



## Licensing Support for NCS 2000 Cards in SVO

This chapter describes the list of line cards that supports NCS 2000 SVO and the associated licensing operations.

**Table 1: Feature History**

Feature Name	Release Information	Feature Description
Licensing Support for NCS 2000 Cards in SVO	Cisco NCS 2000 Release 12.3	SVO web user interface supports licensing operations for the supported NCS 2000 line cards.  You can install, save, prioritize, refresh, or rehost the licenses on the supported NCS 2000 line cards. You can also display the detailed information of the license installed.

Table 2: Feature History

Feature Name	Release Information	Feature Description
License Deployment from SVO for NCS 2000 cards	Cisco NCS 2000 Release 12.3.1	<p>After procuring licenses from the <a href="#">Software Licensing Tool</a>, the SVO web user interface now allows you to install, rehost, save these licenses, and save device credentials on the following line cards:</p> <ul style="list-style-type: none"> <li>• 9-SMR17FS</li> <li>• 9-SMR24FS</li> <li>• 9-SMR34FS</li> </ul> <p>Only three express (EXP) ports are active by default on these cards. This feature allows you to activate the remaining EXP ports using a license. You can use those ports to create the required ROADM services.</p>

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## Overview of Licensing

A license is a permit for a software feature to be functional or enabled on a device. The "pay as you grow" model enables you to upgrade your hardware and software capacity by using a license key. As a result, the upfront deployment cost is reduced and additional capacity or features can be purchased on a need basis. You need not complete a return merchandise authorization (RMA) process to add a new hardware. Instead, you can purchase the license, have it electronically delivered, and use the license key to enable the licensed feature.

New devices are shipped with preinstalled licenses for specific functionalities based on your order. New licenses have to be added for enabling additional functionalities. New or upgraded Cisco devices must be registered in the Cisco Product License Registration portal and must have a product authorization key (PAK) to obtain licenses from Cisco.

## Line Cards with SVO Licenses

SVO supports licensing for the following line cards:

- 40-SMR1-C and 40-SMR2-C Cards

- 20-SMRFS Card
- 200G-CK-LC Card
- 10x10G-LC Card
- 9-SMR17FS, 9-SMR24FS, and 9-SMR34FS Cards

#### **40-SMR1-C and 40-SMR2-C Cards**

The 40-SMR1-C and 40-SMR2-C cards use count-based licenses that represent the number of licensed wavelengths on the express (EXP) ports. The card has a base functionality for the first ten circuits provisioned using the EXP ports. License is required for provisioning any additional circuits on the EXP (Tx and Rx) ports. Permanent licenses can be purchased in 10-port increments. A maximum of three sets of permanent licenses, each supporting ten ports, can be installed.

The evaluation license on the 40-SMR1-C and 40-SMR2-C cards supports full capability and hence, all the ports can be provisioned.

The licensable PIDs for the 40-SMR1-C and 40-SMR2-C cards are:

- 15454-SMR1-LIC
- 15454-SMR2-LIC
- The non-licensable PIDs for the 40-SMR1-C and 40-SMR2-C cards are:
  - 15454-40-SMR1-C
  - 15454-40-SMR2-C

The usage of the 40-SMR1-C and 40-SMR2-C card licensing impacts the circuit provisioning in the following ways:

- If the card is used on a meshed node (of N degrees) or on a ROADM node, the licensing determines the number of OCH pass-through circuits that can be provisioned crossing the EXP (Tx) ports.
- If the card is used on node where a side is defined on the EXP (Tx) port, the licensing will determine the number of OCH pass-through or add/drop circuits that can be provisioned on that side.

If a circuit under base functionality is deleted, an existing circuit under temporary or evaluation license does not get transferred to the base functionality. However, if a new circuit is provisioned on the device, it will use the port available under base functionality.

