



## **Cisco Nexus 6000 Series NX-OS Python API Reference Guide, Release 6.0(2)N1(1)**

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## Preface

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This document lists and describes the Python Application Programming Interface (API) for Cisco Nexus 6000 series switches.

This chapter includes the following sections:

- [Audience, page v](#)
- [Document Conventions, page v](#)
- [Related Documentation, page vi](#)
- [Documentation Feedback, page vii](#)
- [Obtaining Documentation and Submitting a Service Request, page vii](#)

## Audience

This publication is for system administrators who are responsible for installing and managing Cisco Nexus 6000 series switches.

## Document Conventions

Command descriptions use these conventions:

Conventions	Description
<b>boldface font</b>	Commands and keywords are in boldface.
<i>italic font</i>	Arguments for which you supply values are in italics.
{ }	Elements in braces are required choices.
[ ]	Elements in square brackets are optional.
x   y   z	Alternative, mutually exclusive elements are separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.

Screen examples use these conventions:

<code>screen font</code>	Terminal sessions and information the device displays are in screen font.
<b>boldface screen font</b>	Information you must enter is in boldface screen font.
<i>italic screen font</i>	Arguments for which you supply values are in italic screen font.
< >	Nonprinting characters, such as passwords, are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

This document uses the following conventions:



**Note**

Means reader *take note*. Notes contain helpful suggestions or references to material not covered in the manual.



**Caution**

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

## Related Documentation

Documentation for the Cisco Nexus 6000 Series Switch is available at the following URL:

[http://www.cisco.com/en/US/products/ps12806/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/ps12806/tsd_products_support_series_home.html)

The documentation set is divided into the following categories:

### Release Notes

The release notes are available at the following URL:

[http://www.cisco.com/en/US/products/ps12806/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/ps12806/prod_release_notes_list.html)

### Installation and Upgrade Guides

The installation and upgrade guides are available at the following URL:

[http://www.cisco.com/en/US/products/ps12806/prod\\_installation\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps12806/prod_installation_guides_list.html)

### Command References

The command references are available at the following URL:

[http://www.cisco.com/en/US/products/ps12806/prod\\_command\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps12806/prod_command_reference_list.html)

### Technical References

The technical references are available at the following URL:

[http://www.cisco.com/en/US/products/ps12806/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps12806/prod_technical_reference_list.html)

**Configuration Guides**

The configuration guides are available at the following URL:

[http://www.cisco.com/en/US/products/ps12806/products\\_installation\\_and\\_configuration\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps12806/products_installation_and_configuration_guides_list.html)

**Error and System Messages**

The system message reference guide is available at the following URL:

[http://www.cisco.com/en/US/products/ps12806/products\\_system\\_message\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps12806/products_system_message_guides_list.html)

## Documentation Feedback

To provide technical feedback on this document, or to report an error or omission, please send your comments to [nexus6k-docfeedback@cisco.com](mailto:nexus6k-docfeedback@cisco.com). We appreciate your feedback.

## Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS version 2.0.





# CHAPTER 1

## Overview

---

This chapter provides the overview and installation information needed to use the Python Application Programming Interface (API) support on Cisco Nexus 6000 Series switches.

This chapter includes the following sections:

- [Information About the Python API, page 1-1](#)
- [Installing Python, page 1-2](#)
- [Installing Third Party Pure Python Packages, page 1-2](#)
- [Using Python, page 1-2](#)

## Information About the Python API

Python is an easy to learn, powerful programming language. It has efficient high-level data structures and a simple but effective approach to object-oriented programming. Python's elegant syntax and dynamic typing, together with its interpreted nature, make it an ideal language for scripting and rapid application development in many areas on most platforms.

The Python interpreter and the extensive standard library are freely available in source or binary form for all major platforms from the Python website:

<http://www.python.org/>

The same site also contains distributions of and pointers to many free third-party Python modules, programs and tools, and additional documentation.



