
# 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** [**entry** *index-number*] | **download-list [entry** *status-number*}

## Syntax Description

| | |
|---|---|
| **director-db** | Clears all entries in the Smart Install director database. |
| **entry** *index-number* | (Optional) Clears the specified client index from the Smart Install director database. The index number range is from 1 to 255. |
| **download-list** | Clears the Smart Install download-status list, a table of the Smart Install image and configuration download successes and failures. |
| **entry** *status-number* | (Optional) Clears an entry in the Smart Install download-status list. The entry number range is 1 to 255. |

## Defaults

None

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.2(52)SE | This command was introduced. |
| 12.2(58)SE | The **entry** *index-number* keywords were added. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| Cisco IOS XE 3.5.0E and Cisco IOS 15.2(1)SG | The **entry** *status-number* keyword was added on the Catalyst 3750 and Catalyst 4500 series switches. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

You can enter this command only on a director.

Use the **entry** *index-number* keywords to remove inactive clients from the director database. However, take care not to delete valid (active) entries from the director database. If you enter the client index number of a valid client and configuration backup is enabled, a replacement switch does not get the configuration file. The switch sends a message to alert you of this.

Prior to Cisco IOS Release XE 3.5.0E and Cisco IOS Release 15.2(1)SG, the Catalyst 3750 and Catalyst 4500 series switches provided the **clear vstack download-status** command, which resulted in deleting all the entries in one-shot. With Release Cisco IOS Release XE 3.5.0E and Cisco IOS Release 15.2(1)SG, we provide the **clear vstack download-list entry** command, which enables you to delete a single entry in the download status table. This table can be viewed with the **show vstack download-status** command.

## Examples

This example shows how to clear the director database:

```
Switch# clear vstack director-db
```

This example shows the message received if you try to delete a valid client from the director database:

```
Switch# clear vstack director-db entry 2
Config backup feature is ON. If IBC is replaced by another switch, that wont get backup
config file. proceed?[confirm]
```

This example shows how to delete a single entry in the download status table with an index of 1:

```
Switch# clear vstack download-list entry 1
status of upgrading client will not have correct status on clearing the download list.
proceed?[confirm]
```

This example shows how to delete a single entry in the download status table with an index 1:

```
Switch# show vstack do
SmartInstall:  ENABLED
Total no of entries : 2
No   client-IP        client-MAC      Method          Image-status  Config-status   Script-status
===  ===============  ==============  ==============  ============  ==============  ==============
1    10.1.1.4         0017.9570.c780  zero-touch      UPGRADED        UPGRADED       UPGRADED
2    10.1.1.6         0026.985b.bc80  zero-touch      UPGRADED        UPGRADED       UPGRADED
3    10.1.1.11        0030.7870.0c30  zero-touch      UPGRADED        UPGRADED       UPGRADED

Switch# clear vstack download-status entry 2
status of upgrading client will not have correct status on clearing the download entry.
proceed?[confirm]
Switch# show vstack download-status
SmartInstall:  ENABLED
Total no of entries : 1
No   client-IP        client-MAC      Method          Image-status  Config-status   Script-status
===  ===============  ==============  ==============  ============  ==============  ==============
1    10.1.1.4         0017.9570.c780  zero-touch      UPGRADED        UPGRADED       UPGRADED
2    10.1.1.11        0030.7870.0c30  zero-touch      UPGRADED        UPGRADED       UPGRADED
```

## Related Commands

| Command | Description |
|---|---|
| **vstack basic** | Enables the switch or router as the Smart Install director. This command is accepted only if the director IP address is on the switch or router. |
| **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** | **backup** | **cli** | **director-db** | **download** | **emulation** | **fsm** | **group** | **join-window** | **protocol**

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

## Syntax Description

| | |
|---|---|
| **all** | Displays all Smart Install debug messages. |
| **backup** | Displays all Smart Install backup management 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. |
| **join-window** | Displays all Smart Install join window 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. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

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

## Examples

This is example output from the **debug vstack all** command on a client:

```
switch# debug vstack all
```

```
Vstack debug all debugging is on
*May 15 22:37:56.739: VSTACK_DIR_DB: smi_parse_cdp_cache_entry: Got Neighbor on the port
Gi2/5/13
*May 15 22:37:56.739: VSTACK_DIR_DB: smi_parse_cdp_cache_entry: Mac addr after masking
Neig mac 6073.5cb6.6000, Local Mac 0026.99c9.b000
*May 15 22:37:56.739: VSTACK: smi_parse_cdp_cache_entry:processing the cdp pkt for mgmt
vlan
*May 15 22:37:56.739: VSTACK:
received vlan_plus_seqno=20370001, seq no for vlan = 8247,prev_seq_no=8247
*May 15 22:37:56.739: VSTACK_DIR_DB: smi_parse_cdp_cache_entry:string in parse
WS-C3750G-24TS-1U
*May 15 22:37:56.739: VSTACK:
smi_send_mgmt_vlan_to_cdp: Seq no + Mgmt Vlan = 20370001. After conversion Mgmt vlan
withseq no = 540475393,len=9
```

**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. 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 mac** *mac_address*

**no match mac** *mac_address*

**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* **interface** *name* | This keyword is visible when the custom group is defined by connectivity. Configures a client group based on the switch topology, where host *ip_address* is the IP address of the upstream neighbor of the client. If a client matches more than one group characteristic, a connectivity match takes precedence over product ID or stack number, but not over MAC address matches.<br><br>Identifies the interface on the upstream neighbor to which the client is connected. The interface ID must be the full identifier for the interface, such as GigabitEthernet 2/0/1. |
| **mac** *mac_address* | This keyword is visible when the custom group is defined by the **mac** keyword. Configures a client group to include switches with the specified MAC addresses. Enter a **match** command for each MAC address to be included. If a client matches more than one group characteristic, a MAC address match takes precedence over any other match. |
| *product-id* | This argument is visible when the custom group is defined by product-id. A client group based on the model number of the switch associated with the group, where product-id is the product ID for the group starting with WS-Cnnnn-* (for example, WS-C2960-48TC-L).<br><br>**Note** The product ID can be the same as that of a built-in group. If a client matches a built-in group and a custom group, the custom group takes precedence when assigning image and configuration files. |

| | |
|---|---|
| *switch_stack _number product_family port_config* | This argument is visible when the custom group is defined by the stack keyword. Configures a client in a group based on custom stack configuration.<br>• *switch_number*—Number of the switch in the stack. The range is from 1 to 9.<br>• *product_family*—Stack product family. To see the available product families, enter a **?** after the switch number.<br>• *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.<br>If a client matches more than one group characteristic, a stack match takes precedence over product ID, but not over MAC address or connectivity matches. |

**Defaults**

None

**Command Modes**

Smart Install group configuration

**Command History**

| Release | Modification |
|---|---|
| 12.2(52)SE | This command was introduced. |
| 12.2(55)SE | The *mac_address* match option was added. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

**Usage Guidelines**

Although you can enter this command on a client, the configuration does not take effect. Only configuration commands entered on the director are valid. If a client becomes 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** | **mac** | **product-id** | **stack**} global configuration command.

Use the **match host** *ip_address* **interface** *name* command to define connectivity groups based on the network topology; that is, based on the upstream neighbor to which the client is connected. The upstream neighbor could be the director or an intermediate device. If a client matches more than one group characteristic, a connectivity match takes precedence over product ID or a stack match, but not over a MAC address match.

Use the **match** *mac_address* command to define groups based on switch MAC addresses. You can include switches with the same or different product IDs, as long as they use the same image and configuration file. Enter the **show vstack neighbors all** privileged EXEC command to see the MAC addresses of switches in the Smart Install network.

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

Use the **match** *switch_stack _number product_family port_config* command to identify switches in a stack. For example, **match 3 3750e WS-3750E-24PD** matches switch 3 in a Catalyst 3750E stack with a port configuration of 24 PoE ports.

## 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 clients connected to the host with the IP address 2.2.2.2 through interface Gigabit Ethernet 0/1, and to identify the image and configuration files to be obtained through TFTP for the group:

```
Director(config)# vstack group custom test connectivity
Director(config-vstack-group)# match host 2.2.2.2 interface gigabitethernet0/1
Director(config-vstack-group)# image tftp://101.122.33.10/c3560-ipservices-tar.122-52.SE.tar
Director(config-vstack-group)# config tftp://101.122.33.10/3560-24-ipbase-config.txt
Director(config-vstack-group)# script tftp://101.122.33.10/3560-24-post_install.txt
```

