

Sun Ethernet Fabric Operating System

LA Administration Guide



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Using This Documentation

Oracle's LA software enables one or more links to be aggregated together to form a LA group as if it were a single link. LA supports the establishment of logical links, which consist of N number of parallel, full-duplex, point-to-point links operating at the same data rate. This guide explains the configurations for LA running as a part of the SEFOS. You should have a basic knowledge of the protocol as a prerequisite.

- "Product Notes" on page 1
- "Related Documentation" on page 2
- "Acronyms and Abbreviations" on page 2
- "CLI Command Modes" on page 3
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Product Notes

For late-breaking information and known issues about the following products, refer to the product notes at:

Sun Blade 6000 Ethernet Switched NEM 24p 10GbE:

<http://www.oracle.com/pls/topic/lookup?ctx=SB6K-24p-10GbE>

Sun Network 10GbE Switch 72p:

<http://www.oracle.com/pls/topic/lookup?ctx=SN-10GbE-72p>

Related Documentation

Documentation	Links
All Oracle products	http://oracle.com/documentation
Sun Blade 6000 Ethernet Switched NEM 24p 10GbE	http://www.oracle.com/pls/topic/lookup?ctx=SB6K-24p-10GbE
Sun Network 10GbE Switch 72p	http://www.oracle.com/pls/topic/lookup?ctx=SN-10GbE-72p
Sun Blade 6000 modular system	http://www.oracle.com/pls/topic/lookup?ctx=sb6000
Oracle Integrated Lights Out Manager (Oracle ILOM) 3.0	http://www.oracle.com/pls/topic/lookup?ctx=ilom30

For detailed information about the commands and options described in this document, refer to the *Sun Ethernet Fabric Operating System CLI Base Reference Manual*.

Acronyms and Abbreviations

Acronym or Abbreviation	Explanation
GARP	Generic Attribute Registration Protocol
GVRP	GARP VLAN Registration Protocol
IGMP	Internet Group Management Protocol
LA	Link aggregation
LACP	LA Control Protocol
MAC	Media address control
MI	Multiple instances
MRP	Multicast Routing Protocol
PAgP	Port Aggregation Protocol

Acronym or Abbreviation	Explanation
PDU	Path discovery unit
STP	Spanning Tree Protocol
VLAN	Virtual local area network

CLI Command Modes

The following table lists the configuration modes used in this document with their access and exit methods.

Command Mode	Access Method	Prompt	Exit Method
User EXEC	Access SEFOS from Oracle ILOM with read-only rights (privilege level 1).	SEFOS>	Use the <code>logout</code> or <code>exit</code> command to return to the Oracle ILOM prompt.
Privileged EXEC	Access SEFOS from Oracle ILOM with full administrative rights (privilege level 15).	SEFOS#	Use the <code>logout</code> or <code>exit</code> command to return to the Oracle ILOM prompt.
Global Configuration	From User EXEC mode, use the <code>enable</code> command.	SEFOS(config)#	Use the <code>end</code> command to return to Privileged EXEC mode.
Interface Configuration	From Global Configuration mode, use the <code>interface interface-type interface-id</code> command.	SEFOS(config-if)#	Use the <code>exit</code> command to return to Global Configuration mode, or use the <code>end</code> command to return to Privileged EXEC mode.

Feedback

Provide feedback on this documentation at:

<http://www.oracle.com/goto/docfeedback>

Support and Accessibility

Description	Links
Access electronic support through My Oracle Support	http://support.oracle.com
Learn about Oracle's commitment to accessibility	For hearing impaired: http://www.oracle.com/accessibility/support.html http://www.oracle.com/us/corporate/accessibility/index.html

LA Overview

This section describes the LA protocol:

- [“Protocol Description” on page 5](#)

Protocol Description

LA enables aggregation of point-to-point links operating at the same data rate. LA is supported only on point-to-point links with MAC clients operating in full-duplex mode.

A MAC client communicates with a set of ports through an aggregator, which presents a standard IEEE 802.3 service interface to the MAC client. The aggregator binds to one or more ports within a system.

