

**ip**infusion™

**OcNOS®**

**Open Compute  
Network Operating System  
for Routed Optical  
Networking  
Version 6.3.5**

**Licensing Guide**

**June 2024**

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# Preface

This guide describes how to configure OcNOS.

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## IP Maestro Support

Monitor devices running OcNOS Release 6.3.4-70 and above using IP Maestro software.

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## Audience

This guide is intended for network administrators and other engineering professionals who configure OcNOS.

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## Conventions

[Table 1](#) shows the conventions used in this guide.

**Table 1: Conventions**

Convention	Description
Italics	Emphasized terms; titles of books
Note:	Special instructions, suggestions, or warnings
<code>monospaced type</code>	Code elements such as commands, parameters, files, and directories

---

## Chapter Organization

The chapters in command references are organized as described in [Command Description Format](#).

The chapters in configuration guides are organized into these major sections:

- An overview that explains a configuration in words
- Topology with a diagram that shows the devices and connections used in the configuration
- Configuration steps in a table for each device where the left-hand side shows the commands you enter and the right-hand side explains the actions that the commands perform
- Validation which shows commands and their output that verify the configuration

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## Related Documentation

For information about installing of OcNOS, see the *Installation Guide* for your platform.

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## Migration Guide

Check the *Migration Guide* for configuration changes to make when migrating from one version of OcNOS to another.

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## Feature Availability

The features described in this document that are available depend upon the OcNOS SKU that you purchased. See the *Feature Matrix* for a description of the OcNOS SKUs.

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## Support

For support-related questions, contact [support@ipinfusion.com](mailto:support@ipinfusion.com).

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## Comments

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# Command Line Interface

This chapter introduces the OcNOS Command Line Interface (CLI) and how to use its features.

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## Overview

You use the CLI to configure, monitor, and maintain OcNOS devices. The CLI is text-based and each command is usually associated with a specific task.

You can give the commands described in this manual locally from the console of a device running OcNOS or remotely from a terminal emulator such as `putty` or `xterm`. You can also use the commands in scripts to automate configuration tasks.

---

## Command Line Interface Help

You access the CLI help by entering a full or partial command string and a question mark “?”. The CLI displays the command keywords or parameters along with a short description. For example, at the CLI command prompt, type:

```
> show ?
```

The CLI displays this keyword list with short descriptions for each keyword:

```
show ?
  application-priority      Application Priority
  arp                       Internet Protocol (IP)
  bfd                       Bidirectional Forwarding Detection (BFD)
  bgp                       Border Gateway Protocol (BGP)
  bi-lsp                    Bi-directional lsp status and configuration
  bridge                    Bridge group commands
  ce-vlan                   COS Preservation for Customer Edge VLAN
  class-map                 Class map entry
  cli                       Show CLI tree of current mode
  clns                      Connectionless-Mode Network Service (CLNS)
  control-adjacency         Control Adjacency status and configuration
  control-channel           Control Channel status and configuration
  cspf                      CSPF Information
  customer                  Display Customer spanning-tree
  cvlan                     Display CVLAN information
  debugging                 Debugging functions (see also 'undebug')
  etherchannel              LACP etherchannel
  ethernet                  Layer-2
  ...
```

If you type the ? in the middle of a keyword, the CLI displays help for that keyword only.

```
> show de?
debugging  Debugging functions (see also 'undebug')
```

If you type the ? in the middle of a keyword, but the incomplete keyword matches several other keywords, OcNOS displays help for all matching keywords.

```
> show i? (CLI does not display the question mark).
interface  Interface status and configuration
ip         IP information
isis      ISIS information
```

---

## Command Completion

The CLI can complete the spelling of a command or a parameter. Begin typing the command or parameter and then press the tab key. For example, at the CLI command prompt type `sh`:

```
> sh
```

Press the tab key. The CLI displays:

```
> show
```

If the spelling of a command or parameter is ambiguous, the CLI displays the choices that match the abbreviation. Type `show i` and press the tab key. The CLI displays:

```
> show i
  interface ip          ipv6          isis
> show i
```

The CLI displays the `interface` and `ip` keywords. Type `n` to select `interface` and press the tab key. The CLI displays:

```
> show in
> show interface
```

Type `?` and the CLI displays the list of parameters for the `show interface` command.

```
> show interface
  IFNAME  Interface name
  |       Output modifiers
  >       Output redirection
  <cr>
```

The CLI displays the only parameter associated with this command, the `IFNAME` parameter.

---

## Command Abbreviations

The CLI accepts abbreviations that uniquely identify a keyword in commands. For example:

```
> sh int xe0
```

is an abbreviation for:

```
> show interface xe0
```

---

## Command Line Errors

Any unknown spelling causes the CLI to display the error `Unrecognized command` in response to the `?`. The CLI displays the command again as last entered.

```
> show dd?
% Unrecognized command
> show dd
```

When you press the Enter key after typing an invalid command, the CLI displays:

```
(config)#router ospf here
                               ^
% Invalid input detected at '^' marker.
```

where the `^` points to the first character in error in the command.



