CHAPTER 3

Cisco Smart Install CLI Commands

clear vstack

To clear the director database or the download list, use the **clear vstack** privileged EXEC command on the Smart Install director.

clear vstack {**director-db** | **download-list**}

Syntax Description

director-db	Clears the all Smart Install director database.
download-list	Clears the Smart Install download status list.

Defaultsf

No default is defined.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

You can enter this command only on a director.

Examples

This example shows how to clear the director database:

```
Switch(config)# clear vstack director-db
```

Related Commands

Command	Description
vstack basic	Enables the switch as the Smart Install director. This command is accepted only if the director IP address is on the switch.
vstack director	Configures a Smart Install director IP address.

debug vstack

To enable debugging of the Smart Install feature, use the **debug vstack** privileged EXEC command. To disable debugging, use the **no** form of this command.

debug vstack {**all** | **cli** | **director-db** | **download** | **emulation** | **fsm** | **group** | **protocol**}

no debug vstack {**all** | **cli** | **director-db** | **download** | **emulation** | **fsm** | **group** | **protocol**}

Syntax Description

all	Displays all Smart Install debug messages.
cli	Displays Smart Install command-line interface (CLI) debug messages.
director-db	Displays Smart Install director database messages.
download	Displays Smart Install download debug messages.
emulation	Displays Smart Install emulation debug messages.
fsm	Displays Smart Install session-management debug messages.
group	Displays Smart Install group debug messages.
protocol	Displays Smart Install protocol debug messages.

Command Default

Smart Install debugging is disabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

The **undebug vstack** command is the same as the **no debug vstack** command.

Related Commands

Command	Description
show debugging	Displays information about the types of debugging that are enabled.

match (Smart Install group configuration)

To configure the match type for a Smart Install custom group, use the **match** Smart Install group configuration mode command on the Smart Install director. To return to the default setting, use the **no** form of this command. Note that the available keyword depends on the type of custom group defined.

match host *ip_address* **interface** *name*

no match host *ip_address* **interface** *name*

match *product-id*

no match *product-id*

match *switch_stack_number product_family port_config*

no match *switch_stack_number product_family port_config*

Syntax Description

host *ip_address*	This keyword is visible when the custom group is defined by **connectivity**. Configure a client switch group based on the switch topology, where **host** *ip_address* is the IP address of the upstream neighbor of the client switch. If a switch matches more than one group characteristic, a connectivity match takes precedence.
interface *name*	Identifies the interface on the upstream neighbor to which the clients is connected. The interface ID must be the full identifier for the interface, such as GigabitEthernet 2/0/1.
product-id	This keyword is visible when the custom group is defined by **product-id**. Configure a client switch group based on the model number of the switch associated with the group, where *sku-id* is the product ID for the group starting with WS-Cnnnn-* (for example, WS-C2960-48TC-L). **Note** The product ID can be the same as that of a built-in group. If a switch matches a built-in group and a custom group, the custom group takes precedence when assigning image and configuration file.
switch_stack _number product_family port_config	This keyword is visible when the custom group is defined by **product-id**. Configure a switch in a group based on custom stack configuration. • *switch_number*—Number of the switch in the stack. The range is from 1 to 9. • *product_family*—Stack product family. Valid values are: – **2975**—Catalyst 2975 product family – **3750**—Catalyst 3750 product family – **3750e**—Catalyst 3750-E product family – **3750g**—Catalyst 3750 gig product family • *port_config*—Switch port configuration. The available configurations vary, depending on the product family. To see the available port configurations, enter a **?** after the product family. If a switch matches more than one group characteristic, a stack match takes precedence over product ID.

Defaults

No match criteria is identified.

Command Modes

Smart Install group configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

Although you can enter this command on a client switch, the configuration does not take effect. Only configuration commands entered on the director are valid. Should the client switch become a director at some point, the configuration file entered on it is then valid.

To define the custom group type and enter Smart Install group configuration mode, enter the **vstack group custom** *group_name* {**connectivity** | **product-id** | **stack**} global configuration command.

Use the **host** *ip_address* **interface** *name* keyword to define connectivity groups based on the switch network topology, as defined by the upstream neighbor to which the client switch is connected. The upstream neighbor could be the director or an intermediate switch. If a switch matches more than one group characteristic, a connectivity match takes precedence.

Use the *product-id* variable to match any product ID, including those not defined in the **vstack group built-in** command. These could be supported switches that were not shipping when the software version was released.

Use the *switch_stack _number product_family port_config* variable to identify switches in a stack.

Examples

This example shows how to identify a custom group named *test* based on matching connectivity, to enter Smart Install group configuration mode, to specify that the group includes switches connected to the host with the IP address 2.2.2.2 through the interface Gigabit Ethernet 0/1, and to identify the image and configuration files to be obtained through TFTP for the group:

```
Switch(config)# vstack group custom test connectivity
Switch(config-vstack-group)# match host 2.2.2.2 interface gigabitethernet0/1
Switch(config-vstack-group)# image tftp://3560smartinstall.txt
Switch(config-vstack-group)# config tftp://3560-24-ipbase-config.txt
```

You can verify the group settings by entering the **show vstack group custom** privileged EXEC command.

