

Extreme NetIron Software Licensing Guide, 06.2.00

Supporting NetIron OS 06.2.00

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Preface

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Document conventions

The document conventions describe text formatting conventions, command syntax conventions, and important notice formats used in Extreme technical documentation.

Notes, cautions, and warnings

Notes, cautions, and warning statements may be used in this document. They are listed in the order of increasing severity of potential hazards.

NOTE

A Note provides a tip, guidance, or advice, emphasizes important information, or provides a reference to related information.

ATTENTION

An Attention statement indicates a stronger note, for example, to alert you when traffic might be interrupted or the device might reboot.



CAUTION

A Caution statement alerts you to situations that can be potentially hazardous to you or cause damage to hardware, firmware, software, or data.



DANGER

A Danger statement indicates conditions or situations that can be potentially lethal or extremely hazardous to you. Safety labels are also attached directly to products to warn of these conditions or situations.

Text formatting conventions

Text formatting conventions such as boldface, italic, or Courier font may be used to highlight specific words or phrases.

Format	Description
bold text	Identifies command names. Identifies keywords and operands. Identifies the names of GUI elements.
<i>italic text</i>	Identifies text to enter in the GUI. Identifies emphasis. Identifies variables.
Courier font	Identifies document titles. Identifies CLI output.

Format	Description
	Identifies command syntax examples.

Command syntax conventions

Bold and italic text identify command syntax components. Delimiters and operators define groupings of parameters and their logical relationships.

Convention	Description
bold text	Identifies command names, keywords, and command options.
<i>italic text</i>	Identifies a variable.
[]	Syntax components displayed within square brackets are optional. Default responses to system prompts are enclosed in square brackets.
{ x y z }	A choice of required parameters is enclosed in curly brackets separated by vertical bars. You must select one of the options.
x y	A vertical bar separates mutually exclusive elements.
< >	Nonprinting characters, for example, passwords, are enclosed in angle brackets.
...	Repeat the previous element, for example, <i>member[member...]</i> .
\	Indicates a "soft" line break in command examples. If a backslash separates two lines of a command input, enter the entire command at the prompt without the backslash.

Extreme resources

Visit the Extreme website to locate related documentation for your product and additional Extreme resources.

White papers, data sheets, and the most recent versions of Extreme software and hardware manuals are available at www.extremenetworks.com. Product documentation for all supported releases is available to registered users at www.extremenetworks.com/support/documentation.

Document feedback

Quality is our first concern at Extreme, and we have made every effort to ensure the accuracy and completeness of this document. However, if you find an error or an omission, or you think that a topic needs further development, we want to hear from you.

You can provide feedback in two ways:

- Use our short online feedback form at <http://www.extremenetworks.com/documentation-feedback-pdf/>
- Email us at internalinfodev@extremenetworks.com

Provide the publication title, part number, and as much detail as possible, including the topic heading and page number if applicable, as well as your suggestions for improvement.

Contacting Extreme Technical Support

As an Extreme customer, you can contact Extreme Technical Support using one of the following methods: 24x7 online or by telephone. OEM customers should contact their OEM/solution provider.

If you require assistance, contact Extreme Networks using one of the following methods:

- [GTAC \(Global Technical Assistance Center\)](#) for immediate support
 - Phone: 1-800-998-2408 (toll-free in U.S. and Canada) or +1 408-579-2826. For the support phone number in your country, visit: www.extremenetworks.com/support/contact.
 - Email: support@extremenetworks.com. To expedite your message, enter the product name or model number in the subject line.
- [GTAC Knowledge](#) - Get on-demand and tested resolutions from the GTAC Knowledgebase, or create a help case if you need more guidance.
- [The Hub](#) - A forum for Extreme customers to connect with one another, get questions answered, share ideas and feedback, and get problems solved. This community is monitored by Extreme Networks employees, but is not intended to replace specific guidance from GTAC.
- [Support Portal](#) - Manage cases, downloads, service contracts, product licensing, and training and certifications.

Before contacting Extreme Networks for technical support, have the following information ready:

- Your Extreme Networks service contract number and/or serial numbers for all involved Extreme Networks products
- A description of the failure
- A description of any action(s) already taken to resolve the problem
- A description of your network environment (such as layout, cable type, other relevant environmental information)
- Network load at the time of trouble (if known)
- The device history (for example, if you have returned the device before, or if this is a recurring problem)
- Any related RMA (Return Material Authorization) numbers

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What's new in this document

On October 30, 2017, Extreme Networks, Inc. acquired the data center networking business from Brocade Communications Systems, Inc. This document has been updated to remove or replace references to Brocade Communications, Inc. with Extreme Networks, Inc., as appropriate.

For the complete list of supported features and the summary of enhancements and configuration notes for this release, refer to the *Extreme NetIron OS Release Notes*.

Supported hardware and software

The hardware platforms in the following table are supported by this release of this guide.

TABLE 1 Supported devices

ExtremeRouting XMR Series	ExtremeRouting MLX Series	ExtremeSwitching CES 2000 Series	ExtremeRouting CER 2000 Series
XMR 4000	MLX-4	CES 2024C	CER 2024C
XMR 8000	MLX-8	CES 2024F	CER-RT 2024C
XMR 16000	MLX-16	CES 2048C	CER 2024F
XMR 32000	MLX-32	CES 2048CX	CER-RT 2024F
	MLXe-4	CES 2048F	CER 2048C
	MLXe-8	CES 2048FX	CER-RT 2048C
	MLXe-16		CER 2048CX
	MLXe-32		CER-RT 2048CX
			CER 2048F
			CER-RT 2048F
			CER 2048FX
			CER-RT 2048FX

How command information is presented in this guide

Starting with Extreme NetIron 5.6.00, command syntax and parameter descriptions are removed from commands that are referenced in configuration tasks. To find the full description of a specific command, including all required and optional keywords and variables, refer to the *Extreme NetIron Command Reference* for your software release.

Software Licensing Overview

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Software-based licensing overview

Prior to the introduction of software-based licensing, Extreme Networks supported hardware-based licensing, where an EEPROM was used to upgrade to a premium set of features. With the introduction of software-based licensing, one or more valid software licenses are required to run such licensed features on the device.

