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Document Revision History

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<th>Revision</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/2/2020</td>
<td>1.0</td>
<td>Initial document.</td>
</tr>
</tbody>
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1 LLDP Overview

LLDP is a neighbor discovery protocol that is used for network devices to advertise information about themselves to other devices on the network. This protocol runs over the data-link layer, which allows two systems running different network layer protocols to learn about each other.

Devices in a LAN maintain operations-related configuration information in management information bases (MIBs). LLDP helps avoid misconfiguration problems in LANs by enabling LAN devices to be aware of other devices' configuration information.

LLDP supports a set of attributes that it uses to discover neighbor devices. These attributes contain type, length, and value descriptions and are referred to as TLVs. LLDP supported devices can use TLVs to receive and send information to their neighbors. Details such as configuration information, device capabilities, and device identity can be advertised using LLDP. Supermicroswitches provides the following LLDP features:

- Support all mandatory TLVs (chassis identifier, port identifier and time-to-live).
- Support optional TLVs - port description, system name, system description, system capabilities and management address.
- Support organizationally specific optional TLVs - port VLAN identifier, port and protocol VLAN identifier, VLAN name, MAC or PHY configuration or status, link aggregation and maximum frame size.
- Provide support for notifications through traps.

An LLDP agent operates in any one of the following three modes:

1. Transmit-only mode: The agent can only transmit the information about the capabilities and the status of the local system.
2. Receive-only mode: The agent can only receive information about the capabilities and the status of the remote systems.
3. Transmit and receive mode: The agent can transmit the local system capabilities and status information and receive the capabilities and status information of remote systems.

The LLDP transmit only mode sends the local device's information at regular intervals in LLDP TLV's. Whenever the transmit mode is disabled, the device transmits an LLDP PDU with a time-to-live (TTL) TLV containing "0" in the information field. Upon reception of a PDU with TLV 0, remote devices are then enabled to remove the information associated with this local device from their databases.

The LLDP receive only mode receives a remote device's information and updates the remote system's LLDP MIB database. When new or updated information is received, the receive module initiates a timer for a valid duration indicated by the TTL TLV in the received LLDP PDU. The remote system's information is removed from the database when an LLDP PDU is received with TTL TLV containing "0" in its information field.
### Parameter | Default Value
--- | ---
LLDP Status (global) | Disabled
LLDP Status (interface level) | Transmit and receive
TLV | None
HoldtimeMultiplier | 4
Message Transmit Interval | 30
ReinitializationDelay | 2
Transmit Delay | 2
Trap Notification Interval | 5
Chassis ID | Switch MAC address
Chasis ID Subtype | MAC address
Port ID Subtype | Interface name
System Capabilities | None
Notification | Disabled
Notification Type | Mis-configuration

## 2 Enabling LLDP

LLDP is disabled by default in Supermicro switches. Follow the steps below to enable LLDP.

<table>
<thead>
<tr>
<th>Step</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>configure terminal</td>
<td>Enters the configuration mode</td>
</tr>
<tr>
<td>Step 2</td>
<td>set lldp enable</td>
<td>Enables LLDP in the switch.</td>
</tr>
<tr>
<td>Step 3</td>
<td>End</td>
<td>Exits the configuration mode.</td>
</tr>
<tr>
<td>Step 4</td>
<td>show lldp</td>
<td>Displays the LLDP global configuration details</td>
</tr>
</tbody>
</table>

The “set lldp disable” command disables LLDP in the switch.
# 3 Configuring LLDP Parameters

Once LLDP is enabled globally, it is enabled on all supported interfaces by default. Supermicro switches provide a user configuration to place an interface in only send or only receive mode.

Other LLDP parameters that can be configured in Supermicro switches are Notification type, Chassis-ID Sub-type and Port-ID Sub-type.