**Note**

You can know the latest development on Cisco Nexus 6000 Series switches and contribute your ideas by joining the community codesharing page:

<https://github.com/datacenter>

The Cisco Nexus 6000 series switches support all the features available in Python v2.7.2.

The Python scripting capability on the Cisco Nexus 6000 series switches enables you to perform the following tasks:

- Run a script to verify configuration on switch bootup.
- Back up a configuration.
- Proactive congestion management by monitoring and responding to buffer utilization characteristics.

- Integration with the Power-On Auto Provisioning or EEM modules.
- Ability to perform a job at a specific time interval (such as Port Auto Description).
- Programmatic access to the switch command line interface (CLI) to perform various tasks.

## Installing Python

The Python interpreter is available by default on the Cisco NX-OS software. You can invoke Python by entering the **python** command, and write scripts to access Cisco NX-OS APIs by importing the `cisco.py` module using the **import cisco.py** command.

## Installing Third Party Pure Python Packages

You can install the third party pure Python package by copying `mypkg.tgz` on your server. Perform the following steps to extract and install the third party package:

- Secure copy the tar file by executing the **copy scp://user@server/path/to/mypkg.tgz bootflash:mypkg.tgz vrf management** command
- Untar the `mypkg.tgz` file by using the **tar extract bootflash:mypkg.tgz** command.
- Move the extracted file to bootflash by using the **move bootflash:mypkg-1.2/\* bootflash:** command.
- You can install the package by using the **python setup.py install** command.
- Remove the copied file from bootflash.
- You can use the third party package in scripts or in the Python shell.

```
switch# python
>>> import mypkg
```



### Note

You will be able to install the third party packages using the **easy\_install** command, in the future releases.

## Using Python

This section describes how to write and execute Python scripts by passing parameters and includes the following topics:

- [Entering Python Shell, page 1-2](#)
- [Executing Scripts, page 1-3](#)
- [Passing Parameters to the Script, page 1-3](#)

## Entering Python Shell

You can enter the Python shell by using the **python** command without any parameters.

```
switch# python
Python 2.7.2 (default, Oct 11 2011, 13:55:49)
```

```
[GCC 3.4.3 (MontaVista 3.4.3-25.0.143.0800417 2008-02-22)] on linux2
Type "help", "copyright", "credits" or "license" for more information.
Loaded cisco NX-OS lib!
>>> print 'helo world!'
helo world!
>>>exit()
switch#
```

## Executing Scripts

You can execute a Python script by using the **python** *<filename>* command.

```
switch# python test.py
['/bootflash/test.py']
doing 0/1
doing 0/2
doing 1/2
switch#
```

## Passing Parameters to the Script

You can execute a Python script by using the **python** *<filename>* [*arg1, arg2, arg3,.....*] command.

```
switch# python test.py foo bar 1 2
['/bootflash/test.py', 'foo', 'bar', '1', '2']
doing 0/1
doing 0/2
doing 1/2
switch#
```





## CHAPTER 2

# Application Programming Interface (API) Functions

---

This chapter provides information about the following Python Application Programming Interface (API) functions. This chapter includes the following sections:

- [CheckPortDiscards\(\)](#), page 2-1
- [transfer\(\)](#), page 2-2
- [CLI\(\)](#), page 2-2
- [get\\_output\(\)](#), page 2-3
- [rerun\(\)](#), page 2-4
- [History\(\)](#), page 2-4
- [get\\_history\(\)](#), page 2-5
- [clear\\_history\(\)](#), page 2-5

## CheckPortDiscards()

### Synopsis

```
CheckPortDiscards (<port>)
```

### Syntax

```
CheckPortDiscards ('ethernet1/1')
```

### Description

Check the input discards for given port. If discard is more than 0, query and print the discard reason from broadcom.

### Parameters

port

### Returns

None.