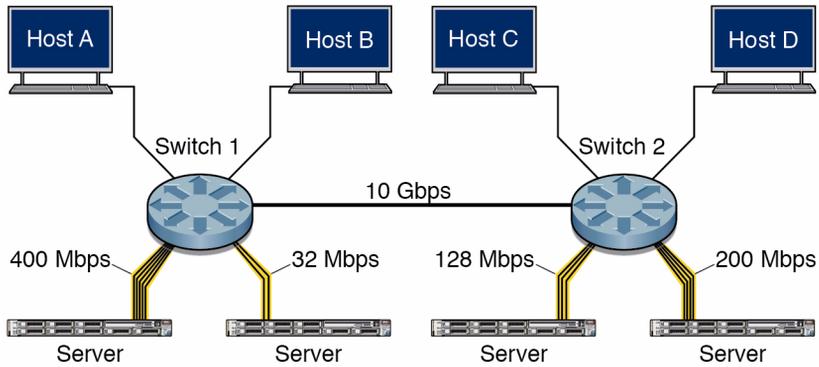
LACP is used for automatic communication of aggregation capabilities and automatic configuration of link aggregation between systems. The list of ports that are aggregated to a particular aggregator, is transparent to the higher modules (such as spanning tree).

LA features include:

- Load sharing
- Increased availability
- Increased bandwidth
- Linear incremental bandwidth
- Low risk of duplication or misordering

Upon link aggregation, individual point-to-point ports or interfaces are aggregated into a group that is regarded as a single port or interface by the higher layers, such as the spanning tree. The total capacity of such an aggregated group is the sum of the capacities of the individual links that compose the aggregate. Thus, LA provides higher bandwidth to the MAC client (such as spanning tree).

As shown in the following illustration, multiple links on the server side of the switch are aggregated together to form a single link.



SEFOS LA takes frames from the aggregator and submits them for transmission on the appropriate port. The physical port for transmission is chosen based on the selection policy in the chip set. Similarly, SEFOS LA collects the frames that are received on various ports of the aggregator.

You can configure a specific distribution policy for the traffic flow based on the deployment scenario. This scenario allows the switches to take advantage of the increased bandwidth for the traffic between the hosts and the server. Also, if one of the links in the aggregation group is brought down for maintenance, the loss of the link will not affect the traffic between the hosts and the server.

Configuring LA

The following sections describe the configuration of LA running as a part of SEFOS.

- “LA Topology Example” on page 7
- “Configuration Guidelines” on page 8
- “Default Settings” on page 8
- “Enable Link Aggregation” on page 8
- “Configure Port-Channel Interfaces” on page 9
- “Configure the LACP System Priority” on page 13
- “Configure Port Channel Load Balancing” on page 15
- “Configure the LACP System Identifier” on page 16
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LA Topology Example

This illustration shows the topology used in the example procedures.



By default, SEFOS supports a maximum of 8 ports per aggregation, assuming that the maximum number of ports per aggregation is 2.

Configuration Guidelines

The following guidelines must be met:

- Enable port-channel in the system for LA configuration to take effect.
- If 802.1x is enabled on a port, then enable LA on that port only when the port is in the authorized state. You cannot enable LA on unauthorized ports.

Default Settings

SEFOS is shipped with the following default settings:

Feature	Default Setting
Port channel	Disabled
Channel groups	None
LACP system priority	0x8000 or 32768
Load balancing	Source and destination (MAC address based)
LACP wait time	2
LACP timeout	Long (The LACP PDU is sent every 30 seconds, and the LACP timeout value is sent every 90 seconds.)
MAC selection	Dynamic (The port-channel MAC address is the address of an active port.)

▼ Enable Link Aggregation

LA is disabled by default. See [“LA Topology Example” on page 7](#) for the topology of this procedure.

1. In both switches, enable LA.

```
SEFOS# configure terminal  
SEFOS(config)# set port-channel enable  
SEFOS(config)# end
```

2. View the etherchannel information.

```
SEFOS# show etherchannel summary
```

The output in switch A and switch B should be:

```
Port-channel Module Admin Status is enabled  
Port-channel Module Oper Status is enabled  
Port-channel System Identifier is 00:14:4f:6c:68:2f
```

Note – To shut down the entire LA module, type the `shutdown port-channel` command.

Configuring Port-Channel Interfaces

You can configure up to eight interfaces of the same type and speed for the same group. In the following procedure, port 0/3 on both switches is configured to be part of the LA. See [“LA Topology Example” on page 7](#) for the topology of this procedure. You must run all of the commands in the following procedure on both switches.

