Configuring VTP

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on Cisco.com is not required.

Prerequisites for VTP

The following are prerequisites for VTP:

- Before you create VLANs, you must decide whether to use the VLAN Trunking Protocol (VTP) in your network. Using VTP, you can make configuration changes centrally on one or more switches and have those changes automatically communicated to all the other switches in the network. Without VTP, you cannot send information about VLANs to other switches. VTP is designed to work in an environment

where updates are made on a single switch and are sent through VTP to other switches in the domain. It does not work well in a situation where multiple updates to the VLAN database occur simultaneously on switches in the same domain, which would result in an inconsistency in the VLAN database.

- The switch supports 1005 VLANs when running the IP Lite image.
- However, the number of routed ports, SVIs, and other configured features affects the usage of the switch hardware. If the switch is notified by VTP of a new VLAN and the switch is already using the maximum available hardware resources, it sends a message that there are not enough hardware resources available and shuts down the VLAN. The output of the **show vlan user** EXEC command shows the VLAN in a suspended state.

Information About VTP

VTP

VTP is a Layer 2 messaging protocol that maintains VLAN configuration consistency by managing the addition, deletion, and renaming of VLANs on a network-wide basis. VTP minimizes misconfigurations and configuration inconsistencies that can cause several problems, such as duplicate VLAN names, incorrect VLAN-type specifications, and security violations.

VTP functionality is supported across the stack, and all switches in the stack maintain the same VLAN and VTP configuration inherited from the active switch. When a switch learns of a new VLAN through VTP messages or when a new VLAN is configured by the user, the new VLAN information is communicated to all switches in the stack.

When a switch joins the stack or when stacks merge, the new switches get VTP information from the active switch.

VTP version 1 and version 2 support only normal-range VLANs (VLAN IDs 1 to 1005). VTP version 3 supports the entire VLAN range (VLANs 1 to 4094). Extended range VLANs (VLANs 1006 to 4094) are supported only in VTP version 3. You cannot convert from VTP version 3 to VTP version 2 if extended VLANs are configured in the domain.

VTP Domain

A VTP domain (also called a VLAN management domain) consists of one switch or several interconnected switches or switch stacks under the same administrative responsibility sharing the same VTP domain name. A switch can be in only one VTP domain. You make global VLAN configuration changes for the domain.

By default, the switch is in the VTP no-management-domain state until it receives an advertisement for a domain over a trunk link (a link that carries the traffic of multiple VLANs) or until you configure a domain name. Until the management domain name is specified or learned, you cannot create or modify VLANs on a VTP server, and VLAN information is not propagated over the network.

If the switch receives a VTP advertisement over a trunk link, it inherits the management domain name and the VTP configuration revision number. The switch then ignores advertisements with a different domain name or an earlier configuration revision number.

（注） Before adding a VTP client switch to a VTP domain, always verify that its VTP configuration revision number is lower than the configuration revision number of the other switches in the VTP domain. Switches in a VTP domain always use the VLAN configuration of the switch with the highest VTP configuration revision number. If you add a switch that has a revision number higher than the revision number in the VTP domain, it can erase all VLAN information from the VTP server and VTP domain.

When you make a change to the VLAN configuration on a VTP server, the change is propagated to all switches in the VTP domain. VTP advertisements are sent over all IEEE trunk connections, including IEEE 802.1Q. VTP dynamically maps VLANs with unique names and internal index associates across multiple LAN types. Mapping eliminates excessive device administration required from network administrators.

If you configure a switch for VTP transparent mode, you can create and modify VLANs, but the changes are not sent to other switches in the domain, and they affect only the individual switch. However, configuration changes made when the switch is in this mode are saved in the switch running configuration and can be saved to the switch startup configuration file.

関連トピック

Adding a VTP Client Switch to a VTP Domain, （20 ページ）

VTP Modes

表 *1* : ***VTP Modes***

VTP Mode	Description
VTP server	In VTP server mode, you can create, modify, and delete VLANs, and specify other configuration parameters (such as the VTP version) for the entire VTP domain. VTP servers advertise their VLAN configurations to other switches in the same VTP domain and synchronize their VLAN configurations with other switches based on advertisements received over trunk links. VTP server is the default mode. In VTP server mode, VLAN configurations are saved in NVRAM. If the switch detects a failure while writing a configuration to NVRAM, VTP mode automatically changes from server mode to client mode. If this happens, the switch cannot be returned to VTP server mode until the NVRAM is functioning.
VTP client	A VTP client functions like a VTP server and transmits and receives VTP updates on its trunks, but you cannot create, change, or delete VLANs on a VTP client. VLANs are configured on another switch in the domain that is in server mode. In VTP versions 1 and 2 in VTP client mode, VLAN configurations are not saved in NVRAM. In VTP version 3, VLAN configurations are saved in NVRAM in client mode.

