



CHAPTER 2

Installing and Configuring Licenses

This chapter provides procedures for installing and configuring licenses and includes the following topics:

- [Information About Licenses, page 2-1](#)
- [Obtaining and Installing a License, page 2-1](#)
- [Transferring Licenses, page 2-5](#)
- [Uninstalling a License, page 2-7](#)
- [Configuring Volatile Licenses, page 2-9](#)
- [“Verifying the License Configuration” procedure on page 2-12](#)
- [Changing the Serial Number in a License, page 2-13](#)
- [Feature History for Licenses, page 2-16](#)

Information About Licenses

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 1, “Overview.”](#)

Obtaining and Installing a License

This section describes how to obtain the license file that is required for each VSM and then install it.

This section includes the following topics:

- [Flow Chart: Obtaining and Installing a License, page 2-2](#)
- [Obtaining the License File, page 2-2](#)
- [Installing the License File on the VSM, page 2-4](#)
- [Verifying the License Configuration, page 2-12](#)

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BEFORE YOU BEGIN

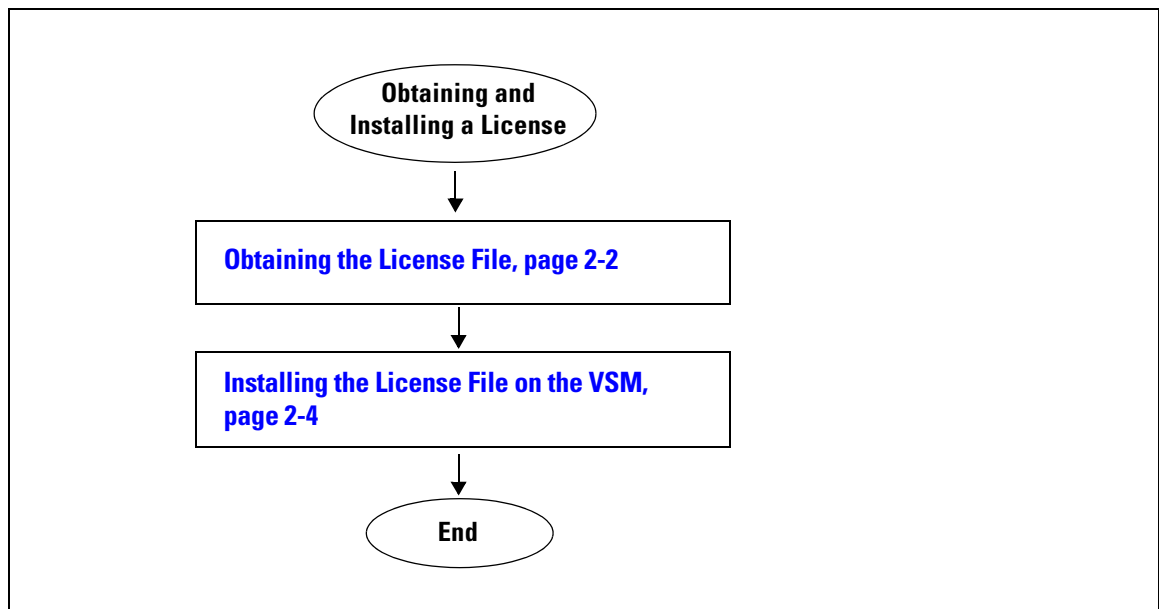
Before beginning the procedures in this section, you must know or do the following:

- A license file is tied to each VSM by the host ID, or the serial number associated with the VSM device.
- A license file contains the number of licenses ordered for your VSM. One license is required for each CPU on each VEM.
- A VSM can have more than one license file depending on the number of installed VEM CPUs.

Flow Chart: Obtaining and Installing a License

The following flow chart guides you through the process of installing a license on a VSM. After completing a procedure, return to the flow chart to make sure you complete all procedures in the correct sequence.