If a command is incomplete, the CLI displays the following message:

```
> show
% Incomplete command.
```

Some commands are too long for the display line and can wrap mid-parameter or mid-keyword, as shown below. This does *not* cause an error and the command performs as expected:

```
area 10.10.0.18 virtual-link 10.10.0.19 authent
ication-key 57393
```

---

## Command Negation

Many commands have a `no` form that resets a feature to its default value or disables the feature. For example:

- The `ip address` command assigns an IPv4 address to an interface
- The `no ip address` command removes an IPv4 address from an interface

---

## Syntax Conventions

[Table 1](#) describes the conventions used to represent command syntax in this reference.

**Table 1: Syntax conventions**

Convention	Description	Example
monospaced font	Command strings entered on a command line	<code>show ip ospf</code>
lowercase	Keywords that you enter exactly as shown in the command syntax.	<code>show ip ospf</code>
UPPERCASE	See <a href="#">Variable Placeholders</a>	IFNAME
( )	Optional parameters, from which you must select one. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	(A.B.C.D <0-4294967295>)
( )	Optional parameters, from which you select one or none. Vertical bars delimit the selections. Do not enter the parentheses or vertical bars as part of the command.	(A.B.C.D <0-4294967295> )
( )	Optional parameter which you can specify or omit. Do not enter the parentheses or vertical bar as part of the command.	(IFNAME )
{ }	Optional parameters, from which you must select one or more. Vertical bars delimit the selections. Do not enter the braces or vertical bars as part of the command.	{intra-area <1-255> inter-area <1-255> external <1-255>}

**Table 1: Syntax conventions (Continued)**

Convention	Description	Example
[ ]	Optional parameters, from which you select zero or more. Vertical bars delimit the selections. Do not enter the brackets or vertical bars as part of the command.	[<1-65535> AA:NN internet local-AS no-advertise no-export]
?	Nonrepeatable parameter. The parameter that follows a question mark can only appear once in a command string. Do not enter the question mark as part of the command.	?route-map WORD
.	Repeatable parameter. The parameter that follows a period can be repeated more than once. Do not enter the period as part of the command.	set as-path prepend .<1-65535>

## Variable Placeholders

Table 2 shows the tokens used in command syntax use to represent variables for which you supply a value.

**Table 2: Variable placeholders**

Token	Description
WORD	A contiguous text string (excluding spaces)
LINE	A text string, including spaces; no other parameters can follow this parameter
IFNAME	Interface name whose format varies depending on the platform; examples are: eth0, Ethernet0, ethernet0, xe0
A.B.C.D	IPv4 address
A.B.C.D/M	IPv4 address and mask/prefix
X:X::X:X	IPv6 address
X:X::X:X/M	IPv6 address and mask/prefix
HH:MM:SS	Time format
AA:NN	BGP community value
XX:XX:XX:XX:XX:XX	MAC address
<1-5> <1-65535> <0-2147483647> <0-4294967295>	Numeric range

---

## Command Description Format

[Table 3](#) explains the sections used to describe each command in this reference.

**Table 3: Command descriptions**

Section	Description
<b>Command Name</b>	The name of the command, followed by what the command does and when should it be used
<b>Command Syntax</b>	The syntax of the command
<b>Parameters</b>	Parameters and options for the command
<b>Default</b>	The state before the command is executed
<b>Command Mode</b>	The mode in which the command runs; see <a href="#">Command Modes</a>
<b>Example</b>	An example of the command being executed

---

## Keyboard Operations

[Table 4](#) lists the operations you can perform from the keyboard.

**Table 4: Keyboard operations**

Key combination	Operation
Left arrow or Ctrl+b	Moves one character to the left. When a command extends beyond a single line, you can press left arrow or Ctrl+b repeatedly to scroll toward the beginning of the line, or you can press Ctrl+a to go directly to the beginning of the line.
Right arrow or Ctrl-f	Moves one character to the right. When a command extends beyond a single line, you can press right arrow or Ctrl+f repeatedly to scroll toward the end of the line, or you can press Ctrl+e to go directly to the end of the line.
Esc, b	Moves back one word
Esc, f	Moves forward one word
Ctrl+e	Moves to end of the line
Ctrl+a	Moves to the beginning of the line
Ctrl+u	Deletes the line
Ctrl+w	Deletes from the cursor to the previous whitespace
Alt+d	Deletes the current word
Ctrl+k	Deletes from the cursor to the end of line
Ctrl+y	Pastes text previously deleted with Ctrl+k, Alt+d, Ctrl+w, or Ctrl+u at the cursor

**Table 4: Keyboard operations (Continued)**

Key combination	Operation
Ctrl+t	Transposes the current character with the previous character
Ctrl+c	Ignores the current line and redisplay the command prompt
Ctrl+z	Ends configuration mode and returns to exec mode
Ctrl+l	Clears the screen
Up Arrow or Ctrl+p	Scroll backward through command history
Down Arrow or Ctrl+n	Scroll forward through command history