This example creates a custom group named *testgroup3* that includes the three switches identified by MAC address and configures the group to use the specified image file and configuration.

```
Director(config)# vstack group custom textgroup3 mac
Director(config-vstack-group)# match mac 0023.34ca.c180
Director(config-vstack-group)# match mac 001a.a1b4.ee00
Director(config-vstack-group)# match mac 0019.309d.5c80
Director(config-vstack-group)# image tftp://101.122.33.10/c3750-ipbase-tar.122-52.SE.tar
Director(config-vstack-group)# config tftp://101.122.33.10/3750-24-ipbase_config.txt
Director(config-vstack-group)# script tftp://101.122.33.10/3560-24-post_install.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.

**show vstack** {**config | host** *ip_address* **| join-window configuration | status** [**detail**]}

**show vstack** {**download-status** [**detail**]

**show vstack client** {**1 |** *client_ ip_address* **| all | group** {**built-in** *product_family port_config chassis_config*| **custom** *group_name*} *client-password* {**running-config | tech-support | version**}

**show vstack group** {**built-in** *product_family chassis_config* {[*port_config*] **detail}** [**configured**]} **| custom** [*group_name*] **detail**}

**show vstack neighbors** [**1 |** *client_ ip_address* **| all | group built-in** *product_family port_config chassis_config*

## Syntax Description

| | |
|---|---|
| **config** | Displays Smart Install configuration parameters. |
| **host** | Displays information about a client within the Smart Install topology. This command is available only on the director. |
| *ip_address* | The IP address of the director or a client. |
| **join-window configuration** | Displays the join-window configurations. |
| **status** | Displays the status of the CDP database. This command is available only on the director. |
| **detail (Optional)** | Displays detailed information for the previous keyword. For example, **show vstack download-status detail** can display a detailed reason for a zero-touch update failure. |
| **download-status** | Displays a tabulated output of the Smart Install image and configuration download successes and failures.<br>**Note** Use this command to determine the status of updates.<br>**Note** Beginning with IOS XE 3.6.0E (or 15.2.(2)E), the show **download-status** command displays the download upgrade of the image upgrade for a Catalyst 4500 platform. Additional fields are introduced in the output of the show **download-status** details command. |
| **client** | Displays client information through the **remote** command |
| **1** | Displays information about client 1 in the Smart Install network. Numbers are shown for as many clients as are in the network. |
| *client_ ip_address* | Information about the client with the specified IP address. |
| **all** | Displays information about all clients. |
| **group** | Displays Smart Install group information. |
| **built-in** | Displays information about preconfigured (built-in) groups. |

| | |
|---|---|
| *product_family* | The built-in product family. To see the available product families, enter **?** after **built-in**.<br>If *product_family* is set to 4500 for Catalyst 4500 series switches. |
| *port_config* | The switch port configuration. The available configurations vary, depending on the product family. To see the available port configurations, enter **?** after the *product_family*.<br>If *product_family* is set to 4500, *port_config* means supervisor configuration. |
| *chassis_config* | The chassis type to configure.<br>If *product_family* is set to 4500, the chassis type selected here is supported by the supervisor engine assigned to *port_config*. |
| **configured** | This keyword displays only the groups that are configured rather than showing all the groups. |
| **custom** | Information about user-defined groups. |
| *group_name* | Th custom group name. |
| *client_password* | The password that is required to access the client switch to get information on **running-config \| tech-support \| version** of the client switch. |
| **running-config** | Displays the current operating configuration for the selected client. |
| **tech-support** | Displays system information for technical support assistance. |
| **version** | Displays system hardware and software status. |
| **neighbors** | Displays information about the specified neighbors:<br>• **1**—Neighbors of client 1<br>• *client_ip_address*—Neighbors of the specified client<br>• **all**—All neighbors in the Smart Install network<br>• **group**—Neighbors of the specified group or groups |

**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. |
| 12.2(55)SE | The **client**, **join-window configuration**, **neighbors**, **1**, **running-config**, **tech-support**, and **version** keywords were added. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release15.0(2)EX1. |

| | |
|---|---|
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |
| 15.2(2)E | The option for post install (script) was introduced for **show vstack config**, **show vstack download-status**, **show vstack download-status detail**, **show vstack status**, and **show vstack status detail** commands. |
| 3.6.0E | The option **chassis type** for the **built-in** keyword was introduced. |

## Usage Guidelines

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

In Cisco IOS Release 12.2(58)SE and later or Release 15.1(1)SY, the output of the **show vstack status** command shows whether or not Smart Install is enabled on the director. If enabled, it also includes this additional information about clients:

- Device status (Smart Install capable or not)
- Health status (active or inactive)
- Join-window status (allowed, hold, or denied), and
- Upgrade status for image or configuration (in progress, complete, or failed).

Beginning with Cisco IOS Release 3.6.0E (IOS 15.2(2)E), the output of the **show vstack status** command remains unchanged, but the meaning of the following fields have changed:

**Note** These changes are for Catalyst 4500 Series Switch only.

- **Product-ID—***chassis-id* is used as the client's product ID and is collected from CDP. For an asymmetric chassis, the product ID may be updated dynamically.
- **MAC Address —**For a Catalyst 4500 standalone IBC, you use the chassis' MAC address whereas for VSS IBC, you use the virtual MAC selected while configuring VSS.

**Note** The meaning of the fields **Hostname**, **IP** and **status** are unchanged; they are platform-independent.

If you disable Smart Install on the director by entering the **no vstack** global configuration command, the output of the **show vstack status** [**detail**] and **show vstack download-status** [**detail**] commands shows only Smart Install: DISABLED. The output of the **show vstack config** command shows the Smart Install configuration even though it is not in effect.

If the director is a Catalyst 4500 series switch, whether it is a single chassis or a VSS setup, only a single entry of the director appears in the output of the **show vstack status detail** command. The product ID shown is the chassis sku-id.

Beginning with IOS XE 3.6.0E (or 15.2.(2)E), the following apply:

- All the director entries (multiple, if the director is a stack) will be assigned the value '0,' and all the IBC stack members will have different entries (situation prior to IOS XE 3.6.0E (or 15.2.(2)E)) but they will all have the same device number.
- When you clear a DB entry and that IBC is a stack, the **clear vstack dir** command will remove all the stack entries from the database.

## Examples

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

```
Director# show vstack config
Role: Client
 Vstack Director IP address: 1.1.1.163
```

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

```
Director# show vstack config
Role: Director
 Vstack Director IP address: 1.1.1.163
 Vstack Mode: Basic
 Vstack default management vlan: 1
 Vstack start-up management vlan:1000
 Vstack management Vlans: none
 Vstack Config file: tftp://1.1.1.100/default-config.txt
 Vstack Image file: tftp://1.1.1.100/c3750e-universalk9-tar.122-
 Vstack Script file: tftp://1.1.1.100/post-install.txt
 Join Window Details:
         Window: Open (default)
         Operation Mode: auto (default)
 Vstack Backup Details:
         Mode: On (default)
         Repository: flash:/vstack (default)
```

These are example outputs from the **show vstack download-status** command on a director:

```
Director# show vstack download-status
Total no of entries : 3
No   client-IP        client-MAC      Method          Image-status  Config-status  Script-status
===  ===============  ==============  ==============  ============  ============   =============
1    172.20.249.3     001e.be67.3000  image-upgrade   UPGRADED      **             **
2    172.20.249.1     0022.5699.c800  zero-touch      UPGRADING     UPGRADED       UPGRADED
3    172.20.249.2     0022.0d26.6300  image-upgrade   NOT STARTED   **             **
```

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

```
Director# show vstack host 1.1.1.1
Host Info :
Code :
ClNum  MAC Address     Product-ID          IP_addr           DevID       status
=====  ==============  ==================  ================  ==========  =========
1      001d.71ba.f780  WS-C2960PD-8TT-L    1.1.1.1           2960pd-47


Neighbor Info:

MAC Address     Dev ID           IP_addr          Local Int      Out Port
==============  ===============  ===============  =============  =============
0023.5e32.3780  3750e-163-smi    1.1.1.163        Fas 0/7        Gig 1/0/1
```

This is example output from the **show vstack join-window configuration** command:

```
Director# show vstack join-window configuration

Join Window Configuration Details:
         Window: Open (default)
           Mode: auto (default)
         No Join Window start/end dates and times configured
```

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

```
Director# show vstack status
SmartInstall:  ENABLED
Status: Device_type Health_status Join-window_status Upgrade_status
Device_type:  S - Smart install N - Non smart install P - Pending
```

```
Health_status:  A - Active I - Inactive
Join-window_Status:  a - Allowed  h - On-hold   d - Denied
Image Upgrade:   i - in progress     I - done           X - failed
Config Upgrade:  c - in progress     C - done           x - failed
Director Database:
DevNo  MAC Address     Product-ID         IP_addr          Hostname    Status
=====  ==============  =================  ===============  ==========  =========
0      0018.7363.4200  WS-C3750-24TS      172.20.249.54    IBD-MXD-ST  Director
1      0016.4779.b780  WS-C3750G-24TS     172.20.249.54    IBD-MXD-ST  Director
2      d0d0.fd37.5a80  WS-C3750X-48P      172.20.249.54    IBD-MXD-ST  Director
3      0026.5285.7380  WS-C3750E-24TD     172.20.249.54    IBD-MXD-ST  Director
4      0024.13c6.b580  WS-C3750E-24TD     172.20.249.115   DEV-c6.b5c  S A a
5      0021.a1ab.9b80  WS-C2960-48TC-S    172.20.249.249   DEV-ab.9bc  S A a I C
6      0024.5111.0900  WS-C3750E-24TD     172.20.249.222   DEV-11.094  S A a I C
7      001d.45f3.f600  WS-C3750G-24TS     172.20.249.87    DEV-90.f64  S A a
8      0016.c890.f600  WS-C3750G-24TS     172.20.249.87    DEV-90.f64  S A a
9      001f.2604.8980  WS-C2960-48TC-S    172.20.249.89    DEV-04.89c  S A a I C
10     001b.d576.2500  WS-C3750E-24PD     172.20.249.91    DEV-a6.1cc  S A a I C
12     0cd9.9649.cb80  WS-C2960S-48TD-L   172.20.249.98    Switch      S A a
```

This is example output from the **show vstack status** command if you have disabled Smart Install on the director by entering the **no vstack** global configuration command:

```
Switch# show vstack status
SmartInstall:  ENABLED

Status: Device_type Health_status Join-window_status Upgrade_status
Device_type:  S - Smart install N - Non smart install P - Pending
Health_status:  A - Active I - Inactive
Join-window_Status:  a - Allowed  h - On-hold   d - Denied
Image Upgrade:   i - in progress     I - done           X - failed
Config Upgrade:  c - in progress     C - done           x - failed
Director Database:
DevNo  MAC Address     Product-ID         IP_addr          Hostname    Status
=====  ==============  =================  ===============  ==========  =========
0      0023.04c2.95c0  WS-C4506-E         1.1.1.1          Switch      Director
4      68ef.bd08.6000  WS-C4507R-E        1.1.1.2          IBC_WOW-08  S I a C

Switch#
```

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

```
Director# show vstack status detail
SmartInstall:  ENABLED
-----------------------------------------------
Device Num     : 0
Device ID      : 3750e-163-smi
MAC Address    : 0023.5e32.3780
IP Addr        : 1.1.1.163
Hop value      : 0
Serial         : FDO1239V026
Product-ID     : WS-C3750E-24PD
Version        : 12.2(0.0.242)DEV
Image          : C3750E-UNIVERSALK9-M
Entry Role     : Entry
(N-1)HOP Entry : Already Root
Backup done    :  no
Latest backup file: none
Latest backup client name: none
File checksum     : none
Status            : Director
```

```
-----------------------------------------------
Device Num     : 1
Device ID      : 3560g-10net-11
MAC Address    : 0013.c4b4.bc00
IP Addr        : 10.5.113.11
Hop value      : 1
Serial         : Not Found
Product-ID     : WS-C3560G-24PS
Version        : 12.2(50)SE3
Image          : C3560-IPSERVICESK9-M
Entry Role     : IBC Entry
(N-1)HOP Entry : 0023.5e32.3780
Backup done    :  no
Latest backup file: none
Latest backup client name: none
File checksum     : none
Status            : NSI

-----------------------------------------------
Device Num     : 2
Device ID      : 2960pd-47
MAC Address    : 001d.71ba.f780
IP Addr        : 1.1.1.1
Hop value      : 1
Serial         : FOC1138Z6P7
Product-ID     : WS-C2960PD-8TT-L
Version        : 12.2(0.0.242)DEV
Image          : C2960-LANBASEK9-M
Entry Role     : IBC Entry
(N-1)HOP Entry : 0023.5e32.3780
Backup done    :  Yes
Latest backup file: flash:/vstack/2960pd-47-001d.71ba.f780.REV2
Latest backup client name: 2960pd-47
File checksum     : 426154BFAFE1425F527621DC8B647C38
Status            : ACT

Director# show vstack download-status detail
SmartInstall:  ENABLED
No 1:
client-ip: 172.20.249.3
client-hostname: Switch
client-mac: 001e.be67.3000
method: image-upgrade
config-fail-reason: NA
image-fail-reason: NA
script-fail-reason: NA
config downloaded at: -
image downloaded at: 02:47:39 UTC Mar 30 2011
script downloaded at: -

No 2:
client-ip: 172.20.249.1
client-hostname: Switch
client-mac: 0022.5699.c8000
method: zero-touch
config-fail-reason: NA
image-fail-reason: NA
script-fail-reason: NA
config downloaded at: 03:02:23 UTC Mar 30 2011
image downloaded at: -
script downloaded at: 02:47:39 UTC Mar 30 2011
```

```
No 3:
client-ip: 217.20.249.2
client-hostname: Switch
client-mac: 0022.0d26.6300
method: image-upgrade
config-fail-reason: NA
image-fail-reason: NA
script-fail-reason: NA
config downloaded at: -
image downloaded at: -
script downloaded at: -
```

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

```
Director# show vstack host 1.1.1.1
Host Info :
Status: Device_type Health_status Join-window_status Upgrade_status
Device_type:  S - Smart install N - Non smart install P - Pending
Health_status:  A - Active I - Inactive
Join-window_Status:  a - Allowed  h - On-hold   d - Denied
Image Upgrade:   i - in progress     I - done           X - failed
Config Upgrade:  c - in progress     C - done           x - failed
Script Upgrade:  p - in progress     P - done           F - failed
DevNo  MAC Address     Product-ID         IP_addr          Hostname    Status
=====  ==============  =================  ===============  ==========  =========
1      0023.348e.8e00  WS-C3750E-48TD     1.1.1.1          Switch.dom  S A a  C P

Neighbor Info:

MAC Address     Dev ID           IP_addr          Local Int      Out Port
==============  ===============  ===============  =============  =============
0024.5111.0880  Switch           2.2.2.1          Gig 1/0/19     Gig 1/0/9
```

This is example output from the **show vstack join-window configuration** command:

```
Director# show vstack join-window configuration

Join Window Configuration Details:
         Window: Open (default)
           Mode: auto (default)
         No Join Window start/end dates and times configured
```

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

```
Director# show vstack status
SmartInstall:  ENABLED
Status: Device_type Health_status Join-window_status Upgrade_status
Device_type:  S - Smart install N - Non smart install P - Pending
Health_status:  A - Active I - Inactive
Join-window_Status:  a - Allowed  h - On-hold   d - Denied
Image Upgrade:   i - in progress     I - done           X - failed
Config Upgrade:  c - in progress     C - done           x - failed
Script Upgrade:  p - in progress     P - done           F - failed
Director Database:
DevNo  MAC Address     Product-ID         IP_addr          Hostname    Status
=====  ==============  =================  ===============  ==========  =========
0      0018.7363.4200  WS-C3750-24TS      172.20.249.54    IBD-MXD-ST  Director
1      0016.4779.b780  WS-C3750G-24TS     172.20.249.54    IBD-MXD-ST  Director
2      d0d0.fd37.5a80  WS-C3750X-48P      172.20.249.54    IBD-MXD-ST  Director
3      0026.5285.7380  WS-C3750E-24TD     172.20.249.54    IBD-MXD-ST  Director
4      0024.13c6.b580  WS-C3750E-24TD     172.20.249.115   DEV-c6.b5c  S A a
5      0021.a1ab.9b80  WS-C2960-48TC-S    172.20.249.249   DEV-ab.9bc  S A a I C
6      0024.5111.0900  WS-C3750E-24TD     172.20.249.222   DEV-11.094  S A a I C P
7      001d.45f3.f600  WS-C3750G-24TS     172.20.249.87    DEV-90.f64  S A a
```

```
8       0016.c890.f600  WS-C3750G-24TS     172.20.249.87    DEV-90.f64  S A a
9       001f.2604.8980  WS-C2960-48TC-S    172.20.249.89    DEV-04.89c  S A a I C P
10      001b.d576.2500  WS-C3750E-24PD     172.20.249.91    DEV-a6.1cc  S A a I C
12      0cd9.9649.cb80  WS-C2960S-48TD-L   172.20.249.98    Switch      S A a
```

This is example output from the **show vstack status** command if you have disabled Smart Install on the director by entering the **no vstack** global configuration command:

```
Director # show vstack status
SmartInstall:  DISABLED
```

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

```
Switch# show vstack status
SmartInstall:  ENABLED

Status: Device_type Health_status Join-window_status Upgrade_status
Device_type:  S - Smart install N - Non smart install P - Pending
Health_status:  A - Active I - Inactive
Join-window_Status:  a - Allowed  h - On-hold   d - Denied
Image Upgrade:   i - in progress     I - done           X - failed
Config Upgrade:  c - in progress     C - done           x - failed
Script Upgrade:  p - in progress     P - done           F - failed

Director Database:
DevNo  MAC Address     Product-ID         IP_addr          Hostname    Status
=====  ==============  =================  ===============  ==========  =========
0      0023.04c2.95c0  WS-C4506-E         1.1.1.1          Switch      Director
4      68ef.bd08.6000  WS-C4507R-E        1.1.1.2          IBC_WOW-08  S I a C P

Switch#
```

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

```
Director# show vstack status detail
SmartInstall:  ENABLED
-----------------------------------------------
Device Num     : 0
Device ID      : 3750e-163-smi
MAC Address    : 0023.5e32.3780
IP Addr        : 1.1.1.163
Hop value      : 0
Serial         : FDO1239V026
Product-ID     : WS-C3750E-24PD
Version        : 12.2(0.0.242)DEV
Image          : C3750E-UNIVERSALK9-M
Entry Role     : Entry
(N-1)HOP Entry : Already Root
Backup done    :  no
Latest backup file: none
Latest backup client name: none
File checksum     : none
Status            : Director

-----------------------------------------------
Device Num     : 1
Device ID      : 3560g-10net-11
MAC Address    : 0013.c4b4.bc00
IP Addr        : 10.5.113.11
Hop value      : 1
Serial         : Not Found
Product-ID     : WS-C3560G-24PS
Version        : 12.2(50)SE3
Image          : C3560-IPSERVICESK9-M
```

```
Entry Role     : IBC Entry
(N-1)HOP Entry : 0023.5e32.3780
Backup done    :  no
Latest backup file: none
Latest backup client name: none
File checksum     : none
Status            : NSI

-----------------------------------------------
Device Num     : 2
Device ID      : 2960pd-47
MAC Address    : 001d.71ba.f780
IP Addr        : 1.1.1.1
Hop value      : 1
Serial         : FOC1138Z6P7
Product-ID     : WS-C2960PD-8TT-L
Version        : 12.2(0.0.242)DEV
Image          : C2960-LANBASEK9-M
Entry Role     : IBC Entry
(N-1)HOP Entry : 0023.5e32.3780
Backup done    :  Yes
Latest backup file: flash:/vstack/2960pd-47-001d.71ba.f780.REV2
Latest backup client name: 2960pd-47
File checksum     : 426154BFAFE1425F527621DC8B647C38
Status            : ACT
```

Beginning with IOS XE 3.6.0E (or 15.2(2)E, Supervisor_ID is provided in the output of the **show vstack status detail** command, because Chassis_ID is displayed in the output of the **show vstack status** command and you require supervisor engine information to decide on the image type provided to a switch. Supervisor_ID is received through the new CDP APP TLV sent by IBC. IBD gathers this information and updates the director database. For a dual supervisor chassis or a VSS system, the supervisor type across a switch should match; hence, a single CDP APP TLV will suffice.

**Note** The Supervisor field will display “not applicable” for platforms that do not have the necessary supervisor engines.