<table>
<thead>
<tr>
<th>Step</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>configure terminal</td>
<td>Enters the configuration mode</td>
</tr>
<tr>
<td>Step 2</td>
<td>interface <code>&lt;interface-type&gt;</code>&lt;interface-id&gt; or interface range <code>&lt;interface-type&gt;</code>&lt;interface-id&gt;</td>
<td>(Optional) Enters the interface configuration mode. interface-type – may be any of the following: fx-ethernet – fx cx-ethernet – cx port-channel – po interface-id is in slot/port format for all physical interfaces. To configure multiple interfaces, use the “interface range ...” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: int range fx 0/1-10 To provide multiple interfaces or ranges, separate with a comma (,). E.g.: int range fx 0/1-10, fx 0/20 If multiple interfaces are provided, the next step will perform the particular configuration on all these interfaces.</td>
</tr>
<tr>
<td>Step 3</td>
<td>lldp {transmit</td>
<td>receive}</td>
</tr>
<tr>
<td>Step 4</td>
<td>lldp notification [remote-table-chg][mis-configuration]</td>
<td>(Optional) Enables LLDP trap notification on an interface.</td>
</tr>
</tbody>
</table>
| Step 5 | lldp port-id-subtype { if.alias | port-comp <string(255)> | mac-addr | if-name | local <string(255)> } | \(\text{remote-table-chg} - \text{Trap notification for change in neighbor's table.}\)  
\(\text{mis-configuration} - \text{Trap notification for mis-configuration.}\)  
(Optional) Configures LLDP port ID subtype and port ID value  
if.alias - interface alias  
port-comp - port component  
mac-addr - MAC address  
if-name - interface name  
local - locally assigned  
The default value for port-id-subtype is if-name.  
Note: The if.alias option can be used only for the interfaces which have valid description configured. |
| Step 6 | Exit | Exit interface configuration mode. |
| Step 7 | lldp chassis-id-subtype { chassis-comp <string(255)> | if.alias | port-comp <string(255)> | mac-addr | nw-addr | if-name | local <string(255)> } | (Optional) Configures LLDP chassis ID subtype and chassis ID value.  
The chassis identifier value can only be set for the chassis-component and local system subtypes. For all other subtypes, the value is taken from the system automatically.  
chassis-comp - chassis component  
if.alias - management interface alias  
port-comp - port component  
mac-addr - MAC address |
<table>
<thead>
<tr>
<th>Step</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>End</td>
<td>Exits the configuration mode.</td>
</tr>
<tr>
<td>9</td>
<td>show lldp interface [interface-type interface-id]</td>
<td>Displays LLDP configuration details on a particular interface or all interfaces.</td>
</tr>
<tr>
<td></td>
<td>show lldp neighbors [chassis-id string(255) port-id string(255)] [interface-type interface-id] [detail]</td>
<td>Displays information about neighbors learned on an interface or all interfaces.</td>
</tr>
<tr>
<td></td>
<td>show lldp traffic [if-type ifnum]</td>
<td>Displays LLDP counters, including the number of frames sent, received, discarded, etc.</td>
</tr>
<tr>
<td></td>
<td>show lldp errors</td>
<td>Displays information about errors such as memory allocation failures, queue overflows, table overflows, etc.</td>
</tr>
<tr>
<td></td>
<td>show lldp statistics</td>
<td>Displays the LLDP remote table statistics information.</td>
</tr>
<tr>
<td>10</td>
<td>clear lldp counters</td>
<td>Clears LLDP transmit and receive statistics.</td>
</tr>
<tr>
<td>11</td>
<td>clear lldp table</td>
<td>Clears LLDP neighbors information.</td>
</tr>
</tbody>
</table>

These commands reset the particular configuration to its default value.

```
lldp {transmit | receive}
no lldp notification
no lldp tlv-select basic-tlv { [port-descr] [sys-name] [sys-descr] [sys-capab] [mgmt-addr {all | ipv4 <unicast_addr> | ipv6 <ip6_addr>}]}
no lldp tlv-select dot1tlv { [port-vlan-id] [protocol-vlan-id {all |<vlan-id>}] [vlan-name {all |<vlan-id>}]}
no lldp tlv-select dot3TLV { [macphy-config] [link-aggregation] [max-framesize] }
```
3.1 Configuring LLDP TLV

Supermicro switches provide support for user configuration of LLDP TLV’s. The TLV types supported by Supermicro switches are: Basic TLV, DOT1 TLV and DOT3 TLV. The figure below displays the TLV types and their content.

<table>
<thead>
<tr>
<th>Basic TLV</th>
<th>DOT1 TLV</th>
<th>DOT3 TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Mandatory</td>
<td>• IEEE 802.1 organizationally specific TLVs</td>
<td>• IEEE 802.3 organizationally specific TLVs</td>
</tr>
<tr>
<td>• Optional</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure LLDP-1: LLDP TLV Types**

The content of the various TLVs supported by Supermicro switches are specified in the figure below.