Figure 1 *Flow Chart: Obtaining and Installing a License*



Obtaining the License File

Use this procedure to obtain a license file for a VSM.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- A license file is tied to each VSM by the host ID, or the serial number associated with the VSM device.

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- Make sure that you have your product authorization key (PAK), found in your software license claim certificate.
If you cannot locate your software license claim certificate, contact [Cisco Technical Support](#).
- You are logged in to the CLI in EXEC mode.
- This procedure requires you to copy a license file. Your username must have the network-admin role which allows you to copy files. For information about user accounts and roles, see the *Cisco Nexus 1000V Security Configuration Guide, Release 4.0(4)SV1(1)*.

DETAILED STEPS

Step 1 Using the following command, obtain the serial number, also called the host ID, for your VSM:

show license host-id

Example:

```
n1000v# show license host-id
License hostid: VDH=1280389551234985805
```



Note The host ID encompasses everything that appears after the equal sign (=). In this example, the host ID is 1280389551234985805. You will need the host ID in [Step 5](#).

Step 2 From your software license claim certificate, locate the product authorization key (PAK).

You will need the PAK in [Step 5](#).

Step 3 Go to the [Software Download web site](#).

Step 4 From the Software Download web site, go to the [Product License Registration web site](#).

Step 5 From the Product License Registration web site follow the instructions for registering your VSM license. The license key file is sent to you in e-mail. The license key authorizes use on only the host ID device. You must obtain separate license key file(s) for each of your VSMs.



Caution The license key file is invalidated if you modify it.

Step 6 Copy your license key file to bootflash on the VSM.

copy *[source url] filename [destination filesystem:] filename*

Example:

```
n1000v# copy scp://user@linux-box.cisco.com/home/user/nlkv_license.lic bootflash:
nlkv_license.lic
Enter vrf (If no input, current vrf 'default' is considered):
user@linux-box.cisco.com's password:
nlkv_license.lic                               100% 252      0.3KB/s   00:00

n1000v#
```

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Installing the License File on the VSM

Use this procedure to install the license file(s) on a VSM. Installing multiple licenses is called stacking.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- This procedure installs the license file using the name, `license_file.lic`. You can specify a different name.
- If you are installing multiple licenses for the same VSM, also called license stacking, make sure that each license key file name is unique.
- Repeat this procedure for each additional license file you are installing, or stacking, on the VSM.
- You must first uninstall an evaluation license if one is present on your VSM. See the [“Uninstalling a License” procedure on page 2-7](#).
- Make sure you are logged in to the active VSM console port.
- This procedure requires that your username is assigned the `network-admin` role. This role is required to install license files. For information about user accounts and roles, see the *Cisco Nexus 1000V Security Configuration Guide, Release 4.0(4)SV1(1)*.

SUMMARY STEPS

- 1 **install license bootflash:** *file_name*
- 2 **show license file** *file_name*
- 3 **show license usage**
- 4 **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	install license bootflash: <i>[filename]</i> Example: <pre>n1000v# install license bootflash:license_file.lic Installing license ..done n1000v#</pre>	From the active VSM console, installs the license. Note If you specify a license file name, the file is installed with the specified name. Otherwise, the default filename is used. The license is installed on the VSM and each VEM automatically acquires a license for every CPU socket.
Step 2	show license file <i>file_name</i> Example: <pre>n1000v# show license file license.lic SERVER this_host ANY VENDOR cisco INCREMENT NEXUS1000V_LAN_SERVICES_PKG cisco 1.0 permanent 1 HOSTID=VDH=1575337335122974806 \ NOTICE="<LicFileID>license.lic</LicFileID><LicLineID></LicLineID> \ <PAK>PAK12345678</PAK>" SIGN=3AF5C2D26E1A n1000v#</pre>	Verify the license installation by displaying the license configured for the VSM.

