OpenStack for Nexus Fabric Overview

Overview of OpenStack for Cisco Nexus Fabric

OpenStack serves as one of orchestrators of the cloud enabled through Cisco Nexus Fabric. For this release, all the orchestration is done using OpenStack's dashboard Horizon graphic user interface or OpenStack generic open APIs.

The following diagram provides an overview of the system in the OpenStack with Cisco Nexus Fabric as its network connecting all the compute nodes:

Figure 1: System Flow
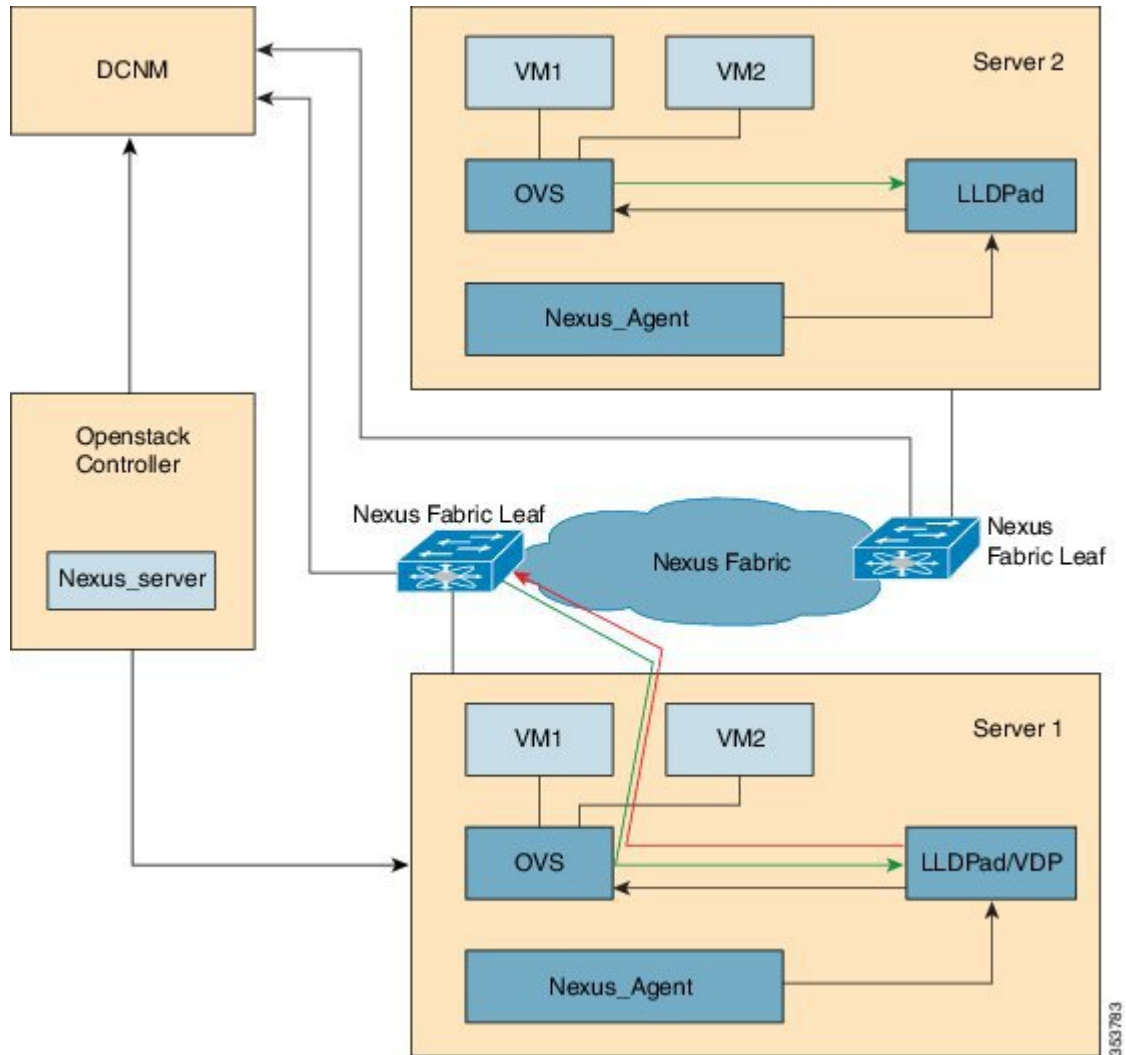
The control flow can be summarized as follows:

1 OpenStack cloud administrator creates a tenant/project. OpenStack Keystone component notifies Cisco Nexus Server running in the control node about the creation of the tenant. The Cisco Nexus Server sends the tenant information to Cisco Prime DCNM via Cisco Prime DCNM REST API. Tenant's user name and password are created by the administrator as well.

2 Tenant logs into OpenStack and create network. OpenStack Neutron components notifies Cisco Nexus Server of the Network Information (Subnet/mask, tenant name), and Cisco Nexus Server automatically sends the network creation request to Cisco Prime DCNM via Cisco Prime DCNM REST APIs.

3 Instance (VM) is launched, specifying the Network that the instance will be a part of.

4 Cisco Nexus Server sends the network information (Subnet/mask, tenant name) and VM information to Cisco Nexus agent running in the corresponding compute node.

5 VSI Discovery and configuration protocol (VDP), running in the context of LLDPad, gets notified by the Cisco Nexus agent about the VM and the segment ID associated with the VM.

6 VDP communicates with the Leaf passing the VM's information along with the Segment ID.

7 Leaf contacts Cisco Prime DCNM with the Segment ID for retrieving the Network attributes and auto-configure the compute node facing interface for this tenant VRF.

8 Leaf responds back with the VLAN to be used for tagging the VM's traffic. The VLAN to be used is the first free VLAN from the predefined VLAN pool (Cisco NX-OS command **system fabric dynamic-vlans**) on each individual leaf switch. The selected one is the leaf switch significance resource.

9 LLDPad module notifies the Cisco Nexus agent with the VLAN information provided by the leaf.

The Cisco Nexus agent configures OVS for tagging the packets from the VM destined to the network with the VLAN provided by the Leaf. VM's VNIC is operational only at this point.