- [“Configure Port-Channel Interfaces” on page 9](#)
- [“Configure the LACP Port Priority” on page 11](#)

▼ Configure Port-Channel Interfaces

1. Enable port channeling, and create the port channel (1 in this example).

```
SEFOS# configure terminal  
SEFOS(config)# set port-channel enable  
SEFOS(config)# interface port-channel 1  
SEFOS(config-if)# no shutdown
```

2. Configure the port.

```
SEFOS(config)# interface extreme-ethernet 0/3  
SEFOS(config-if)# no shutdown
```

3. Configure the physical port in the port channel, and specify the mode by which the port becomes part of the port channel.

```
SEFOS(config-if)# channel-group channel_group_number mode  
mode_value  
SEFOS(config-if)# end
```

where:

- `channel_group_number` can be 1 to 64. Each port channel can have up to eight compatibly configured Ethernet interfaces.
- `mode_value` can be:
 - `active` - LACP negotiation is started unconditionally.
 - `passive` - LACP negotiation is started only when an LACP packet is received from the peer.
 - `on` - Forces the interface to be a part of the port channel without communicating through the LACP protocol. This value is equivalent to manual aggregation.

4. Review the etherchannel information to ensure that the values for the channel group and the mode have changed in both switches.

The following output has been truncated for readability. The output in both switches should be the same.

```
SEFOS# show etherchannel 1 detail  
  
...  
-----  
Port State = Up in Bundle  
Channel Group : 1  
Mode : Active  
Port-channel = Po1  
...
```

5. If the port channel interface is not present, you must create it by typing these commands.

```
SEFOS# configure terminal
SEFOS(config)# interface port-channel port_number
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

Note – Verify the LACP feature by enabling LACP (Active or Passive) on both actor and partner sides. If LACP is enabled on the actor side and manual on the partner side (or vice versa), LACP results in inconsistent behavior. Thus, you must avoid this misconfiguration.

▼ Configure the LACP Port Priority

In the following example, all of the ports in both switches are configured to belong to port channel 1. Ports 0/1, 0/2, and 0/3 are part of the LA. You must run all of the commands in this procedure on both switches.

1. Enable port channeling, and create the port channel (1 in this example).

```
SEFOS# configure terminal
SEFOS(config)# set port-channel enable
SEFOS(config)# interface port-channel 1
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

2. Configure the physical ports, and set the mode for each of the interfaces.

```
SEFOS(config)# interface extreme-ethernet 0/1
SEFOS(config-if)# no shutdown
SEFOS(config-if)# channel-group 1 mode active
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/2
SEFOS(config-if)# no shutdown
SEFOS(config-if)# channel-group 1 mode active
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/3
SEFOS(config-if)# no shutdown
SEFOS(config-if)# channel-group 1 mode active
SEFOS(config-if)# exit
SEFOS(config-if)# end
```

3. Review the etherchannel information in both switches to ensure that the channel group settings have been changed.

The output has been truncated for readability. The output should be the same in both switches.

```
SEFOS# show etherchannel 1 detail
```

```
...
-----
Port State = Up in Bundle
Channel Group : 1
Mode : Active
Pseudo port-channel = Po1
LACP port-priority = 128
LACP Wait-time = 2 secs
...
-----
Port State = Hot standby
Channel Group : 1
Mode : Active
Pseudo port-channel = Po1
LACP port-priority = 128
LACP Wait-time = 2 secs
```

Note – Before configuring the LACP port priority, consider that the extreme-ethernet port, 0/3, is the standby port in switches A and B. The maximum number of ports in the port channel is 2.

4. On switch A, configure the LACP port priority for port 0/3.

```
SEFOS# configure terminal
SEFOS(config)# interface extreme-ethernet 0/3
SEFOS(config-if)# lacp port-priority 20
SEFOS(config-if)# end
```

The possible range of values is from 0-65535. The lower the value, the more likely that the interface will be used for LACP transmission.

5. Type the show command to review the etherchannel information to ensure that the port 0/3 information was added to the etherchannel report.

After you configure the LACP port priority, port 0/2 is the standby port in both switches.

▼ Configure the LACP System Priority

In the following example, all of the ports in both switches are configured to belong to port channel 1. Ports 0/1, 0/2, and 0/3 are part of the LA. Unless otherwise noted, you must perform all of the commands in the following procedure on both switches.