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	Command	Purpose
Step 3	show license usage Example: n1000v# show license usage <pre> Feature Ins Lic Status Expiry Date Comments Count ----- NEXUS1000V_LAN_SERVICES_PKG Yes 16 In use 17 Aug 2009 - </pre> n1000v#	Verifies the license installation by displaying it in the license usage table.
Step 4	copy running-config startup-config Example: n1000v(config)# copy running-config startup-config	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Transferring Licenses

This chapter provides information about transferring licenses between VEMs and uninstalling a license. This chapter includes the following sections:

- [Transferring Licenses Between VEMs, page 2-5](#)
- [Transferring Licenses to the License Pool, page 2-6](#)

Transferring Licenses Between VEMs

Use this procedure to transfer licenses from one VEM to another, after moving a VM from one host to another.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You have at least one active VEM in the VSM.
- You are logged in to the CLI in EXEC mode.
- You know the VEM you want to transfer licenses from and the number of licenses it has.
- You know the VEM you are transferring licenses to and the number of licenses required.
- You know the number of CPUs installed on the destination VEM.
- Licenses cannot be transferred to a VEM unless there are sufficient licenses in the pool for all CPUs on that VEM.
- When licenses are successfully transferred from one VEM to another, then the virtual Ethernet interfaces on the source VEM are removed from service, and the virtual Ethernet interfaces on the destination VEM are brought into service.
- For detailed information about the fields in the output of these commands, see the *Cisco Nexus 1000V Command Reference, Release 4.0(4)SV1(1)*.

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SUMMARY STEPS

- 1 **svs license transfer src-vem <vem no> dst-vem <vem no>**
- 2 **show license usage package_name**

DETAILED STEPS

	Command	Purpose
Step 1	<pre>svs license transfer src-vem <vem no> dst-vem <vem no></pre> <p>Example: n1000v# svs license transfer src-vem 3 dst-vem 5 n1000v(config)#</p>	<p>Transfers the licenses from one VEM to another.</p> <p>In this example the licenses for VEM 3 are transferred to VEM 5.</p>
Step 2	<pre>show license usage package_name</pre> <p>Example: n1000v# show license usage NEXUS1000V_LAN_SERVICES_PKG Application ----- VEM 5 - Socket 1 VEM 5 - Socket 2 VEM 4 - Socket 1 VEM 4 - Socket 2 ----- n1000v#</p>	<p>Verifies the transfer by displaying the licenses in use on each VEM.</p> <p>In this example, VEM 5 now has the licenses previously used by VEM 3.</p>

Transferring Licenses to the License Pool

Use this procedure to transfer licenses from a VEM to the VSM license pool.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You have at least one active VEM in the VSM.
- You are logged in to the CLI in EXEC mode.
- This procedure transfers licenses from a VEM to the VSM license pool.
- All of the virtual Ethernet interfaces on the VEM are removed from service when its licenses are transferred to the license pool.
- For detailed information about the fields in the output of these commands, see the *Cisco Nexus 1000V Command Reference, Release 4.0(4)SV1(1)*.

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SUMMARY STEPS

- 1 `svs license transfer src-vem <vem no> license_pool`
- 2 `show license usage package_name`

DETAILED STEPS

	Command	Purpose
Step 1	<pre>svs license transfer src-vem <vem no> license_pool</pre> <p>Example:</p> <pre>n1000v# svs license transfer src-vem 3 license_pool n1000v(config)#</pre>	<p>Transfers the licenses from a VEM to the license pool.</p> <p>The licenses for this VEM are released back to the pool of available licenses on the VSM.</p>
Step 2	<pre>show license usage package_name</pre> <p>Example:</p> <pre>n1000v# show license usage NEXUS1000V_LAN_SERVICES_PKG Application ----- VEM 4 - Socket 1 VEM 4 - Socket 2 ----- n1000v#</pre>	<p>Verifies the transfer by displaying the licenses in use on each VEM.</p> <p>In this example, VEM 3 licenses are no longer in use.</p>

Uninstalling a License

Use this procedure to uninstall a license that is not in use or to uninstall an evaluation license before adding a permanent license.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:



Caution

Service Disruption

When you uninstall a license file from a VSM, the vEthernet interfaces on the 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 with licenses for the VEMs. We recommend notifying the server administrator that you are uninstalling a license and this will cause the vEthernet interfaces to shut down.