---

## Show Command Modifiers

You can use two tokens to modify the output of a `show` command. Enter a question mark to display these tokens:

```
# show users ?
  | Output modifiers
  > Output redirection
```

You can type the `|` (vertical bar character) to use output modifiers. For example:

```
> show rsvp | ?
begin      Begin with the line that matches
exclude    Exclude lines that match
include    Include lines that match
last       Last few lines
redirect   Redirect output
```

---

## Begin Modifier

The `begin` modifier displays the output beginning with the first line that contains the input string (everything typed after the `begin` keyword). For example:

```
# show running-config | begin xe1
...skipping
interface xe1
  ipv6 address fe80::204:75ff:fee6:5393/64
!
interface xe2
  ipv6 address fe80::20d:56ff:fe96:725a/64
!
line con 0
  login
!
end
```

You can specify a regular expression after the `begin` keyword. This example begins the output at a line with either “xe2” or “xe4”:

```
# show running-config | begin xe[3-4]
...skipping
```

```

interface xe3
 shutdown
 !
interface xe4
 shutdown
 !
interface svlan0.1
 no shutdown
 !
route-map myroute permit 3
 !
route-map mymap1 permit 10
 !
route-map rmap1 permit 3
 !
line con 0
 login
line vty 0 4
 login
 !
end

```

---

## Include Modifier

The `include` modifier includes only those lines of output that contain the input string. In the output below, all lines containing the word “input” are included:

```

# show interface xe1 | include input
input packets 80434552, bytes 2147483647, dropped 0, multicast packets 0
input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 1, missed 0

```

You can specify a regular expression after the `include` keyword. This examples includes all lines with “input” or “output”:

```

#show interface xe0 | include (in|out)put
input packets 597058, bytes 338081476, dropped 0, multicast packets 0
input errors 0, length 0, overrun 0, CRC 0, frame 0, fifo 0, missed 0
output packets 613147, bytes 126055987, dropped 0
output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0

```

---

## Exclude Modifier

The `exclude` modifier excludes all lines of output that contain the input string. In the following output example, all lines containing the word “input” are excluded:

```

# show interface xe1 | exclude input
Interface xe1
Scope: both
Hardware is Ethernet, address is 0004.75e6.5393
index 3 metric 1 mtu 1500 <UP,BROADCAST,RUNNING,MULTICAST>
VRF Binding: Not bound
Administrative Group(s): None
DSTE Bandwidth Constraint Mode is MAM
inet6 fe80::204:75ff:fee6:5393/64
output packets 4438, bytes 394940, dropped 0
output errors 0, aborted 0, carrier 0, fifo 0, heartbeat 0, window 0
collisions 0

```

You can specify a regular expression after the `exclude` keyword. This example excludes lines with “output” or “input”:

```
# show interface xe0 | exclude (in|out)put
Interface xe0
  Scope: both
  Hardware is Ethernet Current HW addr: 001b.2139.6c4a
  Physical:001b.2139.6c4a Logical:(not set)
  index 2 metric 1 mtu 1500 duplex-full arp ageing timeout 3000
  <UP,BROADCAST,RUNNING,MULTICAST>
  VRF Binding: Not bound
  Bandwidth 100m
  DHCP client is disabled.
  inet 10.1.2.173/24 broadcast 10.1.2.255
  VRRP Master of : VRRP is not configured on this interface.
  inet6 fe80::21b:21ff:fe39:6c4a/64
  collisions 0
```

---

## Redirect Modifier

The `redirect` modifier writes the output into a file. The output is not displayed.

```
# show cli history | redirect /var/frame.txt
```

The output redirection token (`>`) does the same thing:

```
# show cli history >/var/frame.txt
```

---

## Last Modifier

The `last` modifier displays the output of last few number of lines (As per the user input). The last number ranges from 1 to 9999.

For example:

```
#show running-config | last 10
```

---

## String Parameters

The restrictions in [Table 5](#) apply for all string parameters used in OcnOS commands, unless some other restrictions are noted for a particular command.

**Table 5: String parameter restrictions**

Restriction	Description
Input length	1965 characters or less
Restricted special characters	“?”, “,”, “>”, “ ”, and “=” The “ ” is allowed only for <code>description</code> CLI in interface mode.

---

## Command Modes

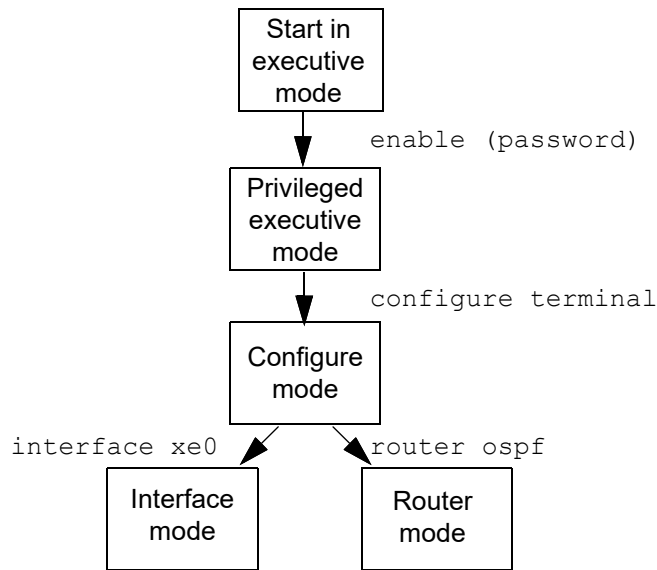
Commands are grouped into modes arranged in a hierarchy. Each mode has its own set of commands. [Table 6](#) lists the command modes common to all protocols.