Software-based licensing is designed to work together with hardware-based licensing. The first release of software-based licensing employs a combination of hardware-based and software-based licensing. A device can use hardware-based licensing, software-based licensing, or both. Future releases that support software-based licensing will use software-based licensing only, eliminating the need for a customer- or factory-installed EEPROM on the management module or switch backplane.

Software-based licensing provides increased scalability and rapid deployment of hardware and software features on the supported Extreme NetIron family of switches. For example, for premium upgrades, it is no longer necessary to physically open the chassis and install an EEPROM to upgrade the system. Instead, the Web is used to generate, download, and install a software license that will enable premium features on the device.

How software-based licensing works

A permanent license can be ordered pre-installed in a device when first shipped from the factory, or later ordered and installed by the customer. In either case, additional licenses can be ordered as needed.

When a license is ordered separately (not pre-installed), a fulfillment email message, along with a *Voucher ID (VID)*, is issued to you by Extreme as proof of purchase. The *VID* and license ID (*LID*) of the Extreme device are used to generate a license key from the Extreme Portal. The license key is contained within a license file, which is downloaded to the customer's PC, where the file can then be transferred to a TFTP or SCP server, and then uploaded to the device.

Once a license is installed on the device, it has the following effect:

- The license unlocks the licensed feature and the feature becomes available immediately. There is no need to reload the software.
- When a trial license expires, the commands and CLI related to the feature are disabled, but the feature itself cannot be disabled until the system reloads.

Seamless transition for legacy devices

The term "legacy device" refers to a device that was shipped prior to the introduction of software-based licensing, has an EEPROM installed, and is running a software release prior to the NetIron OS release 05.0.00.

The transition to software-based licensing is seamless for legacy devices. When upgraded to a release that supports software-based licensing, these devices will continue to operate as previously configured.

Though not mandatory, Extreme recommends that once a legacy device is upgraded to a release that supports software-based licensing, the device should be registered. This will enable Extreme to track the device in case service is needed. To register the device, refer to the instructions in [Special replacement instructions for legacy devices](#) on page 26.

NOTE

There are special considerations and instructions for legacy NetIron devices in need of replacement (via a Return Merchandise Agreement (RMA)). For details, refer to [Special replacement instructions for legacy devices](#) on page 26.

License types

The following license types are supported:

- ExtremeSwitching CES 2000 Series license types:
 - NI-CES-2024-MEU - Enables Metro Edge Premium upgrade for CES 2000 Series 24-port models.
 - NI-CES-2024-L3U - Enables Layer 3 Premium upgrade for CES 2000 Series 24-port models.
 - NI-CES-2048-MEU - Enables Metro Edge Premium upgrade for CES 2000 Series 48-port models.
 - NI-CES-2048-L3U - Enables Layer 3 Premium upgrade for CES 2000 Series 48-port models.
- ExtremeRouting CER 2000 Series license types:
 - NI-CER-2048-RTUPG - Enables support to larger routing tables for CER 2000 Series 48-port models.
- ExtremeRouting MLX Series license types:
 - BR-MLX-10GX4-X - Enables license upgrade to MLX and ExtremeRouting MLXe-4-port 10-GbE (X) module with IPv4, IPv6, and MPLS hardware support (requires XFP optics).
 - BR-MLX-1GCx24-X - Enables 24-port 1 Gbps copper module for wire-speed performance.
 - BR-MLX-1GFx24-X - Enables 24-port 1 Gbps fiber module for wire-speed performance.
 - BR-MLX-100GX1-2PUPG - Enables 100 GbE second port license upgrade (requires CFP optics).
 - BR-MLX-1GX20-U10G-MUPG - Enables 20-port (M) interface module license upgrade from 1-GbE to 1-GbE/10-GbE combo port (requires SFP+ optics for 10G use).
 - BR-MLX-1GX20-U10G-X2UPG - Enables 20-port (X2) module license upgrade from 1-GbE to 1-GbE/10-GbE combo port (requires SFP+ optics for 10G use).
 - BR-MLX-10GX10-X2- Enables 10-port 10/1 GbE on 20 port 10G/1G combo module. Ungradable to 20-port using additional software license.
 - BR-MLX-10GX10-20PUPG- Enables 10G-port (X2) interface module license upgrade to 20-port 10G/1G combo module.
- Trial license - Also called a temporary license, this license enables a license-controlled feature to run on the device on a temporary basis. A trial license enables demonstration and evaluation of a licensed feature and can be valid for a period of 45 days. For more information about a trial license, refer to [Using a trial license](#) on page 24.
- Normal license - Also called a permanent license, this license enables a license-controlled feature to run on the device indefinitely.

Software license terminology

The following terms are used in this document

- License file - The file produced by the Extreme Portal when the license is generated. The file is uploaded to the device and controls access to a *licensed feature* or feature set.
- License ID (LID) - The identification number that uniquely identifies the device. The LID is used in conjunction with the VID to generate and download a software license from the Extreme Portal. The software license is tied to the LID of the device for which the license was ordered and generated.
- Licensed feature - Any hardware or software feature or set of features that require a valid software license in order to operate on the device.

- Voucher ID (VID) - This unique key, along with the *LID*, is used to generate a software license from the Extreme Portal. The Voucher ID is issued by Extreme when a license is purchased. The Voucher ID is delivered through e-mail which is sent to the customer shortly after the order has completed.

Licensing rules

The following licensing rules apply to all NetIron devices that support software licensing:

- A license is tied to the unique LID of the fixed configuration switch for which the license was ordered. Therefore, a license can be used on one particular device only. It cannot be used on any other device.
- More than one license can be installed per device concurrently.
- More than one trial license can be in effect at the same time, as long as each trial license applies to a unique licensed feature.
- A trial license cannot replace or supersede a normal license.

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Generating a license

Before you can use a software license, you must generate it from the Extreme portal.

The following procedure demonstrates how to generate and obtain a software license.

1. Log in to the Extreme Portal at <https://extremeportal.force.com/ExtrLicenseLanding>.

2. If you do not have an Extreme portal account, click **Create a new Extreme Portal account**.

The following figure shows the Extreme Portal login window.

FIGURE 1 Extreme portal login window

Extreme
Connect Beyond the Network

Extreme Portal

Please review the [Extreme Portal Help](#) article if you have questions or issues logging in.