**Basic TLV - Mandatory**
- Chassis ID - Sender MAC address
- Port ID TLV - Sender Port number
- TTL - Time to Live
- End of LLDP PDU

**Basic TLV - Optional**
- Port Description
- System Name
- System Description
- System Capabilities
- Management Address

**DOT1 TLV**
- Port VLAN ID
- Port Protocol VLAN ID
- VLAN Name
- Protocol Identity

**DOT3 TLV**
- MAC/PHY Configuration (speed, duplex, negotiation, etc.)
- Link Aggregation TLV
- Maximum Frame Size TLV

**Figure LLDP-2: LLDP TLV Content**
<table>
<thead>
<tr>
<th>Step</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>configure terminal</td>
<td>Enters the configuration mode</td>
</tr>
<tr>
<td>Step 2</td>
<td>interface <code>&lt;interface-type&gt;</code>&lt;interface-id&gt;<code>or interfacerrange</code>&lt;interface-type&gt;<code>&lt;interface-id&gt;</code></td>
<td>(Optional) Enters the interface configuration mode.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>interface-type – may be any of the following: fx-ethernet – fx cx-ethernet – cx port-channel – po</td>
</tr>
<tr>
<td></td>
<td></td>
<td>interface-id is in slot/port format for all physical interfaces.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To configure multiple interfaces, use the “interface range ...” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: int range fx 0/1-10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To provide multiple interfaces or ranges, separate with a comma (,). E.g.: int range fx 0/1-10, fx 0/20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If multiple interfaces are provided, the next step will perform the particular configuration on all these interfaces.</td>
</tr>
<tr>
<td>Step 3</td>
<td>lldp tlv-select basic-tlv { [port-descr] [sys-name] [sys-descr] [sys-capab] [mgmt-addr {all</td>
<td>ipv4 &lt;ucast_addr&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>port-descr - Port description TLV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sys-name - System name TLV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sys-descr - System description TLV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sys-capab - System capabilities TLV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>mgmt-addr all- Enables the transmission of the management address on the current interface. If no management address is present or configured in the system, the</td>
</tr>
</tbody>
</table>
| Step 4 | `lldp tlv-select dot1tlv { [port-vlan-id] [protocol-vlan-id {all | <vlan-id>} ] [vlan-name {all | <vlan-id>} ] }` | (Optional) Configure dot1 TLV types to be transmitted on a port:
- `port-vlan-id` - Port VLAN identifier TLV. The keyword `port-vlan-id` keyword is not supported.
- `protocol-vlan-id` - Protocol VLAN identifier TLV. The keyword `protocol-vlan-id` is not supported.
- `vlan-name` - VLAN name TLV

**NOTE:** VLAN name must be configured prior to this LLDP configuration. |
| Step 5 | `lldp tlv-select dot3tlv { [macphy-config] [link-aggregation] [max-framesize] }` | (Optional) Configure dot3 TLV types to be transmitted on a port:
- `macphy-config` - MAC or PHY TLV.
- `link-aggregation` - Link aggregation TLV.
- `max-framesize` - Maximum frame size TLV. |
| Step 6 | **End** | Exits the configuration mode. |
| Step 7 | **show lldp interface [ <interface-type> <interface-id> ]**

**show lldp local [ [ <interface-type> <interface-id> ] | [ mgmt-addr ] ]**
| Displays LLDP configuration details on a particular interface or all interfaces

Displays the current switch information that will be used to populate outbound LLDP |
3.1.1 Configuring LLDP Timers
Supermicro switches allow for user configuration of LLDP timers:
- Transmit Interval
- Holdtime Multiplier
- ReinitializationDelay
- Transmit Delay
- Notification Delay

3.1.2 Message Transmit Interval
The message transmit interval is the period between transmission of the periodic LLDP advertisements. The default message transmit interval is 30 seconds.

Supermicro switches allow for user configuration of the message transmit interval. Follow the below steps to change the message transmit interval.

<table>
<thead>
<tr>
<th>Step</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>configure terminal</td>
<td>Enters the configuration mode</td>
</tr>
<tr>
<td>Step 2</td>
<td>lldp transmit-interval &lt;seconds(5-32768)&gt;</td>
<td>(Optional) Configure the message transmit interval, range of 5-32768.</td>
</tr>
<tr>
<td>Step 3</td>
<td>End</td>
<td>Exits the configuration mode.</td>
</tr>
<tr>
<td>Step 4</td>
<td>show lldp</td>
<td>Displays the LLDP global information</td>
</tr>
</tbody>
</table>

The “no lldp transmit-interval” command resets the message transmit interval to its default value.

