CHAPTER 1

Overview

This chapter describes licensing for the Cisco Nexus 1000V software and includes the following sections:

Information About Cisco Nexus 1000V

Cisco Nexus 1000V provides Layer 2 switching functions in a virtualized server environment. Cisco Nexus 1000V replaces virtual switches within ESX servers and allows users to configure and monitor the virtual switch using the Cisco NX-OS command-line interface (CLI). Cisco Nexus 1000V also gives you visibility into the networking components of the ESX servers and access to the virtual switches within the network.

Cisco Nexus 1000V manages a data center defined by the vCenter server. Each server in the data center is represented as a line card in Cisco Nexus 1000V and can be managed as if it were a line card in a physical Cisco switch.

Cisco Nexus 1000V has the following components:

- Virtual Ethernet module (VEM)-data plane

  Each hypervisor is embedded with one VEM. The VEM is a lightweight software component that effectively replaces the virtual switch by performing the following functions:

  - Advanced networking and security
  - Switching between directly attached virtual machines
  - Uplinking to the rest of the network

Note A license is required for every CPU on a VEM.

- Virtual supervisor module (VSM)-control plane

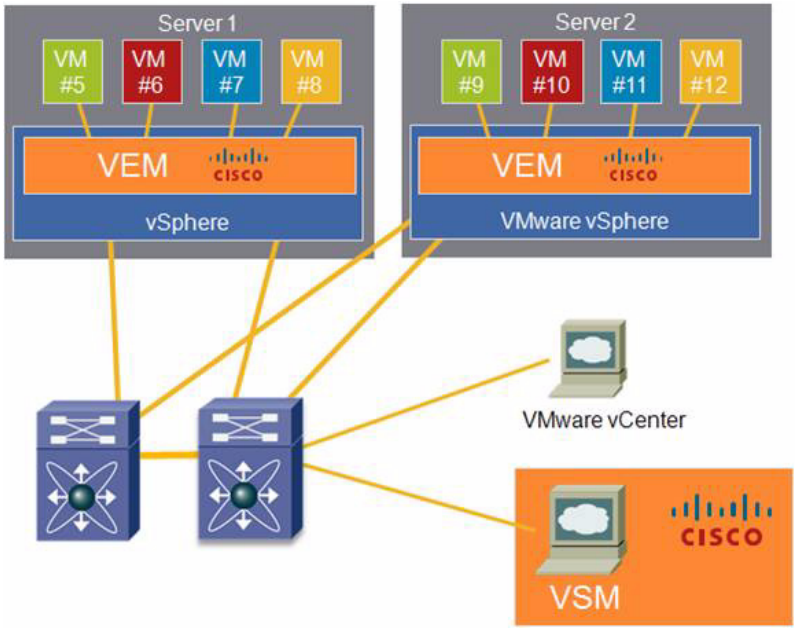
  The VSM is a standalone, external, physical or virtual appliance that performs the following functions for the Cisco Nexus 1000V system (that is, the combination of the VSM itself and all VEMs that it controls):

  - Configuration
  - Management (A single VSM can manage up to 64 VEMs.)
  - Monitoring
  - Diagnostics
  - Integration with VMware vCenter
- Licenses

  The license is delivered in a Software License Claim Certificate in either e-mail or on paper.

Figure 1 shows an example of the Cisco Nexus 1000V distributed architecture. A Cisco Nexus 1000V license is needed for each installed server CPU.

Figure 1 Cisco Nexus 1000V Licenses are Based on Installed Server CPU



Licensing and High Availability

The following high-availability standards are applied to Cisco Nexus 1000V:

- Installing any license in the device is a nondisruptive process.
- If your system has dual supervisors, the licensed software runs on both supervisor modules and provides failover protection.

A Cisco Nexus 1000V license is required for each server CPU in your system. You purchase these licenses in a package and then install the package on your VSM. For more information, see Chapter 2, "Installing and Configuring Licenses."

Types of Licenses

This section includes the following topics:

Permanent Licenses

You can purchase permanent licenses for a fixed number of VEM CPU sockets. Permanent licenses do not expire. The number of licenses is specified in the license file purchased.

When you subsequently upgrade to a new software release, all previously installed permanent licenses remain in effect.

When you purchase permanent licenses, make sure to request enough licenses to cover all of your installed CPUs in all of your VEMs. Before licenses are applied to a VEM, enough licenses must be available to cover all of the CPUs in that VEM. If you are short by one CPU, then no licenses are applied to the VEM.

Note If your license does not have the capacity to cover all CPUs in a particular VEM, then any licenses that could have been applied to that VEM are, instead, placed into a pool of available licenses on the VSM to be used as needed. The VEM remains unlicensed until sufficient licenses are available to cover all CPUs in the VEM.

After you purchase a license package, you then install the package on your VSM. Table 1 shows an example of a license package name.

Table 1 License Package

License Package	Description
NEXUS1000V_LAN_SERVICES_PKG.	Virtual Ethernet Module (VEM)

For more information, see Chapter 2, "Installing and Configuring Licenses."

After installing permanent licenses, if your evaluation licenses are no longer used, you can remove the evaluation license file from the pool. For more information, see the "Uninstalling a License" section on page 2-7.

Evaluation Licenses

Evaluation licenses are available from Cisco.com in packages of 16 licenses that are valid for 60 days or until you upgrade to a new version of Cisco Nexus 1000V. Evaluation licenses let you evaluate the Cisco Nexus 1000V before purchasing permanent licenses.

The60-day evaluation period starts when you install the evaluation license file. An evaluation license is not invalidated when you install a permanent license.

Evaluation licenses are invalidated when one of the following occurs:

- The licenses reach their expiration date.
- You upgrade to a new version of Cisco Nexus 1000V.

  When upgrading to a new software release, any previously installed evaluation licenses are invalidated, and the 16 default licenses included in the upgraded Cisco Nexus 1000V software are applied to your VEMs.

Caution Service Disruption—If your evaluation licenses expire, your VEMs are unlicensed. The vEthernet interfaces on unlicensed VEMs are removed from service and the traffic flowing to them from virtual machines is dropped. This traffic flow is not resumed until you add a new license file.

After installing permanent licenses, if your evaluation licenses are no longer used, you can remove the evaluation license file from the pool. For more information, see the "Uninstalling a License" section on page 2-7.

Overdraft Licenses

Overdraft licenses can prevent a service disruption in the event you exceed the number of permanent or evaluation licenses specified in your license file. The number of overdraft licenses provided is based on the number of licenses ordered.

Volatile Licenses

The volatile license feature automatically captures unused licenses when a VEM is taken out of service and adds them to the VSM license pool so that they can be reused by another VEM. When you enable this feature, any time a VEM is taken out of service, either automatically or manually, its licenses are returned to the VSM license pool.

In contrast, if its licenses are nonvolatile, then the VEM does not release them when taken out of service. When returned to service, the VEM resumes normal activity without further interruption.

The Volatile Licenses feature is disabled by default. That is, the licenses in VEMs are nonvolatile and are not released when a VEM is removed from service.

Note Service Disruption—Volatile licenses are removed from a VEM during a loss in connectivity and are not returned to the VEM when connectivity resumes. We recommends that volatile licenses remain disabled (the default), and that you transfer unused licenses using the "Transferring Licenses to the License Pool" procedure on page 2-6.

For more details, see Chapter 2, "Installing and Configuring Licenses."