VTP Mode	Description
VTP transparent	VTP transparent switches do not participate in VTP. A VTP transparent switch does not advertise its VLAN configuration and does not synchronize its VLAN configuration based on received advertisements. However, in VTP version 2 or version 3, transparent switches do forward VTP advertisements that they receive from other switches through their trunk interfaces. You can create, modify, and delete VLANs on a switch in VTP transparent mode. In VTP versions 1 and 2, the switch must be in VTP transparent mode when you create extended-range VLANs. VTP version 3 also supports creating extended-range VLANs in client or server mode. In VTP versions 1 and 2, the switch must be in VTP transparent mode when you create private VLANs and when they are configured, you should not change the VTP mode from transparent to client or server mode. VTP version 3 also supports private VLANs in client and server modes. When private VLANs are configured, do not change the VTP mode from transparent to client or server mode. When the switch is in VTP transparent mode, the VTP and VLAN configurations are saved in NVRAM, but they are not advertised to other switches. In this mode, VTP mode and domain name are saved in the switch running configuration, and you can save this information in the switch startup configuration file by using the **copy running-config startup-config** privileged EXEC command. In a switch stack, the running configuration and the saved configuration are the same for all switches in a stack.
VTP off	A switch in VTP off mode functions in the same manner as a VTP transparent switch, except that it does not forward VTP advertisements on trunks.

関連トピック

Configuring VTP Mode, （12 ページ）
Example: Configuring the Switch as a VTP Server, （23 ページ）

VTP Advertisements

Each switch in the VTP domain sends periodic global configuration advertisements from each trunk port to a reserved multicast address. Neighboring switches receive these advertisements and update their VTP and VLAN configurations as necessary.

Because trunk ports send and receive VTP advertisements, you must ensure that at least one trunk port is configured on the switch stack and that this trunk port is connected to the trunk port of another switch. Otherwise, the switch cannot receive any VTP advertisements.

VTP advertisements distribute this global domain information:

- VTP domain name
- VTP configuration revision number
- Update identity and update timestamp

- MD5 digest VLAN configuration, including maximum transmission unit (MTU) size for each VLAN
- Frame format

VTP advertisements distribute this VLAN information for each configured VLAN:

- VLAN IDs (including IEEE 802.1Q)
- VLAN name
- VLAN type
- VLAN state
- Additional VLAN configuration information specific to the VLAN type

In VTP version 3, VTP advertisements also include the primary server ID, an instance number, and a start index.

VTP Version 2

If you use VTP in your network, you must decide which version of VTP to use. By default, VTP operates in version 1.

VTP version 2 supports these features that are not supported in version 1:

- Token Ring support—VTP version 2 supports Token Ring Bridge Relay Function (TrBRF) and Token Ring Concentrator Relay Function (TrCRF) VLANs.
- Unrecognized Type-Length-Value (TLV) support—A VTP server or client propagates configuration changes to its other trunks, even for TLVs it is not able to parse. The unrecognized TLV is saved in NVRAM when the switch is operating in VTP server mode.
- Version-Dependent Transparent Mode—In VTP version 1, a VTP transparent switch inspects VTP messages for the domain name and version and forwards a message only if the version and domain name match. Although VTP version 2 supports only one domain, a VTP version 2 transparent switch forwards a message only when the domain name matches.
- Consistency Checks—In VTP version 2, VLAN consistency checks (such as VLAN names and values) are performed only when you enter new information through the CLI or SNMP. Consistency checks are not performed when new information is obtained from a VTP message or when information is read from NVRAM. If the MD5 digest on a received VTP message is correct, its information is accepted.

VTP Version 3

VTP version 3 supports these features that are not supported in version 1 or version 2:

- Enhanced authentication—You can configure the authentication as **hidden** or **secret**. When **hidden**, the secret key from the password string is saved in the VLAN database file, but it does not appear in plain text in the configuration. Instead, the key associated with the password is saved in hexadecimal format in the running configuration. You must reenter the password if you enter a takeover command in the domain. When you enter the **secret** keyword, you can directly configure the password secret key.

- Support for extended range VLAN (VLANs 1006 to 4094) database propagation—VTP versions 1 and 2 propagate only VLANs 1 to 1005. If extended VLANs are configured, you cannot convert from VTP version 3 to version 1 or 2.

  （注） VTP pruning still applies only to VLANs 1 to 1005, and VLANs 1002 to 1005 are still reserved and cannot be modified.

- Private VLAN support.
- Support for any database in a domain—In addition to propagating VTP information, version 3 can propagate Multiple Spanning Tree (MST) protocol database information. A separate instance of the VTP protocol runs for each application that uses VTP.
- VTP primary server and VTP secondary servers—A VTP primary server updates the database information and sends updates that are honored by all devices in the system. A VTP secondary server can only back up the updated VTP configurations received from the primary server to its NVRAM.

  By default, all devices come up as secondary servers. You can enter the **vtp primary** privileged EXEC command to specify a primary server. Primary server status is only needed for database updates when the administrator issues a takeover message in the domain. You can have a working VTP domain without any primary servers. Primary server status is lost if the device reloads or domain parameters change, even when a password is configured on the switch.
- The option to turn VTP on or off on a per-trunk (per-port) basis—You can enable or disable VTP per port by entering the [**no**] **vtp** interface configuration command. When you disable VTP on trunking ports, all VTP instances for that port are disabled. You cannot set VTP to *off* for the MST database and *on* for the VLAN database on the same port.