Related Commands

Command	Description
show vstack group built-in	Displays configured Smart Install built-in groups.
vstack group custom	Configures Smart Install custom groups.

show vstack

To display Smart Install information, use the **show vstack** privileged EXEC command on the Smart Install director or a client switch.

show vstack {**config** | **download-status** [**detail**] | **group** {**built-in** [*product_family* [*port_config*]] **detail** | **custom** [*group_name*] **detail**} | **host** *ip_address* | **status** [**detail**]} [| {**begin** | **exclude** | **include**} *expression*]

Syntax Description

config	Displays Smart Install configuration parameters.
download-status	Displays a tabulated output of the Smart Install image and configuration download successes and failures. The **show vstack download-status detail** command provides detailed reasons for download failures.
group	Displays Smart Install group information.
built-in	Displays information about preconfigured (built-in) groups
product_family	Enter the built-in product family. The product families for the first release are: • **2960**—Catalyst 2960 product family • **2960g**—Catalyst 2960 Gigabit product family • **2975**—Catalyst 2975 product family y • **3560**—Catalyst 3560 product family • **3560e**—Catalyst 3560-E product family • **3560g**—Catalyst 3560 Gigabit product family • **3750**—Catalyst 3750 product family • **3750e**—Catalyst 3750-E product family • **3750g**—Catalyst 3750 Gigabit product family
detail	Displays detailed information for the previous keyword.
port_config	Enter the switch port configuration. The available configurations vary, depending on the product family. To see the available port configurations, enter a **?** after the product family.
custom	Displays information about user-defined groups.
group_name	Enter the user name of remote hosts.
host	Displays information about a switch within the Smart Install topology. This command is available only on the director.
ip_address	Enter the IP address of the director or a client switch.
status	Displays the status of the CDP database. This command is available only on the director.
| **begin**	(Optional) Display begins with the line that matches the expression.
| **exclude**	(Optional) Display excludes lines that match the expression.
| **include**	(Optional) Display includes lines that match the specified expression.
expression	Expression in the output to use as a reference point.

Command Modes

Privileged EXEC

Note The command with some, but not all, of the keywords are available at the User EXEC level.

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

The output of the show commands are different when entered on the director or on the client. Not all keywords are available on the client.

Expressions are case sensitive. For example, if you enter | **exclude** output, the lines that contain *output* do not appear, but the lines that contain *Output* appear.

Examples

This is example output from the **show vstack config** command on a client:

```
Switch# show vstack config
 Role: Client
 Vstack Director IP address: 9.9.3.123

 *** Following configurations will be effective only on director ***
 Vstack Management vlan: 1
 Vstack Image file: tftp://202
```

This is example output from the **show vstack config** command on a director:

```
Switch# show vstack config
Role: Director
 Vstack Director IP address: 1.1.1.163
 Vstack Mode: Basic
 Vstack default management vlan: 1
 Vstack management Vlans: none
 Vstack Config file: tftp://1.1.1.100/default-config.txt
 Vstack Image file: tftp://1.1.1.100/default-image.txt
```

This is example output from the **show vstack download-status** command on a director:

```
Switch# show vstack download-status
No client-IP       Client-MAC     Method         Config-upg-status Image-upg-status
1  100.100.100.100 aaaa.aaaa.aaaa zero-touch     UPGRADED       UPGRADING
2  101.101.101.101 aaaa.aaaa.aaab zero-touch     UPGRADING      UPGRADING
3  10.10.10.13     aaaa.aaaa.aaab config-upgrade UPGRADED       *
4  10.10.10.13     aaaa.aaaa.aaac image-upgrade    *              UPGRADING
5  10.10.10.12     *              image-upgrade    *              FAILED
6  10.10.10.15     *              config-upgrade FAILED         *
7  10.10.10.16     aaaa.aaaa.aaac config-upgrade SUCCESS        *
```

This is example output from the **show vstack group built-in detail** command:

```
Switch# show vstack group built-in detail
-------------------------------------------
Group Name: 2960-24
No Image name specified
No config file name specified

-------------------------------------------
Group Name: 2960-24-8POE
No Image name specified
No config file name specified

-------------------------------------------
Group Name: 2960-24-8POE-lanlite
No Image name specified
No config file name specified

-------------------------------------------
Group Name: 2960-24-lanlite
No Image name specified
No config file name specified

-------------------------------------------
Group Name: 2960-24POE
No Image name specified
No config file name specified

-------------------------------------------
Group Name: 2960-24POE-lanlite
No Image name specified
No config file name specified

-------------------------------------------
Group Name: 2960-48
No Image name specified
No config file name specified
<output truncated>
```

This is example output from the **show vstack group custom detail** command:

```
Switch(config)# show vstack group custom detail
-----------------------------------------------
Group Name:   2960-8
Image:        tftp://1.1.1.100/2960-8-imagelist.txt
Config File:  tftp://1.1.1.100/2960-8-config.txt
Connectivity Details (IP Adress:Interface):
 1.1.1.163:FastEthernet1/0/1
-----------------------------------------------
Group Name:   WS-C3560E-24TD
Image:        tftp://1.1.1.100/3560e-imagelist.txt
Config File:  tftp://1.1.1.100/3560e-config.txt
Product-ID:   WS-C3560E-24TD
-----------------------------------------------
Group Name:   lotr-stack
Image:        tftp://1.1.1.100/lotr-stack-imagelist.txt
Config File:  tftp://1.1.1.100/lotr-stack-config.txt
Stack Details (Switch_number:Product-id):
               1:3750G-24
               3:3750G-24POE
-----------------------------------------------
Group Name:   test
Image:        No Image file specified
Config File:  No Config file specified
Product-ID:   No product-id configured
```

This is example output from the **show vstack host** command:

```
Switch# show vstack host 1.1.1.163
Host Info :
Code :
 HOP 0 : Director        HOP N : Nth Hop in the Network
 HOP ** : Reachability Unknown / Unreachable
MAC Address     Product-ID         IP_addr          DevID            HOP
==============  =================  ===============  ===============  =====
0023.5e32.3780  WS-C3750E-24PD     1.1.1.163        3750e-163-smi    0

Neighbor Info:
MAC Address     Dev ID           IP_addr          Local Int      Out Port
==============  ===============  ===============  =============  =============
001d.71ba.f700  2960pd-47        0.0.0.0          Gig 1/0/1      Fas 0/7
0023.5dd1.a100  2960-161         10.5.113.161     Gig 1/0/23     Fas 0/23
```