1. **Enable port channeling, and create the port channel (1 in this example).**

```
SEFOS# configure terminal
SEFOS(config)# set port-channel enable
SEFOS(config)# interface port-channel 1
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

2. **Configure the physical ports, and set the mode for each of the interfaces.**

```
SEFOS(config)# interface extreme-ethernet 0/1
SEFOS(config-if)# no shutdown
SEFOS(config-if)# channel-group 1 mode active
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/2
SEFOS(config-if)# no shutdown
SEFOS(config-if)# channel-group 1 mode active
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/3
SEFOS(config-if)# no shutdown
SEFOS(config-if)# channel-group 1 mode active
SEFOS(config-if)# exit
SEFOS(config-if)# end
```

3. **Review the etherchannel information on both switches to ensure that all of the ports have been added to the port channel.**

The output on both switches should be the same.

```
SEFOS# show etherchannel 1 detail
```

Note – Before you configure the LACP system priority, note that the extreme-ethernet port, 0/3, is the standby port in both switch A and switch B.

4. Set the LACP system priority in switch B.

```
SEFOS# configure terminal  
SEFOS(config)# lacp system-priority 20
```

The values for the priority range from 0 to 65535. The lower the value, the higher the system priority. The switch with the lower system priority value determines the links between the LACP partner switches that are in active and standby states for each LACP port channel.

5. Configure the LACP port priority for port 0/3 in switch A.

```
SEFOS(config)# interface extreme-ethernet 0/3  
SEFOS(config-if)# lacp port-priority 20  
SEFOS(config-if)# end
```

6. Review the etherchannel information.

The output in the following examples has been truncated to show the relevant information. In this procedure, the output is different for each switch.

```
SEFOS# show etherchannel 1 detail
```

The relevant output in switch A should be:

```
...  
LACP System Priority: 32768  
...
```

The relevant output in switch B should be:

```
...  
LACP System Priority: 20  
...
```

Note – After you configure the LACP system priority, note that the extreme-ethernet port, 0/3, in switch A and switch B continue to be standby ports. The port priority for port 0/3 in switch A does not take effect because the system priority of switch A is less than the system priority of switch B.

▼ Configure Port Channel Load Balancing

Traffic in a port channel is distributed across the individual bundled links in a deterministic fashion. However, the load is not necessarily balanced equally across all of the links. Instead, frames are forwarded on a specific link using any of the following criteria: source IP address, destination IP address, a combination of source and destination IP addresses, or a combination of source and destination MAC addresses.

1. Configure the load balance policy in switch A.

```
SEFOS# configure terminal
SEFOS(config)# port-channel load-balance policy 1
SEFOS(config)# end
```

where `policy` can be:

- `src-mac` - Load distribution is based on the source MAC address in the frame. Packets from different hosts use different ports in the channel, but packets from the same host use the same port.
- `dest-mac` - Load distribution is based on the destination MAC address in the frame. Packets to the same destination are sent on the same port, but packets to different destinations are sent on different ports in the channel.
- `src-dest-mac` - Load distribution is based on the source and destination MAC addresses.
- `src-ip` - Load distribution is based on the source IP address.
- `dest-ip` - Load distribution is based on the destination IP address.
- `src-dest-ip` - Load distribution is based on the source and destination IP addresses.
- `vlan-id` - Load distribution is based on VLAN Identifier.

2. Review the etherchannel load balancing information.

```
SEFOS# show etherchannel load-balance

                        Channel Group Listing
                        -----
Group : 1
-----
Destination MAC Address
```

```
Group : 2
-----
Source & Destination MAC Address
```

Note – If the port-channel index is not included in the output, then load balancing applies to all of the port channels that are configured in the system.

▼ Configure the LACP System Identifier

In the following procedure, ports 0/1, 0/2, and 0/3 are part of the LA. Unless otherwise noted, you must run all of the commands in the following procedure on both switches.

1. Enable port channeling.

```
SEFOS# configure terminal
SEFOS(config)# set port-channel enable
```

2. Create the port channel (1 in this example).

```
SEFOS(config)# interface port-channel 1
SEFOS(config-if)# no shutdown
SEFOS(config)# end
```

3. Configure the LACP system identifier.

```
SEFOS(config)# lACP system-identifier 00:55:44:33:22:11
SEFOS(config)# end
```

4. Review the etherchannel information to ensure that the port channel system identifier has been set.

The output has been truncated for readability.

```
SEFOS# show etherchannel detail
...
Port-channel System Identifier is 00:55:44:33:22:11
...
```

▼ Configure the LACP Port Identifier

In the following procedure, ports 0/1, 0/2, and 0/3 are part of the LA.

1. On switch A, review the port state behavior for the default port identifier.