  When you globally set VTP mode to off, it applies to all the trunking ports in the system. However, you can specify on or off on a per-VTP instance basis. For example, you can configure the switch as a VTP server for the VLAN database but with VTP *off* for the MST database.

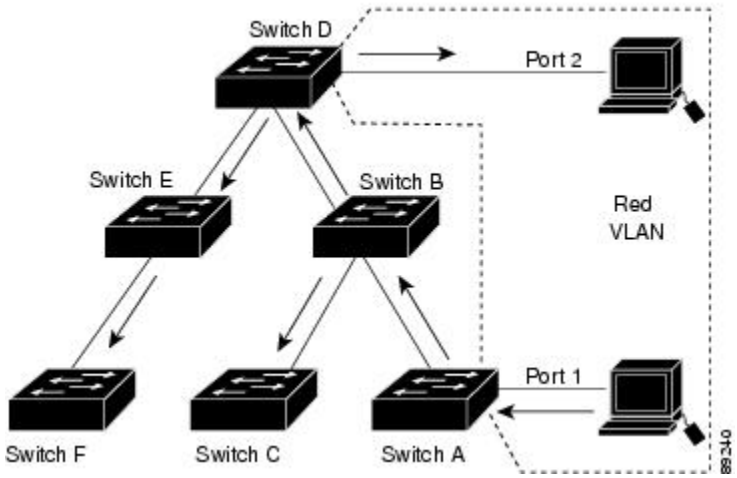
VTP Pruning

VTP pruning increases network available bandwidth by restricting flooded traffic to those trunk links that the traffic must use to reach the destination devices. Without VTP pruning, a switch floods broadcast, multicast, and unknown unicast traffic across all trunk links within a VTP domain even though receiving switches might discard them. VTP pruning is disabled by default.

VTP pruning blocks unneeded flooded traffic to VLANs on trunk ports that are included in the pruning-eligible list. Only VLANs included in the pruning-eligible list can be pruned. By default, VLANs 2 through 1001 are pruning eligible switch trunk ports. If the VLANs are configured as pruning-ineligible, the flooding continues. VTP pruning is supported in all VTP versions.

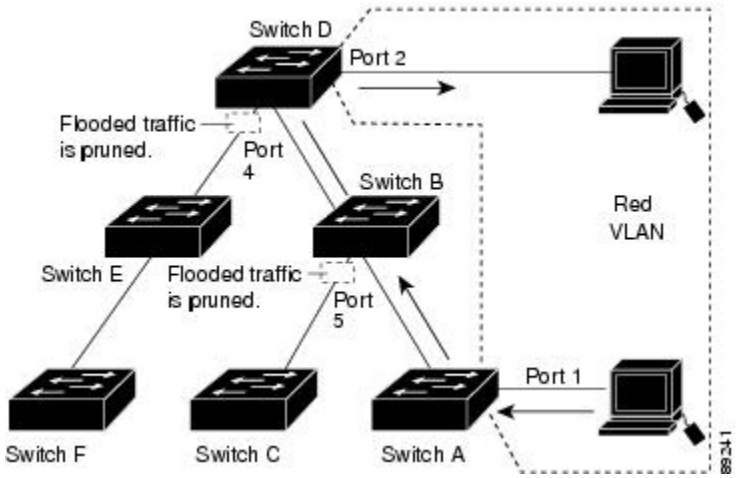
VTP pruning is disabled in the switched network. Port 1 on Switch A and Port 2 on Switch D are assigned to the Red VLAN. If a broadcast is sent from the host connected to Switch A, Switch A floods the broadcast and every switch in the network receives it, even though Switches C, E, and F have no ports in the Red VLAN.

図 1 : *Flooding Traffic without VTP Pruning*



VTP pruning is enabled in the switched network. The broadcast traffic from Switch A is not forwarded to Switches C, E, and F because traffic for the Red VLAN has been pruned on the links shown (Port 5 on Switch B and Port 4 on Switch D).

図 2 : *Optimized Flooded Traffic VTP Pruning*



Enabling VTP pruning on a VTP server enables pruning for the entire management domain. Making VLANs pruning-eligible or pruning-ineligible affects pruning eligibility for those VLANs on that trunk only (not on all switches in the VTP domain).

VTP pruning takes effect several seconds after you enable it. VTP pruning does not prune traffic from VLANs that are pruning-ineligible. VLAN 1 and VLANs 1002 to 1005 are always pruning-ineligible; traffic from these VLANs cannot be pruned. Extended-range VLANs (VLAN IDs higher than 1005) are also pruning-ineligible.

関連トピック

Enabling VTP Pruning, （18 ページ）

VTP and Switch Stacks

VTP configuration is the same in all members of a switch stack. When the switch stack is in VTP server or client mode, all switches in the stack carry the same VTP configuration. When VTP mode is transparent, the stack is not taking part in VTP.

