

Configuration of LAG on Cisco Business 220 Series Switches

Objective

This article explains how to configure Link Aggregation Group (LAG) on the Cisco Business 220 Series Switches.

Introduction

A Link Aggregate Group (LAG) is used to link multiple ports together. LAGs multiply bandwidth, increase port flexibility, and provide link redundancy between two devices to optimize port usage. Link Aggregation Control Protocol (LACP) is part of an IEEE specification (802.3ad) that is used to bundle several physical ports to form a single logical channel.

Two types of LAGs are supported:

- Static - The ports in the LAG are manually configured. A LAG is static if LACP is disabled on it. The group of ports assigned to a static LAG are always active members.
- Dynamic - A LAG is dynamic if LACP is enabled on it. The group of ports assigned to dynamic LAG are candidate ports. LACP determines which candidate ports are active member ports.

Let's get started!

Applicable Devices | Software Version

- CBS220 series ([Data Sheet](#)) | 2.0.0.17

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LAG Management

Step 1

Log in to the web user interface (UI) of CBS220 switch.



Switch

admin **1**

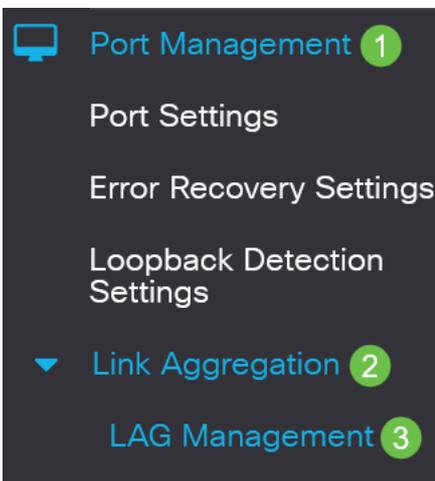
●●●●●●●● **2**

English **3**

Log In **3**

Step 2

Choose **Port Management > Link Aggregation > LAG Management**.



Step 3

Select the radio button of the desired algorithm in the *Load Balance Algorithm* field. Load Balancing is a method that maximizes throughput on a network to optimize resource usage.

- *MAC Address* - Load balancing is performed based on the source and destination MAC addresses of all packets.
- *IP / MAC Address* - Load balancing is performed based on the source and destination IP addresses of IP packets and by the source and destination MAC addresses on non-IP packets.

LAG Management

Load Balance Algorithm: MAC Address
 IP/MAC Address

Step 4

Click **Apply**.

LAG Management

Apply

Cancel

Define Member Ports in a LAG

Step 1

Log in to the web UI of the switch and choose **Port Management > Link Aggregation > LAG Management**. The *LAG Management* page opens.

LAG Management

Load Balance Algorithm: MAC Address
 IP/MAC Address

LAG Management Table



	Entry No.	Port	LAG Name	LACP	Link State	Active Member	Standby Member
<input type="radio"/>	1	LAG1		Disabled	Link Not Present		
<input type="radio"/>	2	LAG2		Disabled	Link Not Present		

Step 2

Select the *LAG* to be configured and click **Edit**.

LAG Management Table



	Entry No.	Port	LAG Name	LACP	Link State	Active Member	Standby Member
<input checked="" type="radio"/>	1	LAG1		Disabled	Link Not Present		

Step 3

Enter the values for the following fields:

- **LAG** - From the LAG drop-down list choose the LAG you want to configure.
- **LAG Name** - Enter the LAG name or a comment.
- **LACP** - Select to enable LACP on the selected LAG. This makes it a dynamic LAG. This field can only be enabled after moving a port to the LAG in the next field.
- **Port List** - Move the ports that are assigned to the Port List LAGs to the LAG Members. Up to eight ports per static LAG can be assigned, and 16 ports can be assigned to a dynamic LAG.

Click **Apply**.

Edit LAG Membership



Interface: LAG LAG1 1

LAG Name: (4/32 characters used) 2

LACP: Enable 3

Port List:

LAG Members:

GE5 GE6 GE7 GE8 GE9 GE10	> <	GE1 GE2 GE3 GE4	4
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5

Apply

Close

LAG Settings

Step 1

Choose **Port Management > Link Aggregation > LAG Settings**.

Port Management 1

Port Settings

Error Recovery Settings

Loopback Detection Settings

Link Aggregation 2

LAG Management

LAG Settings 3

Step 2

Select a *LAG* and click **Edit**.

LAG Settings

LAG Setting Table



Working Time Range

1	Entry No.	Port	Description	Type	Status	Time Range Name	Operational Status	Speed	Flow Control
	1	LAG1			Down		Inactive		Off

Step 3

From the *LAG* drop-down list choose a LAG to configure.

Edit LAG Settings

Interface: LAG LAG1 LAG Type:

Step 4

Enter a name for the LAG in the *Description* field.

Interface: LAG LAG1 LAG Type:
Description: LAG1 (4/32 characters used)

Step 5

Click the radio button that corresponds to the desired LAG status in the *Administrative Status* field. The *Operational Status* field displays the current state of the LAG.

- Up - The LAG is up and operational.
- Down - The LAG is down and not operational.

Administrative Status: Up Down
Operational Status: Down

Step 6

In the *Time Range* field, check the **Enable** checkbox to enable the time range during which the port is in up state. When the time range is not active, the port is in shutdown. If a time range is configured, it is effective only when the port is administratively up.

Time Range:



Step 7

(Optional) If *Time Range* was enabled in the previous step, select the profile that specifies the time range in the *Time Range Name* field. If a time range is not yet defined, click **Edit** to go to the *Time Range* page.