```
SEFOS# show etherchannel 1 detail
```

The following output has been truncated for readability.

```
...
```

Port	State	LACP Port Priority	Admin Key	Oper Key	Port Number	Port State
Ex0/1	Bundle	128	1	1	0x1	0xbe
Ex0/2	Bundle	128	1	1	0x2	0xbe
Ex0/3	Standby	128	1	1	0x3	0xa2

```
...
```

Note – Before you configure the LACP port identifier, note that the extreme-ethernet port, 0/3, in switch A and switch B are standby ports.

2. For port 0/3 in switch A, configure the port identifier as 1.

```
SEFOS(config)# interface extreme-ethernet 0/3
SEFOS(config-if)# lacp port-identifier 1
```

3. Review the configuration information.

The output has been truncated for readability.

```
SEFOS# show etherchannel detail
```

```
...
```

Port	State	LACP Port Priority	Admin Key	Oper Key	Port Number	Port State
Ex0/1	Bundle	128	1	1	0x1	0xbc

```
...
```

Ex0/2	Standby	128	1	1	0x2	0xa0
Ex0/3	Bundle	128	1	1	0x3	0xbc
...						

Note – After you configure the LACP port identifier, note that the extreme-ethernet port, 0/3, in switch A is brought up in the bundle state.

Setting the MTU Value

You can set the MTU value on an individual interface or on the entire port channel. This section contains two example procedures for setting the MTU values.

- [“Set the MTU Value on one or More Ports” on page 18](#)
- [“Set the MTU Value of the Port Channel” on page 20](#)

▼ Set the MTU Value on one or More Ports

You can set the MTU value for an individual port or a set of ports by using the procedure in this section. In the following procedure, ports 0/1, 0/2, and 0/3 are part of the LA. When the MTU of a port in a bundle is different than the MTU for the port channel, the port will not be brought up in the bundle. See [“LA Topology Example” on page 7](#) for the topology referenced in this procedure.

1. Review the port state behavior with the default MTU settings for all of the ports.

```
SEFOS# show interface mtu

Ex0/1    MTU size is 1500
Ex0/2    MTU size is 1500
Ex0/3    MTU size is 1500
Ex0/4    MTU size is 1500
Ex0/5    MTU size is 1500
Ex0/6    MTU size is 1500
Ex0/7    MTU size is 1500
Ex0/8    MTU size is 1500
Ex0/9    MTU size is 1500
Ex0/10   MTU size is 1500
Ex0/11   MTU size is 1500
Ex0/12   MTU size is 1500
```

```
Ex0/13 MTU size is 1500
Ex0/14 MTU size is 1500
Ex0/15 MTU size is 1500
Ex0/16 MTU size is 1500
Ex0/17 MTU size is 1500
Ex0/18 MTU size is 1500
Ex0/19 MTU size is 1500
Ex0/20 MTU size is 1500
Ex0/21 MTU size is 1500
Ex0/22 MTU size is 1500
Ex0/23 MTU size is 1500
Ex0/24 MTU size is 1500
po1    MTU size is 1500
vlan1  MTU size is 1500
```

2. Create the interface (0/1 in this example).

```
SEFOS# configure terminal
SEFOS(config)# interface extreme-ethernet 0/1
SEFOS(config-if)# shutdown
```

3. Configure the MTU.

```
SEFOS(config-if)# mtu 1000
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

4. Review the etherchannel information.

The output has been truncated for readability.

```
SEFOS# show etherchannel detail

...
                Ports in the Group
                -----
Port : Ex0/1
-----
Port State = Down, Not in Bundle
Channel Group : 1
Mode : Active
...
```

Note – After you configure the MTU value on port 0/1 to 1000, note that because the MTU value on port 0/1 is different than the MTU value of the port channel interface, the extreme-ethernet port, 0/1, in switch A will be brought down and out of the bundle.

▼ Set the MTU Value of the Port Channel

If you change the MTU value of the port channel, the new value is applied on all of the ports in the bundle. All of the port channel member ports are bundled in switch A.

1. Create the port channel (1 in this example).

```
SEFOS# configure terminal
SEFOS(config)# interface port-channel 1
SEFOS(config-if)# shutdown
```

2. Set the MTU value (1000 in this example).

```
SEFOS(config-if)# mtu 1000
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

3. Create the physical interface (0/2 in this example).