Email

Password

Log In Remember me

[Reset Password / Forgot Password](#)

[Create a new Extreme Portal account](#)

Extreme Networks, Inc. employee? [Log In](#)

3. Enter your email and password. Click **Log In**.
The **Licenses Home** window appears.

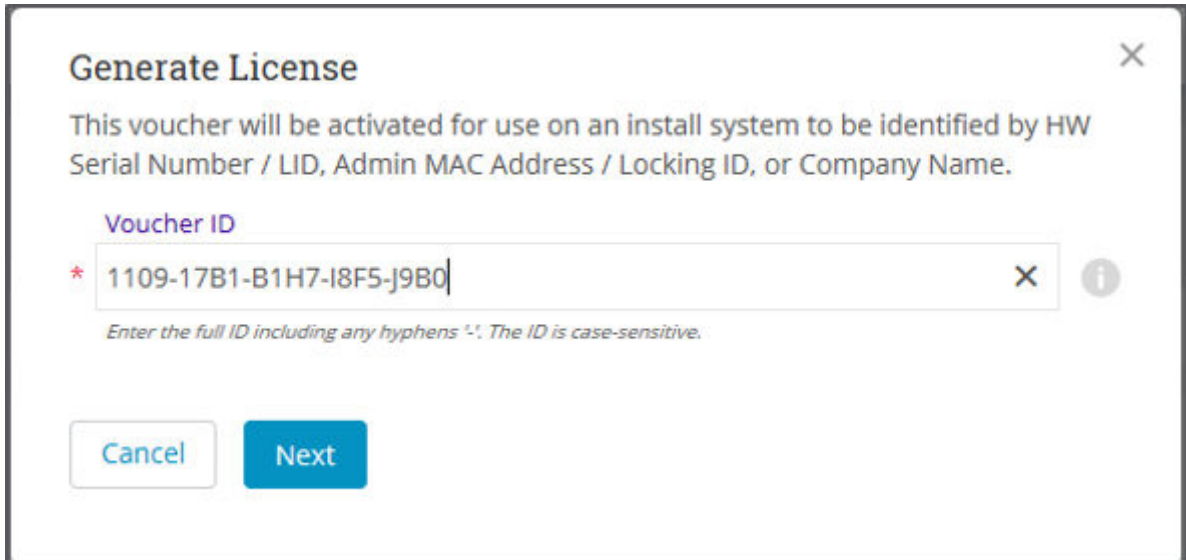
FIGURE 2 Licenses Home window

The screenshot shows the 'Licenses Home' page in the Extreme Portal. At the top, the Extreme logo is on the left, and user information 'Francois TestCustomer Billaut | Log Out University of West Georgia' is on the right. A navigation bar contains 'Support', 'Products', 'Downloads', and 'Assets'. A search bar is located below the navigation. The 'Assets' dropdown menu is open, showing 'Assets Home' and 'Licenses Home'. The main content area is titled 'Licenses Home' and contains three primary actions: 'Generate License' (with subtext 'Activate your Voucher for use on an install system.'), 'Upgrade License' (with subtext 'Upgrade your Extreme Management Center(NetSight) or ExtremeWireless license'), and 'Evaluation Voucher' (with subtext 'We provide hassle-free evaluations of our software products.'). Each action has a corresponding blue button. Below these actions is a filter section with a text input 'Filter all Vouchers and Licenses (for example by Serial Number)', a 'Refine' button, and three dropdown menus for 'Filter results by' (set to 'Voucher Product'), 'Show Active & Available', and 'Show Evaluations'. A 'Clear All Filters' button is also present. At the bottom, a table displays a list of vouchers and licenses.

Voucher ID ▲	Voucher Product ▲	Product Code ▲	HW Serial Number ▲	Redemption Date ▼	Activated ▲	Tags ▲
Eval-002369	NETSIGHT Evaluation	NETSIGHTEVAL		8/24/2017	1 of 1	EVALUATION
1201-15G6-F5G6-J9J9-F5J9	NMS - 500 DEVICES / 5000 THL...	NMS-500		12/1/2015	1 of 1	

4. Select **Assets > Licenses Home** option. Click **Generate License**.
The **Generate License** window is displayed.

FIGURE 3 Generate License window



5. Enter the VID. Click **Next**.
The VID (previously known as Transaction Keys at Brocade) has 20 alphanumeric characters with hyphens.

NOTE

Unredeemed Transaction Keys from Brocade can still be redeemed.

6. Enter the unique identifier of the HW (or the serial number of the LID). Click **Submit**.

NOTE

You must check the box to agree to the Terms and Conditions.

FIGURE 4 HW serial number window

Generate License

This voucher will be activated for use on an install system to be identified by HW Serial Number or LID.

BR-VDX6720-60VCS-01 S/W, VCS LICENSE FOR VDX6720-60/40

Please [Create a Case](#) so GTAC can investigate this issue.

Voucher ID

* 1109-1718-J9E4-F5C2-B1F5 ⓘ
Enter the full ID including any hyphens '-'. The ID is case-sensitive.

