

VLAN Membership on a Cisco Business 250 or 350 Switch

Objective

This article provides instructions on how to assign a port to one or more VLANs in the Cisco Business 250 or 350 series switch.

Applicable Devices | Software Version

- CBS250 ([DataSheet](#)) | 3.0.0.69 ([Download latest](#))
- CBS350 ([Data Sheet](#)) | 3.0.0.69 ([Download latest](#))
- CBS350-2X ([Data Sheet](#)) | 3.0.0.69 ([Download latest](#))
- CBS350-4X ([Data Sheet](#)) | 3.0.0.69 ([Download latest](#))

Introduction

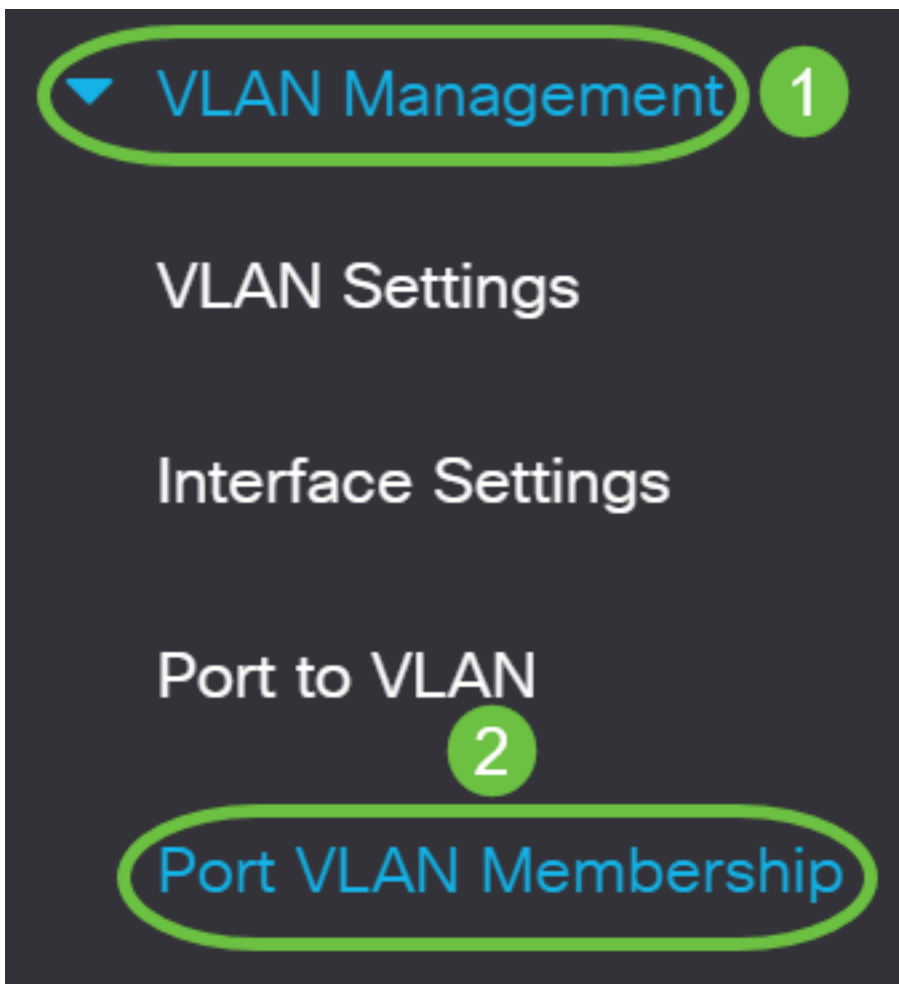
A Virtual Local Area Network (VLAN) allows you to logically segment a Local Area Network (LAN) into different broadcast domains. In scenarios where sensitive data may be broadcast on a network, VLANs can be created to enhance security by designating a broadcast to a specific VLAN. Only users that belong to a VLAN are able to access and manipulate the data on that VLAN. VLANs can also be used to enhance performance by reducing the need to send broadcasts and multicasts to unnecessary destinations.

A VLAN allows a group of hosts that are not connected to the same switch to communicate as if they were on the same broadcast domain. An interface that has VLAN traffic needs to have the VLANs assigned to that interface, or packets may be dropped. When Generic Attribute Registration Protocol (GARP) VLAN Registration Protocol (GVRP) is enabled for an interface, then VLANs can be dynamically assigned and it is not necessary to manually assign them.