The 40-SMR1-C card goes to the LIC-Evaluation period without a traffic hit under the following conditions:

- When the 40-SMR1-C card is upgraded to a release that requires a license.
- When a permanent license is purchased for all the 40 channels.

#### **20-SMRFS Card**

The 20-SMRFS card uses count-based licenses that represent the number of licensed ports on the express (EXP) ports.

Card	Licensable PID	Non-Licensable PID
20-SMRFS	NCS2K-20-SMRFS-L=	NCS2K-20-SMRFS=

### 200G-CK-LC Card

The 200G-CK-LC card supports feature-based licensing. The 200G-CK-LC card supports feature-based licensing.

*Table 3: Licensable and Non-Licensable PIDs*

Card	Licensable PID	Non-Licensable PID
200G-CK-LC	NCS2K-200G-CK-LIC	NCS2K-200G-CK-LC

The base functionality is enabled in the licensed card version. Additional features are provided through specific feature licenses. The feature licenses can be permanent license or evaluation license.

### 10x10G-LC Card

The 10x10G-LC card supports count-based licenses.

*Table 4: Licensable and Non-Licensable PIDs*

Card	Licensable PID	Non-Licensable PID
10x10G-LC	15454-M-10x10-LIC	15454-M10x10G-LC

### 9-SMR17FS, 9-SMR24FS, and 9-SMR34FS Cards

The 9-SMR17FS, 9-SMR24FS, and 9-SMR34FS cards use count-based licenses that represent the number of licensed ports on the express (EXP) ports.

The licensable card versions for the 9-SMR17FS, 9-SMR24FS, and 9-SMR34FS cards have only three ports that are enabled, and by default, they do not have Flex Spectrum capability. Additional ports can be activated through specific licenses. The licenses can be permanent or evaluation licenses.

*Table 5: Licensable and Non-Licensable PIDs*

Card	Licensable PID	Non-Licensable PID
9-SMR17FS	NCS2K-9-SMR17FS-L=	NCS2K-9-SMR17FS=
9-SMR24FS	NCS2K-9-SMR24FS-L=	NCS2K-9-SMR24FS=
9-SMR34FS	NCS2K-9-SMR34FS-L=	NCS2K-9-SMR34FS=

### Feature Licenses

The following table describes the feature licenses that can be purchased from the licensing portal.

License Feature PID	License Feature Name in SVO	Description
L-NCS2K-SMR-2P=	EXP Ports	Enables two EXP-TX/EXP-RX ports on the 9-SMR17FS, 9-SMR24FS, and 9-SMR34FS cards.
L-NCS2K-SMR-4P=	EXP Ports	Enables four EXP-TX/EXP-RX ports on the 20-SMRFS card.
L-NCS2K-CK-CL=	CPAK	Enables the CPAK client and allows to configure the TXP-100G operating mode.
L-NCS2K-SFEC-16Q=	200G	Enables 20% SD-FEC and 200G 16-QAM on the trunk port allowing the MXP_10x10G_100G, MXP_CK_100G and MXP_200G operating modes. This licence also enables CD range for the 200G application (+/- 20000 ps/nm).  <b>Note</b> Two licenses, L-NCS2K-CK-CL= and L-NCS2K-SFEC-16Q=, are required to configure the MXP_CK_100G operating mode.
L-NCS2K-FS=	FLEX_GRID	Enables Flex Spectrum tunability on the trunk port of the 200G-CK-LC card. NCS Flex package is required to use this license.
L-NCS2K-SD-FEC=	100G_SD_FEC_OR_CD_RANGE	Enables wide CD range (+/- 70000 ps/nm) on standard FEC or enables 20% SD-FEC and wide CD range (+/- 92000 ps/nm) for 100G operating modes on the 200G-CK-LC card.
15454-LIC-CH-10=	DWDM_Wavelength	Enables license for 10 Add/Drop or Express channels on the 40-SMR1-C and 40-SMR2-C cards.