HW Serial Number or LID

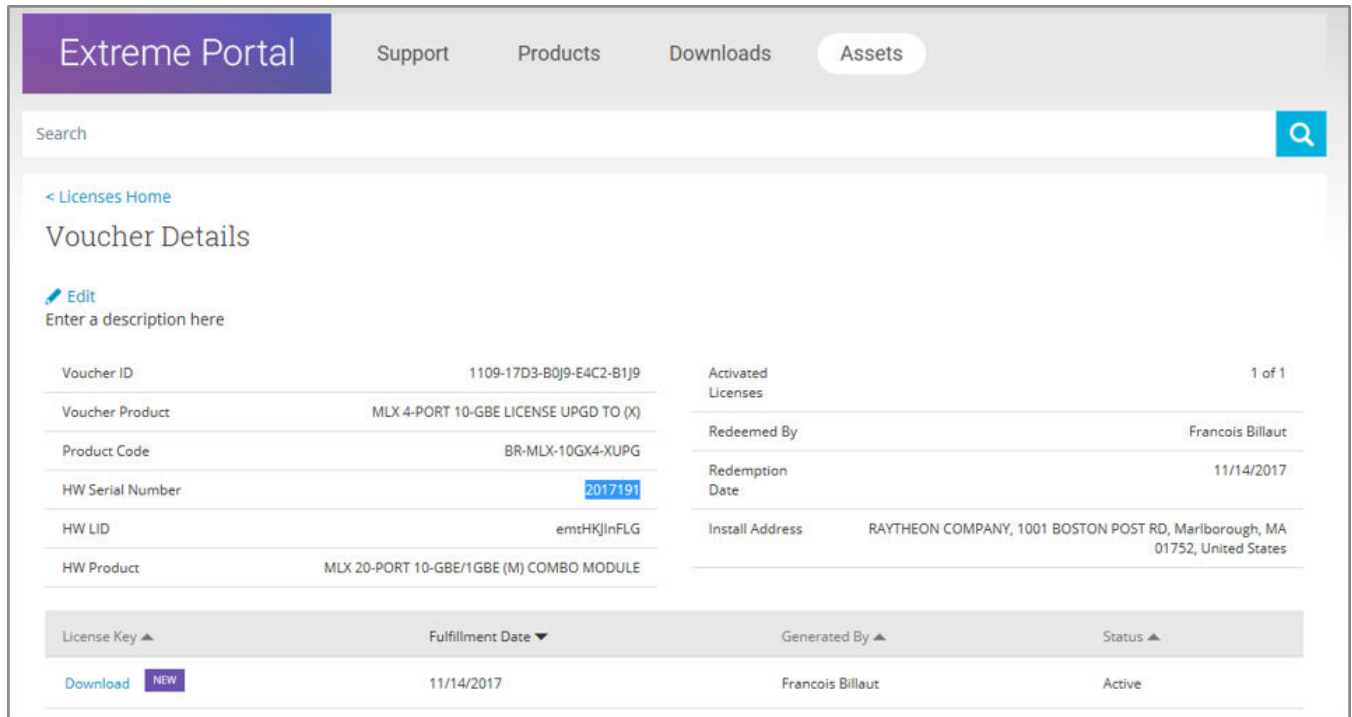
* 10:00:50:EB:1A:CD:A2:E0 ⓘ
Enter the full ID including any hyphens '-'. The ID is case-sensitive.

* You must check this box to acknowledge you agree to the [Terms & Conditions](#)

Cancel Submit

- The VID is displayed. The example below displays voucher information for a non-capacity license.

FIGURE 5 Voucher Details window



- Click **Download** to download a copy of the license.
A license can be downloaded after license generation or when a unit is queried. The license is not emailed. In example below, the contents of the XML license are displayed, including the license SKU and license keys.

FIGURE 6 License file window

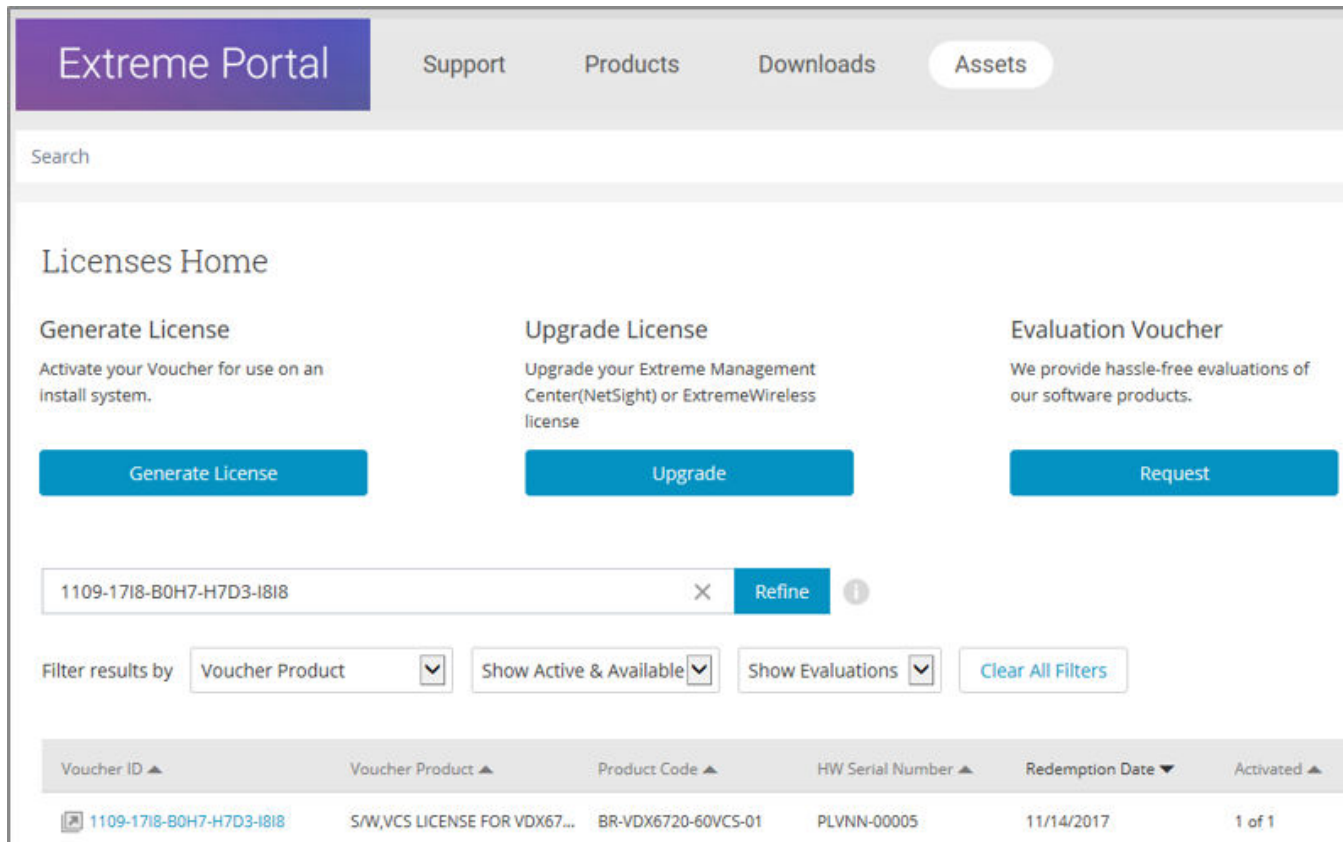


Querying a license

- To query a license, select **Assets > Licenses Home** option.

2. Enter the SN or LID of the HW asset, or the VID of the SW asset in the **Refine** window box. The example below displays how to query a license for a VID.