**Table 6: Common command modes**

Name	Description
Executive mode	Also called <i>view</i> mode, this is the first mode to appear after you start the CLI. It is a base mode from where you can perform basic commands such as <code>show</code> , <code>exit</code> , <code>quit</code> , <code>help</code> , and <code>enable</code> .
Privileged executive mode	Also called <i>enable</i> mode, in this mode you can run additional basic commands such as <code>debug</code> , <code>write</code> , and <code>show</code> .
Configure mode	Also called <i>configure terminal</i> mode, in this mode you can run configuration commands and go into other modes such as interface, router, route map, key chain, and address family.  Configure mode is single user. Only one user at a time can be in configure mode.
Interface mode	In this mode you can configure protocol-specific settings for a particular interface. Any setting you configure in this mode overrides a setting configured in router mode.
Router mode	This mode is used to configure router-specific settings for a protocol such as BGP or OSPF.

## Command Mode Tree

The diagram below shows the common command mode hierarchy.



**Figure 4-1: Common command modes**

To change modes:

1. Enter privileged executive mode by entering `enable` in Executive mode.
2. Enter configure mode by entering `configure terminal` in Privileged Executive mode.

The example below shows moving from executive mode to privileged executive mode to configure mode and finally to router mode:

```

> enable mypassword
# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
(config)# router ospf
(config-router)#
  
```

Note: Each protocol can have modes in addition to the common command modes. See the command reference for the respective protocol for details.



---

## Transaction-based Command-line Interface

The OcNOS command line interface is transaction based:

- Any changes done in configure mode are stored in a separate *candidate* configuration that you can view with the [show transaction current](#) command.
- When a configuration is complete, apply the candidate configuration to the running configuration with the [commit](#) command.
- If a [commit](#) fails, no configuration is applied as the entire transaction is considered failed. You can continue to change the candidate configuration and then retry the [commit](#).
- Discard the candidate configuration with the [abort transaction](#) command.
- Check the last aborted transaction with the [show transaction last-aborted](#) command.
- Multiple configurations cannot be removed with a single [commit](#). You must remove each configuration followed by a [commit](#).

Note: All commands MUST be executed only in the default CML shell (`cmlsh`). If you log in as `root` and start `imish`, then the system configurations will go out of sync. The `imish` shell is not supported and should not be started manually.



# Install, License, and Upgrade Configuration Guide



---

## CHAPTER 1 Install, License, and Upgrade Configuration

---

The *OcNOS Installation Guide* contains the procedures for installing and licensing OcNOS, including:

- Downloading the OcNOS installation image.
- Downloading an OcNOS license.
- Installing OcNOS:
  - From an FTP, HTTP, or TFTP server
  - From a USB stick
  - Using Zero Touch Provisioning
- Setting up a license

OcNOS supports both patch upgrades and full upgrades:

- A patch upgrade means upgrading to a new OcNOS image with bug fixes, but without kernel changes.
- A full upgrade means upgrading to a new OcNOS ONIE image with bug fixes along with kernel changes.

The *OcNOS Installation Guide* also contains the procedures for upgrading an existing installation of OcNOS either by:

- Installing a new OcNOS version over an existing OcNOS version, which saves the existing configuration files.
- Installing a fresh version of OcNOS, which is destructive and removes existing configuration files, SSH keys, and trial licenses. You must manually restore such items from backups as needed.



# Install, License, and Upgrade Command Reference





## CHAPTER 1 Licensing and Upgrade Commands

---

This chapter describes the license and upgrade commands.

- [license get](#)
- [license refresh](#)
- [license release](#)
- [show installers](#)
- [show license](#)
- [show sys-update details](#)
- [sys-update delete](#)
- [sys-update get](#)
- [sys-update install](#)
- [sys-update list-version](#)
- [sys-update un-install](#)
- [sys-update verify](#)

## license get

Use this command to fetch the license for this device from a network path or a USB mount path. This command validates the license against the device identifier.

Note: The system date must be correct to avoid installation failure.

For HTTP, FTP, or TFTP, ensure that the IP address is reachable from the OcnOS device and that the file location is correct.

If you install a license from a USB stick, insert it, and the contents of the USB are available as `///mnt/usb/`. For example:

```
>license get file:///mnt/usb/IPI-CC37ABBE0340.bin
```

After running the `license get` command, you can immediately use the switch without rebooting.