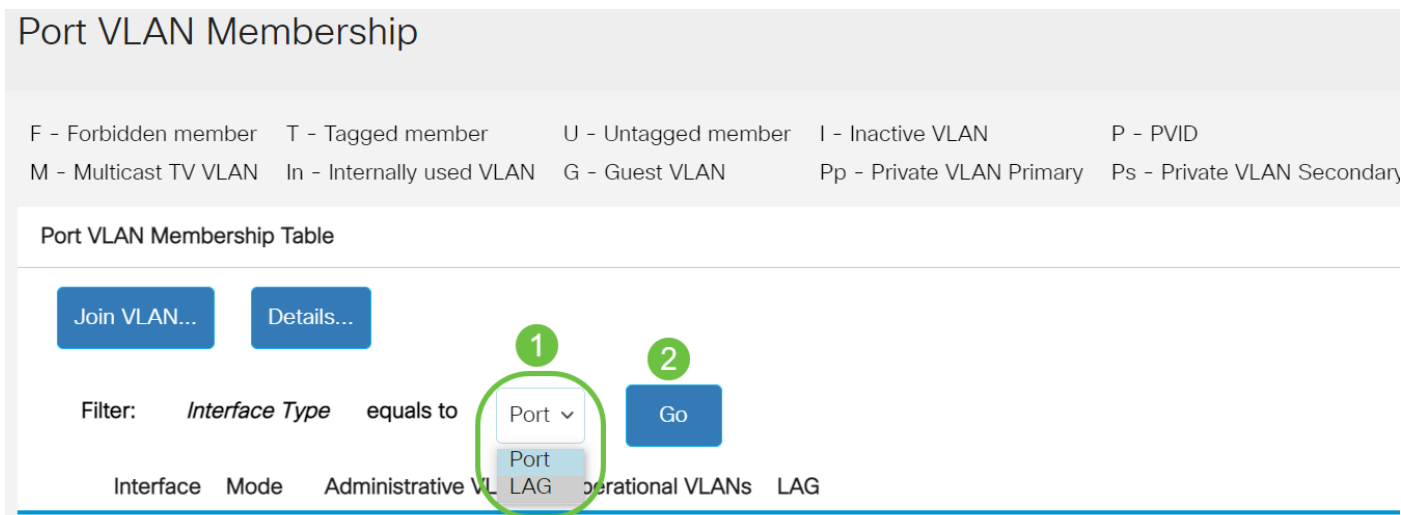
This article provides instructions on how to assign a port to one or more VLANs in the Cisco Business 250 or 350 series switch.

Configure VLAN Membership of an Interface

Step 1. Log in to the web-based utility of your switch then choose **VLAN Management > Port VLAN Membership**.



Step 2. Choose the interface type (Port or LAG) and click **Go**.



The following fields are displayed for all interfaces of the selected type:

- Interface - Port or LAG ID.
- Mode - Interface VLAN mode that was selected in the Interface Settings page.
- Administrative VLANs - Drop-down list that displays all VLANs of which the interface might be a member.
- Operational VLANs - Drop-down list that displays all VLANs of which the interface is currently a member.
- LAG - If the interface selected is Port, it will display the LAG in which it is a member.

Note: In this example, Port is chosen.

Step 3. Click the radio button of a port that you want to configure.

	Interface	Mode	Administrative VLANs	Operational VLANs	LAG
<input type="radio"/>	GE1	Access	1U	1U	
<input type="radio"/>	GE2	Access	1U	1U	
<input checked="" type="radio"/>	GE3	Access	1U	1U	
<input type="radio"/>	GE4	Access	1U	1U	
<input type="radio"/>	GE5	Access	1U	1U	

Note: In this example, GE3 is chosen.

Step 4. Click the **Join VLAN** button.

Port VLAN Membership Table

Filter: *Interface Type* equals to

	Interface	Mode	Administrative VLANs	Operational VLANs	LAG
<input type="radio"/>	GE1	Access	1U	1U	
<input type="radio"/>	GE2	Access	1U	1U	
<input checked="" type="radio"/>	GE3	Access	1U	1U	

Step 5. Make sure the correct Port or LAG is chosen in the Interface area.