FIGURE 7 Querying a license window



- Click the **Voucher** (under the Voucher ID column). The VID is displayed.
The example below displays voucher information for a non-capacity license.

FIGURE 8 Voucher details window

The screenshot shows the 'Extreme Portal' interface. The top navigation bar includes 'Support', 'Products', 'Downloads', and 'Assets'. A search bar is located below the navigation. The main content area is titled 'Voucher Details' and includes an 'Edit' link and a text input field for a description. The voucher information is presented in two columns of key-value pairs:

Voucher ID	1109-17D3-B0J9-E4C2-B1J9	Activated Licenses	1 of 1
Voucher Product	MLX 4-PORT 10-GBE LICENSE UPGD TO (X)	Redeemed By	Francois Billaut
Product Code	BR-MLX-10GX4-XUPG	Redemption Date	11/14/2017
HW Serial Number	2017191	Install Address	RAYTHEON COMPANY, 1001 BOSTON POST RD, Marlborough, MA 01752, United States
HW LID	emTHKJInFLG		
HW Product	MLX 20-PORT 10-GBE/1GBE (M) COMBO MODULE		

Below the details is a table with the following columns: License Key, Fulfillment Date, Generated By, and Status. The table contains one row of data:

License Key	Fulfillment Date	Generated By	Status
Download NEW	11/14/2017	Francois Billaut	Active

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Configuration tasks

Perform the tasks in the order listed in the following table to configure software licensing.

TABLE 2 Configuration tasks for software licensing

Configuration task		Available information
1	Order the desired license. After ordering the license, you will receive a fulfillment email containing the Voucher ID.	For a list of available licenses and associated part numbers, refer to NetIron licensed features and part numbers on page 29.
2	Retrieve the LID of the device.	Viewing the license on page 26
3	Log in to the Extreme portal to generate and obtain the license file located here: https://extremeportal.force.com/ExtrLicenseLanding . If you do not have an account yet, log in to https://secure.extremenetworks.com .	Software portal tasks on page 15
4	Upload the license file to the device.	Installing a license file on page 23
5	Verify that the license is installed. NOTE Do not discard the fulfillment email with the VID in case it is needed for technical support or product replacement (RMAs).	Verifying the license file installation on page 24

Installing a license file

Once you obtain a license file, place it on a TFTP or SCP server to which the device has access, and then use TFTP or SCP to copy the file to the license database of the device.

Using TFTP to install a license file

To copy a license file from a TFTP server to the license database of the device, enter a command such as the following at the privileged EXEC level of the CLI.

```
device# copy tftp license 10.1.1.1 lic.xml
```

Syntax: copy tftp license *IP_address license_filename_on_host*

The *IP_address* variable is the address of the IPv4 TFTP server.

The *license_filename_on_host* variable is the file name of the license file.

Using Secure Copy to install a license

SSH and Secure Copy (SCP) must be enabled on the device before the following procedure can be performed.

To copy a license file from an SCP-enabled client to the license database of the device, enter a command such as the following on the SCP-enabled client.

```
c:\scp c:\license\license101 terry@10.1.1.1:license
```

Syntax: `scp license_file_on_host user @ IP_address :license`

The *license_file_on_host* variable is the file name of the license file.

The *IP_address* variable is the address of the IPv4 TFTP server.

The *user* variable is the user name.

Verifying the license file installation

Use the **show license** command to verify that the license is installed on the device. Details about this command are in the [Viewing the license database](#) on page 27.

Using a trial license

NOTE

A trial license must be ordered and installed by a Extreme Networks representative.

A trial license enables demonstration and evaluation of a licensed feature and can be valid for a period of up to 45 days. A licensed feature operating under a trial license has the same functionality (CLI and show commands) as does a licensed feature operating under a normal license.

What happens when a trial license expires

A trial license expires when it exceeds the specified expiration time or date. The countdown starts when the trial license is generated. When the license expires, the licensed feature will continue to run as configured until the system is reloaded. When the system is reloaded, the CLI commands related to the licensed feature will no longer be available.

If a second trial license is installed after the first license expires, the second trial license will not be activated if installed before the first license expires.

NOTE

Trial licenses are not cumulative. The new license replaces the current license. To extend the license, you must contact your Extreme Networks representative.

Console, syslog, and trap messages for trial license expiration

Three days prior to the date that a trial license is set to expire, the following warning message will appear daily on the console. Syslog and trap messages will also be generated.

```
SYSLOG: <12>Jan 1 00:00:00 624-top License: Package NI-CES-2024-L3U with LID BCYXXXXXXXXX expires in 3 days
```

On the day that the license will expire, a warning message will appear every two hours.

```
SYSLOG: <12>Jan 1 00:00:00 624-top License: Package NI-CES-2024-L3U with LID BCYXXXXXXXXX expires in 4 hours
```

When the license has expired, the following message will appear on the console. Syslog and trap messages will also be generated.

```
SYSLOG: <13>Jan 1 00:00:00 624-top License: NI-CES-2024-L3U with LID BCYXXXXXXXXX has expired
```

Renewing or extending a trial license

A trial license can be extended once by another trial license of the same type, or by a normal license of the same type. To avoid any interruptions to the network, obtain and install the second trial license before the first license expires. When extended by another trial license, the duration is not cumulative. The countdown starts when the trial license is generated.

To extend the license, you must contact your Extreme Networks representative.

NOTE

The start and end date of each trial license is predefined, based on the date and time it is generated.

Deleting a license

A license will remain in the license database until it is deleted. If you want to delete a license, Extreme recommends that you first disable the licensed feature before deleting the associated license.

To delete a license, enter a command such as the following at the privileged EXEC level of the CLI.

```
device# license delete 1
```

The **license delete** command immediately removes the license from the license database. The CLI commands related to the licensed feature will no longer be available from the CLI. The licensed feature will continue to run as configured until the software is reloaded, at which time the feature will be disabled and removed from the system. Syslog and trap messages are generated when the license is deleted.

Syntax: `license delete index_number`

The *index_number* is a valid license index number. This information can be retrieved from the **show license** command output.

Transferring a license

A license can be transferred between NetTron devices if the following conditions are true:

- The device is under an active support contract.
- The license is being transferred between two similar models (for example, from a 24-port model to another 24-port model or from a 48-port model to another 48-port model).

NOTE

A license transfer is intended for retrieving licenses from defective units. The licenses are removed from the defective unit in the database and the unit is flagged as removed from service.

