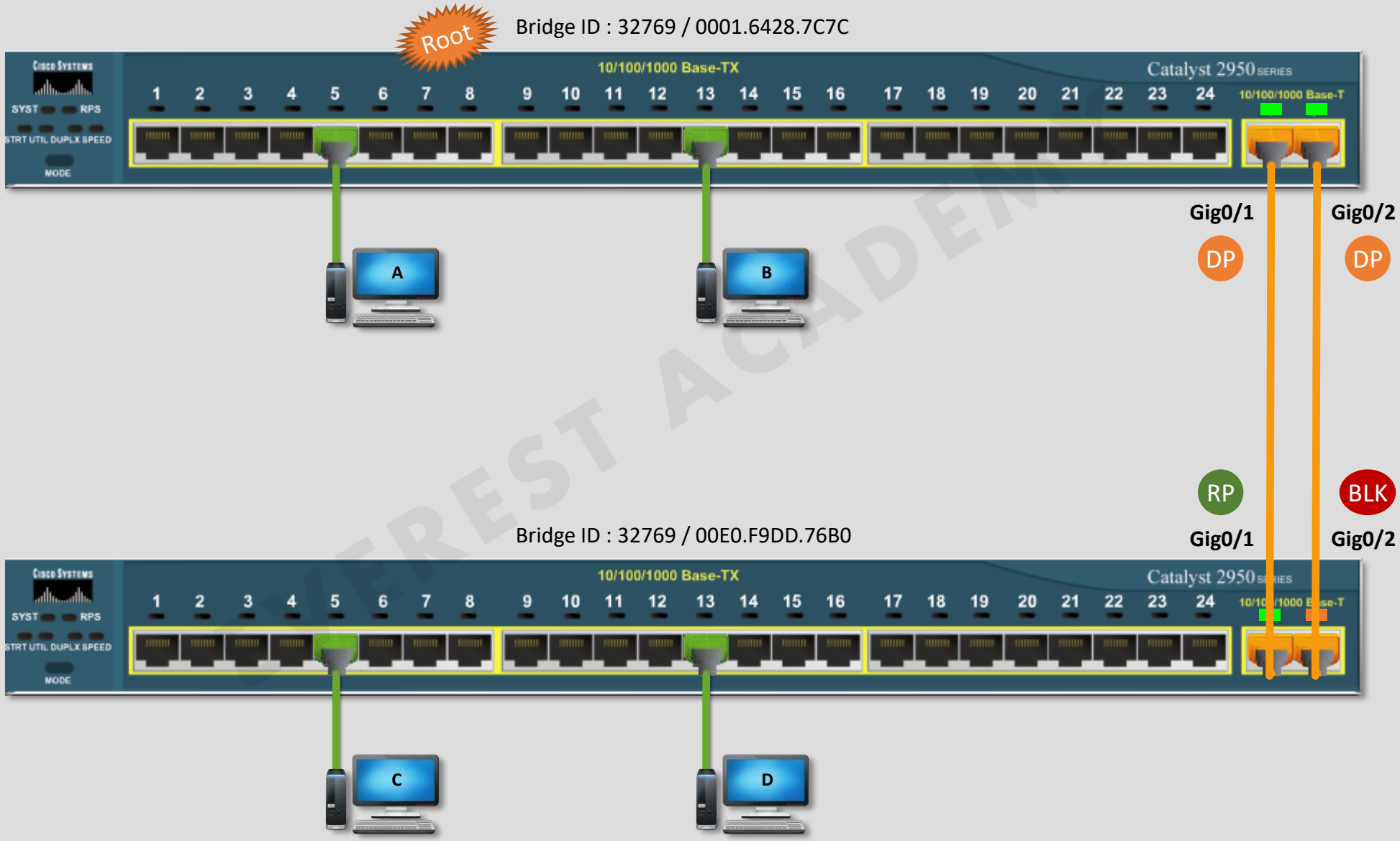