- You have at least one active VEM in the VSM.
- You are logged in to the CLI in EXEC mode.
- If a license is in use, you cannot delete it. This procedure includes instructions for transferring all licenses from the VEMs to the VSM license pool before uninstalling the license file.

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- This procedure requires that your username have the network-admin role. The network-admin role is required to uninstall licenses. For information on user accounts and roles, see the *Cisco Nexus 1000V Security Configuration Guide, Release 4.0(4)SV1(1)*.
- For detailed information about the fields in the output of these commands, see the *Cisco Nexus 1000V Command Reference, Release 4.0(4)SV1(1)*.

SUMMARY STEPS

- 1 **copy running-config tftp://server/path/filename**
- 2 **show license brief**
- 3 **show license usage license_name**
- 4 **svs license transfer src-vem <vem no> license_pool**
- 5 Repeat [Step 4](#) for each VEM.
- 6 **clear license license_name**
- 7 **Yes**
- 8 **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	<pre>copy running-config tftp://server/path/filename</pre> <p>Example: n1000v# copy running-config tftp: n1000v(config)#</p>	Copies the VSM running configuration to a remote server.
Step 2	<pre>show license brief</pre> <p>Example: n1000v# show license brief Enterprise.lic n1000v#</p>	Identifies the name of the license file to uninstall. In this example, the file to uninstall is the Enterprise.lic file.
Step 3	<pre>show license usage package_name</pre> <p>Example: n1000v# show license usage NEXUS1000V_LAN_SERVICES_PKG Application ----- VEM 3 - Socket 1 VEM 3 - Socket 2 VEM 4 - Socket 1 VEM 4 - Socket 2 ----- n1000v#</p>	Displays the licenses in use on each VEM so that you can transfer them back to the VSM license pool before uninstalling the license file.

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	Command	Purpose
Step 4	<pre>svs license transfer src-vem <vem no> license_pool</pre> <p>Example: n1000v# svs license transfer src-vem 3 license_pool</p>	<p>Transfers the licenses from the VEM back to the VSM license pool.</p> <p>As the licenses are transferred from a VEM, its vEthernet interfaces are shut down and the following syslog is generated: PLATFORM-2-PFM_VEM_UNLICENSED</p>
Step 5	Repeat Step 4 for each VEM until all licenses in use have been transferred back to the VSM license pool.	
Step 6	<pre>clear license license_name</pre> <p>Example: n1000v# clear license Enterprise.lic Clearing license Enterprise.lic: SERVER this_host ANY VENDOR cisco Do you want to continue? (y/n) y Clearing license ..done</p>	<p>Begins the uninstall of the named license file.</p> <p>In this example, the Enterprise.lic file is uninstalled.</p>
Step 7	<pre>Yes</pre> <p>Example: Do you want to continue? (y/n) y Clearing license ..done</p>	<p>Continues and completes the uninstall of the named license file.</p> <p>The license file is uninstalled from the VSM.</p>
Step 8	<pre>copy running-config startup-config</pre> <p>Example: n1000v(config)# copy running-config startup-config</p>	<p>(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.</p>

Configuring Volatile Licenses

This chapter provides information about enabling and disabling the volatile license feature. This chapter includes the following sections:

- [Information about Volatile Licenses, page 2-9](#)
- [Enabling Volatile Licenses, page 2-10](#)
- [Disabling Volatile Licenses, page 2-11](#)

Information about 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, then any time a VEM is taken out of service, either automatically or manually, its licenses are returned to the VSM license pool.