This is example output from the **show vstack status** command:

```
Switch #show vstack status
Code :
 HOP 0 : Director        HOP N : Nth Hop in the Network
 HOP ** : Reachability Unknown / Unreachable
Director Database :
MAC Address     Product-ID         IP_addr          DevID            HOP
==============  =================  ===============  ===============  =====
0023.5e32.3780  WS-C3750E-24PD     1.1.1.163        3750e-163-smi    0
001d.71ba.f700  WS-C2960PD-8TT-L   0.0.0.0          2960pd-47        1
0023.5dd1.a100  WS-C2960-24-S      10.5.113.161     2960-161         1
```

This is example output from the **show vstack status detail** command:

```
Switch# show vstack status detail
----------------------------------------------
Device ID      : 3750e-163-smi
MAC Address    : 0023.5e32.3780
IP Addr        : 1.1.1.163
Serial         : FDO1239V026
Product-ID     : WS-C3750E-24PD
Version        : 12.2(0.0.231)SE
Image          : C3750E-UNIVERSALK9-M
Entry Role     : IBD Entry
(N-1)HOP Entry : Already Root
----------------------------------------------
Device ID      : 2960pd-47
MAC Address    : 001d.71ba.f700
IP Addr        : 0.0.0.0
Serial         : Not Found
Product-ID     : WS-C2960PD-8TT-L
Version        : 12.2(0.0.231)SE
Image          : C2960-LANBASEK9-M
Entry Role     : IBC Entry
(N-1)HOP Entry : 0023.5e32.3780
----------------------------------------------
Device ID      : 2960-161
MAC Address    : 0023.5dd1.a100
<output truncated>
```

Related Commands

Command	Description
vstack basic	Enables the switch to be the Smart Install director. This command is accepted only if the director IP address is on the switch.
vstack director	Configures a Smart Install director IP address.

vstack basic

To enable the switch as the Smart Install director, use the **vstack basic** global configuration command. This command is accepted only if the director IP address matches one of the switch IP addresses. To disable the Smart Install director function on the switch, use the **no** form of this command.

vstack basic

no vstack basic

Syntax Description

This command has no keywords.

Defaults

Smart Install director is not enabled on the switch.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

There can be only one director managing a number of clients in a Smart Install network.

The director must be running a Smart Install capable image.

For zero-touch upgrade, all DHCP transactions in the Smart Install network between the DHCP server and the client switches must run through the director.

If you enter the **vstack basic** command on a switch that does not have the director IP address (either assigned by the DHCP server or configured by entering the vstack **director** *ip-address* global configuration command), the command is not accepted, and the switch must be a client.

If you enter the **vstack basic** command before a director IP address has been assigned or configured, the command is rejected with a message that the director is not configured.

When you enable the director by entering this command:

- DHCP snooping is enabled on the director for VLAN 1 and any other configured Smart Install VLANs.
- The director starts building a director database of neighboring switches.

If you enter the **no vstack basic** command to disable director functionality on the switch, Smart Install configurations are not deleted but do not take effect until the switch is again enabled as a director. When you enter **no vstack basic**, DHCP snooping is disabled, and the director database is no longer valid.

If the director IP address is configured on an interface, and you shut down or delete the interface, or change the interface IP address, the switch becomes a client switch and must find for another director IP address.

Examples

This example shows how to enable the switch as a director when the director IP address is on the switch:

```
Switch(config)# vstack basic
Switch(config)#
```

This example shows the error message that appears if you enter the command on a switch when no director IP address has been configured or assigned by DHCP:

```
Switch(config)# vstack basic
Command Rejected: Director IP is not configured
```

This example shows the error message that appears if you enter the command on a switch configured with a director IP address that is not owned by the switch:

```
Switch(config)# vstack basic
Command Rejected: The Director IP address does not match a switch IP address.
```

You can verify Smart Install director settings by entering the **show vstack config** privileged EXEC command.

Related Commands

Command	Description
show vstack config	Displays the Smart Install configuration.
vstack director	Configures a Smart Install director IP address.

vstack config

To identify the default configuration file for the client switches, use the **vstack config** global configuration command on the Smart Install director. To remove the configuration file as the default, use the **no** form of this command.

vstack config *location config_filename*

no vstack config

Syntax Description

location	Enter **flash:** if the director is the TFTP server and the configuration file is in the director flash memory. Enter **tftp://** and the location of the default configuration file if the file is not in the director flash memory. If the director is the TFTP server, the location is the director IP address. **Note** Although visible in the command-line help, these options are not supported: **flash1:**, **ftp:**, **http:**, **https:**, **null:**, **nvram:**, **rcp:**, **scp:**, **system:**, **tmpsys:.**
filename	The syntax for entering the filename when not in the director flash is **tftp:**[[*//location*]*/directory*]*/config.txt*

Defaults

No default file name is configured.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

Although you can enter this command on any switch running a Smart Install image, the configuration does not take effect if the switch is not the director. Only configuration commands entered on a director are valid. If the client switch at some point becomes the director, the entered configurations is then valid.

Use this command to define the configuration file when all switches in the network are the same product ID (PID).

This is an optional configuration. When you configure a default configuration, the default configuration file is used when the configuration file for a client is not in a group configuration file.

A client switch sends an error message if it is unable to download an image or configuration file due to misconfiguration, if the image or the configuration file is not available, or if a join window is configured and the DHCP acknowledgement occurs outside of the configured time frame.

Examples

This is an example of Smart Install default configuration when there is only one type of product ID (24-port Catalyst 2960) in the network, the director is the TFTP server, and the configuration file is in the director flash memory:

```
Switch(config)# vstack config flash:2960-24-lanbase-config.txt
```

This is an example of Smart Install default configuration when there is only one type of product ID (24-port Catalyst 2960) in the network and the configuration file is not in the director flash memory:

```
Switch(config)# vstack config tftp://1.1.1.10/2960-24-lanbase-config.txt
```

You can verify Smart Install settings by entering the **show vstack config** privileged EXEC command.