NOTE

Transferring a license is only available within Extreme Networks, and externally for designated partners with specific accounts in the Extreme portal. Contact your Extreme Networks representative for more information.

Special replacement instructions for legacy devices

A legacy device refers to a device that was shipped prior to the introduction of software-based licensing, has an EEPROM installed, and is running a software version prior to the NetIron OS 05.0.00 release.

For legacy devices in need of replacement (via a Return Merchandise Agreement (RMA)), the following actions must be taken:

- If the replacement device will be upgraded to a software release that supports software-based licensing, registration of the replacement device is required after the software is upgraded.
- If the replacement device will be using a software release that does *not* support software-based licensing, follow these instructions:
 1. Prior to shipping the device in need of replacement back to the factory, remove the EEPROM from the device. To remove the EEPROM, follow the instructions in the appropriate hardware installation guide or in the instructions that shipped with the EEPROM.
 2. After removing the EEPROM, store it in a safe place.
 3. When the replacement device is received from the factory, install the same EEPROM in the device. To do so, follow the instructions that shipped with the EEPROM.

Viewing the license

Extreme devices that ship during and after the release of software licensing will have the license ID (LID) imprinted on the label affixed to the device. You can use the **show version** command as well to view the LID on these devices, and on devices that shipped before the release of software licensing.

Use the **show version** command to display the serial number, license, and LID of the device. The following example output shows a CER 2000 Series unit with the RT_SCALE and ADV_SVCS_PREM licenses.

```
device# show version
System: NetIron CER (Serial #: K40533F00H, Part #: 40-1000372-04)
License: RT_SCALE, ADV_SVCS_PREM (LID: BCYXXXXXXXX)
Boot : Version 5.3.0T185 Copyright (c) 1996-2009 Brocade Communications
Systems, Inc.
Compiled on Nov 16 2011 at 10:06:46 labeled as ceb05300
(447585 bytes) from boot flash
Monitor : Version 5.3.0T185 Copyright (c) 1996-2009 Brocade Communications
Systems, Inc.
Compiled on Nov 16 2011 at 10:06:46 labeled as ceb05300
(447585 bytes) from code flash
IronWare : Version 5.3.0T183 Copyright (c) 1996-2009 Brocade Communications
Systems, Inc.
Compiled on Jan 20 2012 at 18:56:08 labeled as ce05300
(14385657 bytes) from Primary
CPLD Version: 0x00000010
Micro-Controller Version: 0x0000000d
Extended route scalability
PBIF Version: 0x56
```

```
800 MHz Power PC processor 8544 (version 8021/0022) 400 MHz bus
512 KB Boot Flash (AM29LV040B), 64 MB Code Flash (MT28F256J3)
2048 MB DRAM
```

Viewing license information for line card modules

Extreme supports licensing for the following line card modules. With these licenses, the user can upgrade the MLXe 20x1G (-M) and MLXe 20x1G (-X2) module to the 1G/10G (combo) module, BR-MLX-10Gx20 20-port 1/10GbE.

The following example output displays the line card module with the 20x10G-1G-AND-10G-MODE license installed.

```
device# show version slot 3
=====
SL 1: BR-MLX-10Gx20 20-port 1/10GbE Module (Serial #: CWB0306K013, Part #: 60-1003017-01)
License: 20x10G-1G-AND-10G-MODE, 20x10G-WITH-1G-MODE-ONLY (LID: eydFIFLmFGI)
Boot : Version 5.7.0T175 Copyright (c) 1996-2014 Brocade Communications Systems, Inc.
Compiled on May 5 2014 at 10:42:40 labeled as xmlprm05700
(447073 bytes) from boot flash
Monitor : Version 5.7.0T175 Copyright (c) 1996-2014 Brocade Communications Systems, Inc.
Compiled on May 5 2014 at 10:43:08 labeled as xmlb05700
(564163 bytes) from code flash
IronWare : Version 5.7.0pT177 Copyright (c) 1996-2014 Brocade Communications Systems, Inc.
Compiled on Sep 30 2014 at 16:05:44 labeled as xmlp05700p021
(7801298 bytes) from Primary
FPGA versions:
Valid PBIF Version = 2.01, Build Time = 7/16/2014 9:13:00

Valid XPP Version = 2.01, Build Time = 6/20/2014 21:37:00

MACXPP100G 0
MACXPP100G 1
1199 MHz MPC 8541 (version 8021/1051) 599 MHz bus
512 KB Boot Flash (MX29LV040C), 66846720 Bytes (~63 MB) Code Flash (MT28F256J3)
2048 MB DRAM, 8 KB SRAM, 286331153 Bytes (~273 MB) BRAM
LP Slot 1 uptime is 1 hours 10 minutes 43 seconds
=====
All show version done
```

Viewing the license database

To display general information about all software licenses in the license database, use the **show license** command.

To display detailed information about a particular license, use the **show license index_number** command.

The following example output displays an MLX Series unit with the 10x10G-20PUPG license (20-port upgrade) on the BR-MLX-10GX10-X2 module.

```
device# show license
Index Package Name                Lid          Slot License Type  Status  License Period
1      10x10G-X2-MODE                eydFIJmLFFr S3      normal      active  unlimited
2      20x10GbE-X2-Scaling-UPG          eydFIJmLFFr S3      normal      active  unlimited
3      10x10G-20PUPG                    eydFIJmLFFr S3      normal      active  unlimited
```

Syntax: **show license** [*index_number*]

The following table describes the information displayed by the **show license** command.

TABLE 3 Output from the show license command

Field	Description
Index	The license hash number that uniquely identifies the license.
+package name	The package name for the license.

TABLE 3 Output from the show license command (continued)

Field	Description
+lid	The license ID. This number is embedded in the Extreme device.
Slot	Indicates that the license is active in the specified slot for the line card.
+license type	Indicates whether the license is normal (permanent) or trial (temporary).
+status	Indicates the status of the license: <ul style="list-style-type: none"> • Valid - A license is valid when the LID matches the serial number of the device for which the license was purchased, and the package name is recognized by the system. • Active - The license is valid and in effect on the device. • Not used - The license is not in effect on the device. • Expired - For trial licenses only, this indicates that the trial license has expired.
+license period	If the license type is trial (temporary), this field will display the number of days the license is valid. If the license type is normal (permanent), this field will display "unlimited".
Trial license information	
The following details display in the output of the show license <i>Index_number</i> command.	
+ days used	The number of days the trial license has been in effect.
+ hours used	The number of hours the trial license has been in effect.
+ days left	The number of days left before the trial license expires.
+ hours left	The number of hours left before the trial license expires.