- When a switch joins the stack, it inherits the VTP and VLAN properties of the stack master.
- All VTP updates are carried across the stack.
- When VTP mode is changed in a switch in the stack, the other switches in the stack also change VTP mode, and the switch VLAN database remains consistent.

VTP version 3 functions the same on a standalone switch or a stack except when the switch stack is the primary server for the VTP database. In this case, the MAC address of the stack master is used as the primary server ID. If the master switch reloads or is powered off, a new stack master is elected.

- If you do not configure the persistent MAC address feature (by entering the **stack-mac persistent timer** [**0** | *time-value*] global configuration command, when the new master is elected, it sends a takeover message with the new master MAC address as the primary server.
- If persistent MAC address is configured, the new master waits for the configured **stack-mac persistent timer** value. If the previous master switch does not rejoin the stack during this time, then the new master issues the takeover message.

VTP Configuration Guidelines

Configuration Requirements

When you configure VTP, you must configure a trunk port so that the switch can send and receive VTP advertisements to and from other switches in the domain.

If you are configuring VTP on a cluster member switch to a VLAN, use the **rcommand** privileged EXEC command to log in to the member switch. For more information about the command, see the command reference for this release.

In VTP versions 1 and 2, when you configure extended-range VLANs on the switch, the switch must be in VTP transparent mode. VTP version 3 also supports creating extended-range VLANs in client or server mode.

VTP versions 1 and 2 do not support private VLANs. VTP version 3 does support private VLANs. If you configure private VLANs, the switch must be in VTP transparent mode. When private VLANs are configured on the switch, do not change the VTP mode from transparent to client or server mode.

VTP Settings

The VTP information is saved in the VTP VLAN database. When VTP mode is transparent, the VTP domain name and mode are also saved in the switch running configuration file, and you can save it in the switch

startup configuration file by entering the **copy running-config startup-config** privileged EXEC command. You must use this command if you want to save VTP mode as transparent, even if the switch resets.

When you save VTP information in the switch startup configuration file and reboot the switch, the switch configuration is selected as follows:

- If the VTP mode is transparent in the startup configuration and the VLAN database and the VTP domain name from the VLAN database matches that in the startup configuration file, the VLAN database is ignored (cleared), and the VTP and VLAN configurations in the startup configuration file are used. The VLAN database revision number remains unchanged in the VLAN database.
- If the VTP mode or domain name in the startup configuration do not match the VLAN database, the domain name and VTP mode and configuration for VLAN IDs 1 to 1005 use the VLAN database information.

Domain Names for Configuring VTP

When configuring VTP for the first time, you must always assign a domain name. You must configure all switches in the VTP domain with the same domain name. Switches in VTP transparent mode do not exchange VTP messages with other switches, and you do not need to configure a VTP domain name for them.

（注） If the NVRAM and DRAM storage is sufficient, all switches in a VTP domain should be in VTP server mode.

注意 Do not configure a VTP domain if all switches are operating in VTP client mode. If you configure the domain, it is impossible to make changes to the VLAN configuration of that domain. Make sure that you configure at least one switch in the VTP domain for VTP server mode.

Passwords for the VTP Domain

You can configure a password for the VTP domain, but it is not required. If you do configure a domain password, all domain switches must share the same password and you must configure the password on each switch in the management domain. Switches without a password or with the wrong password reject VTP advertisements.

If you configure a VTP password for a domain, a switch that is booted without a VTP configuration does not accept VTP advertisements until you configure it with the correct password. After the configuration, the switch accepts the next VTP advertisement that uses the same password and domain name in the advertisement.

If you are adding a new switch to an existing network with VTP capability, the new switch learns the domain name only after the applicable password has been configured on it.

注意 When you configure a VTP domain password, the management domain does not function properly if you do not assign a management domain password to each switch in the domain.

関連トピック

Configuring a VTP Version 3 Password, （14 ページ）
Example: Configuring a Hidden Password, （24 ページ）

VTP Version

Follow these guidelines when deciding which VTP version to implement:

- All switches in a VTP domain must have the same domain name, but they do not need to run the same VTP version.
- A VTP version 2-capable switch can operate in the same VTP domain as a switch running VTP version 1 if version 2 is disabled on the version 2-capable switch (version 2 is disabled by default).
- If a switch running VTP version 1, but capable of running VTP version 2, receives VTP version 3 advertisements, it automatically moves to VTP version 2.
- If a switch running VTP version 3 is connected to a switch running VTP version 1, the VTP version 1 switch moves to VTP version 2, and the VTP version 3 switch sends scaled-down versions of the VTP packets so that the VTP version 2 switch can update its database.
- A switch running VTP version 3 cannot move to version 1 or 2 if it has extended VLANs.
- Do not enable VTP version 2 on a switch unless all of the switches in the same VTP domain are version-2-capable. When you enable version 2 on a switch, all of the version-2-capable switches in the domain enable version 2. If there is a version 1-only switch, it does not exchange VTP information with switches that have version 2 enabled.
- Cisco recommends placing VTP version 1 and 2 switches at the edge of the network because they do not forward VTP version 3 advertisements.
- If there are TrBRF and TrCRF Token Ring networks in your environment, you must enable VTP version 2 or version 3 for Token Ring VLAN switching to function properly. To run Token Ring and Token Ring-Net, disable VTP version 2.
- VTP version 1 and version 2 do not propagate configuration information for extended range VLANs (VLANs 1006 to 4094). You must configure these VLANs manually on each device. VTP version 3 supports extended-range VLANs. You cannot convert from VTP version 3 to VTP version 2 if extended VLANs are configured.
- When a VTP version 3 device trunk port receives messages from a VTP version 2 device, it sends a scaled-down version of the VLAN database on that particular trunk in VTP version 2 format. A VTP version 3 device does not send VTP version 2-formatted packets on a trunk unless it first receives VTP version 2 packets on that trunk port.
- When a VTP version 3 device detects a VTP version 2 device on a trunk port, it continues to send VTP version 3 packets, in addition to VTP version 2 packets, to allow both kinds of neighbors to coexist on the same trunk.
- A VTP version 3 device does not accept configuration information from a VTP version 2 or version 1 device.
- Two VTP version 3 regions can only communicate in transparent mode over a VTP version 1 or version 2 region.

- Devices that are only VTP version 1 capable cannot interoperate with VTP version 3 devices.
- For VTP version 1 and version 2, if extended-range VLANs are configured on the switch stack, you cannot change VTP mode to client or server. You receive an error message, and the configuration is not allowed. VTP version 1 and version 2 do not propagate configuration information for extended range VLANs (VLANs 1006 to 4094). You must manually configure these VLANs on each device.

（注） For VTP version 1 and 2, before you create extended-range VLANs (VLAN IDs 1006 to 4094), you must set VTP mode to transparent by using the **vtp mode transparent** global configuration command. Save this configuration to the startup configuration so that the switch starts in VTP transparent mode. Otherwise, you lose the extended-range VLAN configuration if the switch resets and boots up in VTP server mode (the default).

- VTP version 3 supports extended-range VLANs. If extended VLANs are configured, you cannot convert from VTP version 3 to VTP version 2.
- If you configure the switch for VTP client mode, the switch does not create the VLAN database file (vlan.dat). If the switch is then powered off, it resets the VTP configuration to the default. To keep the VTP configuration with VTP client mode after the switch restarts, you must first configure the VTP domain name before the VTP mode.

注意 If all switches are operating in VTP client mode, do not configure a VTP domain name. If you do, it is impossible to make changes to the VLAN configuration of that domain. Therefore, make sure you configure at least one switch as a VTP server.

関連トピック

Enabling the VTP Version, （16 ページ）

Default VTP Configuration

The following table shows the default VTP configuration.

表 *2* : ***Default VTP Configuration***

Feature	Default Setting
VTP domain name	Null
VTP mode (VTP version 1 and version 2)	Server
VTP mode (VTP version 3)	The mode is the same as the mode in VTP version 1 or 2 before conversion to version 3.
VTP version	Version 1
MST database mode	Transparent

Feature	Default Setting
VTP version 3 server type	Secondary
VTP password	None
VTP pruning	Disabled

How to Configure VTP

Configuring VTP Mode

You can configure VTP mode as one of these:

- When a switch is in VTP server mode, you can change the VLAN configuration and have it propagated throughout the network.
- When a switch is in VTP client mode, you cannot change its VLAN configuration. The client switch receives VTP updates from a VTP server in the VTP domain and then modifies its configuration accordingly.
- When you configure the switch for VTP transparent mode, VTP is disabled on the switch. The switch does not send VTP updates and does not act on VTP updates received from other switch. However, a VTP transparent switch running VTP version 2 does forward received VTP advertisements on its trunk links.
- VTP off mode is the same as VTP transparent mode except that VTP advertisements are not forwarded.

When you configure a domain name, it cannot be removed; you can only reassign a switch to a different domain.

手順の概要

1. **configure terminal**
2. **vtp domain** *domain-name*
3. **vtp mode** {**client** | **server** | **transparent** | **off**} {**vlan** | **mst** | **unknown**}
4. **vtp password** *password*
5. **end**
6. **show vtp status**
7. **copy running-config startup-config**

手順の詳細

	コマンドまたはアクション	目的
ステップ 1	**configure terminal** 例： `Switch# configure terminal`	Enters the global configuration mode.
ステップ 2	**vtp domain** *domain-name* 例： `Switch(config)# vtp domain eng_group`	Configures the VTP administrative-domain name. The name can be 1 to 32 characters. All switches operating in VTP server or client mode under the same administrative responsibility must be configured with the same domain name. This command is optional for modes other than server mode. VTP server mode requires a domain name. If the switch has a trunk connection to a VTP domain, the switch learns the domain name from the VTP server in the domain. You should configure the VTP domain before configuring other VTP parameters. （注）
ステップ 3	**vtp mode** {**client** | **server** | **transparent** | **off**} {**vlan** | **mst** | **unknown**} 例： `Switch(config)# vtp mode server`	Configures the switch for VTP mode (client, server, transparent, or off). • **vlan**—The VLAN database is the default if none are configured. • **mst**—The multiple spanning tree (MST) database. • **unknown**—An unknown database type. （注） To return a switch in another mode to VTP server mode, use the **no vtp mode** global configuration command.
ステップ 4	**vtp password** *password* 例： `Switch(config)# vtp password mypassword`	(Optional) Sets the password for the VTP domain. The password can be 8 to 64 characters. If you configure a VTP password, the VTP domain does not function properly if you do not assign the same password to each switch in the domain. （注） To return the switch to a no-password state, use the **no vtp password** global configuration command.
ステップ 5	**end** 例： `Switch(config)# end`	Returns to privileged EXEC mode.