Edit VLAN Membership

Interface: Port GE3 LAG 1

Current VLAN Mode: Access

Note: The Current VLAN Mode displays the port VLAN mode that was chosen in the Interface Settings page. In this example, the mode is set to Access. To learn more about how to configure this feature, click [here](#) for instructions.

Step 6. Choose an access VLAN ID from the drop-down list. When the port is in Access mode, it will be a member of the Access VLAN. The default value is 1.

Access Mode Membership (Active)

These are the VLAN membership settings for the current active VLAN interface mode. These settings will take effect immediately.

Access VLAN ID:

20

None

1

20

Multicast TV VLAN:

Note: In this example, VLAN 20 is chosen.

Step 7. Choose a multicast TV VLAN from the drop-down list. When the port is in Access mode, it will be a member of the Multicast TV VLAN. The default value is None.

Access Mode Membership (Active)

These are the VLAN membership settings for the current

Access VLAN ID:

20

Multicast TV VLAN:

None

None

1

20

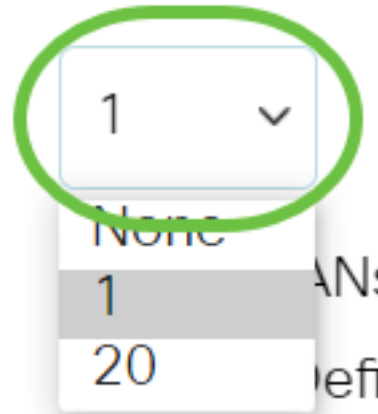
The following settings are for the interface VLAN

The following settings are for the inactive interface VLAN modes. These effects will be saved, but will not take effect until the interface VLAN mode is changed in the VLAN Interface Settings page. To learn more about how to configure this feature, click [here](#) for instructions.

Step 8. Choose a native VLAN ID from the drop-down list. When the port is in Trunk mode, it will be a member of the Native VLAN. The default value is 1.

Trunk Mode Membership

Native VLAN ID:



1

None

1

20

Tagged VLANs:

Step 9. When the port is in Trunk mode, it will be a member of the Tagged VLANs. Choose from the following options:

- All VLANs - When the port is in Trunk mode, it will be a member of all VLANs.
- User Defined - When the port is in Trunk mode, it will be a member of the VLANs that are entered in this field.

Trunk Mode Membership

Native VLAN ID:

Tagged VLANs:

All VLANs

User Defined

30-40

(VLAN Range; Example: 1,3,5-10)

Note: In this example, User Defined is chosen and VLANs 30-40 are used.

Step 10. Enter the VLAN ID in the *Untagged VLANs* field. When the port is in General mode, it will be an untagged member of this VLAN.

General Mode Membership

Untagged VLANs:

1

(VLAN Range; Example: 1,3,5-10)

Note: In this example, VLAN 1 is used.

Step 11. Enter the VLAN ID in the *Tagged VLANs* field. When the port is in General mode, it will be a tagged member of this VLAN.

General Mode Membership

Untagged VLANs: (VLAN Range; Example: 1,3,5-10)
Tagged VLANs: (VLAN Range; Example: 1,3,5-10)

Note: In this example, VLAN 30 is used.

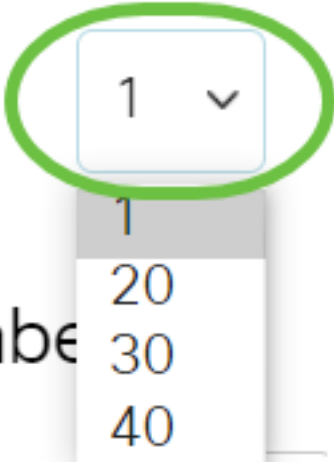
Step 12. Enter the VLAN ID in the *Forbidden VLANs* field. When the port is in General mode, the interface is not allowed to join the VLAN even from GVRP registration. When a port is not a member of any other VLAN, enabling this option on the port makes the port part of internal VLAN 4095 which is a reserved VLAN ID (VID).

General Mode Membership

Untagged VLANs: (VLAN Range; Example: 1,3,5-10)
Tagged VLANs: (VLAN Range; Example: 1,3,5-10)
Forbidden VLANs: (VLAN Range; Example: 1,3,5-10)

Note: In this example, VLAN 40 is used.

Step 13. Choose a VLAN ID from the General PVID drop-down list. When the port is in General mode, it will be a member of these VLANs. The default value is 1.