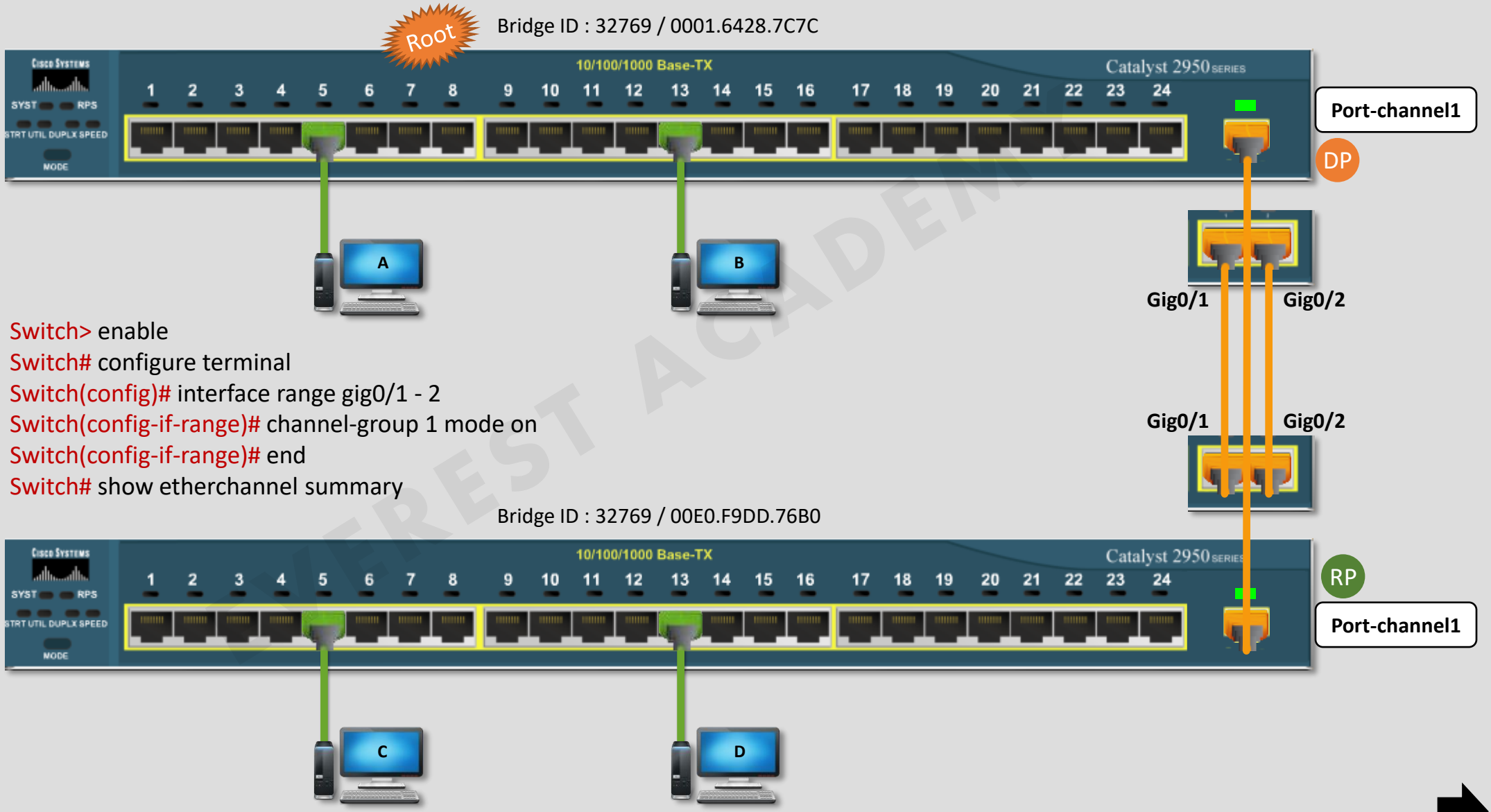
Layer 2 EtherChannel

