

# EtherChannel Protocols - LACP



- **LACP Link Aggregation Control Protocol:**
  - Open standard
  - The switches on both sides negotiate the port channel creation and maintenance
  - This is the preferred method

# EtherChannel Protocols - PAgP



- **PAgP Port Aggregation Protocol:**
  - Cisco proprietary.
  - The switches on both sides negotiate the port channel creation and maintenance.

# EtherChannel Protocols - Static



- **Static Etherchannel:**
  - The switches do not negotiate creation and maintenance but the settings must still match on both sides for the port channel to come up.
  - Use if LACP is not supported on both sides.
- All protocols are configured with the `channel-group` command

# EtherChannel Parameters



- **The switches on both sides must have a matching configuration**
- The member interfaces must have the same settings on both sides:
- Speed and duplex
- Access or Trunk mode
- Native VLAN and allowed VLANs on trunks
- Access VLAN on access ports

# LACP Configuration



- LACP interfaces can be set as either **Active** or **Passive**
- If SW1's interfaces are set as Active and SW2's as Passive, the port channel will come up
- If both sides are Passive, the port channel will not come up
- If both sides are Active, the port channel will come up
- It is recommended to configure both sides as Active so you don't have to think about which side is which

# LACP Configuration



```
SW1(config)#interface range f0/23 - 24  
SW1(config-if-range)#channel-group 1 mode active  
This creates interface port-channel 1
```

```
SW1(config)#interface port-channel 1  
SW1(config-if)#switchport mode trunk  
Configure the interface settings on the port channel
```

# LACP Configuration



Configure matching settings on the other switch on the other side of the links:

```
SW2(config)#interface range f0/23 - 24
```

```
SW2(config-if-range)#channel-group 1 mode active
```

```
SW2(config)#interface port-channel 1
```

```
SW2(config-if)#switchport mode trunk
```

# PAgP Configuration



- PAgP interfaces can be set as either **Desirable** or **Auto**
- If one side is Desirable and the other Auto, the port channel will come up
- If both sides are Auto, the port channel will not come up
- If both sides are Desirable, the port channel will come up
- If you configure both sides as Desirable you don't have to think about which side is which



# PAgP Configuration



```
SW1(config)#interface range f0/23 - 24  
SW1(config-if-range)#channel-group 1 mode desirable
```

```
SW1(config)#interface port-channel 1  
SW1(config-if)#switchport mode trunk
```

Configure matching settings on the switch on the other side of the links

# Static Configuration



```
SW1(config)#interface range f0/23 - 24
```

```
SW1(config-if-range)#channel-group 1 mode on
```

```
SW1(config)#interface port-channel 1
```

```
SW1(config-if)#switchport mode trunk
```

Configure matching settings on the switch on the other side of the links

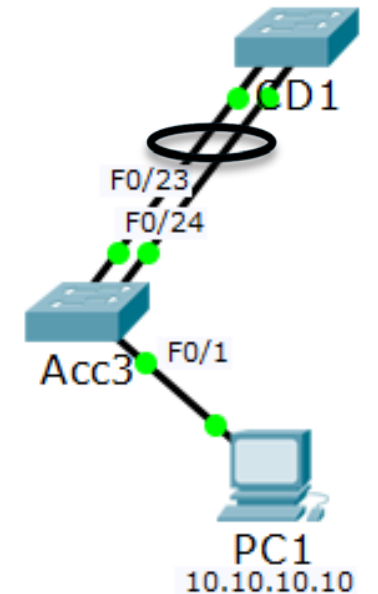
# Verification – show etherchannel summary

```
Acc3#show etherchannel summary
```

```
Flags:  D - down          P - in port-channel
        I - stand-alone  s - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port
```

```
Number of channel-groups in use: 1
Number of aggregators:           1
```

Group	Port-channel	Protocol	Ports
1	Po1 (SU)	LACP	Fa0/23 (P) Fa0/24 (P)



# Verification – show spanning-tree vlan

## • Before EtherChannel configured:

```
Acc3#show spanning-tree vlan 1
```

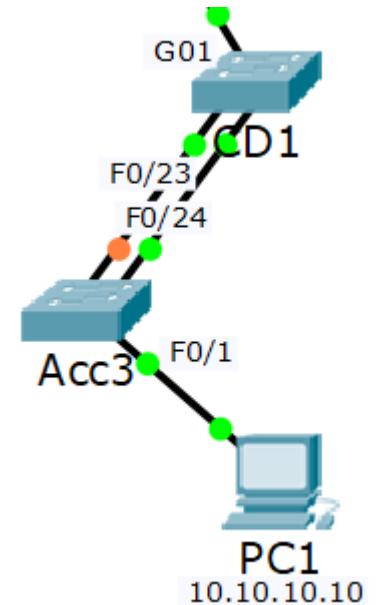
```
VLAN0001
```

```
Spanning tree enabled protocol ieee
```

```
Root ID      Priority      24577
Address      0090.0CA0.3902
Cost         19
Port         23(FastEthernet0/23)
Hello Time   2 sec      Max Age 20 sec      Forward Delay 15 sec
```

```
Bridge ID    Priority      32769 (priority 32768 sys-id-ext 1)
Address      0001.C962.D43D
Hello Time   2 sec      Max Age 20 sec      Forward Delay 15 sec
Aging Time   20
```

Interface	Role	Sts	Cost	Prio.Nbr	Type
Fa0/23	Root	FWD	19	128.23	P2p
Fa0/24	Altn	BLK	19	128.24	P2p



# Verification – show spanning-tree vlan

- After EtherChannel configured:

```
Acc3#show spanning-tree vlan 1
VLAN0001
```

```
Spanning tree enabled protocol ieee
```

```
Root ID      Priority      24577
             Address      0090.0CA0.3902
             Cost          9
             Port          27 (Port-channel 1)
             Hello Time    2 sec      Max Age 20 sec      Forward Delay 15 sec
```

```
Bridge ID    Priority      32769 (priority 32768 sys-id-ext 1)
             Address      0001.C962.D43D
             Hello Time    2 sec      Max Age 20 sec      Forward Delay 15 sec
             Aging Time    20
```

Interface	Role	Sts	Cost	Prio.Nbr	Type
-----	-----	-----	-----	-----	-----
Pol	Root	FWD	9	128.27	Shr