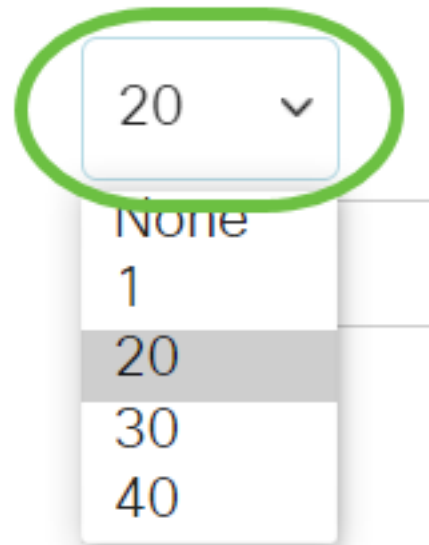
General PVID: 

Customer Mode Member

Step 14. (Optional) Choose a VLAN ID from the Customer VLAN ID drop-down list. When the port is in Customer mode, it will be a member of this VLAN.

Customer Mode Membership

Customer VLAN ID:



A dropdown menu for 'Customer VLAN ID' is shown. The selected value is '20'. The dropdown list is open, showing options: 'None', '1', '20' (highlighted), '30', and '40'. A green circle highlights the dropdown menu.

Customer Multicast VLANs:

Note: In this example, VLAN 20 is chosen.

Step 15. (Optional) Enter the VLAN ID in the *Customer Multicast VLANs* field. When the port is in Customer mode, it will be a member of this Multicast TV VLAN.

Customer Mode Membership

Customer VLAN ID:



A dropdown menu for 'Customer VLAN ID' is shown with the value '20' selected.

Customer Multicast VLANs:



An empty text input field for 'Customer Multicast VLANs' is shown, highlighted with a green circle.

(VLAN Range; Example: 1,3,5-10)

Note: In this example, no VLAN ID is entered.

Step 16. Click **Apply** then click **Close**.

Interface: Port GE3 LAG 1

Current VLAN Mode: Access

Access Mode Membership (Active)

These are the VLAN membership settings for the current active VLAN interface mode. These settings will take effect immediately.

Access VLAN ID: 20

Multicast TV VLAN: None

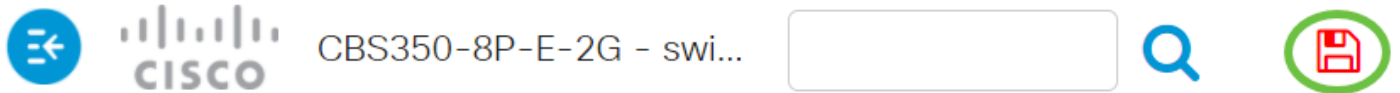
The following settings are for the inactive interface VLAN modes. these effects will be saved, but will not take effect until the interface VLAN mode is changed in the [VLAN Interface Settings screen](#).

Trunk Mode Membership

Native VLAN ID: 1

Apply Close

Step 17. (Optional) Click **Save** to save settings to the startup configuration file.



Port VLAN Membership

F - Forbidden member T - Tagged member U - Untagged member I - In
 M - Multicast TV VLAN In - Internally used VLAN G - Guest VLAN Pp -

Port VLAN Membership Table

You have now successfully assigned a port to one or more VLANs in the switch.

Looking for more information on VLANs for your Cisco Business Switches? Check out any of the following links for more information.

- [Create VLANs Private VLAN Membership Access and Trunk Ports Protocol-Based Groups to VLAN Port to VLAN Settings Subnet-Based VLAN Configure Multicast TV Group to VLAN Protocol-Based VLAN Groups Access Port Multicast TV VLAN Membership Customer Port Multicast TV VLAN Membership](#)

Article Skeleton w/ Content

Objective

This article provides instructions on how to configure an interface VLAN as an access or trunk port on your Cisco Business 350 series switch through the Command Line Interface (CLI).

Introduction

A Virtual Local Area Network (VLAN) allows you to logically segment a Local Area Network (LAN) into different broadcast domains. In scenarios where sensitive data may be broadcast on a network, VLANs can be created to enhance security by designating a broadcast to a specific VLAN. Only users that belong to a VLAN are able to access and manipulate the data on that VLAN.