Viewing active packages installed in the device

Use the **show version** command to view the active packages that are currently installed in the device.

NOTE

The active package name is not the same as the license name.

The following table lists the supported software packages.

TABLE 4 Software packages

Product	Software package name	License needed?
Netron CES	CES 2000 Series BASE	No
	CES 2000 Series ME_PREM	Yes
	CES 2000 Series L3_PREM	Yes
Netron CER	CER 2000 Series BASE	No
	CER 2000 Series ADV_SVCS_PREM	Yes

NetIron licensed features and part numbers

- CES 2000 Series and the CER 2000 Series devices licensed features and part numbers.....29
- MLX Series devices licensed features and part numbers.....31

CES 2000 Series and the CER 2000 Series devices licensed features and part numbers

The following table lists the supported licensed features, associated image filenames, and related part numbers for the CES 2000 Series and the CER 2000 Series devices.

NOTE

There are no changes to the part numbers for products with pre-installed (factory-installed) licenses. These part numbers are listed for reference in the last column of the following tables.

TABLE 5 Licensed features and part numbers for the NetIron CES devices

Licensed feature or feature set	Image filename	Part numbers for software license only	Part numbers for hardware with pre-installed software license
EPREM Metro Edge Premium (Metro Edge Premium License) <ul style="list-style-type: none"> • All Classic Layer 2 capabilities • Base Layer 3 (RIP and static routes) • QoS and ACLs • Management via SNMP and CLI • IP over MPLS (IGP shortcuts) • GRE • Policy Based Routing (PBR) • Provider Bridges (IEEE 802.1ad) • Provider Backbone Bridges (IEEE 802.1ah) • In-band management for PB/PBB network • OSPF and ISIS • Connectivity Fault Management (IEEE 802.1ag) and Service OAM • Ethernet Service Instance (ESI) framework • Multi-VRF • MPLS (VPLS, VLL) • 802.3ah Link OAM • Static IPv6 	cer05600.bin	24 ports: NI-CES-2024-MEU	<ul style="list-style-type: none"> • NI-CES-2024F-MEPREM-AC • NI-CES-2024F-MEPREM-DC • NI-CES-2024C-MEPREM-AC • NI-CES-2024C-MEPREM-DC • NI-CES-2024FX-MEPREM-AC • NI-CES-2024FX-MEPREM-DC • NI-CES-2024CX-MEPREM-AC • NI-CES-2024CX-MEPREM-DC
		48 ports: NI-CES-2048-MEU	<ul style="list-style-type: none"> • NI-CES-2048F-MEPREM-AC • NI-CES-2048F-MEPREM-DC • NI-CES-2048C-MEPREM-AC • NI-CES-2048C-MEPREM-DC • NI-CES-2048FX-MEPREM-AC • NI-CES-2048FX-MEPREM-DC

TABLE 5 Licensed features and part numbers for the NetTron CES devices (continued)

Licensed feature or feature set	Image filename	Part numbers for software license only	Part numbers for hardware with pre-installed software license
<ul style="list-style-type: none"> RIPng OSPFv3 IS-ISv6 			<ul style="list-style-type: none"> NI-CES-2048CX-MEPREM-AC NI-CES-2048CX-MEPREM-DC
EPREM L3_PREM (Layer 3 Premium License) <ul style="list-style-type: none"> All Classic Layer 2 capabilities Base Layer 3 (RIP and static routes) QoS and ACLs Management via SNMP and CLI Full Layer 3 capabilities, including OSPF, ISIS, and BGP Multi-VRF Static IPv6 RIPng IS-ISv3 OSPFv3 BGP shortcuts (requires L3_PREM and ME_PREM) GRE Policy Based Routing (PBR) 	cer05600.bin	24 ports: NI-CES-2024-L3U	<ul style="list-style-type: none"> NI-CES-2024F-L3PREM-AC NI-CES-2024F-L3PREM-DC NI-CES-2024C-L3PREM-AC NI-CES-2024C-L3PREM-DC NI-CES-2024FX-L3PREM-AC NI-CES-2024FX-L3PREM-DC NI-CES-2024CX-L3PREM-AC NI-CES-2024CX-L3PREM-DC
		48 ports: NI-CES-2048-L3U	<ul style="list-style-type: none"> NI-CES-2048F-L3PREM-AC NI-CES-2048F-L3PREM-DC NI-CES-2048C-L3PREM-AC NI-CES-2048C-L3PREM-DC NI-CES-2048FX-L3PREM-AC NI-CES-2048FX-L3PREM-DC NI-CES-2048CX-L3PREM-AC NI-CES-2048CX-L3PREM-DC

TABLE 6 Licensed features and part numbers for the NetTron CER devices

Licensed feature or feature set	Image filename	Part numbers for software license only	Part numbers for hardware with pre-installed software license
Advanced Services Premium: <ul style="list-style-type: none"> All base features Multi-Protocol Label Switching (MPLS) Layer 2 VPNs using VPLS and VLLs Provider Bridges (IEEE 802.1ad) Provider Backbone Bridges (IEEE 802.1ah) Connectivity Fault Management (IEEE 802.1ag) and Service OAM 	cer05600.bin	24 ports: NI-CER-2024-ADV	<ul style="list-style-type: none"> NI-CER-2024F-ADVPREM-AC NI-CER-2024F-ADVPREM-DC NI-CER-2024C-ADVPREM-AC NI-CER-2024C-ADVPREM-DC NI-CER-2024FX-ADVPREM-AC NI-CER-2024FX-ADVPREM-DC

TABLE 6 Licensed features and part numbers for the NetIron CER devices (continued)