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In contrast, if its licenses are non-volatile, then the VEM does not release them during a loss in network connectivity with the VSM. When connectivity is returned, the VEM can resume normal activity without further interruption.

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



Caution

Service Disruption

Volatile licenses are removed from a VEM during a loss in connectivity and are not returned to the VEM when connectivity resumes. Cisco recommends the volatile licenses remain disabled (the default). Cisco recommends that you, instead, transfer unused licenses using the [“Transferring Licenses to the License Pool” procedure on page 2-6](#).

Enabling Volatile Licenses

Use this procedure to enable volatile licenses so that, whenever a VEM is taken out of service, its licenses are returned to the VSM pool of available licenses.



Caution

Service Disruption

Volatile licenses are removed from a VEM during a loss in connectivity and are not returned to the VEM when connectivity resumes. Cisco recommends the volatile licenses remain disabled and that you, instead, transfer unused licenses using the [“Transferring Licenses to the License Pool” procedure on page 2-6](#).

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You have at least one active VEM in the VSM.
- You are logged in to the CLI in EXEC mode.
- Volatile license is disabled by default. That is, by default, licenses are not returned to the VSM pool when a VEM is removed from service.

SUMMARY STEPS

- 1 **config t**
- 2 **svs license volatile**
- 3 **show**
- 4 **copy running-config startup-config**

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DETAILED STEPS

	Command	Purpose
Step 1	config t Example: n1000v# config t n1000v(config)#	Places you into CLI Global Configuration mode.
Step 2	svs license volatile Example: n1000v(config)# svs license volatile n1000v(config)#	Enables volatile licenses in the running configuration.
Step 3	copy running-config startup-config Example: n1000v(config)# copy running-config startup-config	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Disabling Volatile Licenses

Use this procedure to disable volatile licenses so that, when a VEM is taken out of service, its licenses are not returned to the VSM pool of available licenses.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- You have at least one active VEM in the VSM.
- You are logged in to the CLI in EXEC mode.
- Volatile license is disabled by default. That is, by default, licenses are not returned to the VSM pool when a VEM is removed from service.
- For detailed information about the fields in the output of these commands, see the *Cisco Nexus 1000V Command Reference, Release 4.0(4)SV1(1)*.

SUMMARY STEPS

- 1 **config t**
- 2 **no svs license volatile**
- 3 **show**
- 4 **copy running-config startup-config**

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DETAILED STEPS

	Command	Purpose
Step 1	<code>config t</code> Example: n1000v# config t n1000v(config)#	Places you into CLI Global Configuration mode.
Step 2	<code>no svs license volatile</code> Example: n1000v(config)# no svs license volatile n1000v(config)#	Disables volatile licenses in the running configuration.
Step 3	<code>copy running-config startup-config</code> Example: n1000v(config)# copy running-config startup-config	(Optional) Saves the running configuration persistently through reboots and restarts by copying it to the startup configuration.

Verifying the License Configuration

Use the commands in [Table 2-1](#) to verify licenses configured in your system:

Table 2-1 Verifying License Installation

Command	Description
<code>show license</code>	Displays the license configured for the VSM. See Example 2-1 on page 2-12 .
<code>show license brief</code>	Displays the license installed on the VSM. See Example 2-2 on page 2-13 .
<code>show license file filename</code>	Displays the license configured for the VSM. See Example 2-3 on page 2-13 .
<code>show license usage</code>	Displays the total CPU licenses in use on your VEMs. See Example 2-4 on page 2-13 .
<code>show license usage filename</code>	Displays the CPU licenses in use on each VEM. See Example 2-5 on page 2-13 .