	コマンドまたはアクション	目的
ステップ 6	**show vtp status** 例： `Switch# show vtp status`	Verifies your entries in the *VTP Operating Mode* and the *VTP Domain Name* fields of the display.
ステップ 7	**copy running-config startup-config** 例： `Switch# copy running-config startup-config`	(Optional) Saves the configuration in the startup configuration file. Only VTP mode and domain name are saved in the switch running configuration and can be copied to the startup configuration file.

関連トピック

VTP Modes, （3 ページ）
Example: Configuring the Switch as a VTP Server, （23 ページ）

Configuring a VTP Version 3 Password

You can configure a VTP version 3 password on the switch.

手順の概要

1. **configure terminal**
2. **vtp password** *password* [**hidden** | **secret**]
3. **end**
4. **show vtp password**
5. **copy running-config startup-config**

手順の詳細

	コマンドまたはアクション	目的
ステップ 1	**configure terminal** 例： `Switch# configure terminal`	Enters the global configuration mode.

	コマンドまたはアクション	目的
ステップ 2	**vtp password** *password* [**hidden** | **secret**] 例： `Switch(config)# vtp password mypassword hidden`	(Optional) Sets the password for the VTP domain. The password can be 8 to 64 characters. • (Optional) **hidden**—Saves the secret key generated from the password string in the nvram:vlan.dat file. If you configure a takeover by configuring a VTP primary server, you are prompted to reenter the password. • (Optional) **secret**—Directly configures the password. The secret password must contain 32 hexadecimal characters. （注） To clear the password, enter the **no vtp password** global configuration command.
ステップ 3	**end** 例： `Switch(config)# end`	Returns to privileged EXEC mode.
ステップ 4	**show vtp password** 例： `Switch# show vtp password`	Verifies your entries. The output appears like this: VTP password: 89914640C8D90868B6A0D8103847A733
ステップ 5	**copy running-config startup-config** 例： `Switch# copy running-config startup-config`	(Optional) Saves the configuration in the startup configuration file.

関連トピック

Passwords for the VTP Domain, （9 ページ）
Example: Configuring a Hidden Password, （24 ページ）

Configuring a VTP Version 3 Primary Server

When you configure a VTP server as a VTP primary server, the takeover operation starts.

手順の概要

1. **vtp primary** [**vlan** | **mst**] [**force**]

手順の詳細

	コマンドまたはアクション	目的
ステップ 1	**vtp primary** [**vlan** | **mst**] [**force**] 例： `Switch# vtp primary vlan force`	Changes the operational state of a switch from a secondary server (the default) to a primary server and advertises the configuration to the domain. If the switch password is configured as **hidden**, you are prompted to reenter the password. • (Optional) **vlan**—Selects the VLAN database as the takeover feature. This is the default. • (Optional) **mst**—Selects the multiple spanning tree (MST) database as the takeover feature. • (Optional) **force**—Overwrites the configuration of any conflicting servers. If you do not enter **force**, you are prompted for confirmation before the takeover.

関連トピック

Example: Configuring a VTP Version 3 Primary Server, （24 ページ）

Enabling the VTP Version

VTP version 2 and version 3 are disabled by default.

- When you enable VTP version 2 on a switch , every VTP version 2-capable switch in the VTP domain enables version 2. To enable VTP version 3, you must manually configure it on each switch
- With VTP versions 1 and 2, you can configure the version only on switches in VTP server or transparent mode. If a switch is running VTP version 3, you can change to version 2 when the switch is in client mode if no extended VLANs exist, no private VLANs exist, and no hidden password was configured.

注意 VTP version 1 and VTP version 2 are not interoperable on switches in the same VTP domain. Do not enable VTP version 2 unless every switch in the VTP domain supports version 2.

- In TrCRF and TrBRF Token Ring environments, you must enable VTP version 2 or VTP version 3 for Token Ring VLAN switching to function properly. For Token Ring and Token Ring-Net media, disable VTP version 2.

注意 In VTP version 3, both the primary and secondary servers can exist on an instance in the domain.