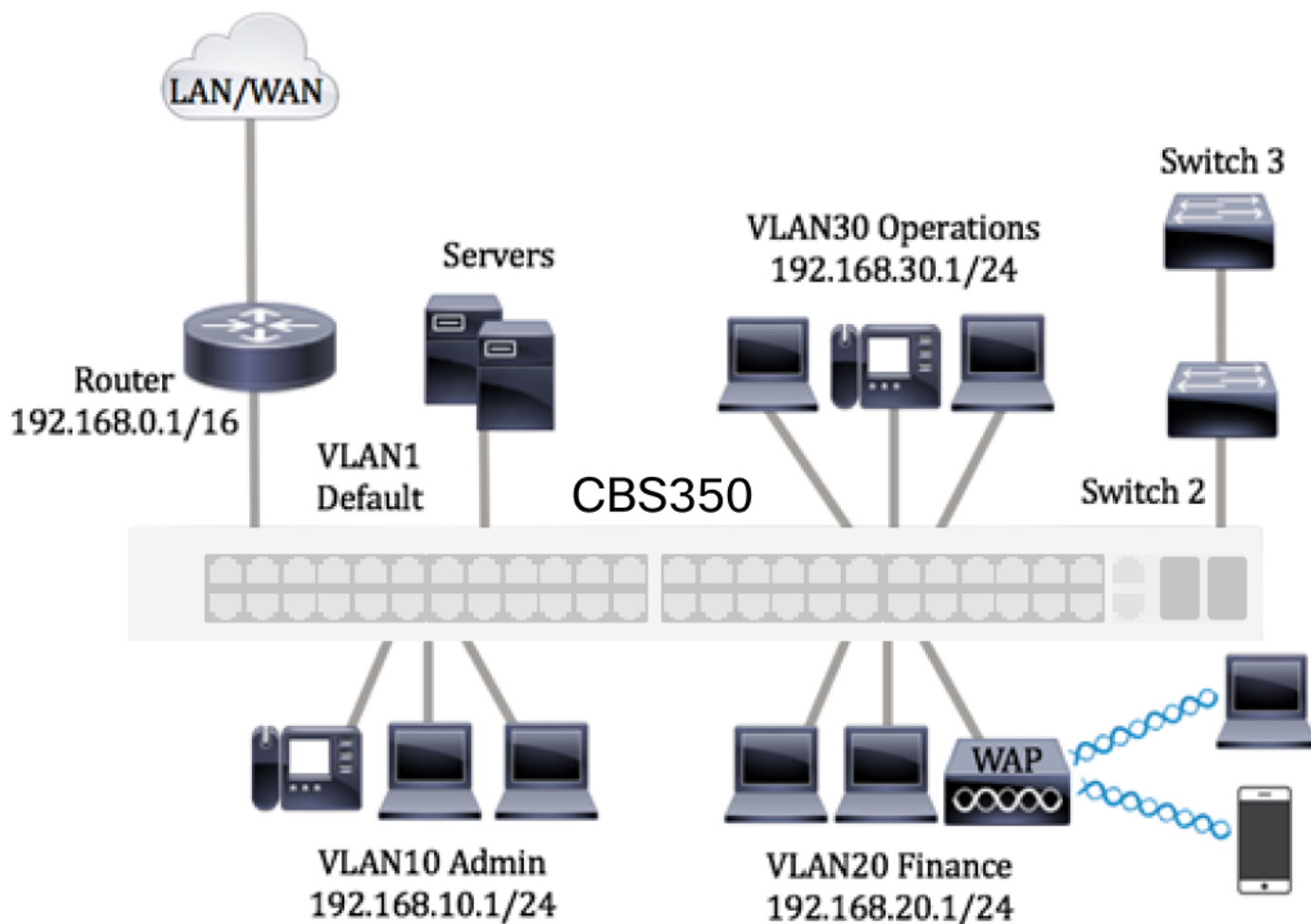
You can configure the ports and specify whether the port should be in access or trunk mode, and assign specific ports to VLANs.

VLAN is a network that is usually segmented by function or application. VLANs behave much like physical LANs, but you can group hosts even if they are not physically co-located. A switch port can belong to a VLAN. Unicast, broadcast, and multicast packets are forwarded and flooded out ports in the same VLAN.

VLANs can also be used to enhance performance by reducing the need to send broadcasts and multicasts to unnecessary destinations. It also eases network configuration by logically connecting devices without physically relocating those devices.