3.1.3 Message Transmit Holdtime Multiplier
The Message Transmit Holdtime Multiplier is used to calculate the time-to-live (TTL) value sent in LLDP advertisements. The time-to-live informs the receiving LLDP agent of the time to retain remote LLDP information if LLDP advertisements are not received periodically.

The TTL is calculated as: the minimum of ((Transmission Interval * Holdtime Multiplier), or 65536)

The default holdtime multiplier is 4 seconds. The default TTL is: 4*30 = 120 seconds. Supermicro switches allow for the user configuration of the message transmit holdtime multiplier. Follow the steps below to change the message transmit holdtime multiplier.

<table>
<thead>
<tr>
<th>Step</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>configure terminal</td>
<td>Enters the configuration mode</td>
</tr>
<tr>
<td>Step 2</td>
<td>lldpholdtime-multiplier &lt;value(2-10)&gt;</td>
<td>(Optional)</td>
</tr>
</tbody>
</table>
3.1.4 ReinitializationDelay

When LLDP ports are disabled or the link goes down, LLDP is reinitialized on a port. The delay between the port going down and the reinitialization is called the reinitialization delay. When LLDP is reinitialized on a port, all information in the remote systems LLDP MIB associated with this port is deleted.

Supermicro switches allow user configuration of the reinitialization delay. Follow the steps below to change the reinitialization delay.

<table>
<thead>
<tr>
<th>Step</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>configure terminal</td>
<td>Enters the configuration mode</td>
</tr>
<tr>
<td>Step 2</td>
<td>lldpreinitialization-delay &lt;seconds(1-10)&gt;</td>
<td>(Optional) Configures the reinitialization delay, range of 1-10.</td>
</tr>
<tr>
<td>Step 3</td>
<td>End</td>
<td>Exits the configuration mode.</td>
</tr>
<tr>
<td>Step 4</td>
<td>show lldp</td>
<td>Displays the LLDP global information</td>
</tr>
</tbody>
</table>

The “no lldpreinitialization-delay” command resets the reinitialization delay to its default value.

3.1.5 Transmit Delay

Any change in local LLDP MIB variables initiates the transmission of LLDP advertisements. The delay between the successive transmissions of such advertisements is called the Transmit Delay. The transmit delay helps prevent unnecessary LLDP transmissions when rapid changes occur in local LLDP MIB objects.

Supermicro switches allow for user configuration of the message transmit delay. Follow the steps below to change the message transmit delay.

<table>
<thead>
<tr>
<th>Step</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>configure terminal</td>
<td>Enters the configuration mode</td>
</tr>
<tr>
<td>Step 2</td>
<td>lldptx-delay &lt;seconds(1-8192)&gt;</td>
<td>(Optional)</td>
</tr>
</tbody>
</table>

The “no lldptx-delay” command resets the message transmit delay to its default value.
3.1.6 Notification Interval

The Notification Interval is the time interval between successive periodic SNMP notifications about LLDP MIB changes. Any change in LLDP neighbors that occurs between SNMP notifications is not transmitted; only state changes that exist at the expiry of the notification interval are included in the transmission.

Supermicro switches allow for user configuration of the notification interval. Follow the steps below to change the notification interval.

<table>
<thead>
<tr>
<th>Step</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>configure terminal</td>
<td>Enters the configuration mode</td>
</tr>
<tr>
<td>Step 2</td>
<td>lldp notification-interval &lt;seconds(5-3600)&gt;</td>
<td>(Optional) Configures the notification interval, range of 5-3600.</td>
</tr>
<tr>
<td>Step 3</td>
<td>End</td>
<td>Exits the configuration mode.</td>
</tr>
<tr>
<td>Step 4</td>
<td>show lldp</td>
<td>Displays the LLDP global information</td>
</tr>
</tbody>
</table>

The “no lldp notification-interval” command resets the notification interval to its default value.