```
SEFOS(config)# interface extreme-ethernet 0/2
SEFOS(config-if)# shutdown
```

4. Set the MTU value for the interface.

```
SEFOS(config-if)# mtu 1000
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

5. Review the etherchannel information.

```
SEFOS# show etherchannel 1 detail

Port-channel Module Admin Status is enabled
Port-channel Module Oper Status is enabled
Port-channel System Identifier is 00:01:02:03:04:01
```

LACP System Priority: 32768

Channel Group Listing

Group: 1

Protocol :LACP

Ports in the Group

Port : Ex0/1

Port State = Up in Bundle
Channel Group : 1
Mode : Active
Pseudo port-channel = Po1
LACP port-priority = 128
LACP Wait-time = 2 secs
LACP Port Identifier = 1
LACP Activity : Active
LACP Timeout : Long

Aggregation State : Aggregation, Sync, Collecting, Distributing,
Defaulted

Port : Ex0/2

Port State = Up in Bundle
Channel Group : 1
Mode : Active
Pseudo port-channel = Po1
LACP port-priority = 128
LACP Wait-time = 2 secs
LACP Port Identifier = 2
LACP Activity : Active
LACP Timeout : Long

Aggregation State : Aggregation, Sync, Collecting, Distributing,
Defaulted

Port	State	LACP Port Priority	Admin Key	Oper Key	Port Number	Port State
Ex0/1	Bundle	128	1	1	0x1	0xbe
Ex0/2	Bundle	128	1	1	0x2	0xbe

Port-channel : Po1

Number of Ports = 2

```
HotStandBy port = null
Port state = Port-channel Ag-Inuse
Protocol = LACP
MAC selection = Dynamic
```

▼ Configure the LACP Wait Time

The LACP wait time is the interval of time the system takes to aggregate a link. Configuring the wait time value as 0 ensures that links get aggregated immediately. The default value for the LACP wait time is 2.

1. Enter the configuration mode for the interface (0/1 in this example).

```
SEFOS(config)# configure terminal
SEFOS(config)# interface extreme-ethernet 0/1
```

2. Configure the LACP wait time.

```
SEFOS(config-if)# lACP wait-time 1
```

3. Review the etherchannel information.

```
SEFOS# show etherchannel 1 detail
...
LACP port-priority = 128
LACP Wait-time = 1 secs
LACP Port Identifier = 1
...
```

▼ Configure the LACP Time-Out Value

The LACP time out value is a periodic interval. When the interval expires, an LACP PDU is sent out regularly. The default value for LACP time out is long. This list contains explanations of the possible values:

- long - The LACP PDU will be sent for every 30 seconds, and the LACP timeout value (when no packet is received from the peer) is 90 seconds.

- short - The LACP PDU will be sent every 1 second. The timeout value is 3 seconds.

1. Enter the configuration mode for the interface (0/1 in this example).

```
SEFOS(config)# configure terminal  
SEFOS(config)# interface extreme-ethernet 0/1
```

2. Configure the LACP time out.

```
SEFOS(config-if)# lACP timeout short
```

3. Review the etherchannel information.

```
SEFOS# show etherchannel detail  
...  
LACP Port Identifier = 1  
LACP Activity : Active  
LACP Timeout : Short  
...
```

▼ Display the LACP Status

You can display a detailed report or a summary of the LACP status by using the `show` command. You can view specific information about the load-balancing and frame-distribution schemes, specific information about the individual ports in the port channel, and general information about the port channel settings.

1. Get specific details.

```
SEFOS# show etherchannel 1 detail  
SEFOS(config)# interface extreme-ethernet 0/1
```

2. View specific LACP information, such as traffic counters and neighbor information.

```
SEFOS# show lACP neighbor detail
```

▼ Interaction Between LA and VLANs

Whenever you create a port channel, the channel is added as an untagged member port of the default VLAN 1. For other VLANs, you must explicitly configure the channel as a member port, or the channel must be dynamically learned through GVRP. The channel does not inherit the VLAN membership of its member ports. When a port is aggregated into a bundle, that port will not be visible to layer 2 applications like VLAN and STP. Only the port of the port channel is visible to layer 2 applications. When a port gets aggregated into a port channel port, the port is removed from the membership of the specific VLAN. Similarly, when a port is deaggregated from a port channel, the port is added as a member port of the default VLAN.

To demonstrate this behavior, perform these steps.