## Licensing Operations

You can choose one of the following licensing operations that best suits your requirement:

- [Install License, on page 6](#)
- [Save License, on page 6](#)
- [Save Watchtower Device Certificate License](#)
- [Rehost License](#)

## Install License

Use this task to install the license on the card.




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**Note** The license file would have been emailed to your registered e-mail address after the license registration on the licensing portal.

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### Before you begin

[Log into the SVO Web Interface](#)

[Open the Card View](#)

### Procedure

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- Step 1** Click the **Provisioning > Licensing > License Operations** tabs.
  - Step 2** From the **Choose the Operation to Perform** drop-down list, choose **Install License**.
  - Step 3** Click **Select files**, browse and select the license file.
  - Step 4** Click **Apply**.
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## Save License

Use this task to save the license file on the card.




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**Note** You can always save a license file that you have installed. If you have lost the license by accidental delete, you can reinstall the license using the saved license file. An evaluation license cannot be saved.

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**Note** The saved license file used in SVO is not applicable in CTC and vice versa.

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### Before you begin

[Log into the SVO Web Interface](#)

[Open the Card View](#)

### Procedure

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- Step 1** Choose the **Provisioning > Licensing > License Operations** tabs.
  - Step 2** From the **Choose the Operation to Perform** drop-down list, choose **Save Licenses**.
  - Step 3** Enter a name in the **File Name** field and click **Apply**.
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## Save Watchtower Device Certificate License

The Watchtower Device Certificate (WDC) is used to ascertain the physical authenticity of the device. The WDC is hard-coded on the device.

Use this task to save the credentials associated with the card.

### Before you begin

[Log into the SVO Web Interface](#)

[Open the Card View](#)

### Procedure

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- Step 1** Click the **Provisioning > Licensing > License Operations** tabs.
  - Step 2** From the **Choose the Operation to Perform** drop-down list, choose **Save Device Credentials (WDC)**.
  - Step 3** Enter a name in the **File Name** field and click **Apply**.
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## Rehost License

Rehosting enables you to transfer license between two cards, where you revoke the license from the source card and install it on a new card.

Use this task to upload a permission ticket onto the device from which the licenses are transferred (the source device) and rehost the licenses.

### Before you begin

[Log into the SVO Web Interface](#)

[Open the Card View](#)

### Procedure

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- Step 1** Click the **Provisioning > Licensing > License Operations** tabs.
- Step 2** From the **Choose the Operation to Perform** drop-down list, choose **Rehost License**.

- Step 3** Click **Select File** to choose a permission ticket, enter a name in the **File Name** field for the Rehost Ticket, and click **Upload**.
- Step 4** Click **Apply**.  
You will be notified with a "**Rehost License operation successful for the card**" message. You can download the Rehost file.
- Step 5** Go to the Product License Registration application page: <https://software.cisco.com/software/swift/lrp/#/pak>.
- Step 6** Click **Devices** > **Move Licenses** > **Complete Secure Rehost** tabs.
- Step 7** Select the **Product Type**, enter the **Product ID**, and the **Serial Number** of the device that the licenses will be transferred to (the destination device).
- Step 8** Paste the **Rehost Ticket** and click **Next**.  
You will see the licenses that are available for transfer to the destination device.
- Step 9** Click **Submit** to generate the licenses.  
You will receive an email with the set of licenses. Install the licenses onto the destination device.
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## View License Information

You can perform the following operations to view the license information:

- [Refresh License](#)
- [Display License](#)

## Refresh License

Use this task to refresh the license data. You can view the updated license information.



**Note** The license data cannot be automatically updated. The license card data can only be refreshed by using **Refresh License Data** operation.