Example 2-1 Show License

```
n1000v# show license
Enterprise.lic:
SERVER this_host ANY
VENDOR cisco
INCREMENT LAN_ENTERPRISE_SERVICES_PKG cisco 1.0 permanent uncounted \
  VENDOR_STRING=<LIC_SOURCE>MDS_SWIFT</LIC_SOURCE><SKU>N7K-LAN1K9=</SKU> \
  HOSTID=VDH=TBC10412106 \
  NOTICE="<LicFileID>20071025133322456</LicFileID><LicLineID>1</LicLineID>
\
```

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```
<PAK>PAK12345678</PAK>" SIGN=0CC6E2245FBE
```

Example 2-2 Show License Brief

```
n1000v# show license brief
Enterprise.lic
```

Example 2-3 Show License File

```
n1000v# show license file n1kv_license.lic
Enterprise.lic:
SERVER this_host ANY
VENDOR cisco
INCREMENT LAN_ENTERPRISE_SERVICES_PKG cisco 1.0 permanent uncounted \
  VENDOR_STRING=<LIC_SOURCE>MDS_SWIFT</LIC_SOURCE><SKU>N7K-LAN1K9=</SKU> \
  HOSTID=VDH=TBC10412106 \
  NOTICE="<LicFileID>20071025133322456</LicFileID><LicLineID>1</LicLineID>
 \
<PAK>PAK12345678</PAK>" SIGN=0CC6E2245FBE
```

Example 2-4 Show License Usage

```
n1000v# show license usage
Feature                               Ins Lic      Status      Expiry      Date Comments
                                   Count
-----
NEXUS1000V_LAN_SERVICES_PKG         Yes 100      In use      Never        -
-----

n1000v#
```

Example 2-5 Show License Usage filename

```
n1000v# show license usage NEXUS1000V_LAN_SERVICES_PKG
Application
-----
VEM 3 - Socket 1
VEM 3 - Socket 2
VEM 4 - Socket 1
VEM 4 - Socket 2
-----