Related Commands

Command	Description
show vstack config	Displays the Smart Install configuration.
vstack image	Configures a Smart Install default image file.

vstack dhcp-localserver

To configure the Smart Install integrated director as the Smart Install DHCP server, use the **vstack dhcp-localserver** global configuration command on the director. The command creates a Smart Install DHCP pool and enters Smart Install DHCP configuration mode. To delete the Smart Install DHCP pool, use the **no** form of this command.

vstack dhcp-localserver *poolname*

no vstack dhcp-localserver *poolname*

Syntax Description

poolname	Enter the name of the Smart Install DHCP server pool.

Defaults

The director is not the Smart Install DHCP server.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

When the Smart Install DHCP server is the director or another device running Cisco IOS, if the network reloads, the server could assign other IP addresses to participating switches. If the director IP address changes, it is no longer the Smart Install director, which could break the director and client switch relationships. You must then reassociate the clients and the director. To ensure that this does not occur, you should enter the **ip dhcp remember** global configuration command to configure the DHCP pool to remember the IP bindings. If the network or device reloads, the DHCP server issues the same IP address to a client that it had before the reload.

Enter this command only on the director; do not enter it on client switches.

These configuration commands are available in Smart Install DHCP configuration mode:

- **address-pool** *ip-address* {*network_mask* | */prefix-length*}: configures the IP address and network mask or prefix-length for the DHCP pool. The prefix length is the number of bits that comprise the address prefix and is another way to specify the network mask. It is entered as a number preceded by a forward slash (*/nn*).
- **default-router** *ip-address*: configures the DHCP default router IP address for the pool.
- **exit**: exits Smart Install DHCP configuration mode and returns to global configuration mode.
- **file-server** *ip-address*: configures a default TFTP server IP address. This is the same parameter configured by entering the **option 150** *ip-address* keyword in DHCP pool configuration mode.
- **no**: negates a command or sets its default.

Examples

This example shows how to configure a Smart Install DHCP pool named *smart_install1* by entering Smart Install DHCP configuration mode and assigning a network address and default router for the pool and a TFTP server:

```
Switch(config)# vstack dhcp-localserver smart_install1
Switch(config-vstack-dhcp)# address-pool 1.1.1.1 /22
Switch(config-vstack-dhcp)# default-router 2.2.2.2
Switch(config-vstack-dhcp)# file-server 3.3.3.3
Switch(config-vstack-dhcp)# exit
```

You can verify Smart Install DHCP server settings by entering the **show dhcp server** or **show ip dhcp pool** privileged EXEC command.

Related Commands

Command	Description
show ip dhcp pool	Displays information about configured DHCP pools.
show dhcp server	Displays the DHCP servers.
vstack basic	Enables the switch to be the Smart Install director. This command is accepted only if the director IP address is on the switch.

vstack director

To manually configure the IP address of the director, use the **vstack director** global configuration command on the Smart Install director or client switch. to remove the director IP address configuration, use the **no** form of this command.

vstack director *ip-address*

no vstack director

Syntax Description

ip-address	Manually enter the IP address of the switch or an interface on the switch intended to be the Smart Install director. • When entered on the director, the IP address should be one of the switch interfaces. • When entered on a client, the IP address should be an IP address on the director.

Defaults

No director IP address is configured unless it was assigned by the DHCP server.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

For a switch to be the director, the director IP address must be the IP address of a Layer 3 interface on the switch. A Catalyst 2000 series switch cannot be the director.

This command is not mandatory if the director IP address is configured by DHCP. For DHCP to assign the director IP address, you must configure the DHCP server with options 125 and 16.

If the director IP address is not assigned by DHCP, you must enter the **vstack director** *ip-address* command on the director and on the other Smart Install switches.

When the director IP address has been configured (by entering this command or is assigned by a DHCP server), you enable the Smart Install director by entering the **vstack basic** command on the switch.

In this release, there can be only one director for a set of clients and there is no way to configure a backup director. If the director fails, the switch must restart before you can resume plug and play operation.

The director must be the switch in the network through which all DHCP transactions between the client switches and the DHCP server pass. The director must be running a Smart Install capable image.

If you enter the **vstack director** *ip-address* command on a client with an IP address that does not match the director IP address assigned by the DHCP server, the client cannot participate in a session with the director listed by the server.

If you enter the v**stack director** *ip-address* command on a client and change the IP address from that of the director, the client attempts to contact the new director. If the new IP address is on the client, that switch becomes the director.

A director changes roles and becomes a client if you shut down or delete the interface on which the director IP address is configured or change the interface IP address.

Examples

This example shows how to configure the director IP address on a switch and then enable the switch as the director:

```
Switch(config)# vstack director 1.1.1.1
Switch(config)# vstack basic
Switch(config
```

You can verify Smart Install settings by entering the **show vstack config** privileged EXEC command.

Related Commands

Command	Description
show vstack config	Displays the Smart Install configuration.
vstack basic	Enables the switch to be the Smart Install director. This command is accepted only if the director IP address is on the switch.

vstack download-config

To start an on-demand configuration download for client switches, use the **vstack download-config** privileged EXEC command on the Smart Install director. This command is visible only on the director.

vstack download-config {*config_URL ip_address* | **built-in** *product_family port_config*} *remote_switch_password* **startup** [**reload**] [**in** *time*]

Note There is not a **no** form for this command.