```
Example:
Device ID      : IBC_WOW-08.603f
MAC Address    : 68ef.bd08.6000
IP Addr        : 1.1.1.2
Hop value      : **
Serial         : FOX1352H3FK
Product-ID     : WS-C4507R-E
Supervisor     : WS-X45-SUP7-E
Version        : 03.06.00.E
Image          : cat4500e-UNIVERSALK9-M
Entry Role     : IBC Entry
(N-1)HOP Entry : 0023.04c2.95c0
Backup done    :  Yes
Latest backup file: bootflash:/vstack/IBC_WOW-08.603f-68ef.bd08.6000.REV2
Latest backup client name:
File checksum     : 00000000000000000000000000000000
Switch replace type: Same Switch
SMI Version     : 1
Status            : S I a C
Capability     : Network derived SMI management VLAN supported

Switch#
```

The following example illustrates how to configure a built-in group for the Catalyst 4500 switch by selecting the chassis model:

```
Switch# show vst group built-in 4500 sup8-e 4503 de
-------------------------------------------
Group Name: sup8-e 4503
No Image name specified
No config file name specified
No Script file specified
Switch#
```

In the following example, we select the supervisor type rather than the chassis model. This displays all the groups for the chassis that support that particular supervisor engine.

```
Switch# show vst group built-in 4500 sup8-e de
-------------------------------------------
Group Name: sup8-e 4503
No Image name specified
No config file name specified
No Script file specified
-------------------------------------------
Group Name: sup8-e 4506
No Image name specified
No config file name specified
No Script file specified
-------------------------------------------
Group Name: sup8-e 4507r+e
No Image name specified
No config file name specified
No Script file specified
-------------------------------------------
Group Name: sup8-e 4510r+e
No Image name specified
No config file name specified
No Script file specified
Switch#
```

This is example output from the **show vstack client running-config** command for client 1:

```
Director# show vstack client 1 password running-config
----- [show running-config] for 2960pd-47 @ 1.1.1.1 -----

Building configuration...

Current configuration : 2723 bytes
!
version 12.2
no service pad
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname 2960pd-47
!
boot-start-marker
boot-end-marker
!
enable password test
!
!
!
no aaa new-model
```

```
system mtu routing 1500
authentication mac-move permit
<output truncated>
```

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

```
Director# show vstack group built-in
2918        2918 product family
2960        2960 product family
2960c       2960c product family
2960cg      2960cg product family
2960g       2960g product family
2960s       2960s product family
2960s-fe    2960s-fe product family
2975        2975 product family
3560        3560 product family
3560c       3560c product family
3560cg      3560cg product family
3560e       3560e product family
3560g       3560g product family
3560x       3560x product family
3750        3750 product family
3750e       3750e product family
3750g       3750g product family
3750x       3750x product family
3850        3850 product family
3650        3650 product family
nme-es      NME-ES product family
sm-d-es2    SM-D-ES2 product family
sm-d-es3    SM-D-ES3 product family
```

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

```
Director # show vstack group custom detail
---------------------------------------------
Group Name:   2960-8
Image:        tftp://1.1.1.100/c2960-lanbasek9-tar.122-0.0.221.DEV.tar
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://1.1.1.0/c3560e-ipbasek9-tar.122-0.0.221.DEV.tar
Config File:  tftp://1.1.1.100/3560e-config.txt
Product-ID:   WS-C3560E-24TD
---------------------------------------------
Group Name:   lotr-stack
Image 1:      tftp://1.1.1.100/c3750e-universalk9-tar.122-0.0.221.DEV.tar
Image 2:      tftp://1.1.1.100/c3750-ipservicesk9-tar.122-0.0.221.DEV.tar
Config File:  tftp://1.1.1.100/lotr-stack-config.txt
Stack Details (Switch_number:Product-id):
               1:3750G 24
               3:3750G 24POE
```

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

```
Director #show vstack group custom detail
---------------------------------------------
Group Name:   2960-8
Image:        tftp://1.1.1.100/c2960-lanbasek9-tar.122-0.0.221.DEV.tar
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://1.1.1.0/c3560e-ipbasek9-tar.122-0.0.221.DEV.tar
Config File:  tftp://1.1.1.100/3560e-config.txt
Product-ID:   WS-C3560E-24TD
-----------------------------------------------
Group Name:   lotr-stack
Image 1:      tftp://1.1.1.100/c3750e-universalk9-tar.122-0.0.221.DEV.tar
Image 2:      tftp://1.1.1.100/c3750-ipservicesk9-tar.122-0.0.221.DEV.tar
Config File:  tftp://1.1.1.100/lotr-stack-config.txt
Stack Details (Switch_number:Product-id):
               1:3750G 24
               3:3750G 24POE
```

This is example output from the **show vstack neighbors** command for client 1:

```
Director #show vstack neighbors 1
MAC Address     Dev ID           IP_addr          Local Int      Out Port
==============  ===============  ===============  =============  ============
001d.71ba.f780  2960pd-47        1.1.1.1          Gig 1/0/1      Fas 0/7
```

## Related Commands

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

# vstack

To enable the Smart Install feature on a director or client device, use the **vstack** global configuration command. To disable the Smart Install feature on a director or client device, use the **no** form of this command.

**vstack**

**no vstack**

## Syntax Description

This command has no keywords.

## Defaults

Smart Install is enabled.

## Command Modes

Global configuration

## Command History

| Release | Modification |
|---|---|
| 12.2(58)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

Configuring Smart Install on a director or client switch opens TCP port 4786 on the director and on the client. You can use the **no vstack** global configuration command on a director or client device to disable Smart Install and shut down the TCP port.

To enable Smart Install after it has been disabled, enter the **vstack** global configuration command.

When you enter the **no vstack** command to disable Smart Install on a director or client device, if the Smart Install configuration is already present, it remains in the running configuration but does not take effect. This includes the Smart Install director IP address and other Smart Install configurations, such as group configurations.

If you disable Smart Install on a director and there were Smart Install DHCP IP addresses configured, you need to manually delete them.

When Smart Install is disabled on a device, the **vstack director** *ip_ address* and **vstack basic** global configuration commands are not allowed on the device.

No warning message is generated when you disable Smart Install.

To reenable Smart Install on a device, enter the **vstack** global configuration command.

To see if Smart Install is enabled on a device, enter the **show vstack status** privileged EXEC command.

If you disable Smart Install on the director by entering the **no vstack** global configuration command, the output of the **show vstack status** [**detail**] and **show vstack download-status** [**detail**] commands shows only Smart Install: DISABLED. The output of the **show vstack config** command shows the Smart Install configuration even though it is not in effect.

## Examples

This example shows how to disable Smart Install on the device:

```
Director(config)# no vstack
Director(config)#
```

## Related Commands

| Command | Description |
|---|---|
| **show vstack status** | Displays the Smart Install status. |

# vstack attach

To connect to a client from the director, use the **vstack attach** privileged EXEC command on the director.

**vstack attach** {*client - index* | *client IP address*}

**Syntax Description**

| | |
|---|---|
| *client - index* | Client index number from the list of active clients within the Smart Install network. |
| *client IP address* | Client IP address. |

**Command Default**

None

**Command Modes**

Privileged EXEC mode

**Command History**

| Release | Modification |
|---|---|
| 12.2(55)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

**Usage Guidelines**

Use this command to connect to the client user interface from the director. This command is a wrapper for the **telnet** command. Select the client either by choosing from a list that shows the active clients that are available within the Smart Install network or by entering the client IP address.

The client-index list is dynamically generated in the Cisco IOS help text. If the director device is not rebooted, then the same client-index numbers can be used in additional configurations.

If you are running Supervisor Engine 7-E, Supervisor Engine 7L-E, or Supervisor Engine 8-E on a Catalyst 4500 IBC, ensure that HTTP is enabled; by default, it is disabled.

**Examples**

This example shows how to use the client ID with the **vstack attach** command to connect to a client from the director.