- **EtherChannel** is a form of link aggregation used in switched networks.
- **Link aggregation** is the ability to create one logical link using multiple physical links between two devices.
- **EtherChannel** allows load sharing among the physical links, rather than having a STP block one or more of the links.
- **EtherChannel technology** was originally developed by Cisco as a technique of grouping several Fast Ethernet or Gigabit Ethernet switch ports into one logical channel.
- **EtherChannel** increases the **bandwidth**, provides **Redundancy** and balances the **traffic load** across the links.

Layer 2 EtherChannel



Layer 2 EtherChannel




```
Switch> enable
Switch# configure terminal
Switch(config)# interface range gig0/1 - 2
Switch(config-if-range)# channel-group 1 mode on
Switch(config-if-range)# end
Switch# show etherchannel summary
```

Dynamic EtherChannels

- There are two dynamic protocols to negotiate whether a particular link becomes part of an EtherChannel or not.

  1. Cisco-proprietary Port Aggregation Protocol (PAgP).

  2. IEEE standard Link Aggregation Control Protocol (LACP) (802.3ad).

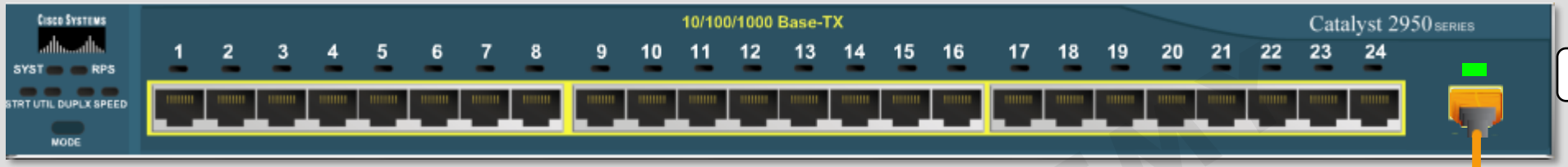
- The switch can use these protocols to negotiate with the neighboring switch and discover whether their configuration settings pass all checks.

- If a given physical link passes, the link is added to the EtherChannel and used; if not, it is placed in a down state, and not used, until the configuration inconsistency can be resolved.

Restrictions When Configuring Etherchannel

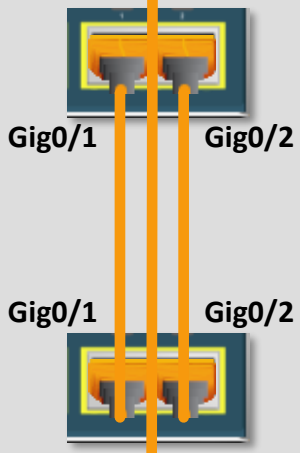
- Interface Speed.
- Interface Duplex.
- Operational Mode (access or trunk).
- If an access port, the access VLAN.
- If a trunk port, the allowed VLAN list .
- If a trunk port, the native VLAN.
- STP interface settings (Path Cost).

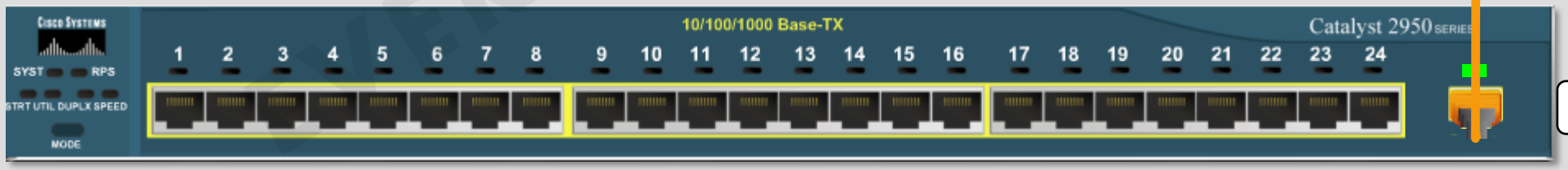
Configuring Dynamic EtherChannels (PAgP)