Syntax Description

config_URL	Enter **tftp:** and the download configuration URL. **Note** Although visible in the command-line help, these options are not supported: **bs:**, **cns:**, **flash1:**, **flash:**,**ftp:**, **http:**, **https:**, **null:**, **nvram:**, **rcp:**, **scp:**, **system:**, **tar:**, **tmpsys:**, **xmodem:**, **ymodem.**
ip_address	Enter the IP address of the client switch.
built-in *product_family*	Enter the pre-identified (built-in) product family ID. The product IDs for the first release are: • **2960**—Catalyst 2960 product family • **2960g**—Catalyst 2960 Gigabit product family • **2975**—Catalyst 2975 product family y • **3560**—Catalyst 3560 product family • **3560e**—Catalyst 3560-E product family • **3560g**—Catalyst 3560 Gigabit product family • **3750**—Catalyst 3750 product family • **3750e**—Catalyst 3750-E product family • **3750g**—Catalyst 3750 Gigabit product family
port_config	Enter the switch port configuration. The available IDs depend on the product family. To see the available port configurations, enter a **?** after the product family.
remote_switch_password	Enter the password of the client switch. **Note** The password is required only for switches that are not Smart Install capable. It is not required for switches already in the Smart Install network.
startup	Applies the configuration to the startup configuration.
reload	(Optional) Reloads the switch.
in *time*	• (Optional) Specifies the time to reload the switch using the format hh:mm. The range is from 00:00 to 23:59. If no time is specified, the reload occurs when you exit the CLI.

Defaults

No download configuration is identified.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

You can enter this command only on the director.

When you enter the **built-in** *product_family port_config* keywords for an on-demand configuration download, you must have previously identified the configuration for the specified built-in group. Do this by entering the **config** *location config_filename* Smart Install group configuration command.

The *remote_switch_password* is required only for switches that are not Smart Install capable. It is not required for switches already in the Smart Install network.

Examples

This example shows how to start an on-demand image download of the configuration file for a 2960 24-port switch on a client switch with the password *mypassword*. The download occurs when the switch starts in 10 hours:

```
Switch# vstack download-config built-in 2960 24 mypassword startup in 10
```

To see the configuration files for built-in or custom groups, enter the **show vstack group** {**built-in** | **custom**} privileged EXEC command. To verify the success of the download, enter the **show vstack download-status** privileged EXEC command.

Related Commands

Command	Description
show vstack download-status [**detail**]	Displays Smart Install download status. The **show vstack download-status detail** display includes detailed reasons for download failures.
show vstack group	Displays configures Smart Install groups.

vstack download-image

To configure an on-demand image download for client switches, use the **vstack download-image** privileged EXEC command on the Smart Install director. This command is visible only on the director.

vstack download-image {*imagelist file_URL ip_address* | **built-in** *product_family port_config*} *remote_switch_password* [**override**] **reload** [**in** *time*]

Note There is not a **no** form for this command.

Syntax Description

imagelist file_URL	Enter **tftp:** and the URL for the imagelist file. The imagelist file is a text file (for example, *3560smartinstall.txt*) to be downloaded to the switch. **Note** Although visible in the command-line help, these options are not supported: **bs:**, **cns:**, **flash1:**, **flash:**,**ftp:**, **http:**, **https:**, **null:**, **nvram:**, **rcp:**, **scp:**, **system:**, **tar:**, **tmpsys:**, **xmoden:**, **ymodem.**
ip_address	Enter the IP address of the remote host.
built-in *product_family*	Enter the pre-identified (built-in) product family ID. The product IDs for the first release are: • **2960**—Catalyst 2960 product family • **2960g**—Catalyst 2960 Gigabit product family • **2975**—Catalyst 2975 product family y • **3560**—Catalyst 3560 product family • **3560e**—Catalyst 3560E product family • **3560g**—Catalyst 3560 Gigabit product family • **3750**—Catalyst 3750 product family • **3750e**—Catalyst 3750E product family • **3750g**—Catalyst 3750 Gigabit product family
port_config	Enter the port configuration. The available configurations depend on the product family. To see the available configurations, enter a **?** after the product family.
remote_switch_password	Enter the password of the client switch. **Note** The password is required only for switches that are not Smart Install capable. It is not required for switches already in the Smart Install network.
override	(Optional) Override the existing image.
reload	Reload the switch.
in *time*	(Optional) Specify the time in Specify the **time** to reload the switch using the format hh:mm. The range is from 00:00 to 23:59. If no time is specified, the reload occurs when you exit the CLI.

Defaults

No download image is identified.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

You can enter this command only on the director.

The imagelist file is a text file (for example, *3560smartinstall.txt*) that will be uploaded to the switch. When you create the text file, include the name of the image that you want to download (for example, *c3560-ipservices-mz.122-52.SE.tar*). This image must be a tar and not a bin file. For a standalone switch, the imagelist file contains a single image. For a stack, the imagelist contains images for all members of the stack, which could be different or the same. The image must match the image stored on the TFTP server.

When you enter the **built-in** *product_family port_config* keywords for an on-demand image download, you must have previously identified the image for the specified built-in group by entering the **image** *location image_list file* Smart Install group configuration command.

The *remote_switch_password* is required only for switches that are not Smart Install capable. It is not required for switches already in the Smart Install network.

Examples

This example shows how to start an on-demand image download of the configured imagelist file for a 2960 24-port client switch with the password *mypassword*. The switch is set to reload in 10 hours:

```
Switch# vstack download-image built-in 2960 24 mypassword reload in 10:00
```

To see the images in the director database, enter the **show vstack status detail** privileged EXEC command. To see images configured for built-in or custom groups, enter the **show vstack group** {**built-in** | **custom**} privileged EXEC command. To verify the success of the download, enter the **show vstack download-status** privileged EXEC command.