To verify, run the [show license](#) command after giving this command.

### Command Syntax

```
license get [(source-interface IFNAME)] WORD
```

### Parameters

IFNAME	The interface used to download the license. If not specified, <code>eth0</code> is used. If the management interface of the switch is in the “management” VRF, then this command uses the “management” VRF to get the license from the specified path. You do need not to know if the management port is in the default VRF or the “management” VRF.
WORD	Where to get the license: <code>ftp://your-server-ip/path/to/file/IPI_deviceId.bin</code> <code>http://your-server-ip/path/to/file/IPI_deviceId.bin</code> <code>tftp://your-server-ip/path/to/file/IPI_deviceId.bin</code> <code>file:///mnt-point/usb/path/to/file/IPI_deviceId.bin</code>

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced before OcnOS version 1.3.

### Examples

```
>license get http://myServer/IPI-CC37ABBE0340.bin
```

Specify the `source-interface` parameter to set the interface to use:

```
>license get source-interface xe2 http://myServer/IPI-CC37ABBE0340.bin
```

---

## license refresh

Use this command to install a license present on the device. This command is required only when the [license get](#) command reports error when installing the license but successfully downloaded the license.

When this command is given without a file name, the device installs the most recently downloaded license file.

Note: Always ensure that the device date is up to date to avoid license installation failures.

Once this command is successful, you can use the device without rebooting. Verify license installation with the [show license](#) command.

### Command Syntax

```
license refresh (FILENAME|)
```

### Parameters

FILENAME	License file name which exists on the device.
----------	---

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS version 1.3.7.

### Examples

```
>license refresh  
>license refresh IPI-CH3QX42.bin
```

---

## license release

Use this command to release any type of license, node-locked or floating, on the device.

The device license is revoked immediately.

### Command Syntax

```
license release
```

### Parameters

None

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS version 3.0.

### Examples

```
>license release
```

---

## show installers

Use this command to display a list of downloaded images on the device.

### Command Syntax

```
show installers
```

### Parameters

None

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS version 1.3.6.

### Examples

```
#show installers  
/installers/DELL_S6000_ON-OcNOS-1.3.6.228a-DC_MPLS-S0-P0-installer  
#
```

---

## show license

Use this command to display the current license details and errors. The licenses are device locked, which means that a separate license is required for each device.

### Command Syntax

```
show license
```

### Parameters

None

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced before OcNOS version 1.3.

### Examples

```
>show license
License Type: Trial edition
Remaining day to expires : 21 day(s)
Node Identifier: 1402EC2DA140
Device Software : OCNOS-ENT-IPBASE
```

```
>show license
License Type: Evaluation, Limited edition
License Validity: Not Applicable
Node Identifier: A82BB59DCAD9
Device Software : OCNOS-DC-IPBASE
License Error: Invalid license file
```

---

## show sys-update details

Use this command to display upgrade details. The output indicates whether the current version is committed or rolled back.

### Command Syntax

```
show sys-update details
```

### Parameters

None

### Default

None

### Command Mode

Exec mode and Privileged Exec mode

### Applicability

This command was introduced before OcNOS version 1.3.

### Examples

```
#show sys-update details
Previous_version EC_AS5812_54X-OcNOS-1.3.4.265-DC_MPLS_ZEBM-S0-P0
Current_version EC_AS5812_54X-OcNOS-1.3.4.266-DC_MPLS_ZEBM-S0-P0-installer
(committed)
Last_upgraded Wed Sep 26 14:40:06 UTC 2018
Auto Rollback end time NA
```

---

## sys-update delete

Use this command to delete a downloaded image.

### Command Syntax

```
sys-update delete IMAGE_NAME
```

### Parameters

IMAGE_NAME	Installer to delete
------------	---------------------

### Default

None

### Command mode

Privileged Exec mode

### Applicability

This command was introduced in OcNOS version 1.3.6.

### Examples

```
#sys-update delete DELL_S6000_ON-OcNOS-1.3.6.228a-DC_MPLS-S0-P0-installer
```



---

## sys-update get

Use this command to download an installer image.

Note: The URL must be compliant with RFC 3986.

Note: At times while downloading installer through TFTP protocol, download progress would show 100% from the start to the end of the download. This behavior is observed whenever the TFTP server doesn't support the TFTP Option Negotiation. Also at times TFTP download takes more time to download the installer though the client and server are part of the same subnet, eventually download operation even times out after 30 minutes. The reason for such issue is the latency, here some of the TFTP server implementations are lagging performance. In such instances we recommend to switch to a different TFTP server. This TFTP download operation is verified in Debian Linux machine against the server present in the `tftpd-hpa` package.

Note: For SCP and SFTP, make sure the IP address/hostname present in the `known_hosts` file else SCP and SFTP will fail with the error message “curl: (60) SSL peer certificate or SSH remote key was not OK”. If `sys-update` fails, the user is prompted to add the hostname/IP address in the `known_hosts` file to proceed with `sys-update`.