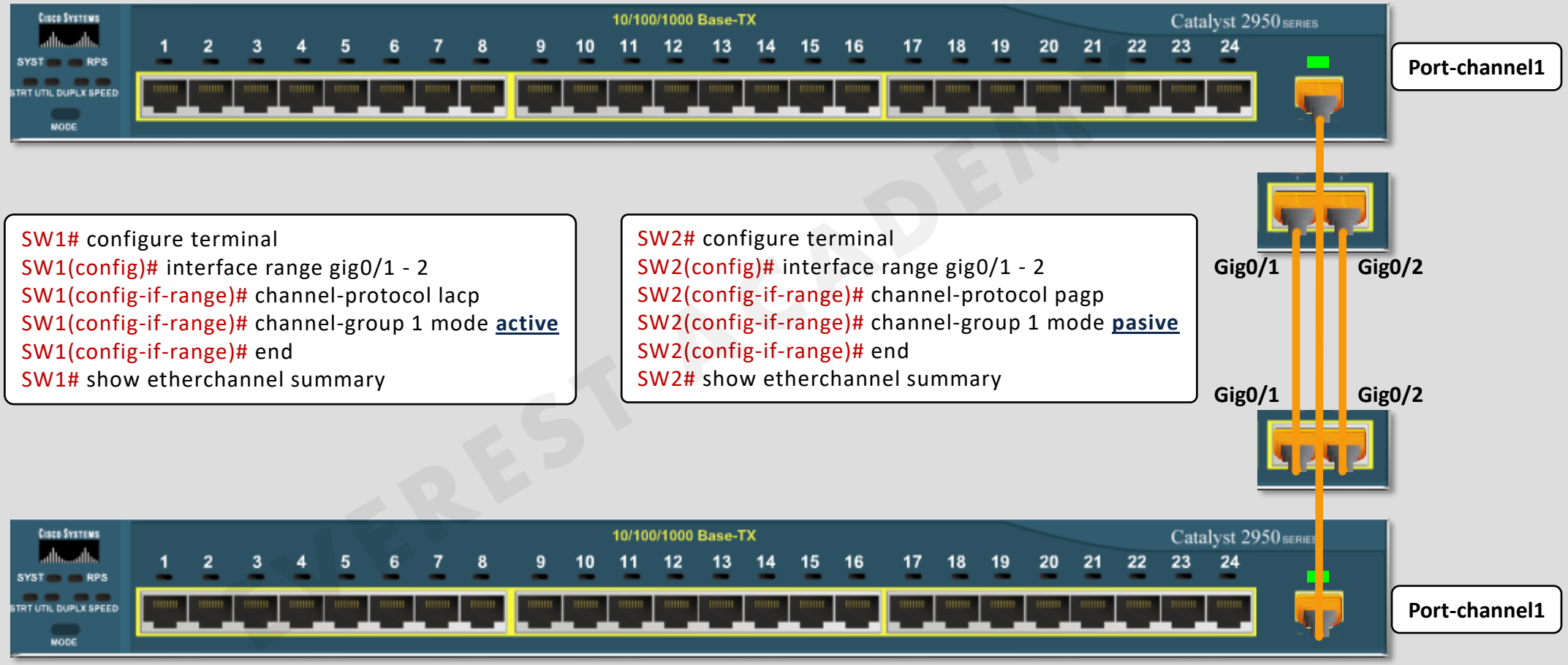

```
SW1# configure terminal
SW1(config)# interface range gig0/1 - 2
SW1(config-if-range)# channel-protocol pagp
SW1(config-if-range)# channel-group 1 mode desirable
SW1(config-if-range)# end
SW1# show etherchannel summary
```

```
SW2# configure terminal
SW2(config)# interface range gig0/1 - 2
SW2(config-if-range)# channel-protocol pagp
SW2(config-if-range)# channel-group 1 mode auto
SW2(config-if-range)# end
SW2# show etherchannel summary
```





Configuring Dynamic EtherChannels (LACP)




```
SW1# configure terminal
SW1(config)# interface range gig0/1 - 2
SW1(config-if-range)# channel-protocol lacp
SW1(config-if-range)# channel-group 1 mode active
SW1(config-if-range)# end
SW1# show etherchannel summary
```

```
SW2# configure terminal
SW2(config)# interface range gig0/1 - 2
SW2(config-if-range)# channel-protocol pagp
SW2(config-if-range)# channel-group 1 mode pasive
SW2(config-if-range)# end
SW2# show etherchannel summary
```