Related Commands

Command	Description
show vstack download-status [**detail**]	Displays Smart Install download status. Entering **show vstack download-status detail** includes detailed reasons for download failures.
show vstack group	Displays configures Smart Install groups.
show vstack status detail	Displays Smart Install imagelists in the director database.

vstack group built-in

To identify a built-in Smart Install group and to enter Smart Install group configuration mode for the group, use the **vstack group built-in** global configuration command on the Smart Install director. The built-in groups are currently shipping products. To remove the configuration for the built-in group, use the **no** form of this command.

vstack group built-in *product_family port_config*

no vstack group built-in *product_family port_config*

Syntax Description

product_family	Enter the pre-identified (built-in) product family ID. The product families for the first release are: • **2960**—Catalyst 2960 product family • **2960g**—Catalyst 2960 Gigabit product family • **2975**—Catalyst 2975 product family • **3560**—Catalyst 3560 product family • **3560e**—Catalyst 3560-E product family • **3560g**—Catalyst 3560 Gigabit product family • **3750**—Catalyst 3750 product family • **3750e**—Catalyst 3750-E product family • **3750g**—Catalyst 3750 Gigabit product family
port_config	Enter the switch port configuration. The available choices depend on the product family. To see the available port configurations, enter a **?** after the product family. For example, if the product family is 3560, the available port configurations are: 12-10gig—12 port ten gig switch 12-1gig—12 port one gig switch 24—24 port gig switch 24poe—24 port gig POE switch 48—48 port gig switch 48poe—48 port gig POE switch If the product family is 2975, the available port configuration is: 48poe—48poe port switch

Defaults

No built-in groups are identified.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

Although you can enter this command on any switch running a Smart Install image, the configuration does not take effect if the switch is not the director. Only configuration commands entered on the director are valid. If the client switch at some point becomes the director, the entered configurations are then valid.

Use this command to define the configuration file for a group when there are multiple product IDs (PIDs) in the network. If all switches in the network have the same PID, you would use the **vstack config** *location config_filename* global configuration command to configure a default configuration file for all switches.

The built-in groups are shipping products that are present in the CLI.

You can use the **vstack group built-in ?** command to display a list of the product IDs built in to the configuration. You can use the **vstack group built-in** *product_family* **?** command to display a list of the port configurations for a product family.

If a client does not match any custom group, the switch is configured by using a built-in group configuration and image. If a switch does not match any group, the default image and configuration are used.

Note Image files are specific to a product family. Configuration files are specific to a port configuration.

A client switch sends an error message if it cannot download an image or configuration file due to misconfiguration, if the image or configuration file is not available, or if a join window is configured and the DHCP acknowledgement occurs outside of the configured time frame.

These configuration commands are available in Smart Install group configuration mode for built-in groups:

- **config**: identifies the configuration file for the group.
- **exit**: exits Smart Install group configuration mode and returns to global configuration mode.
- **image**: identifies the *imagelist file* for the group. The imagelist file is a text file (for example, *3560smartinstall.txt*) to be downloaded to the switch. When you create the text file, include the name of the image that you want to download (for example, *c3560-ipservices-mz.122-52.SE.tar*). This image must be a tar and not a bin file. For a standalone switch, the imagelist file contains a single image. For a stack, the imagelist contains images for all members of the stack, which could be different or the same. The image must match that entered in the CLI and stored on the TFTP server.
- **no**: negates a command or sets its default.

To identify the group configuration file name (*config*) and the group image file name (*imagelist file*), enter **tftp:** followed by the filename.

Note Although visible in the command-line help, these keywords are not supported: **flash1:**, **flash:**, **ftp:**, **http:**, **https:**, **null:**, **nvram:**, **rcp:**, **scp:**, **system:**, **tmpsys:**

Examples

This example shows how to identify a group as Catalyst 3560 8-port power over Ethernet (PoE) switches and to enter Smart Install group configuration mode. It identifies the image to be obtained through TFTP for the group as the *3560smartinstall.txt*, which contains the 3560 IP base image for 12.2(52)SE, and identifies the configuration file as the 3560 IP base image.

```
Switch(config)# vstack group built-in 3560 8poe
Switch(config-vstack-group)# image tftp://1.1.1.10/3560smartinstall.txt
Switch(config-vstack-group)# config tftp://1.1.1.10/3560-24-ipbase-config.txt
```

You can verify group settings by entering the **show vstack group built-in** privileged EXEC command.

Related Commands

Command	Description
show vstack group built-in	Displays the configured Smart Install built-in groups.
vstack group custom	Configures Smart Install custom groups.

vstack group custom

To configure a user-defined Smart Install group and to enter Smart Install group configuration mode for the group, use the **vstack group custom** global configuration command on the Smart Install director. To return to the default setting or to remove the group, use the **no** form of this command.

vstack group custom *group_name* {**connectivity** | **product-id** | **stack**}

no vstack group custom *group_name*

Syntax Description

group_name	Enter a name for the custom group.
connectivity	Matches a custom group based on connectivity or switch topology. If a switch matches more than one group characteristic, a connectivity match takes precedence.
product-id	Matches a custom group based on the product ID.
stack	Matches a custom group based on switch stack membership. If a switch matches more than one group characteristic, a stack match takes precedence over product-id.

Defaults

No custom group is identified.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

Although you can enter this command on any switch running a Smart Install image, the configuration does not take effect if the switch is not the director. Only configuration commands entered on the director are valid. If the client switch becomes the director, the entered configurations are then valid.

All members of a custom group must be able to run the same image and configuration file. For example, only Catalyst 3560 switches can run the image c3560-ipbase-tar.122-52.SE.tar and each 3560 port configuration would run a different configuration file.

A custom group takes precedence over a built-in group. If a switch does not match any custom group, the switch is configured with the built-in group configuration. If a switch does not belong to any group, the default configuration and image are used.

Among custom groups, a group matched by connectivity takes precedence over one matched by product ID or stack.

