Linking Up (Instructor Version)

**Instructor Note**: Red font color or Gray highlights indicate text that appears in the instructor copy only.

1. Objective

Describe link aggregation.

Instructor Note: This modeling activity is best completed in very small groups and then shared with another group or the class.

1. Scenario

Many bottlenecks occur on your small- to medium-sized business network, even though you have configured VLANs, STP, and other network traffic options on the company’s switches.

Instead of keeping the switches as they are currently configured, you would like to try EtherChannel as an option for, at least, part of the network to see if it will lesson traffic congestion between your access and distribution layer switches.

Your company uses Catalyst 3560 switches at the distribution layer and Catalyst 2960 and 2950 switches at the access layer of the network. To verify if these switches can perform EtherChannel, you visit the [*System Requirements to Implement EtherChannel on Catalyst Switches*](http://www.cisco.com/en/US/tech/tk389/tk213/technologies_tech_note09186a0080094646.shtml). This site allows you to gather more information to determine if EtherChannel is a good option for the equipment and network currently in place.

After researching the models, you decide to use a simulation software program to practice configuring EtherChannel before implementing it live on your network. As a part of this procedure, you ensure that the equipment simulated in Packet Tracer will support these practice configurations.

1. Resources

* World Wide Web connectivity
* Packet Tracer software
* Word processing or spreadsheet software

1. Directions
   1. Visit [*System Requirements to Implement EtherChannel on Catalyst Switches*](http://www.cisco.com/en/US/tech/tk389/tk213/technologies_tech_note09186a0080094646.shtml).
      1. Pay particular attention to the Catalyst 3560, 2960, and 2950 model information.
      2. Record any information you feel would be useful to deciding whether to use EtherChannel in your company.
   2. Create a matrix to record the information you recorded in Step 1b, including:
      1. Number of ports allowed to bundled for an EtherChannel group
      2. Maximum group bandwidth supported by bundling the ports
      3. IOS version needed to support EtherChannel on the switch model
      4. Load balancing availability
      5. Load balancing configuration options
      6. Network layers supported for EtherChannel operation
   3. Open Packet Tracer.
      1. Notice how many ports are available to bundle for EtherChannel on all three switch models.
      2. Check all three models to see how many EtherChannel groups you could create on each model.
      3. Make sure the IOS version is recent enough to support all EtherChannel configurations.
      4. Do not configure your simulated network, but do check the models available in the Packet Tracer to make sure they will support all the EtherChannel configuration options.
   4. Share your matrix with another group or the class.
2. Instructor – Example Activity Solution

|  |  |  |  |
| --- | --- | --- | --- |
| **EtherChannel Requirements** | **Catalyst 3560** | **Catalyst 2960** | **Catalyst 2950** |
| **Maximum number of ports allowed for channel groups** | 8 | 8 | 8 |
| **Etherchannel bandwidth created per group** | 800 Mbps  8 Gbps | 800 Mbps  2 Gbps | 800 Mbps  2 Gbps |
| **Minimum IOS Version supported** | 12.1(19)EA | 12.2(25)FX | 12.0(5.2)WC(1) |
| **Load balancing types** | MAC or IP address  Source or destination  Source and destination | MAC or IP address  Source or destination  Source and destination | MAC address  Source or destination |
| **OSI Model layers supported for configuration** | Layers 2 and 3 | Layers 2 and 3 | Layer 2 |
| **Packet Tracer program IOS version** | 1.2(37)SE1 | 12.2(25r)FX | 12.1(22)EA4 |
| **Number of Packet Tracer ports available for channel groups** | 24 FastEthernet  2 GigabitEthernet | 24 FastEthernet  2 GigabitEthernet | 24 FastEthernet |

1. Identify elements of the model that map to IT-related content:

* EtherChannel
* EtherChannel switch models
* Bandwidth for channel groups
* EtherChannel configuration layers
* IOS for switch models using EtherChannel