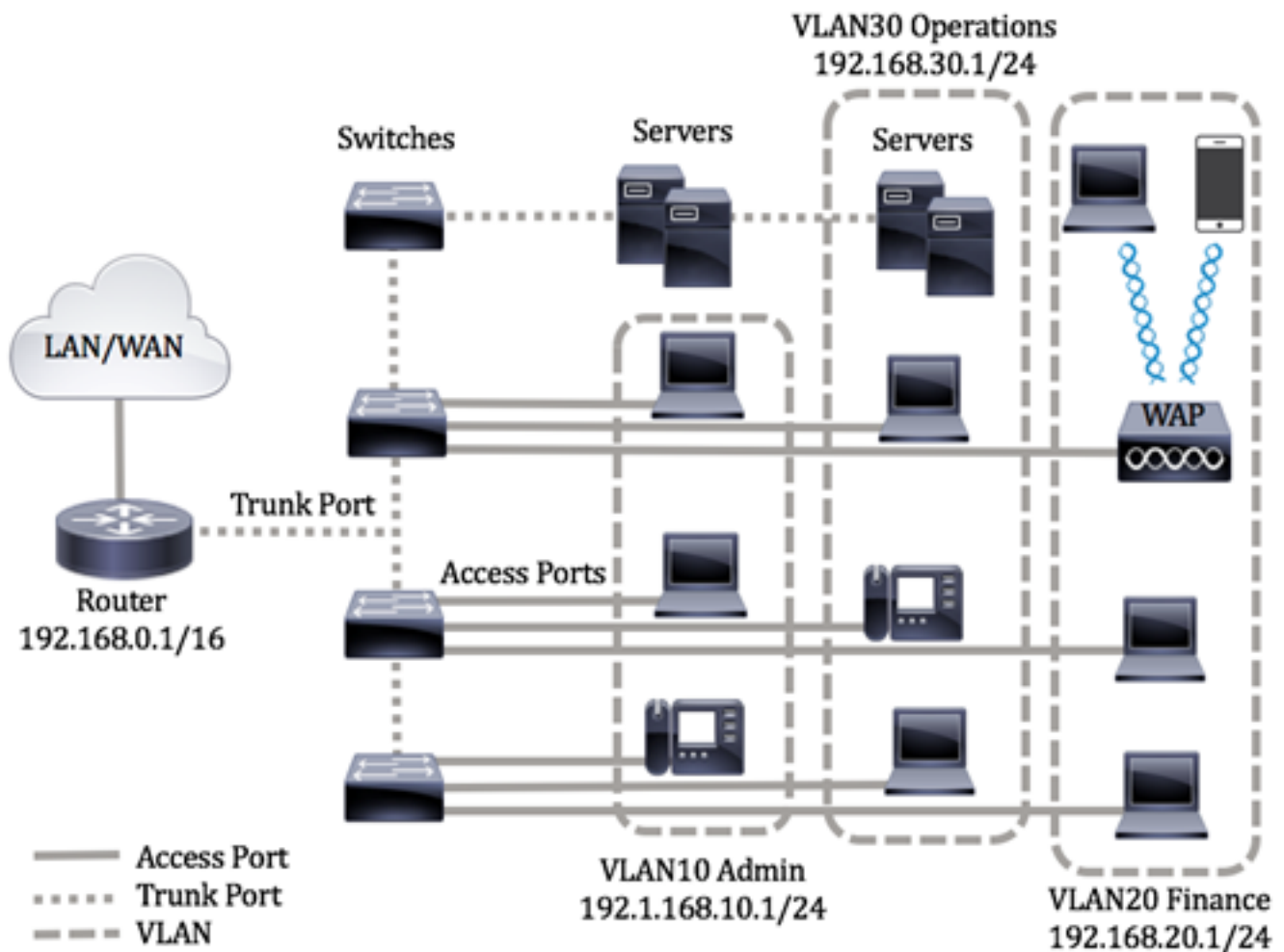
To learn how to configure the VLAN settings on your switch through the web-based utility, click [here](#). For CLI-based instructions, click [here](#).

The image below displays a CBS350 switch that is configured with the following VLANs:



- VLAN1 - This is the default VLAN. The switch is connected to the router through this VLAN. This can be used but cannot be modified or deleted.
- VLAN10 - Virtual network for the Admin department. The network address is 192.168.10.1 with subnet mask 255.255.255.0 or /24.
- VLAN20 - Virtual network for the Finance department. The network address is 192.168.20.1 with subnet mask 255.255.255.0 or /24.
- VLAN30 - Virtual network for the Operations department. The network address is 192.168.30.1 with subnet mask 255.255.255.0 or /24.