3.2 LLDP Configuration

The example below shows the commands used to configure LLDP by connecting two switches: Switch A and Switch B.
Figure LLDP-3: LLDP Configuration Example

Switch A
SMIS# configure terminal
SMIS(config)# set lldp enable
SMIS(config)# end
SMIS# show lldp
LLDP is enabled
Transmit Interval : 30
Holdtime Multiplier : 4
Reinitialization Delay : 2
Tx Delay : 2
Notification Interval : 5
Chassis Id SubType : Mac Address
Chassis Id : 00:30:48:e3:04:75
SMIS# show lldp neighbors
Capability Codes :
(R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device,
(W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other

Chassis ID   Local Intf  Hold-time  Capability  Port Id
-------------  ---------  ----------  -----------  ---------
00:30:48:e3:70:bc  Fx0/21   120          Fx0/22

Total Entries Displayed : 1
SMIS(config)# lldp chassis-id-subtype if-name
SMIS(config)# lldpholdtime-multiplier 7
SMIS(config)# lldp notification-interval 100
SMIS(config)# lldp reinitialization-delay 5
SMIS(config)# lldp reinitialization-delay 9
SMIS(config)# lldp reinitialization-delay 10
SMIS(config)# lldp transmit-interval 100
SMIS(config)# lldp transmit-interval 10
SMIS(config)# end
SMIS(config)# interface Fx 0/21
SMIS(config-if)# lldp notification remote-table-chg
SMIS(config-if)# lldp port-id-subtype if-name
SMIS(config-if)# lldp tlv-select basic-tlv port-descrmgmt-addr all
SMIS(config-if)# exit
SMIS(config)# vlan 1
SMIS(config-vlan)# name vlan1
SMIS(config-vlan)# exit
SMIS(config)# interface Fx 0/21
SMIS(config-if)# lldp tlv-select dot1tlv vlan-name 1
SMIS(config-if)# lldp tlv-select dot3tlv macphy-config
SMIS(config-if)# end

SMIS# show lldp
LLDP is enabled
Transmit Interval : 10
Holdtime Multiplier : 7
Reinitialization Delay : 10
Tx Delay : 2
Notification Interval : 100
Chassis Id SubType : Interface Name
Chassis Id : eth0
SMIS# show lldp neighbors
Capability Codes :
(R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device, (W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other

<table>
<thead>
<tr>
<th>Chassis ID</th>
<th>Local Intf</th>
<th>Hold-time</th>
<th>Capability</th>
<th>Port Id</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:30:48:e3:70:bc</td>
<td>Fx0/21</td>
<td>120</td>
<td>Fx0/22</td>
<td></td>
</tr>
</tbody>
</table>

Total Entries Displayed : 1
SMIS# show lldp errors
Total Memory Allocation Failures : 0
Total Input Queue Overflows : 0
Total Table Overflows : 0
SMIS# show lldp traffic
Total Frames Out : 71
Total Entries Aged : 0
Total Frames In : 28
Total Frames Received In Error : 0
Total Frames Discarded : 0
Total TLVS Unrecognized : 0
Total TLVs Discarded : 0
SMIS# show lldp interface Fx 0/21
Fx0/21:
Tx State : Enabled
Rx State : Enabled
Tx SEM State : IDLE
Rx SEM State : WAIT FOR FRAME
Notification Status : Enabled
Notification Type : Remote Table Change
SMIS# show lld statistics
Remote Table Last Change Time : 217700
Remote Table Inserts : 1
Remote Table Deletes : 0
Remote Table Drops : 0
Remote Table Ageouts : 0
Remote Table Updates : 0

SMIS# show lldp local Fx 0/21
Port Id SubType : Interface Name
Port Id : Slot0/21
Port Description :
Enabled TxTlvs : Port Description, Management Address, Mac Phy

Extended 802.3 TLV Info
-MAC PHY Configuration & Status
Auto-Neg Support & Status : Supported, Enabled
Advertised Capability Bits : 6c11
10base-T(HD)
10base-T(FD)
100base-TX(HD)
100base-TX(FD)
Asym and SymmPAUSE(FD)
1000base-T(FD)
Operational MAU Type : 30
-Link Aggregation
Capability & Status : Not Capable, Not In Aggregation
Aggregated Port Id : 21
-Maximum Frame Size : 1500

Extended 802.1 TLV Info
-Port VLAN Id : 1
-Port & Protocol VLAN Id
Protocol VLAN Id Support Protocol VLAN Status TxStatus
------------------------ ------- -------------- ------------
0 Supported Disabled Disabled

-Vlan Name
Vlan Id Vlan Name TxStatus
------- ------- ------- -------
1 vlan1 Enabled

SMIS# show running-config
Building configuration...