A client switch sends an error message if it cannot download an image or configuration file due to misconfiguration, if the image or configuration file is not available, or if a join window is configured and the DHCP acknowledgement occurs outside of the configured time frame.

These configuration commands are available in Smart Install group configuration mode for custom groups:

- **config**: identifies the configuration file for the group.
- **exit**: exits Smart Install group configuration mode and returns to global configuration mode.
- **image**: identifies the *imagelist file* for the group.

  The imagelist file is a text file (for example, *3750smartinstall.txt*) to be downloaded to the switch. When you create the text file, include the name of the image that you want to download (for example, *c3750-ipservices-mz.122-52.SE.tar*). This image must be a tar and not a bin file. For a standalone switch, the imagelist file contains a single image. For a stack, the imagelist file contains images for all members of the stack, which could be different or the same. The image must match that entered in the CLI and stored on the TFTP server.
- **match**: configure the match type for the group. See the **match (Smart Install group configuration)** command for more information about defining criteria for the custom group.
- **no**: negates a command or sets its default.

To identify the group configuration file name (*config*) and the group image file name (*imagelist file*), enter **tftp:** *config* followed by the filename.

Note Although visible in the command-line help, these keywords are not supported: **flash1:**, **flash:**, **ftp:**, **http:**, **https:**, **null:**, **nvram:**, **rcp:**, **scp:**, **system:**, **tmpsys:**

Examples

This example shows how to identify a custom group named *test* based on matching connectivity and to enter Smart Install group configuration mode. It specifies that the group includes switches connected to the host with the IP address 2.2.2.2 with an interface name as *finance*, and identifies the image and configuration to be obtained through TFTP for the group:

```
Switch(config)# vstack group custom test connectivity
Switch(config-vstack-group)# match host 2.2.2.2 interface finance
Switch(config-vstack-group)# image tftp://1.1.1.10/3560smartinstall.txt
Switch(config-vstack-group)# config tftp://1.1.1.103560-24-ipbaseconfig.txt
```

You can verify the group settings by entering the **show vstack group custom** privileged EXEC command.

Related Commands

Command	Description
vstack hostname-prefix	Configures group parameters to match for a custom group.
show vstack group custom	Displays the configured Smart Install custom groups.
vstack group built-in	Configures Smart Install built-in groups.

vstack hostname-prefix

To specify a prefix for the hostname for a client switch, use the **vstack hostname-prefix** global configuration command on the Smart Install director. To remove the prefix name setting, use the **no** form of this command.

vstack hostname-prefix *prefix*

no vstack hostname-prefix

Syntax Description

prefix	Enter a prefix to the hostname for clients in the Smart Install network. The last part of the switch hostname for a switch that had a DCHP request snooped through the director would be the last 3 bytes of the switch MAC address.

Defaults

No prefix name is identified.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

Although you can enter this command on any switch running a Smart Install image, the configuration does not take effect if the switch is not the director. Only configuration commands entered on the director are valid. If the nondirector becomes the director, the entered configurations are then valid.

When a DHCP request is snooped through the director and this command is entered, the switch hostname includes the configured hostname followed by the last 3 bytes of the switch MAC address.

Examples

This example shows how to configure the hostname *Cisco* for a client that has been DHCP-snooped. The second display shows the resulting switch hostname assignment:

```
Switch(config)# vstack hostname-prefix Cisco
Switch(config)# exit
```

If you then telnet to that switch from the director, the hostname is shown:

```
Switch#
*Mar  1 17:21:43.281: %SYS-5-CONFIG_I: Configured from console by console
*Mar  1 17:21:52.399: %DHCP-6-ADDRESS_ASSIGN: Interface Vlan1 assigned DHCP address
172.16.0.17, mask 255.255.0.0, hostname

    CISCO-bf.97c0#
```

You can verify the hostname prefix by entering the **show vstack config** privileged EXEC command on the director.

Related Commands

Command	Description
show vstack config	Displays the Smart Install configuration.

vstack image

To configure the default image file name for all clients in a Smart Install topology, use the **vstack image** global configuration command on the Smart Install director. To remove the default image, use the **no** form of this command.

vstack image *location* {*image_name.***tar** | *image_list file*}

no vstack image

Syntax Description

location	Enter **flash:** if the director is the TFTP server and the default image is in the director flash memory. Enter **tftp://** and the location of the default imagefile if the image is not in the director flash memory. If the director is the TFTP server, the location is the director IP address. **Note** Although visible in the command-line help, these options are not supported: **flash1:**,**ftp:**, **http:**, **https:**, **null:**, **nvram:**, **rcp:**, **scp:**, **system:**, **tmpsys:.**
*image_name.***tar**	In Cisco IOS Release 12.2(53)SE, for the default image, if the director is the TFTP server and the default image is in the director flash memory, you can enter the image name, for example, *c2960-lanbase-tar.122-53.SE.tar.* The director automatically creates the image_list file.
image_list file	If the default image is not in the director flash memory, you need to create the imagelist file. The *imagelist file* is a text file (for example, *3560smartinstall.txt*) that will be uploaded to the switch. For a standalone switch, the imagelist file contains a single image. For a stack, the imagelist file contains images for all members of the stack, which could be different or the same. The image must match that entered in the CLI and stored on the TFTP server. The syntax for entering the filename is: **tftp:**[[*//location*]*/directory*]*/imagelist.txt.*

Defaults

No default image name is identified.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

Although you can enter this command on any switch running a Smart Install image, the configuration does not take effect if the switch is not the director. Only configuration commands entered on the director are valid. If the client switch at some point becomes the director, the entered commands would then be valid.

When you create the *imagelist file* text file, it must include the name of the image that you want to download (for example, *c3750-ipservices-mz.122-52.SE.tar*). This image must be a tar and not a bin file. For a standalone switch, the imagelist file contains a single image. For a stack, the imagelist contains images for all members of the stack, which could be different or the same.