手順の概要

1. **configure terminal**
2. **vtp version** {**1** | **2** | **3**}
3. **end**
4. **show vtp status**
5. **copy running-config startup-config**

手順の詳細

	コマンドまたはアクション	目的
ステップ 1	**configure terminal** 例： `Switch# configure terminal`	Enters the global configuration mode.
ステップ 2	**vtp version** {**1**	**2**	**3**} 例： `Switch(config)# vtp version 2`	Enables the VTP version on the switch. The default is VTP version 1. （注） To return to the default VTP version 1, use the **no vtp version** global configuration command.
ステップ 3	**end** 例： `Switch(config)# end`	Returns to privileged EXEC mode.
ステップ 4	**show vtp status** 例： `Switch# show vtp status`	Verifies that the configured VTP version is enabled.
ステップ 5	**copy running-config startup-config** 例： `Switch# copy running-config startup-config`	(Optional) Saves the configuration in the startup configuration file.

関連トピック

VTP Version, （10 ページ）

Enabling VTP Pruning

Pruning increases available bandwidth by restricting flooded traffic to those trunk links that the traffic must use to access the destination devices. You can only enable VTP pruning on a switch in VTP server mode.

With VTP versions 1 and 2, when you enable pruning on the VTP server, it is enabled for the entire VTP domain. In VTP version 3, you must manually enable pruning on each switch in the domain.

Only VLANs included in the pruning-eligible list can be pruned. By default, VLANs 2 through 1001 are pruning-eligible on trunk ports. Reserved VLANs and extended-range VLANs cannot be pruned.

はじめる前に

VTP pruning is not designed to function in VTP transparent mode. If one or more switches in the network are in VTP transparent mode, you should do one of these:

- Turn off VTP pruning in the entire network.
- Turn off VTP pruning by making all VLANs on the trunk of the switch upstream to the VTP transparent switch pruning ineligible.

To configure VTP pruning on an interface, use the **switchport trunk pruning vlan** interface configuration command. VTP pruning operates when an interface is trunking. You can set VLAN pruning-eligibility, whether or not VTP pruning is enabled for the VTP domain, whether or not any given VLAN exists, and whether or not the interface is currently trunking.

手順の概要

1. **configure terminal**
2. **vtp pruning**
3. **end**
4. **show vtp status**

手順の詳細

	コマンドまたはアクション	目的
ステップ 1	**configure terminal** 例： `Switch# configure terminal`	Enters the global configuration mode.
ステップ 2	**vtp pruning** 例： `Switch(config)# vtp pruning`	Enables pruning in the VTP administrative domain. By default, pruning is disabled. You need to enable pruning on only one switch in VTP server mode. （注） To disable VTP pruning, use the **no vtp pruning** global configuration command.

	コマンドまたはアクション	目的
ステップ 3	**end** 例： `Switch(config)# end`	Returns to privileged EXEC mode.
ステップ 4	**show vtp status** 例： `Switch# show vtp status`	Verifies your entries in the *VTP Pruning Mode* field of the display.

関連トピック

VTP Pruning, （6 ページ）

Configuring VTP on a Per-Port Basis

With VTP version 3, you can enable or disable VTP on a per-port basis. You can enable VTP only on ports that are in trunk mode. Incoming and outgoing VTP traffic are blocked, not forwarded.

手順の概要

1. **configure terminal**
2. **interface** *interface-id*
3. **vtp**
4. **end**
5. **show running-config interface** *interface-id*
6. **show vtp status**

手順の詳細

	コマンドまたはアクション	目的
ステップ 1	**configure terminal** 例： `Switch# configure terminal`	Enters the global configuration mode.

	コマンドまたはアクション	目的
ステップ 2	**interface** *interface-id* 例： `Switch(config)# interface gigabitethernet1/0/1`	Identifies an interface, and enters interface configuration mode.
ステップ 3	**vtp** 例： `Switch(config)# vtp`	Enables VTP on the specified port. （注） To disable VTP on the interface, use the **no vtp** interface configuration command.
ステップ 4	**end** 例： `Switch(config)# end`	Returns to privileged EXEC mode.
ステップ 5	**show running-config interface** *interface-id* 例： `Switch# show running-config interface gigabitethernet1/0/1`	Verifies the change to the port.
ステップ 6	**show vtp status** 例： `Switch# show vtp status`	Verifies the configuration.

関連トピック

Example: Configuring VTP on a Per-Port Basis, （24 ページ）

Adding a VTP Client Switch to a VTP Domain

Follow these steps to verify and reset the VTP configuration revision number on a switch *before* adding it to a VTP domain.

はじめる前に

Before adding a VTP client to a VTP domain, always verify that its VTP configuration revision number is *lower* than the configuration revision number of the other switches in the VTP domain. Switches in a VTP domain always use the VLAN configuration of the switch with the highest VTP configuration revision number.

With VTP versions 1 and 2, adding a switch that has a revision number higher than the revision number in the VTP domain can erase all VLAN information from the VTP server and VTP domain. With VTP version 3, the VLAN information is not erased.

You can use the **vtp mode transparent** global configuration command to disable VTP on the switch and then to change its VLAN information without affecting the other switches in the VTP domain.