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### Before you begin

- [Log into the SVO Web Interface](#)
- [Open the Card View](#)

### Procedure

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- Step 1** Click the **Provisioning** > **Licensing** > **Counted License Features** > **License Features** tabs.
- Step 2** Choose the license entry to refresh the license data.
- Step 3** Click **Refresh License Data** to refresh the following parameters:



- License Feature Name—Name of the licensed feature.
  - Total Base Count— Total number of ports under built-in-base license.
  - Available Base Count—Number of ports available to provision under base license.
  - Total License Count—Total number of licensed ports that can be used under the current in-use license.
  - Available License Count—Number of ports available to be provisioned under the current in-use license.
  - Unlicensed Count—Number of unlicensed ports.
  - Type Used—Type of the license.
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## Display License

Use this task to display the following information for the installed and evaluation licenses:

- License Index—In count-based licenses, the license index is based on the license type and the number of licensed ports. In feature-based licenses, the license index is based on the license type and is always license type-1.
- License State—License state such as Active, Inactive, In\_use, or Not In use.
- License Type—License type such as Evaluation, Temporary, or Permanent.
- Expired—Shows whether the license is expired or not.
- Total License Count—The number of licensed ports.
- Priority—The priority of the license such as high, medium, or low.
- Expiry Date—Shows the license expiry date.

### Before you begin

[Log into the SVO Web Interface](#)

[Open the Card View](#)

### Procedure

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- Step 1** Click the **Provisioning > Licensing > Counted License Features** tabs.
  - Step 2** Choose the license entry.
  - Step 3** Click **Manage License Data**.
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## Manage Licensing Data

You can manage the license data by performing the following actions:

- [Annotate license](#)
- [Delete license](#)
- [Modify License Priority](#)

## Annotate license

Use this task to annotate comments to a license line. The comments added are saved in the license file.

### Before you begin

[Log into the SVO Web Interface](#)

[Open the Card View](#)

### Procedure

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- Step 1** Click the **Provisioning > Licensing > Counted License Features** tabs.
- Step 2** Choose the license entry and click **Manage License Data**.
- Step 3** Choose the license entry that you want to annotate and click **Annotate License**.
- Step 4** Enter the comment on the **Annotate License** dialog box and click **OK**.

Evaluation license cannot be annotated. License annotation allows you to add a maximum of 99 characters. This operation overwrites the existing user comments, if any.

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## Delete license

Use this task to delete a permanent or temporary license from the card. You can delete a license only when the license has expired or when it is in the **Inactive** or **Active, not in use** state.

### Before you begin

[Log into the SVO Web Interface](#)

[Open the Card View](#)

### Procedure

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- Step 1** Click the **Provisioning > Licensing > Counted License Features** tabs.
  - Step 2** Choose the license entry and click **Manage License Data**.
  - Step 3** Choose the license entry that you want to delete and click **Delete License**.
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## Modify License Priority

Use this task to change the license priority of an evaluation or temporary license. You can change the priority of the license from high to low or vice versa.



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**Note** License priority of a permanent license cannot be modified. Priority management does not support "Feature Based Licenses".

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### Before you begin

[Log into the SVO Web Interface](#)

[Open the Card View](#)

### Procedure

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- Step 1** Click the **Provisioning > Licensing > License Features** tabs.
  - Step 2** Choose the license entry and click **Manage License Data**.
  - Step 3** Choose the license entry that you want to modify and click **Modify License Priority**.
  - Step 4** From the **Select the Priority** drop-down list and click choose high or low priority.
  - Step 5** Click **OK**.
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## Display Detail License Usage

Use this task to display the list of ports and the corresponding license status for each of the ports in the **Detail License** page.



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**Note** You can see the NETCONF client operations here: <https://www.cisco.com/c/en/us/td/docs/optical/ncs2000/121/data-models-configuration/guide/b-data-models-config-guide-121.html>

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### Before you begin

[Log into the SVO Web Interface](#)

[Open the Card View](#)

### Procedure

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- Step 1** Click the **Provisioning > Licensing > Counted License Features** tabs.
- Step 2** Click the **Get Detail License Usage** tab.

The list of ports and their license status are displayed. You can sort the ports based on created order or by port number.

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