OpenStack as the open source platform of choice for building private and hybrid clouds. These clouds are quickly transforming traditional IT departments, enabling them to be more agile and deliver responsive services in demands for rapidly changing business and market demands.
Solution Overview

In the following example, a tenant network, with a unique Network Identifier has been established for a customer (or, for example, a department or project for an enterprise deployment). The tenant network consists of two logical subnets – SUBNET 1 and SUBNET 2. These subnets were established via the SDN Service Orchestration Platform, which provides centralized orchestration for CPLANE’s OpenStack Networking product - Dynamic Virtual Networks – Data Center (DVNd).

DVNd proactively determines the network topology for the tenant network, then calculates and pushes the associated optimized flow rules to each node in the subnet. Using this same topology mapping, an Overlay Gateway Router can easily be added to provide gateway services. Once the OGR has been initialized as a virtual machine, it is added to the topology and the associated flow rules for each compute node are then calculated and automatically pushed to each node in the subnet.
Customer Requirements

Provisioning of the OGR can be accomplished by several different methods:

- Via the DVNd user console
- Through open DVNd API calls
- Automatically via CPLANE’s Multi-Site Manager

Provisioning via the DVNd user console consists of a few easy steps:

1. Select the target OGR
2. Configure the Autonomous System (AS) Number and IP Address of the external network
3. Select the Advertisement Protocol (e.g., BGP)
4. Add the OGR to the subnet virtual router
5. Associate the OpenStack subnet to the target physical subnet

More information on deploying and configuring an OGR can be found on the CPLANE blog.
Use Cases

The Overlay Gateway Router provides seamless connectivity to external resources over any Layer 3 network. Typical scenarios for deploying OGR include:

- Connecting two or more distributed OpenStack instances. This can be accomplished by independently configuring OGRs at each location, or automatically via CPLANE’s Multi-Site Manager.

- Public cloud integration. Connection to public clouds such as Amazon Web Services, Microsoft Azure or VMware vCloud Air can be established as an IPSEC tunnel or via dedicated, secure connections such as AWS Direct Connect. In this latter example, the target network would be an AWS Direct Connect service router.

- Integration with legacy VMware infrastructure. This is accomplished by simply connecting to a VMware gateway router in the VMware virtual domain.

- Connection to container environments such as Docker or Kubernetes, via a dedicated router in the container domain.

- Connection to bare metal devices via a physical router providing VLAN services for the bare metal environment.

About CPLANE.ai

CPLANE.ai orchestrates and manages highly-distributed clouds for Edge Computing, IoT, Industrial IoT, MEC, Fog, and intelligent edge applications. We eliminate the complexity associated with deploying cloud resources to millions of Edge Computing end points, allowing enterprises and service providers to focus on value-added business and IT services.

To learn more about our fully-integrated cloud orchestration and software-defined networking solutions, visit us at: www.cplaneai.com

Contact us:

info@cplaneai.com

+1 408.475.4950