手順の概要

1. **show vtp status**
2. **configure terminal**
3. **vtp domain** *domain-name*
4. **end**
5. **show vtp status**
6. **configure terminal**
7. **vtp domain** *domain-name*
8. **end**
9. **show vtp status**

手順の詳細

	コマンドまたはアクション	目的
ステップ 1	**show vtp status** 例： `Switch# show vtp status`	Checks the VTP configuration revision number. If the number is 0, add the switch to the VTP domain. If the number is greater than 0, follow these sub steps: • Write down the domain name. • Write down the configuration revision number. • Continue with the next steps to reset the switch configuration revision number.
ステップ 2	**configure terminal** 例： `Switch# configure terminal`	Enters the global configuration mode.
ステップ 3	**vtp domain** *domain-name* 例： `Switch(config)# vtp domain domain123`	Changes the domain name from the original one displayed in Step 1 to a new name.

	コマンドまたはアクション	目的
ステップ 4	**end** 例： `Switch(config)# end`	Returns to privileged EXEC mode. The VLAN information on the switch is updated and the configuration revision number is reset to 0.
ステップ 5	**show vtp status** 例： `Switch# show vtp status`	Verifies that the configuration revision number has been reset to 0.
ステップ 6	**configure terminal** 例： `Switch# configure terminal`	Enters global configuration mode.
ステップ 7	**vtp domain** *domain-name* 例： `Switch(config)# vtp domain domain012`	Enters the original domain name on the switch
ステップ 8	**end** 例： `Switch(config)# end`	Returns to privileged EXEC mode. The VLAN information on the switch is updated.
ステップ 9	**show vtp status** 例： `Switch# show vtp status`	(Optional) Verifies that the domain name is the same as in Step 1 and that the configuration revision number is 0.

関連トピック

VTP Domain, （2 ページ）

Monitoring VTP

This section describes commands used to display and monitor the VTP configuration.

You monitor VTP by displaying VTP configuration information: the domain name, the current VTP revision, and the number of VLANs. You can also display statistics about the advertisements sent and received by the switch.

表 *3* : ***VTP Monitoring Commands***

Command	Purpose
show vtp counters	Displays counters about VTP messages that have been sent and received.
show vtp devices [**conflict**]	Displays information about all VTP version 3 devices in the domain. Conflicts are VTP version 3 devices with conflicting primary servers. The **show vtp devices** command does not display information when the switch is in transparent or off mode.
show vtp interface [*interface-id*]	Displays VTP status and configuration for all interfaces or the specified interface.
show vtp password	Displays the VTP password. The form of the password displayed depends on whether or not the **hidden** keyword was entered and if encryption is enabled on the switch.
show vtp status	Displays the VTP switch configuration information.

Configuration Examples for VTP

Example: Configuring the Switch as a VTP Server

This example shows how to configure the switch as a VTP server with the domain name *eng_group* and the password *mypassword*:

```
Switch(config)# vtp domain eng_group
Setting VTP domain name to eng_group.

Switch(config)# vtp mode server

Setting device to VTP Server mode for VLANS.
Switch(config)# vtp password mypassword

Setting device VLAN database password to mypassword.

Switch(config)# end
```

関連トピック

Configuring VTP Mode, （12 ページ）

VTP Modes, （3 ページ）

Example: Configuring a Hidden Password

This example shows how to configure a hidden password and how it appears.

```
Switch(config)# vtp password mypassword hidden
Generating the secret associated to the password.
Switch(config)# end
Switch# show vtp password
VTP password: 89914640C8D90868B6A0D8103847A733
```

関連トピック

Configuring a VTP Version 3 Password, （14 ページ）

Passwords for the VTP Domain, （9 ページ）

Example: Configuring a VTP Version 3 Primary Server

This example shows how to configure a switch as the primary server for the VLAN database (the default) when a hidden or secret password was configured:

```
Switch# vtp primary vlan

Enter VTP password: mypassword
This switch is becoming Primary server for vlan feature in the VTP domain
VTP Database Conf Switch ID Primary Server Revision System Name
------------ ---- -------------- -------------- -------- --------------------
VLANDB Yes 00d0.00b8.1400=00d0.00b8.1400 1 stp7
Do you want to continue (y/n) [n]? y
```

関連トピック

Configuring a VTP Version 3 Primary Server, （15 ページ）

Example: Configuring VTP on a Per-Port Basis

This example shows how to configure VTP on a per-port basis:

```
Switch(config)# interface gigabitethernet 1/0/1
Switch(config-if)# vtp
Switch(config-if)# end
```

関連トピック

Configuring VTP on a Per-Port Basis, （19 ページ）

Where to Go Next

After configuring VTP, you can configure the following:

- VLANs

- VLAN trunking
- Private VLANs
- VLAN Membership Policy Server (VMPS)
- Tunneling
- Voice VLANs

Additional References

Related Documents

Related Topic	Document Title
For complete syntax and usage information for the commands used in this chapter.	*Catalyst 2960-XR Switch VLAN Management Command Reference*

Standards and RFCs

Standard/RFC	Title
—	—

MIBs

MIB	MIBs Link
All supported MIBs for this release.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/support

Feature History and Information for VTP

Release	Modification
Cisco IOS 15.0(2)EX1	This feature was introduced.