```
Director# vstack attach ?
  1        c3750-2042 @ IP 10.0.0.1 : MAC 0000.0040.4080
  2        c3750-2045 @ IP 10.0.0.2 : MAC 0000.000c.0d80
  A.B.C.D  IP address of remote node to attempt attaching to
Director# vstack attach 2
```

This example shows how to use the client IP address with the **vstack attach** command:

```
Director# vstack attach 1.1.1.1
```

# vstack backup

To enable the backup feature and allow client configurations to be saved in the director's repository, use the **vstack backup** global configuration command. Use the **no vstack backup** command to disable the backup feature.

**vstack backup** [**file-server** *url*]

**no vstack backup**

## Syntax Description

| | |
|---|---|
| **file-server** *url* | (Optional) Specifies the registry used for backup:<br>• **flash**<br>• **ftp**<br>• **http**<br>• **https**<br>• **rcp**<br>• **scp**<br>• **tftp**[1]<br>• **usb**<br>If no registry is specified, the local repository **flash**:/vstack is used. |

1. **tftp** is the only supported network *url*.

## Command Default

Backup is enabled. The local repository **flash**:/vstack is used. It is created if it does not exist. If the directory cannot be created, the **flash**:/ directory is used.

## Command Modes

Global configuration mode

## Command History

| Release | Modification |
|---|---|
| 12.2(55)SE | This command was introduced to support Smart Install devices. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

From the director, enter this command to enable the backup feature and allow clients' configurations to be saved in the director repository. You must enable this feature so that zero-touch replacement occurs when a client is replaced by another client with the same product ID.

You can enter the **file-server** keyword to specify a repository to be used for the backup. Do not include the director IP address as part of the file-server URL. If the director IP address is part of the URL, the command is not rejected, but it does not work as expected.

**Note** This command works on both the director and the client. However, it is only meaningful when the device is the director.

## Examples

This example shows how to enable the backup feature:

```
Director(config)# vstack backup
```

This example shows where you can specify the repository:

```
Director(config)# vstack backup file-server ?
  flash:  Repository using flash:
  ftp:    Repository using ftp:
  http:   Repository using http:
  https: Repository using https:
  rcp:    Repository using rcp:
  scp: Repository using scp:
  tftp:   Repository using tftp:
```

# vstack basic

To enable a switch or router 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 device IP addresses. To disable the Smart Install director function on the switch or router, use the **no** form of this command.

**vstack basic**

**no vstack basic**

## Syntax Description

This command has no arguments or keywords.

## Defaults

Smart Install director is not enabled.

## Command Modes

Global configuration

## Command History

| Release | Modification |
|---|---|
| 12.2(52)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## 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.

If you have disabled Smart Install on the device by entering the **no vstack** global configuration command, this command is not allowed. You can reenable Smart Install by entering the **vstack** global configuration command.

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

If you enter the **vstack basic** command on a device 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. If the device is a switch, it 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, these operation occur:

- DHCP snooping is enabled on the director for VLAN 1 and any other configured Smart Install VLANs. You can, however, use the **vstack startup-vlan** global configuration command to specify another default VLAN.
- The director starts building a director database of neighboring devices.

If you enter the **no vstack basic** command to disable director functionality on the device, Smart Install configurations are not deleted but do not take effect until the device 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 and must find another director IP address.

## Examples

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

```
Director(config)# vstack basic
Director(config)#
```

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

```
Director(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 device configured with a director IP address that is not owned by the switch or router:

```
Director(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 clients, 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:; flash0:,** or **flash1:** 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.<br>**Note** Although visible in the command-line help, these options are not supported: **ftp:**, **http:**, **https:**, **null:**, **nvram:**, **rcp:**, **scp:**, **system:**, **tmpsys:.** |
| *config_filename* | The syntax for entering the filename when not in the director flash is **tftp:**[[*//location*]*/directory*]*/config.txt* |

## Defaults

None

## Command Modes

Global configuration

## Command History

| Release | Modification |
|---|---|
| 12.2(52)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

The **vstack config** configuration command is used to identify the configuration file for application to the smart install client. It is needed for all vstack groups whose clients must have a configuration file automatically applied.

Prior to Release IOS XE 3.6.0E and IOS 15.2(2)E, the **vstack config** command was mandatory for custom and built-in vstack groups. With Release IOS XE 3.6.0E and IOS 15.2(2)E, configuring the group for configuration is optional.

Because the default group is optional, all commands to this group are also optional. If you are using the default group, however, you should always configure a default configuration, which is used when the client could not be matched to either a built-in group or custom group (i.e., when the configuration file for a client is outside of a built-in or custom group).

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

A smart install client sends an error message if it cannot download the configuration file This could stem from one of the following:

- a misconfiguration on the director
- the unavailability of the configuration file
- a join window is configured and the client attempts to join the group outside the join window

## 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:

```
Director(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:

```
Director(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 script** | Configures a Smart Install default post install 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. 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* | 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. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## 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 devices. If the director IP address changes, it is no longer the Smart Install director, which could break the director and client 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 a client. The command creates a Smart Install DHCP pool and enters Smart Install DHCP configuration mode.

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. Enter it 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:

```
Director(config)# vstack dhcp-localserver smart_install1
Director(config-vstack-dhcp)# address-pool 1.1.1.1 /22
Director(config-vstack-dhcp)# default-router 2.2.2.2
Director(config-vstack-dhcp)# file-server 3.3.3.3
Director(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 dhcp server** | Displays the DHCP servers. |
| **show ip dhcp pool** | Displays information about configured DHCP pools. |
| **vstack basic** | Enables the switch or router to be the Smart Install director. This command is accepted only if the director IP address is on the device. |

# 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. 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* | The IP address of the switch or an interface on the switch or router intended to be the Smart Install director.<br>• When entered on the director, the IP address should be one of the device interfaces.<br>• 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. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

For a switch or router to be the director, the director IP address must be the IP address of a Layer 3 interface on the device. A Layer 2 switch cannot be the director.

If you have disabled Smart Install on the device by entering the **no vstack** global configuration command, this command is not allowed. You can re-enable Smart Install by entering the **vstack** global configuration command.

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 it is assigned by a DHCP server, enable the Smart Install director by entering the **vstack basic** command on the switch or router.

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 device 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 device 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 if you change the interface IP address.

## Examples

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

```
Director(config)# vstack director 1.1.1.1
Director(config)# vstack basic
Director(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 or router as the Smart Install director. This command is accepted only if the director IP address is on the device. |

# vstack download-config

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

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

**Note** A **no** form for this command does not exist.

## Syntax Description

| | |
|---|---|
| *ip_address* | The IP address of the client. |
| **index** *name* | (Optional) Specifies the index name from the director database for multiple clients or a range of clients.<br>• *name*—Enter multiple clients or a range of clients, for example 1,3-5,7,9-11. |
| **built-in** *product_family* | Specifies the identified (built-in) product family ID. To see the available product families, enter a **?** after **built-in**. |
| *port_config* | The switch port configuration. The available IDs depend on the product family. To see the available port configurations, enter a **?** after the product family.<br>If *product_family* is set to 4500 (that is, Catalyst 4500 standalone IBC), *port_config* means supervisor configuration. |
| *chassis_config* | The chassis type to configure.<br>If *product_family* is set to 4500, the chassis type selected here is supported by the supervisor engine assigned to *port_config*. |
| *remote_switch_password* | The password of the client switch. Enter *none* (or any word) for switches with no password,<br>**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 in the format hh:mm. The range is from 00:00 to 23:59. If you do not specify a time, the reload occurs when you exit the CLI. |

## Defaults

None.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.2(52)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |
| 3.6.0E | The **chassis** option 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 first identified the configuration for the specified built-in group. Enter the **config** *location config_filename* Smart Install group configuration command.

*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.

Selecting a Catalyst “4k” group is similar to configuring a Catalyst “4k” group.

**Note** You must select similar parameters (product type, sup type, and chassis type) as you did while configuring the group.

## Examples

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

```
Director# vstack download-config built-in 2960 24 mypassword startup reload in 10:00
```

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 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 tar image download for clients, use the **vstack download-image** privileged EXEC command on the Smart Install director. This command is visible only on the director.

**vstack download-image tar** *image_URL* {*ip_address* | **index** *name*} *remote_switch_password* [**override**] **reload** [**in** *time*]

**vstack download-image built-in** *product_family port_config chassis_config remote_switch_password* **[override]** [**issu** [**allow-reload**]] [**reload**] [**in** *time*]

**Note** For releases prior to12.2(55)SE, you must create an image list: **vstack download-image** {*imagelist_file URL ip_address* | **built-in** *product_family port_config*} *remote_switch_password* [**override**] **reload** [**in** *time*]

**Note** A **no** form for this command does not exist.

## Syntax Description

| | |
|---|---|
| **tar** *image_URL* | Enter **tar** and **tftp** URL for the tar image file.<br>For example, `tftp://192.168.0.50/2960.tar`<br>**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* | Specifies the IP address of the remote host. |
| **index** *name* | (Optional) Enter the index name from the director database for multiple clients or a range of clients.<br>• *name*—Enter multiple clients or a range of clients, for example 1,3-5,7,9-11. |
| **built-in** *product_family* | Specifies the identified (built-in) product family ID. To see the available product families, enter a **?** after **built-in**.<br>For the Catalyst 4500 series switch, *product_family* is set to 4500. |
| *port_config* | The port configuration. The available configurations depend on the product family. To see the available configurations, enter a **?** after the product family.<br>If *product_family* is set to 4500 (i.e., Catalyst 4500 standalone IBC), *port_config* means supervisor configuration. |
| *chassis_config* | The chassis type to configure.<br>If *product_family* is set to 4500, the chassis type selected here is supported by the supervisor engine assigned to *port_config*. |
| *remote_switch_password* | The password of the client, or enter NONE if there is no password configured. 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.<br>• When upgrading multiple clients (by entering the **index** *name* keyword), all clients must have the same password or they must all have no password. |
| **override** | (Optional) Overrides the existing image. |

| | |
|---|---|
| **issu** | Specifies use of ISSU for on-demand upgrade for Catalyst 4500 IBC. |
| **allow-reload** | Allows a reload if triggering ISSU fails,<br>This option appears only if the ISSU keyword is selected. |
| **reload** | Allows a reload of the switch if ISSU fails to trigger. |
| **in** *time* | (Optional) Specifies 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. |
| 12.2(52)SE | The **index** *name* keywords were added. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release XE 3.2(0)SE. |
| 3.6.0E | The **built-in** *chassis_config* and **issu** keywords were added. |

## Usage Guidelines

You can enter this command only on the director.

The image file must be a tar and not a bin file.

When you enter the **built-in** *product_family port_config chassis_config* keywords for an on-demand image download, you must have first identified the image for the specified built-in group by entering the **image** *location image_name* 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.

When you use the **index** *name* keyword to upgrade multiple clients, all clients must have the same password, or must have no password configured.

When you use the **index** *name* keyword to upgrade multiple clients, if a client is not compatible with the specified image, the upgrade fails.

## Examples

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

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

This example shows how to reload the IBCs that fall under the built-in group of 4500:

```
Switch# vstack download-image built-in 4500
Switch# vstack download-image built-in 4500 sup8
Switch# vstack download-image built-in 4500 sup8-e
Switch# vstack download-image built-in 4500 sup8-e 45
Switch# vstack download-image built-in 4500 sup8-e 4507

Switch# vstack download-image built-in 4500 sup8-e 4507r+e NONE ?
  issu      Force ISSU Upgrade
  override  Override the existing image
  reload    Reload the switch

Switch# vstack download-image built-in 4500 sup8-e 4507r+e NONE issu

Switch# vstack download-image built-in 4500 sup8-e 4507r+e NONE issu ?
  allow-reload  Allow Reloading the switch if ISSU fails to trigger
  in            Specify time in
  <cr>

Switch# vstack download-image built-in 4500 sup8-e 4507r+e NONE issu alo
Switch# vstack download-image built-in 4500 sup8-e 4507r+e NONE issu all

Switch# $load-image built-in 4500 sup8-e 4507r+e NONE issu allow-reload ?
  in  Specify time in
  <cr>

Switch# $load-image built-in 4500 sup8-e 4507r+e NONE issu allow-reload
```

This command reloads the IBCs that fall under this group.

The following example shows how to start an on-demand image download of the configured image file for clients 1 through 3 and 4 in the director database and to reload in 10 hours:

```
Director# vstack download-image tar tftp://192.168.0.50/2960.tar index 1-3, 4 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 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 images 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. To remove the configuration for the built-in group, use the **no** form of this command.

**vstack group built-in** *product_family port_config chassis_config*

**no vstack group built-in** *product_family port_config chassis_config*

## Syntax Description

| | |
|---|---|
| *product_family* | The identified (built-in) product family ID. To see the available product families, enter a **?** after **built-in**.<br>If *product_family* is set to 4500 for Catalyst 4500 series switches. |
| *port_config* | The switch port configuration. The available choices depend on the product family. To see the available port configurations, enter a **?** after the product family.<br>If *product_family* is set to 4500 (that is, Catalyst 4500 standalone IBC), *port_config* means supervisor configuration. |
| *chassis_config* | The chassis type to configure.<br>If *product_family* is set to 4500, the chassis type selected here is supported by the supervisor engine assigned to *port_config*. |

## Defaults

None

## Command Modes

Global configuration

## Command History

| Release | Modification |
|---|---|
| 12.2(52)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |
| 15.2(2)E | The script keyword was introduced. |
| 3.6.0E | The *chassis config* keyword was introduced. |

## Usage Guidelines

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

Use this command to define the configuration file (or post install file) for a group when multiple product IDs (PIDs) exist in the network. If all switches in the network have the same PID, you would use the **vstack config** *location config_filename* (or **vstack script** *location post_install_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 into 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.

**Note** To configure Catalyst 4500 "modular" series switches, set *product_family* to 4500.

If a client does not match any custom group, the switch is configured with 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 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 acknowledgment occurs outside 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 image for the group, for example, *c3560-ipservices-mz.122-52.SE.tar*. This image must be a tar and not a bin file.
- **script**—Identifies the post install file for the group.
- **no**—Negates a command or sets its default.

To identify the group post install file name (script), configuration file name (config), and the group image file name, 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 c3560-ipbase-mz.122-52.SE.tar, which contains the 3560 IP base image for Release12.2(52)SE, identifies the post install file as the 3560 IP Base image, and identifies the configuration file as the 3560 IP Base image.

```
Director(config)# vstack group built-in 3560 8poe
Director(config-vstack-group)# image tftp://1.1.1.10/c3560-ipbase-mz.122-52.SE.tar
Director(config-vstack-group)# config tftp://1.1.1.10/c3560-24-ipbase-config.txt
Director(config-vstack-group)# script tftp://1.1.1.10/c3560-24-ipbase-post_install.txt
```

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

The following example uses the chassis type to display the configurations for a built-in group of “4k” with “sup8-e” in a 4503 chassis:

```
Switch# show vst group built-in 4500 sup8-e 4503 de
-------------------------------------------
Group Name: sup8-e 4503
No Image name specified
No config file name specified
No Script file specified
Switch#
```

In the following example, we select the supervisor type rather than the chassis type. This displays all the groups for the chassis that support that particular supervisor engine.

```
Switch# show vst group built-in 4500 sup8-e de
-------------------------------------------
Group Name: sup8-e 4503
No Image name specified
No config file name specified
No Script file specified
-------------------------------------------
Group Name: sup8-e 4506
No Image name specified
No config file name specified
No Script file specified
-------------------------------------------
Group Name: sup8-e 4507r+e
No Image name specified
No config file name specified
No Script file specified
-------------------------------------------
Group Name: sup8-e 4510r+e
No Image name specified
No config file name specified
No Script file specified
Switch#
```

## 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** | **mac** | **product-id** | **stack**}

**no vstack group custom** *group_name*

## Syntax Description

| | |
|---|---|
| *group_name* | A name for the custom group. |
| **connectivity** | Matches a custom group based on connectivity or network topology. All clients that have the same upstream neighbor. If a client matches more than one group characteristic, a connectivity match takes precedence over a stack match or product-id match, but not over a MAC address match. |
| **mac** | Matches a custom group consisting of switch MAC addresses. If a client matches more than one group characteristic, a MAC address 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

None

## Command Modes

Global configuration

## Command History

| Release | Modification |
|---|---|
| 12.2(52)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |
| 15.2(2)E | The *script* keyword was introduced. |

## Usage Guidelines

Although you can enter this command on any switch or router running a Smart Install image, the configuration does not take effect if the device 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 you enter Smart Install group configuration mode, use the **match** command to identify the group characteristics.

All members of a custom group must be able to run the same image, post install file, 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 and post install 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 match any group, the default configuration, post install file and image are used.

Among custom groups, a group matched by MAC address takes precedence over other matches. A connectivity match takes precedence over one matched by product ID or stack, and a stack match takes precedence over product ID.

A client sends an error message if it cannot download an image or configuration file or post install file due to misconfiguration, if the image, configuration or post install file is unavailable, or if a join window is configured and the DHCP acknowledgment occurs outside 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 image for the group, for example *c3750-ipservices-mz.122-52.SE.tar*. This image must be a tar and not a bin file.
- **match**—Configures the match type for the group. See the **match (Smart Install group configuration)** command for more information about defining criteria for the custom group.
- **script**—Identifies the post install file for the group.
- **no**: Negates a command or sets its default.

To identify the group configuration file name (*config*) and the group image file name, 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 clients connected to the host with the IP address 2.2.2.2 with an interface name of finance, and identifies the image, post install file and configuration to be obtained through TFTP for the group:

```
Director(config)# vstack group custom test connectivity
Director(config-vstack-group)# match host 2.2.2.2 interface finance
Director(config-vstack-group)# image tftp://1.1.1.10/c3560-ipbase-mz.122-52.SE.tar
Director(config-vstack-group)# config tftp://1.1.1.10/3560-24-ipbaseconfig.txt
Director(config-vstack-group)# script tftp://1.1.1.10/3560-24-ipbase_post_install.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, 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* | 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

None

## Command Modes

Global configuration

## Command History

| Release | Modification |
|---|---|
| 12.2(52)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

Although you can enter this command on any device running a Smart Install image, the configuration does not take effect if the device 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:

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

If you then telnet to that switch from the director, the display shows the resulting switch hostname assignment:

```
Director#
*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 filename 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**

**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 image file if the image is not in the director flash memory. If the director is the TFTP server, the location is the director IP address.<br>**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** | The image name, for example, *c2960-lanbase-tar.122-53.SE.tar*. The image must be a tar and not a bin file. |

## Defaults

None

## Command Modes

Global configuration

## Command History

| Release | Modification |
|---|---|
| 12.2(52)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

The **vstack image** configuration command is used to identify the ios image that applies to the smart install client. It is needed for all vstack groups whose clients need to have the correct ios image automatically applied.