### Example

```
c = CheckPortDiscards('eth1/1')
```

**Sample Output**

```
zero discards
```

# transfer()

**Synopsis**

```
transfer()
```

**Syntax**

```
transfer (<protocol>, <host>, <source>, <dest>, <vrf>, <login_timeout>, <user>,
<password>)
```

**Description**

API to transfer file specified in <source> from <host> to the path mentioned in <dest> using <protocol>.

**Protocol can be scp, tftp, ftp or sftp.**

**Parameters**

protocol, host, source, dest, vrf, login\_timeout, user, password.

**Returns**

Returns True if transfer was successful.

**Example**

Transfer using scp:

```
c = transfer("scp", "10.193.190.100", "/tftpboot/transfer_test_image",
"transfer_test_image", user="scpUser", password="scpPasswd")
```

Transfer using sftp:

```
c = transfer("sftp", "10.193.190.100", "/tftpboot/transfer_test_image",
"transfer_test_image", user="sftpUser", password="sftpPasswd")
```

Transfer using tftp:

```
c = transfer("tftp", "10.193.190.100", "/transfer_test_image", "transfer_test_image",
user="", password="")
```

Transfer using ftp:

```
c = transfer("ftp", "10.193.190.51", "golden/home/su-ash/transfer_test_image",
"transfer_test_image", user="ftpUser", password="ftpPasswd")
```

# CLI()

**Synopsis**

```
CLI() - Class Object
```

**Syntax**

```
CLI (<command>, <do_print>)
```

**Description**

Instantiates an object of the CLI class with the CLI command specified in <command>. <do\_print> when set to False does not print the output of the command and prints the output when set to True, which is the default.

**Parameters**

command, do\_print

**Returns**

An object of CLI class.

**Example**

```
c = CLI ('show runn inter eth1/1')
```

**Sample Output**

```
!Command: show running-config interface Ethernet1/1
!Time: Mon Feb 27 14:33:24 2012

version 5.0(3)U3(1)

interface Ethernet1/1
  switchport mode trunk
  uddl enable
  channel-group 12

<cisco.CLI object at 0xb7ae948c>
```

## get\_output()

**Synopsis**

```
get_output()
```

**Syntax**

```
CLI.get_output()
```

**Description**

Returns the output of the CLI command.

**Parameters**

None.

**Returns**

Output of the CLI command.

**Example**

```
c = CLI ('show runn inter eth1/1')
c.get_output()
```

**Sample Output**

```
[', '!Command: show running-config interface Ethernet1/1', '!Time: Mon Feb 27 14:36:10
2012', ', 'version 5.0(3)U3(1)', ', 'interface Ethernet1/1', ' switchport mode trunk',
' udld enable', ' channel-group 12', ', ', '']
```

## rerun()

**Synopsis**

```
rerun()
```

**Syntax**

```
CLI.rerun()
```

**Description**

Reruns the command.

**Parameters**

None.

**Returns**

None.

**Example**

```
c = CLI ('show runn inter eth1/1')
c.rerun()
```

**Sample Output**

```
!Command: show running-config interface Ethernet1/1
!Time: Mon Feb 27 14:37:05 2012

version 5.0(3)U3(1)

interface Ethernet1/1
  switchport mode trunk
  udld enable
  channel-group 12
```

## History()

**Synopsis**

History() - Class Object

**Syntax**

```
History()
```

**Description**

Instantiates an object of the History class.

**Parameters**

None.

**Returns**

An object of History class.

**Example**

```
a = History()
```

## get\_history()

**Synopsis**

```
get_history()
```

**Syntax**

```
History.get_history()
```

**Description**

Gets the history of CLI commands executed so far.

**Parameters**

None.

**Returns**

Returns the history of commands executed.

**Example**

```
a = History()
a.get_history()
```

## clear\_history()

**Synopsis**

```
clear_history()
```

**Syntax**

```
History.clear_history()
```

**Description**

Clears history.

**Parameters**

None.

**Returns**

None.

**Example**

## ■ clear\_history()

```
a = History()
a.clear_history()
```