### Command Syntax

```
sys-update get ((source-interface IFNAME) | (source-ip (A.B.C.D | X:X::X:X))) | URL
(verbose|)
```

### Parameters

IFNAME	The interface used to download the new version. If not specified, eth0 is used.
URL	Where to get the installer: <pre>http://username:password@your-server-ip/path/to/file/&lt;abc-installer&gt;&gt; or ftp://username:password@your-server-ip/path/to/file/&lt;abc-installer&gt;&gt; or tftp://your-server-ip/path/to/file/&lt;abc-installer&gt;&gt; or scp://username:password@your-server-ip/path/to/file/&lt;abc-installer&gt; or sftp://username:password@your-server-ip/path/to/file/&lt;abc-installer&gt;&gt; or file:///mnt/usb/path/to/file/&lt;abc-installer&gt;</pre>
A.B.C.D	The interface IPv4 address used to download the new version.
X:X::X:X	The interface IPv6 address used to download the new version.
verbose	Include download logs in the output.

### Default

None

### Command Mode

Privileged Exec mode

## Applicability

This command was introduced in OcnOS version 1.3.6.

## Examples

```
#sys-update get source-interface xe3 http://myServer/OcnOS-SP-MPLS-Q1-6.3.3-41-MR-
installer
```

Example using SCP if IP address or hostname is not present in the `known_hosts` file.

```
OcnOS#sys-update get scp://root@10.12.33.204/home/OcnOS-SP-MPLS-Q1-6.3.3-41-MR-
installer
VRF default cannot be deleted or not exists
Please wait ...
curl: (60) SSL peer certificate or SSH remote key was not OK
More details here: curl - SSL CA Certificates
curl failed to verify the legitimacy of the server and therefore could not
establish a secure connection to it. To learn more about this situation and
how to fix it, please visit the web page mentioned above.
The host name is not added in known_host
Do you want to add it to known_host
  continue (y/n):y
Successfully added host to known_hosts file.
Please wait ...
OcnOS#show installers
/installers/OcnOS-SP-MPLS-Q1-6.3.3-39-MR-installer
/installers/OcnOS-SP-MPLS-Q1-6.3.3-41-MR-installer
```

---

## sys-update install

Use this command to upgrade the current software to a newer version. You can do two types of installation:

- If a `.deb` file is provided, the board is loaded with new binaries.
- If an installer file is provided, the board is completely installed with a new kernel and binaries.

Note:

1. During an upgrade, if a license is not available the existing configuration is not applied. Also, the `ZebOS.conf` file is not created and the `terminal monitor` command is not allowed.
2. The URL must be compliant with RFC 3986.
3. When this command is executed without the `source-interface` parameter, then `eth0` and the default management VRF are used. When this command is executed with the `source-interface` parameter then that interface is used.
4. At times while downloading installer through TFTP protocol, download progress would show 100% from the start to the end of the download. This behavior is observed whenever the TFTP server doesn't support the TFTP Option Negotiation. Also at times TFTP download takes more time to download the installer though the client and server are part of the same subnet, eventually download operation even times out after 30 minutes. The reason for such issue is the latency, here some of the TFTP server implementations are lagging performance. In such instances we recommend to switch to a different TFTP server. This TFTP download operation is verified in Debian Linux machine against the server present in the `tftpd-hpa` package.
5. For SCP and SFTP, make sure the IP address/hostname present in the `known_hosts` file else SCP and SFTP will fail with the error message "curl: (60) SSL peer certificate or SSH remote key was not OK". If `sys-update` fails, the user is prompted to add the hostname/IP address in the `known_hosts` file to proceed with `sys-update`.

### Command Syntax

```
sys-update install (|(source-interface IFNAME | (source-ip (A.B.C.D | X:X::X:X))))
URL (verbose|)
```

### Parameters

IFNAME	The interface used to download the new version. If not specified, <code>eth0</code> is used.
URL	Where to get the new version:  <code>&lt;http://username:password@your-server-ip/path/to/file/&lt;abc-updater.deb&gt; or abc-installer&gt;</code> or <code>&lt;ftp://username:password@your-server-ip/path/to/file/&lt;abc-updater.deb&gt; or abc-installer&gt;</code> or <code>tftp://your-server-ip/path/to/file/&lt;abc-updater.deb&gt; or abc-installer&gt;</code> or <code>scp://username:password@your-server-ip/path/to/file/&lt;abc-updater.deb or abc-installer&gt;</code> or <code>sftp://username:password@your-server-ip/path/to/file/&lt;abc-updater.deb&gt; or abc-installer&gt;</code> or <code>file:///mnt/usb/path/to/file/&lt;abc-updater.deb or abc-installer&gt;</code>
A.B.C.D	The interface IPv4 address used to download the new version.

<code>X:X::X:X</code>	The interface IPv6 address used to download the new version.
<code>verbose</code>	Include upgrade logs in the output.