Use this command to define the image when all switches in the network have the same product ID (PID).

This is an optional configuration. When you configure a default imagelist, the image file is used if a switch does not belong to a custom group (first priority) or a built-in group.

Use this command when all switches managed by the director are in the same product family.

A client switch sends an error message if it is unable to download an image or configuration file due to misconfiguration, if the image or configuration file is not available, or if a join window is configured and the DHCP acknowledgement occurs outside the configured time frame.

Examples

This is an example of Smart Install default configuration when there is only one type of product ID (24-port Catalyst 2960) in the network, the director is the TFTP server, and the image file is stored in the director flash memory:

```
Switch(config)# vstack image flash:c2960-lanbase-tar.122-53.SE.tar.
```

This example shows how to configure the default image when the image is not in the director flash memory. The *2960smartinstall.txt* imagelist file is a one-line file containing the image name.

```
Switch(config)# vstack image tftp://1.1.1.10/2960smartinstall.txt
```

You can verify group settings by entering the **show vstack config** privileged EXEC command.

Related Commands

Command	Description
show vstack config	Displays the Smart Install configuration.
vstack config	Configures a Smart Install default configuration file.

vstack join-window start

To configure the time interval during which the director sends configuration and image files to clients, use the **vstack join-window start** global configuration command on the Smart Install director. To remove the join-window configuration, use the **no** form of this command.

vstack join-window start [*date*] *hh:mm* [*interval*] [**end** *date*] [**recurring**]}

no vstack join-window

Syntax Description

date	(Optional) Enter a start date for the director to send configuration and image files to the client in the format *day month year*: • *day* is 1 to 31. • *month* is the 3-letter abbreviation for the month (for example, Jun for June). • *year* is 1993 to 2035.
hh:mm	Enter the time to start sending the files in the format *hh:mm*, using a 24-hour clock, 00:00 to 23:59.
interval	Enter the number of hours for which the join window will remain active. The range is from 0 to 23, in the format *hh:mm*, for example 01:30 would be one hour and 30 minutes.
end *date*	(Optional) Enter the end date for the director to stop sending configuration and image files in the format *day month year*: • *day* is 1 to 31. • *month* is the 3-letter abbreviation for the month (for example, Jun for June). • *year* is 1993 to 2035.
recurring	(Optional) Specifies that the time to send configuration and image files to the client occurs every day at the configured start time.

Defaults

No director time interval is configured. When configured, if no dates or intervals are set, the start time is recurring.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

Although you can enter this command on any switch running a Smart Install image, the configuration does not take effect if the switch is not the director. Only configuration commands entered on the director are valid. If the client switch becomes the director, the entered configurations are then valid.

When a join window is configured and clients are detected outside the join window, the director does not send files to the client until the next configured join window. The autoinstall process occurs on the client as if it were not a Smart Install client.

During the join window, clients cannot upgrade their image or configuration file except with files received from the director. Within the join window, the director passes the names and locations of the image and configuration files to the client, which then upgrades its image and configuration files.

When a join window is configured, a client switch sends an error message that it cannot download an image or configuration file due to misconfiguration if the DHCP acknowledgement occurs outside the configured time frame.

Examples

This example shows how to configure the director to insert DHCP options, starting at 10 a.m. and recurring every day at this time.

```
Switch(config)# vstack join-window start 10:00 recurring
```

This example shows how to configure the join window to start on July 4, 2009 and remain on (no end date).

```
Switch(config)# vstack join window start 04 july 2009 09:00
```

This example shows how to configure the join window to start on July 4, 2009 and end on July 5, 2009.

```
Switch(config)# vstack join window start 04 july 2009 10:00 end 05 july 2009
```

This example shows how to configure the join window to start on July 4, 2009 at 10 am and continue for 4 hours:.

```
Switch(config)# vstack join window start 04 july 2009 10:00 04:00
```

This example shows how to configure the join window to start on July 7, 2009 at 10 a.m., operate for 4 hours, recurs daily at that time until July 10, when the join window ends and remains shut.

```
Switch(config)# vstack join window s 07 july 2009 10:00 04:00 end 10 july 2009 recur
```

You can verify join-window settings by entering the **show vstack config** privileged EXEC command on the director.

Related Commands

Command	Description
show vstack config	Displays the Smart Install configuration.

vstack vlan

To configure Smart Install VLANs for DHCP snooping, use the **vstack vlan** global configuration command on the Smart Install director. To remove a Smart Install management VLAN, use the **no** form of this command.

vstack vlan *vlan-range*

no vstack vlan *vlan-range*

Syntax Description

vlan-range	Enter the VLAN ID or IDs for Smart Install management VLANs. You can specify a single VLAN identified by VLAN ID number, a range of VLANs separated by a hyphen, or a series of VLANs separated by a comma. The range is 1 to 4094.

Defaults

The default Smart Install management VLAN is VLAN 1.

Command Modes

Global configuration

Command History

Release	Modification
12.2(52)SE	This command was introduced.

Usage Guidelines

Although you can enter this command on any switch running a Smart Install image, the configuration does not take effect if the switch is not the director. Only configuration commands entered on the director are valid. If the client switch becomes the director, the entered configurations are then valid.

When Smart Install is enabled on the director, DHCP snooping is automatically enabled on VLAN 1 and on any other configured Smart Install VLANs.

There is no limit to the number of Smart Install VLANs that you can configure.

Examples

This example shows how to configure VLAN 10 as a Smart Install VLAN:

```
Switch(config)# vstack vlan 10
```

This example shows how to configure multiple Smart Install VLANs:

```
Switch(config)# vstack vlan 10-12,100,200
```

You can verify Smart Install settings by entering the **show vstack config** privileged EXEC command.

Related Commands

Command	Description
show vstack config	Displays the Smart Install configuration.