n1000v#
```

Changing the Serial Number in a License

Use this procedure to change the serial number, or host ID, associated with a license. This process is also called rehosting and is required if you replace a VSM in your network with a new VSM.

This section includes the following topics:

- [Flow Chart: Changing the Serial Number in a License, page 2-14](#)

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- [Obtaining the License File, page 2-2](#)
- [Installing the License File on the VSM, page 2-4](#)
- [Verifying the License Configuration, page 2-12](#)

BEFORE YOU BEGIN

Before beginning the procedures in this section, you must know or do the following:



Caution

Service Disruption

When you remove a VSM from your network, the vEthernet interfaces on the 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 VSM and new license file with the new host ID.

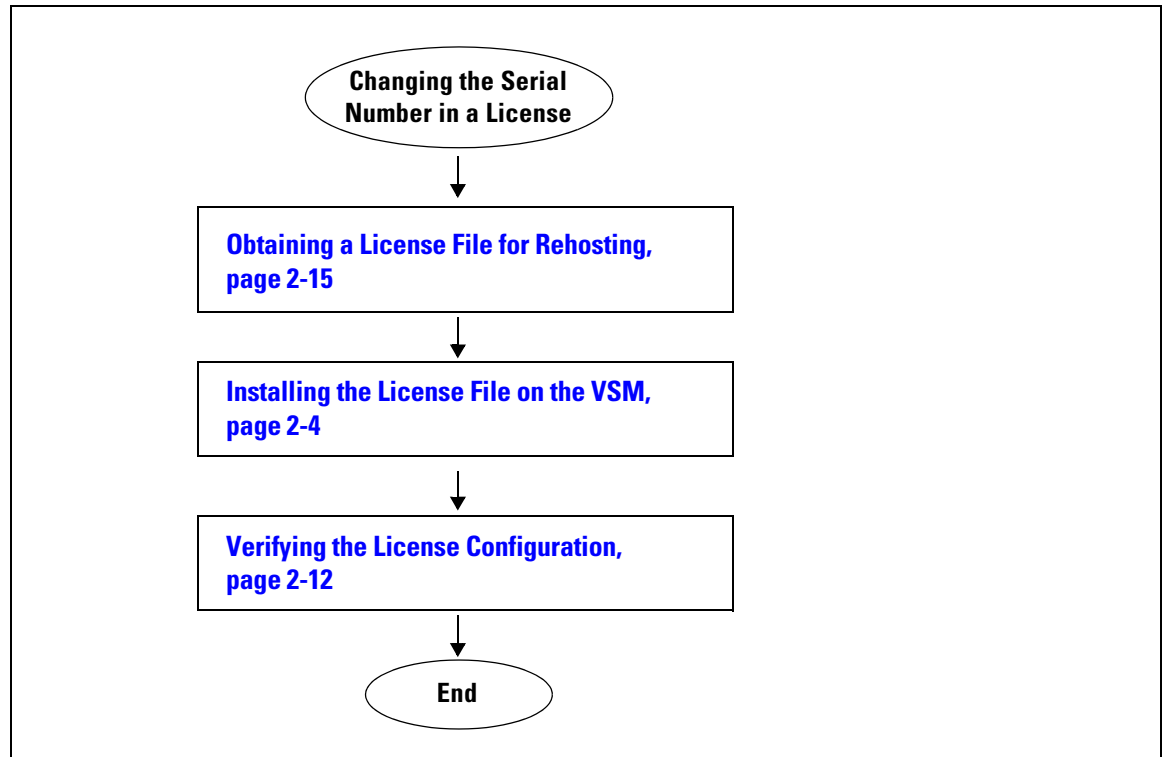
- You have a copy of your existing license file(s) with the host ID of the existing VSM.
- A license file is tied to each VSM by the host ID, or the serial number, associated with the VSM device.
- A license file contains the number of licenses ordered for your VSM. One license is required for each CPU on each VEM.
- A VSM can have more than one license file depending on the number of installed VEM CPUs.
- If you have multiple license files stacked on your VSM, repeat this process for each license file.

Flow Chart: Changing the Serial Number in a License

The following flow chart guides you through the process required to change the serial number, or host ID, in an existing license. After completing a procedure, return to the flow chart to make sure you complete all procedures in the correct sequence.

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Figure 2 Flow Chart: Changing the Serial Number in a License



Obtaining a License File for Rehosting

Use this procedure to obtain a new license file when you are changing the VSM host, also called rehosting.

BEFORE YOU BEGIN

Before beginning this procedure, you must know or do the following:

- A license file is tied to each VSM by the host ID, or the VSM serial number.
- You are logged in to the CLI in EXEC mode.
- This procedure requires you to copy a license file. Your username must have the network-admin role which allows you to copy files. For information about user accounts and roles, see the *Cisco Nexus 1000V Security Configuration Guide, Release 4.0(4)SV1(1)*.

DETAILED STEPS

- Step 1** Using the following command, obtain the serial number, also called the host ID, for your new VSM:
- show license host-id**

Example:

```
n1000v# show license host-id
License hostid: VDH=1280389551234985805
```

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Note The host ID encompasses everything that appears after the equal sign (=). In this example, the host ID is 1280389551234985805. You will need the host ID in [Step 5](#).

- Step 2** E-mail the following information to licensing@cisco.com, requesting the license file be rehosted to the new host ID:
- the new host ID
 - a copy of the existing license file from the old VSM

A new license key file, with the host ID of the new VSM, is sent to you in E-mail within 48 hours.



Caution The license key file is invalidated if you modify it.

Step 3 Save your license to a TFTP server.

Step 4 Copy your license to bootflash on the VSM.

Example:

```
n1000v@ copy scp://user@linux-box.cisco.com/home/user/n1kv_license.lic bootflash:
Enter vrf (If no input, current vrf 'default' is considered):
user@linux-box.cisco.com's password:
n1kv_license.lic                               100% 252      0.3KB/s   00:00
n1000v@
```

Feature History for Licenses

This section provides the license release history.

Feature Name	Releases	Feature Information
Licenses	4.0	This feature was introduced.