In a bigger network, the configured VLANs with interfaces assigned as access and trunk ports on switches could look like this:



The port modes are defined as follows:

- Access Port - The frames received on the interface are assumed to not have a VLAN tag and are assigned to the specified VLAN. Access ports are used primarily for hosts and can only carry traffic for a single VLAN.
- Trunk Port - The frames received on the interface are assumed to have VLAN tags. Trunk ports are for links between switches or other network devices and are capable of carrying traffic for multiple VLANs.

Note: By default, all interfaces are in trunk mode, which means they can carry traffic for all VLANs. To know how to assign an interface VLAN as an Access or Trunk port through the web-based utility of the switch, click [here](#).

[To configure VLANs, follow these guidelines:](#)

1. Create the VLANs. To learn how to configure the VLAN settings on your switch through the web-based utility, click [here](#). For CLI-based instructions, click [here](#).
2. (Optional) Set the desired VLAN-related configuration for ports. For instructions on how to configure the VLAN interface settings on your switch through the web-based utility, click [here](#). For CLI-based instructions, click [here](#).
3. Assign interfaces to VLANs. For instructions on how to assign interfaces to VLANs through the web-based utility of your switch, click [here](#).

4. (Optional) Configure VLAN groups on your switch. You can configure any of the following:

- MAC-based VLAN Group Overview - For instructions on how to configure MAC-based VLAN Groups through the web-based utility of your switch, click [here](#). For CLI-based instructions, click [here](#).
- Subnet-based VLAN Groups Overview - For instructions on how to configure subnet-based VLAN Groups through the web-based utility of your switch, click [here](#). For CLI-based instructions, click [here](#).
- Protocol-based VLAN Groups Overview - For instructions on how to configure Protocol-based VLAN Groups through the web-based utility of your switch, click [here](#). For CLI-based instructions, click [here](#).

5. (Optional) Configure TV VLAN settings on your switch. You can configure any of the following:

- Access Port Multicast TV VLAN - For instructions on how to configure Access Port Multicast TV VLAN through the web-based utility of your switch, click [here](#).
- Customer Port Multicast TV VLAN - For instructions on how to configure Customer Port Multicast TV VLAN through the web-based utility of your switch, click [here](#).

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- CBS350-2X ([Data Sheet](#)) | 3.0.0.69 ([Download latest](#))
- CBS350-4X ([Data Sheet](#)) | 3.0.0.69 ([Download latest](#))

Configure VLAN Interface Settings on the Switch through the CLI

Configure Interface as Access Port and Assign to VLAN

Step 1. Log in to the switch console. The default username and password is cisco/cisco. If you have configured a new username or password, enter the credentials instead.

```
(User Name:cisco  
(Password:*****
```

The commands may vary depending on the exact model of your switch.

Step 2. To display the current VLAN on the switch, enter the following:

```
CBS350#show vlan
```

Step 3. From the Privileged EXEC mode of the switch, enter the Global Configuration mode by entering the following:

```
CBS350#configure terminal
```

Step 4. In the Global Configuration mode, enter the Interface Configuration context by entering the following:

```
CBS350(config)#interface [interface-id | range vlan vlan-range]
```

The options are:

- interface-id - Specifies an interface ID to be configured.
- range vlan vlan-range - Specifies a list of VLANs. Separate nonconsecutive VLANs with a comma and no spaces. Use a hyphen to designate a range of VLANs.

Step 5. In the Interface Configuration context, use the **switchport mode** command to configure the VLAN membership mode.

```
CBS350(config-if-range)#switchport mode access
```

Step 6. Use the **switchport access vlan** command to assign the port or range of ports into access ports. A port in access mode can have only one VLAN configured on the interface which can carry traffic for only one VLAN.

```
CBS350(config-if-range)#switchport access vlan [vlan-id | none]
```

The options are:

- vlan-id - Specifies the VLAN to which the port is configured.
- none - Specifies that the access port cannot belong to any VLAN.

Step 7. (Optional) To return the port or range of ports to the default VLAN, enter the following:

```
CBS350(config-if-range)#no switchport access vlan
```

Step 8. To exit the Interface Configuration context, enter the following:

```
CBS350(config-if-range)#exit
```

Step 9. (Optional) Repeat steps 4 to 6 to configure more access ports and assign to the corresponding VLANs.