<table>
<thead>
<tr>
<th>ID</th>
<th>Hardware Version</th>
<th>Firmware</th>
<th>OS</th>
<th>Boot Loader</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SSE-F3548</td>
<td>1.0.0.0</td>
<td>6</td>
<td>0.0.0.0</td>
</tr>
</tbody>
</table>

vlan 1
ports fx 0/1-24 untagged
ports cx 0/1-3 untagged
name vlan1
exit

setlldp enable
lldp transmit-interval 10
lldpholdtime-multiplier 7
lldpreinitialization-delay 10
lldp notification-interval 100
lldp chassis-id-subtype if-name
interface Fx 0/21
lldp notification remote-table-chg
lldp tlv-select basic-tlv port-descrmgmt-addr all
lldp tlv-select dot3tlv macphy-config
lldp tlv-select dot1tlv vlan-name 1
exit

Switch B
SMIS# configure terminal
SMIS(config)# set lldp enable
SMIS(config)# end
SMIS# show lldp

LLDP is enabled
Transmit Interval : 30
Holdtime Multiplier : 4
Reinitialization Delay : 2
Tx Delay : 2
Notification Interval : 5
Chassis Id SubType : Mac Address
Chassis Id : 00:30:48:e3:70:bc

SMIS# show lldp neighbors

Capability Codes :
(R) Router, (B) Bridge, (T) Telephone, (C) DOCSIS Cable Device,
(W) WLAN Access Point, (P) Repeater, (S) Station, (O) Other

<table>
<thead>
<tr>
<th>Chassis ID</th>
<th>Local Intf</th>
<th>Hold-time</th>
<th>Capability</th>
<th>Port Id</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:30:48:e3:70:bc</td>
<td>Fx0/22</td>
<td>120</td>
<td></td>
<td>Fx0/21</td>
</tr>
</tbody>
</table>
Total Entries Displayed: 1

SMIS# show lldp statistics
Remote Table Last Change Time: 80900
Remote Table Inserts: 4
Remote Table Deletes: 3
Remote Table Drops: 0
Remote Table Ageouts: 3
Remote Table Updates: 7

SMIS(config)# show lldp traffic
Total Frames Out: 52
Total Entries Aged: 3
Total Frames In: 144
Total Frames Received In Error: 0
Total Frames Discarded: 0
Total TLVS Unrecognized: 0
Total TLVs Discarded: 0

SMIS(config)# show lldp errors
Total Memory Allocation Failures: 0
Total Input Queue Overflows: 0
Total Table Overflows: 0

SMIS(config)# show lldp interface Fx 0/22
Fx0/22:
Tx State: Enabled
Rx State: Enabled
Tx SEM State: IDLE
Rx SEM State: WAIT FOR FRAME
Notification Status: Disabled
Notification Type: Mis-configuration

SMIS# show lldp local Fx 0/22
Port Id SubType: Interface Alias
Port Id: Fx0/22
Port Description:
Enabled TxBv:

Extended 802.3 TLV Info
-MAC PHY Configuration & Status
Auto-Neg Support & Status: Supported, Enabled
Advertised Capability Bits: 6c11
10base-T(HD)
10base-T(FD)
100base-TX(HD)
100base-TX(FD)
Asym and SymmPAUSE(FD)
1000base-T(FD)
Operational MAU Type: 30
-Link Aggregation
  Capability & Status : Not Capable, Not In Aggregation
  Aggregated Port Id : 22
  -Maximum Frame Size : 1500

  Extended 802.1 TLV Info
  -Port VLAN Id : 1
  -Port & Protocol VLAN Id
  Protocol VLAN Id  Support  Protocol VLAN Status  TxStatus
                      --------  ------------------  --------
                          0  Supported  Enabled  Disabled
  -Vlan Name
  Vlan Id  Vlan Name  TxStatus
          -------  --------
                        1  Disabled

  SMIS# show running-config
  Building configuration...
  ID  Hardware Version  Firmware  OS  Boot Loader
  0   SSE-F3548         1.0.0.0  6   0.0.0.0

  vlan 1
  ports fx 0/1-24 untagged
  ports cx 0/1-3 untagged
  exit
  setlldp enable
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