Understanding Aggregated Ethernet Interfaces and LACP

IEEE 802.3ad link aggregation enables you to group Ethernet interfaces to form a single link layer interface, also known as a *link aggregation group (LAG)* or *bundle*.

Link aggregation can be used for point-to-point connections. It balances traffic across the member links within an aggregated Ethernet bundle and effectively increases the uplink bandwidth. Another advantage of link aggregation is increased availability, because the LAG is composed of multiple member links. If one member link fails, the LAG continues to carry traffic over the remaining links.

Link Aggregation Group (LAG)

You configure a LAG by specifying the link number as a physical device and then associating a set of ports with the link. All the ports must have the same speed and be in full-duplex mode. JUNOS software for EX-series switches assigns a unique ID and port priority to each port. The ID and priority are not configurable. When configuring LAG, consider the following guidelines:

- Up to 8 Ethernet ports can be created in each bundle.
- Up to 64 LAGs are supported in a virtual chassis configuration on EX 4200 switches.
- Up to 127 LAGs are supported on EX 8200 series switches.
- LAG must be configured on both sides of the link.
- The ports on either side of the link must be set to the same speed.
- Link Aggregation Control Protocol (LACP) can optionally be configured for link negotiation.

NOTE: The interfaces that are included within a bundle or LAG are sometimes referred to as *member interfaces*. Do not confuse this term with *member switches*, which refers to EX 4200 switches that are interconnected as a virtual chassis. It is possible to create a LAG that is composed of member interfaces that are located in different member switches of a virtual chassis.

You can configure and apply firewall filters on a LAG.

A typical deployment for LAG would be to aggregate trunk links between an access switch and a distribution switch or customer edge (CE) router. LAG is not supported on virtual chassis port links. LAG can only be used for a point-to-point connection.

Link Aggregation Control Protocol (LACP)

LACP, a subcomponent of IEEE 802.3ad, provides additional functionality for LAG. When LACP is configured, it detects misconfigurations on the local end or the remote end of the link.

About enabling LACP:

- When LACP is not enabled, a local LAG might attempt to transmit packets to a remote single interface, which causes the communication to fail.
- When LACP is enabled, a local LAG cannot transmit packets unless a LAG with LACP is also configured on the remote end of the link.

By default, Ethernet links do not exchange protocol data units (PDUs), which contain information about the state of the link. You can configure Ethernet links to actively transmit PDUs, or you can configure the links to passively transmit them, sending out LACP PDUs only when they receive them from another link. The transmitting link is known as the *actor* and the receiving link is known as the *partner*.

If the remote end of the LAG is a security device, LACP might not be supported because security devices require a deterministic configuration. In this case, do not configure LACP. All links on the LAG are permanently operational unless the switch detects a link failure within the Ethernet physical layer or data link layers.

Related Topics

- Understanding Virtual Chassis Configurations and Link Aggregation
- Understanding Redundant Trunk Links on EX Series Switches
- Example: Configuring Aggregated Ethernet High-Speed Uplinks Between a Virtual Chassis Access Switch and a Virtual Chassis Distribution Switch
- Example: Configuring Aggregated Ethernet High-Speed Uplinks with LACP Between a Virtual Chassis Access Switch and a Virtual Chassis Distribution Switch
- *JUNOS Network Interfaces Configuration Guide* at http://www.juniper.net/techpubs/software/junos/junos90/index.html

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