1. Review the VLANs that are configured in the switch.

```
SEFOS# show vlan

Vlan database
-----
Vlan ID          : 1
Member Ports     : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6
                  Ex0/7, Ex0/8, Ex0/9, Ex0/10, Ex0/11, Ex0/12
                  Ex0/13, Ex0/14, Ex0/15, Ex0/16, Ex0/17, Ex0/18
                  Ex0/19, Ex0/20, Ex0/21, Ex0/22, Ex0/23, Ex0/24
Untagged Ports   : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6
                  Ex0/7, Ex0/8, Ex0/9, Ex0/10, Ex0/11, Ex0/12
                  Ex0/13, Ex0/14, Ex0/15, Ex0/16, Ex0/17, Ex0/18
                  Ex0/19, Ex0/20, Ex0/21, Ex0/22, Ex0/23, Ex0/24
Forbidden Ports  : None
Name             :
Status           : Permanent
-----
Vlan ID          : 2
Member Ports     : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5
Untagged Ports   : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5
Forbidden Ports  : None
Name             :
Status           : Permanent
-----
```

2. Aggregate port 1 and port 2 into a bundle.

```
SEFOS(config)# set port-channel enable
SEFOS(config)# interface port-channel 1
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/1
SEFOS(config-if)# channel-group 1 mode active
SEFOS(config-if)# exit
SEFOS(config)# interface extreme-ethernet 0/2
SEFOS(config-if)# channel-group 1 mode active
SEFOS(config-if)# exit
```

3. Review the VLAN configuration information.

```
SEFOS# show vlan

Vlan database
-----
Vlan ID          : 1
Member Ports     : Ex0/3, Ex0/4, Ex0/5, Ex0/6, Ex0/7, Ex0/8
                  Ex0/9, Ex0/10, Ex0/11, Ex0/12, Ex0/13, Ex0/14
                  Ex0/15, Ex0/16, Ex0/17, Ex0/18, Ex0/19, Ex0/20
                  Ex0/21, Ex0/22, Ex0/23, Ex0/24, po1
Untagged Ports   : Ex0/3, Ex0/4, Ex0/5, Ex0/6, Ex0/7, Ex0/8
                  Ex0/9, Ex0/10, Ex0/11, Ex0/12, Ex0/13, Ex0/14
                  Ex0/15, Ex0/16, Ex0/17, Ex0/18, Ex0/19, Ex0/20
                  Ex0/21, Ex0/22, Ex0/23, Ex0/24, po1
Forbidden Ports  : None
Name             :
Status           : Permanent
-----
Vlan ID          : 2
Member Ports     : Ex0/3, Ex0/4, Ex0/5
Untagged Ports   : Ex0/3, Ex0/4, Ex0/5
Forbidden Ports  : None
Name             :
Status           : Permanent
```

After you create a port channel, the member ports of bundle 1 and bundle 2 are removed from all of the VLANs. The port channel port becomes the member of the default VLAN.

4. Delete the port channel, and review the VLAN configuration information.

```
SEFOS(config)# no interface port-channel 1
SEFOS(config)# exit
SEFOS# show vlan

Vlan database
-----
Vlan ID          : 2
Member Ports     : Ex0/3, Ex0/4, Ex0/5
Untagged Ports   : Ex0/3, Ex0/4, Ex0/5
Forbidden Ports  : None
Name             :
Status           : Permanent
-----
Vlan ID          : 1
Member Ports     : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6
                  Ex0/7, Ex0/8, Ex0/9, Ex0/10, Ex0/11, Ex0/12
                  Ex0/13, Ex0/14, Ex0/15, Ex0/16, Ex0/17, Ex0/18
                  Ex0/19, Ex0/20, Ex0/21, Ex0/22, Ex0/23, Ex0/24
Untagged Ports   : Ex0/1, Ex0/2, Ex0/3, Ex0/4, Ex0/5, Ex0/6
                  Ex0/7, Ex0/8, Ex0/9, Ex0/10, Ex0/11, Ex0/12
                  Ex0/13, Ex0/14, Ex0/15, Ex0/16, Ex0/17, Ex0/18
                  Ex0/19, Ex0/20, Ex0/21, Ex0/22, Ex0/23, Ex0/24
Forbidden Ports  : None
Name             :
Status           : Permanent
```

After you delete the port channel, note the port channel port is removed from the VLAN. Member ports of bundles 1 and bundle 2 become members of the default VLAN, but not of other VLANs.