Step 10. Enter the **end** command to go back to the Privileged EXEC mode:

```
CBS350(config-if)#end
```

Step 11. (Optional) To display the configured ports on the VLANs, enter the following:

```
CBS350#show vlan
```

The configured ports should be displayed according to the assigned VLANs.

Step 12. (Optional) In the Privileged EXEC mode of the switch, save the configured settings to the startup configuration file, by entering the following:

```
CBS350#copy running-config startup-config
```

Step 13. (Optional) Press **Y** for Yes or **N** for No on your keyboard once the Overwrite file [startup-config]... prompt appears.

You should now have configured the interfaces on your switch as access ports and assigned to their corresponding VLANs.

Configure Interface as Trunk Port and Assign to VLAN

Step 1. In the Privileged EXEC mode of the switch, enter the Global Configuration mode by entering the following:

```
CBS350#configure terminal
```

Step 2. In the Global Configuration mode, enter the Interface Configuration context by entering the following:

```
CBS350#interface [interface-id | range vlan vlan-range]
```

The options are:

- interface-id - Specifies an interface ID to be configured.
- range vlan vlan-range - Specifies a list of VLANs. Separate nonconsecutive VLANs with a comma and no spaces. Use a hyphen to designate a range of VLANs.

Step 3. In the Interface Configuration context, use the **switchport mode** command to configure the VLAN membership mode.

```
CBS350(config-if)#switchport mode trunk
```

Step 4. (Optional) To return the port to the default VLAN, enter the following:

```
CBS350(config-if)#no switchport mode trunk
```

Step 5. Use the **switchport trunk allowed vlan** command to specify which VLANs the port belongs to when its mode is configured as trunk.

```
CBS350(config-if)#switchport trunk allowed vlan [all | none | add vlan-list | remove vlan-list | except vlan-list]
```

The options are:

- **all** - Specifies all VLANs from 1 to 4094. At any time, the port belongs to all VLANs existing at the time.
- **none** - Specifies an empty VLAN list. The port does not belong to any VLAN.
- **add** vlan-list - List of VLAN IDs to add to the port. Separate nonconsecutive VLAN IDs with a comma and no spaces. Use a hyphen to designate a range of IDs.
- **remove** vlan-list - List of VLAN IDs to remove from a port. Separate nonconsecutive VLAN IDs with a comma and no spaces. Use a hyphen to designate a range of IDs.
- **except** vlan-list - List of VLAN IDs including all VLANs from range 1-4094 except VLANs belonging to vlan-list.

Step 6. To exit the Interface Configuration context, enter the following:

```
CBS350(config-if)#exit
```

Step 7. (Optional) To return the port or range of ports to the default VLAN, enter the following:

```
CBS350(config-if)#no switchport trunk allowed vlan
```

Step 8. (Optional) Repeat steps 2 to 6 to configure more trunk ports and assign to the corresponding VLANs.

Step 9. Enter the **end** command to go back to the Privileged EXEC mode:

```
CBS350(config-if)#end
```

Step 10. (Optional) To display the configured ports on the VLANs, enter the following:

```
CBS350#show vlan
```

Note: The configured ports should be displayed according to the assigned VLANs.

Step 11. (Optional) In the Privileged EXEC mode of the switch, save the configured settings to the startup configuration file, by entering the following:

```
CBS350#copy running-config startup-config
```

Step 12. (Optional) Press **Y** for Yes or **N** for No on your keyboard once the Overwrite file [startup-config]... prompt appears.

You have now configured the interfaces on your Cisco Business 350 series switch as trunk ports and assigned to their corresponding VLANs.

Important: To proceed with configuring the VLAN group settings on your switch, follow the [guidelines](#) above.

Looking for more information on VLANs for your Cisco Business Switches? Check out any of the following links for more information.

[Create VLANs](#) [Private VLAN Membership](#) [Access and Trunk Ports](#) [Protocol-Based Groups](#)

[to VLAN](#) [Port to VLAN Settings](#) [Subnet-Based VLAN](#) [Configure Multicast TV Group to VLAN](#)
[Protocol-Based VLAN Groups](#) [Access Port Multicast TV VLAN Membership](#) [Customer Port](#)
[Multicast TV VLAN Membership](#)