### Default

None

### Caution

OcNOS services are using `/usr/local/etc` path to store the device configuration, and this path mounted into a separate partition to isolate system configurations. This partition is meant only for system configuration. It will affect the system stability if the user uses this partition for storing general files. In this problematic state, if the device reboots, OcNOS services will not start properly, that would even create problems to the device connectivity. There will be an impact on normal system configuration operations.

User must take care of this problem just before issuing the following commands:

- `reload/sys-reload` - Reboots the device.
- `sys-shutdown` - This is to shutdown the device, but when users powers the device OcNOS services won't start cleanly.
- `reboot / shutdown` - From Linux shell
- Also includes all copy commands from Linux shell before issuing the user triggered reload commands.

### Command Mode

Privileged Exec mode

### Applicability

This command was introduced before OcNOS version 1.3.

### Examples

```
#sys-update install source-interface eth2 http://10.12.52.150/myServer/OcNOS-SP-MPLS-Q1-6.3.3-41-MR-installer
```

```
#sys-update install http://10.12.52.150/myServer/OcNOS-SP-MPLS-Q1-6.3.3-41-MR-installer
```

```
#sys-update install http://10.12.52.150/myServer/OcNOS-SP-MPLS-Q1-6.3.3-41-MR-installer
```

```
#sys-update install http://10.12.52.150/myServer/OcNOS-SP-MPLS-Q1-6.3.3-41-MR-installer
```

---

## sys-update list-version

Use this command to display files and folders. This command supports only FTP and the local file system.

### Command Syntax

```
sys-update list-version ((source-interface IFNAME)|) URL
```

### Parameters

IFNAME	The interface used to download the list. If not specified, eth0 is used.
URL	Where to get the list: ftp://(username@ ) serverIP/path/to/file/ file:///mnt/usb/path/to/file/

### Default

None

### Command Mode

Privileged Exec mode

### Applicability

This command was introduced before OcnOS version 1.3.

### Examples

```
#sys-update list-version ftp://10.12.52.150/
```

---

## sys-update un-install

Use this command to un-install the device software remotely using the CLI and NetConf.management interfaces. This command decouples the device console dependency to un-install OcNOS.

This command puts the device in ONIE un-install mode and triggers device reboot. Upon reboot, ONIE detects the un-install mode and performs the un-installation. Once the un-installation completes, the device boots ONIE. To understand more about the un-installation technique, see the U-Boot and x86 Architecture sections at:

<https://opencomputeproject.github.io/onie/design-spec/index.html#>.

Note: By default, ONIE has SSH and Telnet services running, so you also have the option to trigger the installation through the management connection. For more information about SSH and Telnet connectivity, see:

<https://opencomputeproject.github.io/onie/user-guide/index.html#debugging-an-installation>.

### Command Syntax

```
sys-update un-install
```

### Parameters

None

### Default

None

### Command Mode

Privileged Exec mode

### Applicability

This command was introduced in OcNOS version 1.3.8.

### Examples

```
#sys-update un-install
```

---

## sys-update verify

Use this command to verify the checksum and compatibility of the downloaded image. This command does not install the image and just lists the compatibility with HW, license and checksum.

### Command Syntax

```
sys-update verify IMAGE_PATH
```

### Parameters

`IMAGE_PATH` Path of downloaded image. File should be present in `/installers/`.

### Default

None

### Command Mode

Privileged Exec mode

### Applicability

This command was introduced in OcNOS version 6.2.0

### Examples

```
#sys-update verify /installers/OcNOS-6.1.0.39-MPLS_Q1-Alpha-installer
Verifying installer at /installers/OcNOS-6.1.0.39-MPLS_Q1-Alpha-installer
Checksum Validation: PASS: Checksum: d5b641802bac97df08ea87353d1e3f5daa73212b
Installer compatibility with HW: PASS
License compatibility: PASS
Overall Status: PASS
```





## CHAPTER 2 Firmware Upgrade Commands

---

This chapter describes the firmware upgrade commands.

- [onie-firmware download](#)
- [onie-firmware list](#)
- [onie-firmware remove](#)
- [onie-firmware stage](#)
- [onie-firmware unstage](#)
- [onie-firmware upgrade](#)
- [show onie-firmware staged](#)
- [show onie-firmware update-results](#)

---

## onie-firmware download

Use this command to download the firmware package from a network path or a USB mount path.

Note: http, ftp, tftp and file protocol schemes are supported.

### Command Syntax

```
onie-firmware download URL (|vrf management)
```

### Parameters

URL	Firmware package URL
vrf management	Management VRF

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS-OTN version 4.2.

### Examples

```
>onie-firmware download http://10.12.28.115/umakant/as7716_24sc-pak-  
v1.0.0.4_zz.updater vrf management  
#####  
100.0%
```

---

## onie-firmware list

Use this command to display a list of firmware packages downloaded using [onie-firmware download](#) command.

Note: User downloaded packages must be copied to `/firmware` directory, to get listed here.

### Command Syntax

```
onie-firmware list
```

### Parameters

None

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS-OTN version 4.2.