Time Range Name:



[Edit](#)

Time range needs to be enabled to select a time range name.

Step 8

Check the **Enable** checkbox in the *Auto Negotiation* field to enable or disable auto negotiation on the LAG. Auto negotiation is a protocol between two link partners that enables a LAG to advertise its transmission speed and flow control to its partner (the Flow Control default is disabled). The *Operational Auto Negotiation* field displays the auto-negotiation settings.

Auto Negotiation:



Operational Auto Negotiation: Enabled

It is recommended to keep auto negotiation enabled on both sides of an aggregate link, or disabled on both sides, while ensuring that link speeds are identical.

Step 9

If *Auto Negotiation* is disabled in the previous step, select the *Administrative Port Speed*. The *Operational Lag Speed* displays the current speed at which the LAG is operating.

The available speeds are:

- 10M
- 100M
- 1000M
- 10G

Administrative Port Speed:

- 10M
 100M
 1000M
 10G

Operational LAG Speed:

The speed may vary depending on the model of your switch.

Step 10

In the *Auto Advertisement Speed* field, check the capabilities to be advertised by the LAG. The *Operational Advertisement* displays the administrative advertisement status. The LAG advertises its capabilities to its neighbor LAG to start the negotiation process. The options are:

- All Speed - All LAG speeds and both duplex modes are available.
- 10M - The LAG advertises a 10 Mbps speed and the mode is full duplex.
- 100M - The LAG advertises a 100 Mbps speed and the mode is full duplex.
- 1000M - The LAG advertises a 1000 Mbps speed and the mode is full duplex.
- 10/100M - The LAG advertises a 10/100 Mbps speed and the mode is full duplex.
- 10G - The LAG advertises a 10G speed and the mode is full duplex.

Auto Advertisement Speed: All Speed Operational Advertisement:
 10M
 100M
 1000M
 10M/100M
 10G

Step 11

Check the **Enable** checkbox in the *Back Pressure* field. Back Pressure mode is used with half duplex mode to slow down packet reception rate.

Back Pressure: Enable

Step 12

Select one of the options in the *Administrative Flow Control* field. Flow control is a feature that allows the receiving device to send a signal to the sending device that it's congested. This tells the sending device to temporarily stop transmitting to help ease the congestion. The *Operational Flow Control* shows the current flow control setting.

The options are:

- *Enable*
- *Disable*
- *Auto-Negotiation*

Flow Control: Enable Current Flow Control: Disabled
 Disable
 Auto-Negotiation

Step 13

Check the checkbox to **Enable Protected Port** setting. The Protected Port feature provides Layer 2 isolation between interfaces (Ethernet ports and LAGs) that share the

same VLAN with other interfaces.

Devices from protected ports are not allowed to communicate with each other even when they are in the same VLAN.

Protected Port:



Step 14

Click **Apply**.



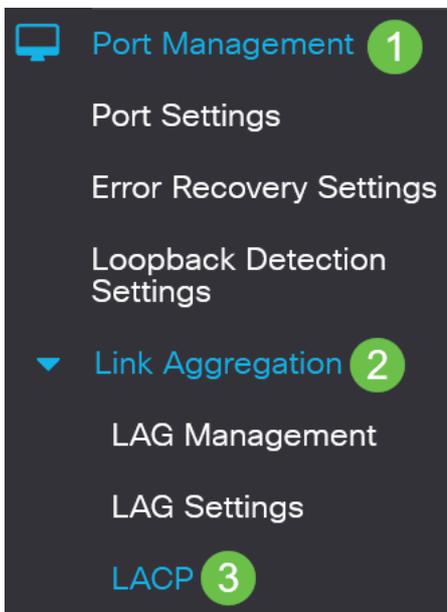
Link Aggregation Control Protocol (LACP)

Link Aggregation Control Protocol (LACP) is used to prioritize ports on a LAG. A dynamic LAG can have up to 16 ports of the same type but only 8 can be active at one time. When a LAG has more than 8 ports, the switch uses LACP port priority to determine which ports will become active.

To define the LACP settings, complete the following steps:

Step 1

Log in to the web UI and choose **Port Management > Link Aggregation > LACP**.



Step 2

Enter a LACP priority in the *LACP System Priority* field. The LACP priority is used to determine which device controls port selection to the LAG. Devices with a lower value will have higher priority. If both switches have the same LACP priority, the switch with the lower MAC address will be given control of port selection.

LACP

LACP System Priority (Range: 1 - 65535, Default: 32768)

Step 3

Select the port you want to edit and click **Edit**.

LACP Interface Table



1	Entry No.	Port	Port Priority	LACP Timeout
	1	GE1	1	Long
	2	GE2	1	Long

Step 4

In the *Edit LACP Settings* dialog box, enter the values for the following fields:

- *Port* - Select the port number to which timeout and priority values are assigned.
- *LACP Port Priority* - Enter the LACP priority value for the port.
- *LACP Timeout* - This determines the interval at which LACP protocol data units (PDUs) are sent or received.
 - Long - The interval between a sent or received LACP PDU and the next consecutive LACP PDU is long (30 seconds).
 - Short - The interval between a sent or received LACP PDU and the next consecutive LACP PDU is short (1 second).

Edit LACP Settings

Interface: Port

LACP Port Priority: (Range: 1 - 65535, Default: 1)

LACP Timeout: Long Short

Step 5

Click **Apply**.

Edit LACP Settings

Interface: Port

Conclusion

You did it! You have successfully configured LAG on your CBS220 switch.

For more configurations, refer to the [Cisco Business 220 Series Switches Administration Guide](#).