Licensed feature or feature set	Image filename	Part numbers for software license only	Part numbers for hardware with pre-installed software license
<ul style="list-style-type: none"> Ethernet Service Instance (ESI) framework 			<ul style="list-style-type: none"> NI-CER-2024CX-ADVPREM-AC NI-CER-2024CX-ADVPREM-DC
		48 ports: NI-CER-2048-ADV	<ul style="list-style-type: none"> NI-CER-2048F-ADVPREM-AC NI-CER-2048F-ADVPREM-DC NI-CER-2048C-ADVPREM-AC NI-CER-2048C-ADVPREM-DC NI-CER-2048FX-ADVPREM-AC NI-CER-2048FX-ADVPREM-DC NI-CER-2048CX-ADVPREM-AC NI-CER-2048CX-ADVPREM-DC
CER-RT: Adds additional memory to support larger routing tables. <ul style="list-style-type: none"> IPv4: 1.5M IPv6: 256K IPv4+IPv6 simultaneously: 1.45M+256K 	cer05600.bin	IP_ROUTE_SCALE	<ul style="list-style-type: none"> NI-CER-2024F-RT-AC NI-CER-2024F-RT-DC NI-CER-2024C-RT-AC NI-CER-2024C-RT-DC NI-CER-2024FX-RT-AC NI-CER-2024FX-RT-DC NI-CER-2024CX-RT-AC NI-CER-2024CX-RT-DC NI-CER-2048F-RT-AC NI-CER-2048F-RT-DC NI-CER-2048C-RT-AC NI-CER-2048C-RT-DC NI-CER-2048FX-RT-AC NI-CER-2048FX-RT-DC NI-CER-2048CX-RT-AC NI-CER-2048CX-RT-DC

MLX Series devices licensed features and part numbers

The following table lists the supported licensed features, associated image filenames, and related part numbers for the MLX Series devices.

TABLE 7 MLX Series and Netron routers

Licensed feature or feature set	Image filename	Part numbers for software license only	Part numbers for hardware with pre-installed software license
<p>10x4G license upgrade (MLX and MLX Series):</p> <ul style="list-style-type: none"> 4-port 10-GbE (X) module with IPv4/IPv6/ MPLS hardware support - requires XFP optics. Supports 1 million IPv4 routes. 	xgmacsp2_05600.bin	BR-MLX-10GX4-XUPG	BR-MLX-10GX4-X
<p>100 GbE second port license upgrade:</p> <ul style="list-style-type: none"> MLX Series 100 GbE second port license upgrade —requires CFP optics. 	xpp2x100_05600.bin	BR-MLX-100GX1-2PUPG	BR-MLX-100Gx2-X
<p>License upgrade to 10-GbE for the 1-GbE (M) module (MLX Series).</p> <p>To upgrade from 1-GbE to 10-GbE, purchase license: BR-MLX-1GX20-U10G-MUPG.</p> <p>The BR-MLX-1GX20-U10G-MUPG license is displayed on the CLI with package name 20x10G-1G-AND-10G-MODE.</p> <ul style="list-style-type: none"> MLXe 20-port 1-GbE (M) combo license upgrade support from 1-GbE to 10-GbE mode. 	xpp20x10g3_05700.bin	BR-MLX-1GX20-U10G-MUPG	
<p>License upgrade to 10-GbE for the 1-GbE (X2) module (MLX Series).</p> <p>Purchase license: BR-MLX-1GX20-U10G-X2UPG</p> <p>The BR-MLX-1GX20-U10G-X2UPG license is displayed on the CLI with 3 package names: 20x10GbE-X2-Scaling-UPG, 20x10G-WITH-1G-MODE-ONLY, and 20x10G-1G-AND-10G-MODE.</p> <ul style="list-style-type: none"> MLXe 20-port 1-GbE (X2) combo license upgrade support from 1-GbE to 10-GbE mode. 	xpp20x10g3_05700.bin	BR-MLX-1GX20-U10G-X2UPG	
<p>10x10-X2 license (MLX Series)</p> <p>Purchase license: 10x10G-X2-MODE</p> <ul style="list-style-type: none"> 10-port GbE/1GbE (X2) SFP+ and SFP combo module. Supports 2 million IPv4 and 8 million IPv6 routes in hardware. MACSEC 			BR-MLX-10GX10-X2

TABLE 7 MLX Series and NetIron routers (continued)

Licensed feature or feature set	Image filename	Part numbers for software license only	Part numbers for hardware with pre-installed software license
enabled. No trial licenses available. Ungradable from 10-port GbE to 20-port GbE using additional software license.			
10x10-X2 license upgrade from 10-GbE(X2) to 20-GbE port (MLX Series) To upgrade from 10-Gbe to 20-GbE port, purchase license: 10x10G-20PUPG <ul style="list-style-type: none"> 10-port GbE/1GbE (X2) SFP+ and SFP combo module ungradable to 20-port GbE. Supports 2 million IPv4 and 8 million IPv6 routes in hardware. MACSEC enabled. 		BR-MLX-10GX10-20PUPG	
24x1G Copper license upgrade: <ul style="list-style-type: none"> Enables 24-port 1Gbps copper module for wire-speed performance 	pbifmrj_05600.bin xppmrj_05600.bin statsmrj_05600.bin	BR-MLX-1GX24-XUPG	BR-MLX-1GCx24-X
24x1G Fiber license upgrade: <ul style="list-style-type: none"> Enables 24-port 1Gbps fiber module for wire-speed performance. 	pbifmrj_05600.bin xppmrj_05600.bin statsmrj_05600.bin	BR-MLX-1GX24-XUPG	BR-MLX-1GFx24-X

Troubleshooting

- [Syslog messages.....35](#)

Syslog messages

The following syslog messages are supported for software-based licensing.

Message	License: Package <i><package_name></i> with LID <i><LID_number></i> on slot <i><slot_number></i> is added
Explanation	Indicates that the license package has been added.
Message Level	Informational
Message	License: Package <i><package_name></i> with LID <i><LID_number></i> is removed
Explanation	Indicates that the license package has been deleted.
Message Level	Informational
Message	License: Package <i><package_name></i> with LID <i><LID_number></i> expires in <i><number></i> days
Explanation	The trial license is about to expire. This message will begin to display 3 days before the expiration date, and every day until the license will expire.
Message Level	Warning
Message	License: Package <i><package_name></i> with LID <i><LID_number></i> expires in <i><number></i> hours
Explanation	The trial license is about to expire. This message will begin to display every 2 hours on the last day that the license will expire.
Message Level	Warning
Message	License: Package <i><package_name></i> with LID <i><LID_number></i> has expired
Explanation	The trial license has expired.
Message Level	Notification