### Examples

```
>onie-firmware list  
as7716_24sc-pak-v1.0.0.4_zz.updater
```

---

## onie-firmware remove

Use this command to remove firmware packages listed in [onie-firmware list](#) command, from device filesystem.

### Command Syntax

```
onie-firmware remove FILE
```

### Parameters

FILE	Firmware package name
------	-----------------------

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS-OTN version 4.2.

### Examples

```
>onie-firmware remove as7716_24sc-pak-v1.0.0.4_zz.updater
```

## onie-firmware stage

Use this command to stage the firmware package for upgrade, which can be triggered using the CLI [onie-firmware upgrade](#).

### Command Syntax

```
onie-firmware stage FILE
```

### Parameters

FILE	Firmware package name
------	-----------------------

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS-OTN version 4.2.

### Examples

```
#onie-firmware stage as7716_24sc-pak-v1.0.0.4_zz.updater  
Staging firmware update: /tmp/firmware/as7716_24sc-pak-v1.0.0.4_zz.updater
```

---

## onie-firmware unstage

Use this command to remove the staged firmware package.

### Command Syntax

```
onie-firmware unstage FILE
```

### Parameters

FILE	Firmware package name
------	-----------------------

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS-OTN version 4.2.

### Examples

```
#onie-firmware unstage as7716_24sc-pak-v1.0.0.4_zz.updater  
Removing pending firmware update: as7716_24sc-pak-v1.0.0.4_zz.updater
```

---

## onie-firmware upgrade

Use this command to install the staged firmware packages. This command will reboot the switch in firmware update mode and installs the staged firmware. After the installation switch will boot with OcNOS, Use [show onie-firmware update-results](#) command to view the results of firmware upgrade.

### Command Syntax

```
onie-firmware upgrade
```

### Parameters

None

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS-OTN version 4.2.

### Examples

```
#onie-firmware upgrade
Please make sure the device running config is saved, enter 'y' to continue (y/n):y
Device rebooted by ocnos user from cmlsh at time:Tue Apr  2 13:28:43 2019
```

---

## show onie-firmware staged

Use this command to view the staged firmware packages for firmware upgrade.

### Command Syntax

```
show onie-firmware staged
```

### Parameters

None

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcNOS-OTN version 4.2.

### Examples

```
#show onie-firmware staged
Name                               | Version | Attempts | Size (Bytes) | Date
=====+=====+=====+=====+=====
as7716_24sc-pak-v1.0.0.4_zz.updater | 1.0.0.4 | 0 | 3405652 | 2019-04-02 12:27:32
=====+=====+=====+=====+=====
```



## show onie-firmware update-results

Use this command to view the result of firmware upgrade performed via [onie-firmware upgrade](#) command.

### Command Syntax

```
show onie-firmware update-results (| FILE)
```

### Parameters

FILE Firmware package name

### Default

None

### Command Mode

Exec mode

### Applicability

This command was introduced in OcnOS-OTN version 4.2.

### Examples

```
#show onie-firmware update-results
Name                                     | Version           | Result           | Date
=====+=====+=====+=====
as7716_24sc-pak-v1.0.0.4_zz.updater | 1.0.0.4           | Success         | 2019-04-02 13:35:07
onie-updater                           | 2017.11.00.03    | Success         | 2000-01-01 00:00:59
=====+=====+=====+=====
```

```
#show onie-firmware update-results as7716_24sc-pak-v1.0.0.4_zz.updater
Name                                     | Version           | Result           | Date
=====+=====+=====+=====
as7716_24sc-pak-v1.0.0.4_zz.updater | 1.0.0.4           | Success         | 2019-04-02 13:35:07
=====+=====+=====+=====
Additional firmware update results information:
onie_update_status_code=0
onie_update_image_url=/mnt/onie-boot/onie/update/pending/as7716_24sc-pak-v1.0.0.4_zz.updater
image_arch="x86_64"
image_vendor_id="259"
image_machine="accton_as7716_24sc"
image_machine_rev="0"
image_type="CPLD1, CPLD23, CPLD CPU"
image_version=1.0.0.4
image_build_date="2021-05-04T17:17+0800"
updater_version="Tue May 4 11:08:09 2021 +0800"
board_version_cpld23="07,07h"
image_version_cpld23="h"
board_version_cpld1="0x07"
image_version_cpld1="h"
board_version_cpld_cpu="40h"
image_version_cpld_cpu="h"
update_start_system_time=1554211888
unlock_bus_duration=12
run_reboot_duration=101
lock_bus_duration=11
update_cpld23_done=yes
update_cpld23_ret=0
update_cpld23_duration=21
update_cpld23_retry_times=0
update_cpld1_done=yes
update_cpld1_ret=0
update_cpld1_duration=58
```

## Firmware Upgrade Commands

---

```
update_cp1d1_retry_times=0
update_cp1d_cpu_done=yes
update_cp1d_cpu_ret=0
update_cp1d_cpu_duration=9
update_cp1d_cpu_retry_times=0
update_total_duration=219
update_finish_system_time=1554212107
```

---

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