Prior to Release IOS XE 3.6.0E and IOS 15.2(2)E, the **vstack image** command was mandatory for custom and built-in vstack groups. With Release IOS XE 3.6.0E and IOS 15.2(2)E, configuring the group for image is optional.

Because the default group is optional, all commands to this group are also optional. If you are using the default group, however, you should always configure a default image, which is used when the client could not be matched to either a built-in group or custom group (i.e., when the image for a client is outside of a built-in or custom group).

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

The image name is 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.

Because the default group is optional, all commands to this group are also optional. If you are using the default image, however, you should always configure a default image, which is used when the client could not be matched to either a built-in group or custom group (i.e., when the configuration file for a client is outside of a built-in or custom group).

A smart install client sends an error message if it cannot download the image. This could stem from one of the following:

- a misconfiguration on the director
- the unavailability of the image
- a join window is configured and the client attempts to join the group outside the join window

## 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:

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

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 script** | Configures a Smart Install default post install file. |

# vstack join-window close

To completely close the join window, use the **vstack join-window close** global configuration command on the Smart Install director. To open the join window, use the **no vstack join-window close** command.

**vstack join-window close**

**no vstack join-window close**

## Syntax Description

This command has not arguments or keywords.

## Defaults

The join window is open.

## Command Modes

Global configuration mode

## Command History

| Release | Modification |
|---|---|
| 12.2(55)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

From the director, use the **vstack join-window close** command in global configuration mode to close the join window. The join window is a time frame during which a client that is coming up and joining the Smart Install network can be upgraded with a new image and configuration.

**Note** This command works on both the director and the client. However, it is only meaningful when the device is the director.

## Examples

This example shows how to close the join window.

```
Director(config)# vstack join-window close
```

## Related Commands

| Command | Description |
|---|---|
| **vstack join-window mode auto** | Configures the join window mode on the director. |
| **vstack join-window start** | Configures the time interval during which the director sends configuration and image files to clients. |

# vstack join-window mode auto

To configure the join window mode, use the **vstack join-window mode auto** global configuration command on the Smart Install director.

**vstack join-window mode auto**

**no vstack join-window mode auto**

## Defaults

Clients are automatically upgraded when the join window is open.

## Command Modes

Global configuration mode

## Command History

| Release | Modification |
|---|---|
| 12.2(55)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

Entering the **vstack join-window mode auto** global configuration command automatically allows clients to be upgraded to the latest image and configuration after they join the Smart Install network as long as the join window is open. This is the default.

Entering the **no vstack join-window mode** global configuration command puts clients in a hold state when they join the network. You must enter the **vstack on-hold-clients install** privileged EXEC command for the immediate upgrade of clients in the hold state.

**Note** You can enter this command on both the director and the client, but it is only meaningful when the device is the director.

## Examples

This example shows how to configure the join-window manual mode on the director.

```
Director(config)# vstack join-window mode auto
```

## Related Commands

| Command | Description |
|---|---|
| **vstack join-window close** | Closes the join window completely. |

| Command | Description |
|---|---|
| **vstack join-window start** | Configures the time interval during which the director sends configuration and image files to clients. |
| **vstack on-hold-clients install** | Installs configuration and images files on a specified client. |

# 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 start**

## Syntax Description

| | |
|---|---|
| *date* | (Optional) A start date for the director to send configuration and image files to the client in the format *day month year*:<br>• *day* is 1 to 31.<br>• *month* is the 3-letter abbreviation for the month (for example, Jun for June).<br>• *year* is 1993 to 2035. |
| *hh:mm* | The time to start sending the files in the format *hh:mm*, using a 24-hour clock, 00:00 to 23:59. |
| *interval* (Optional) | The number of hours for which the join window remains active. The range is from 0 to 23, in the format *hh:mm*, for example, 01:30 is 1 hour and 30 minutes.<br>**Note** The maximum duration that you can configure is 24 hours. |
| **end** *date* | (Optional) Specifies the end date for the director to stop sending configuration and image files in the format *day month year*:<br>• *day* is 1 to 31.<br>• *month* is the 3-letter abbreviation for the month (for example, Jun for June).<br>• *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. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |

| Release | Modification |
|---|---|
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

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

**Note** Before configuring a join window, you should verify that the director time is correct.

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 auto-install process occurs on the client as if it were not a Smart Install client.

During the join window, clients cannot upgrade the image or configuration files 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 these files.

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

## 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.

```
Director(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).

```
Director(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.

```
Director(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 a.m. and to continue for 4 hours:.

```
Director(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, recur daily at that time until July 10, when the join window ends and remains shut.

```
Director(config)# vstack join-window start 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 join-window-status index

To move a client from the join-window deny state to the held or active state, use the **vstack join-window-status index** privileged EXEC command on the Smart Install director.

**vstack join-window-status index** *client-id* {**allowed** | **held**}

## Syntax Description

| | |
|---|---|
| *client-id* | The client ID from the director database. The client ID can be a single client, multiple clients, or a range of clients, for example 1,3-5,7,9-11. |
| **allowed** | Changes the join window state for the client or clients from deny or held to active. A client in the active state is allowed zero-touch updates, on-demand updates, or configuration backups when the join window is open. |
| **held** | Changes the join window state for the client or clients from deny to held. A client in the held state is allowed zero-touch updates and on-demand updates, but not configuration backups when the join window is open. |

## Defaults

The join window state for all clients is determined by the vstack join-window mode global configuration command.

## Command Modes

Privileged EXEC

## Command History

| Release | Modification |
|---|---|
| 12.2(58)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

Use this command to move a client or multiple clients out of the join-window deny state.

After you enter the command, you are asked to confirm the client state change.

You can see the current client states by entering the **show vstack status** privileged EXEC command.

## Examples

This example shows how to manually change the join window state of clients 1 to 4 to active.

```
Director # vstack join-window-status index 1-4 allowed
```

**Related Commands**

| Command | Description |
|---|---|
| **show vstack status** | Displays Smart Install status, including the join window state for clients. |

# vstack on-hold-clients install

To authorize an immediate image and configuration upgrade to an on-hold client or to all on-hold clients, use the **vstack on-hold-clients install** privileged EXEC command on the Smart Install director.

**vstack on-hold-clients install** {**all** | **client-id** *client index* | **ipaddr** *ip-address* | **mac** *mac address*} [**override**]

## Syntax Description

| | |
|---|---|
| **all** | Installs the image and configuration update on all on-hold clients. |
| **client-id** *client index* | Installs the image and configuration update on clients with the specified client ID. The client ID range is 0 to 255. |
| **ipaddr** *ip-address* | Installs the image and configuration update on the client with the specified IP address. |
| **mac** *mac address* | Installs the image and configuration update on the client with the specified MAC address. |
| **override** | (Optional) Overrides the existing image. |

## Command Default

None

## Command Modes

Privileged EXEC mode

## Command History

| Release | Modification |
|---|---|
| 12.2(55)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

This command is required only when you configure **no vstack join-window mode**. When the mode is **auto** (the default), clients joining the Smart Install network are automatically updated when the join window is open.

When you set the join window mode to manual by entering the **no vstack join-window mode** command, clients joining the Smart Install network are put in a *hold* state. Entering the **vstack on-hold-clients install** privileged EXEC command authorizes the director to immediately upgrade an on-hold client. Specify a client for upgrade by entering one of the keywords, or enter **all** to select all client devices for upgrade.

## Examples

This example shows how to select all on-hold client devices for upgrade:

```
Director# vstack on-hold-clients install all
```

This example shows how to specify the on-hold client for upgrade by IP address:

```
Director# vstack on-hold-clients install ipaddr 10.10.10.1
```

## Related Commands

| Command | Description |
|---|---|
| **vstack join-window mode auto** | Configures the join window mode on the director. |
| **vstack on-hold-clients remove** | Removes a specified client from the on-hold client allowed list. |

# vstack on-hold-clients remove

To remove a specified client or all clients from the hold state, use the **vstack on-hold-clients remove** privileged EXEC command on the director.

**vstack on-hold-clients remove** {**all | client-id** *client index* **| ipaddr** *ip-address* **| mac** *mac address*}

## Syntax Description

| | |
|---|---|
| **all** | Removes on all on-hold clients from the allowed list. |
| **client-id** *client index* | Removes the client with the specified client ID. The client ID range is 0 to 255. |
| **ipaddr** *ip-address* | Removes the client with the specified IP address. |
| **mac** *mac address* | Removes the client with the specified MAC address. |

## Command Default

None

## Command Modes

Privileged EXEC mode

## Command History

| Release | Modification |
|---|---|
| 12.2(55)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

When you set the join window mode to manual by entering the **no vstack join-window mode** command, new clients joining the Smart Install network are put in a *hold* state. They remain in this state until you enter the **vstack on-hold clients install** privileged EXEC command to start an upgrade on the client or until you remove them from the on-hold state.

Enter the **vstack on-hold-clients remove** privileged EXEC command on the director to remove a specified client or all clients from the list of clients in the hold state. When a client has been removed from the on-hold list and you enter the **vstack on-hold clients install** privileged EXEC command for the client, the request is denied.

When you remove a client from the on-hold list, you must restart the client for an upgrade to occur.

When the mode is **auto** (the default), clients joining the Smart Install network are automatically upgraded when the join window is open.

## Examples

This example shows how to remove all on-hold client devices from the hold list:

```
Director# vstack on-hold-clients remove all
```

This example shows how to specify the on-hold client for removal by IP address:

```
Director# vstack on-hold-clients remove ipaddr 10.10.10.1
```

**Related Commands**

| Command | Description |
|---|---|
| **vstack join-window mode auto** | Configures the join window mode on the director. |
| **vstack on-hold-clients install** | Authorizes the director to grant an immediate upgrade to an on-hold client. |

# vstack script

To identify the default post install file for the clients, use the **vstack script** global configuration command on the Smart Install director. To remove the configuration file as the default, use the no form of this command.

**Note** This command is available only on switches. This command is not available when a router is the Smart Install Director.

**vstack script** *location post_install_filename*

**no vstack script**

**Syntax Description**

| | |
|---|---|
| *location* | Enter **flash**:; **flash0**:, or **flash1**: if the director is the TFTP server and the post install file is in the director flash memory. Enter **tftp**:// and the location of the default post install 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.<br>**Note** Although visible in the command-line help, these options are not supported: **ftp**:, **http**:, **https**:, **null**:, **nvram**:, **rcp**:, **scp**:, **system**:, **tmpsys**: |
| *post_install_filename* | The syntax for entering the filename when not in the director flash is **tftp**:[[//*location*]/*directory*]/*post_install*.txt. |

**Command Default**

None

**Command Modes**

Global configuration

**Command History**

| Release | Modification |
|---|---|
| 3.6.0E | This command was introduced. |
| 15.2(2)E | This command was introduced. |

**Usage Guidelines**

Prior to Release IOS XE 3.6.0E and IOS 15.2(2)E, the **vstack script** command was mandatory for custom and built-in vstack groups. With Release IOS XE 3.6.0E and IOS 15.2(2)E, configuring the group for script is optional.

Because the default group is optional, all commands to this group are also optional. If you are using the default group, however, you should always configure a default script, which is used when the client could not be matched to either a built-in group or custom group (i.e., when the script for a client is outside of a built-in or custom group).You can decide not to configure post install in conjunction with image, configuration, or both.

When you configure the default configuration, that default post install file is used by the client when the client's post install file is not configured in any group (built-in or custom).

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

Use this command to define the post install script when all switches in the network have the same product ID (PID). The post install file is a text file that contains the post install command to be downloaded to the client.

A smart install client sends an error message if it cannot download the script. This could stem from one of the following:

- a misconfiguration on the director
- the unavailability of the script
- a join window is configured and the client attempts to join the group outside the join window

**Note** This statement is relevant only for default mode. SMI offers two types of customization: group (MAC, stack, and connectivity; and product-id based) and built-in. Post install is configurable in three modes: default, custom group, and built-in.

## Examples

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

```
Director(config)# vstack script flash:2960-24-lanbase-post_install.txt
```

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

```
Director(config)# vstack script tftp://1.1.1.10/2960-24-lanbase-post_install.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 config** | Configures a Smart Install default configuration file. |

# vstack startup-vlan

To specify the default VLAN that the director should use for Smart Install management, use the **vstack startup-vlan** global configuration command.

**vstack startup-vlan** *vlan_value*

**Syntax Description**

| | |
|---|---|
| *vlan_value* | The VLAN to use for Smart Install management. |

**Command Default**

None

**Command Modes**

Global configuration

**Command History**

| Release | Modification |
|---|---|
| 15.0(2)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

**Usage Guidelines**

Use this command to specify the default VLAN that the director should use for Smart Install operations. Depending on the VLAN that is specified in the command, DHCP snooping is enabled on that VLAN so that the director can identify new switches that are connected to the network. If this command is not entered, however, VLAN 1 is used as default.

**Examples**

This example shows how to specify VLAN 7 as the default VLAN for Smart Install:

```
Director# vstack startup-vlan ?
  <1-4094> Startup Management Vlan
Director# vstack startup-vlan 10
```

# vstack tar

To archive files into a tar file, use the **vstack tar** privileged EXEC command on the director.

**vstack tar** *destination-url* [*source-url*]

## Syntax Description

| | |
|---|---|
| *destination-url* | The source URL alias for the local or network file system in which to archive files. The following options are supported:<br>• **flash:** *tar file name*<br>• **ftp:***t ar file name*<br>• **http:** *tar file name*<br>• **https:** *tar file name*<br>• **rcp:** *tar file name*<br>• **scp:** *tar file name*<br>• **tftp:** *tar file name* |
| *source-url* | (Optional) The source URL.<br>**Note** When a source URL is not specified, the entire local repository is archived. Specify the local repository with the **vstack backup file-server** command in global configuration mode. |

## Command Default

None

## Command Modes

Privileged EXEC mode

## Command History

| Release | Modification |
|---|---|
| 12.2(55)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

Use the **vstack tar** command in privileged EXEC mode on the director to create a tar file into which to write files. Specify the destination URL for the local or network file system and the name of the tar file to be created. Specify the source URL (optional).

**Note** If you do not specify a source URL, the local repository is archived. Specify the local repository with the **vstack backup file-server** global configuration command.

## Examples

This example shows how to create an archive tar file (*archive.tar*) in flash memory and archive files from the repository into *mytar* directory in flash.

```
Director# vstack tar flash: archive.tar flash mytar
```

## Related Commands

| Command | Description |
|---|---|
| **vstack untar** | Extracts and archives a tar file. |

# vstack untar

To extract archived tar files into a directory, use the **vstack untar** privileged EXEC command on the director.

**vstack untar** *source-url* [*destination-url*]

## Syntax Description

| | |
|---|---|
| *source-url* | The source URL alias for the local or network file system and the name of the tar file. The following options are supported:<br>• **flash**: *tar file name*<br>• **ftp**: *tar file name*<br>• **http**: *tar file name*<br>• **https**: *tar file name*<br>• **rcp**: *tar file name*<br>• **scp**: *tar file name*<br>• **tftp**: *tar file name* |
| *destination-url* | (Optional) The destination URL.<br>**Note** When you do not specify a destination URL, the local repository is used. Specify the local repository with the **vstack backup file-server** command in global configuration mode. |

## Command Default

None

## Command Modes

Privileged EXEC mode

## Command History

| Release | Modification |
|---|---|
| 12.2(55)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

Use the **vstack untar** command in privileged EXEC mode on the director to extract files from a tar file. Specify the source URL for the local or network file system and the name of the tar file. Specify the destination URL (optional).

**Note** When you do not specify a destination URL, the local repository is used. Specify the local repository with the **vstack backup file-server** command in global configuration mode.

## Examples

This example shows how to extract the tar file *archive.tar* from flash memory into the local repository.

```
Director# vstack untar flash: archive.tar
```

## Related Commands

| Command | Description |
|---|---|
| **vstack tar** | Creates a tar file and writes files into it. |
| **vstack untar / table** | Archives tar files in a table. |

# vstack untar / table

To list the contents of a tar file, use the **vstack untar/ table** privileged EXEC command on the director.

**vstack untar/table** *source-url*

**Syntax Description**

| | |
|---|---|
| *source-url* | The source URL alias for the local or network file system and the name of the tar file. These options are supported:<br>• **flash:** *tar file name*<br>• **ftp:** *tar file name*<br>• **http**: *tar file name*<br>• **https:** *tar file name*<br>• **rcp:** *tar file name*<br>• **scp:** *tar file name*<br>• **tftp:** *tar file name* |

**Command Default**

None

**Command Modes**

Privileged EXEC mode

**Command History**

| Release | Modification |
|---|---|
| 12.2(55)SE | This command was introduced. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

**Usage Guidelines**

Use the **vstack untar/table** command in privileged EXEC mode on the director to archive tar files. Specify the source URL for the local or network file system and the name of the tar file.

**Examples**

This example shows how to display the contents of the tar file *myconfig.tar* that is in flash memory.

```
Director# vstack untar/table flash:myconfig.tar
c3750-1-0000.0040.4080.REV2 (1785 bytes)
c3750-1-0000.0040.4080.REV1 (91 bytes)
c3750-0000.0040.4080.REV2 (1795 bytes)
c3750-0000.0040.4080.REV1 (1674 bytes)
c3750-ibc-0000.0040.4080.REV2 (1823 bytes)
```

**Related CommandsI**

| Command | Description |
|---|---|
| **vstack tar** | Creates a tar file and writes files into it. |
| **vstack untar** | Extracts and archives tar files. |

# 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*

**Note** This command is not valid when the director is a router.

## Syntax Description

| | |
|---|---|
| *vlan-range* | 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. |
| 15.1(1)SY | This command was integrated into Cisco IOS Release 15.1(1)SY. |
| 3.4SG | This command was integrated into Cisco IOS XE Release 3.4SG. |
| 15.1(2)SG | This command was integrated into Cisco IOS Release 15.1(2)SG. |
| 15.0(2)EX | This command was integrated into Cisco IOS Release 15.0(2)EX. |
| 15.0(2)EX1 | This command was integrated into Cisco IOS Release 15.0(2)EX1. |
| 3.2(0)SE | This command was integrated into Cisco IOS Release 3.2(0)SE. |

## Usage Guidelines

Although you can enter this command on any device running a Smart Install image, the configuration does not take effect if the device is not the director. Only configuration commands entered on the director are valid. If the client 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. You can, however, use the **vstack startup-vlan** global configuration command to specify another default VLAN instead of VLAN 1.

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

This command does not apply to routers.

Examples

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

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

This example shows how to configure multiple Smart Install VLANs:

```
Director(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. |