



Installing the Cisco ACI Fabric Hardware

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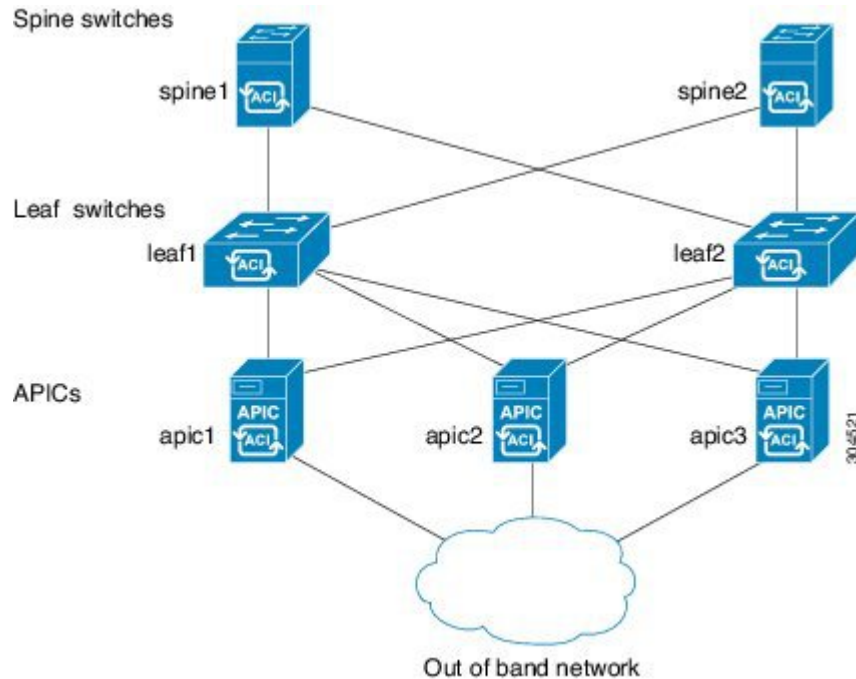
ACI Fabric Topology

The ACI fabric topology includes the following major components:

- Application Centric Infrastructure Controllers (APICs) (Cisco UCS C220-M3 and C220-M4 servers)
- Leaf switches (Cisco Nexus 93128TX, 9332PQ, 9372PX, 9372TX, 9396PX, and 9396TX switches)
- Spine switches (Cisco Nexus 9336PQ, 9504, 9508, and 9516 switches)

As shown in the following figure, each APIC is connected to one or two leaf switches and each leaf switch is connected to every spine switch in the same ACI fabric.

Figure 1: ACI Fabric Topology



Connecting the Application Policy Infrastructure Controller

Depending on the type of Virtual Interface Card (VIC) installed on the controller, you must connect either optical (10-Gigabit SFP+) or copper (10BASE-T) leaf switches as follows:

- Controller with a VIC1225 (10-Gigabit SFP+ optical ports) module must be connected to leaf switches with 10-Gigabit SFP+ optical downlink ports (for example, a Cisco Nexus 9396PX switch).
- Controller with a VIC1225T (10GBASE-T ports) module must be connected to leaf switches with 10GBASE-T downlink ports (for example, a Cisco Nexus 93128TX or 9396TX switch).

The connections between leaf and spine switches are made with 40-Gigabit Ethernet transceivers.

Before You Begin

- The Application Policy Infrastructure Controller (APIC), a Cisco UCS C220-M3 or UCS C220-M4 server with APIC software, must be fully installed in its rack and powered up (see the *Cisco UCS C220 Server Installation and Service Guide*).
- One or two leaf switches (such as the Cisco Nexus 93128TX, 9396PX, or 9396TX switches) must be installed in racks that are within reach of the interface cables that you are using to connect those switches to the controller. To install these switches in racks, see the following documents:

◦ *Cisco Nexus 93128TX ACI-Mode Switch Hardware Installation Guide*

- *Cisco Nexus 9396PX ACI-Mode Switch Hardware Installation Guide*
- *Cisco Nexus 9396TX ACI-Mode Switch Hardware Installation Guide*
- One or more spine switches (such as the Cisco Nexus 9336PQ, 9504, 9508, or 9516) must be installed in racks that are within reach of the interface cables that you are using to connect those switches to the leaf switches. To install these switches in racks, see the following documents:
 - *Cisco Nexus 9336PQ Switch Hardware Installation Guide*
 - *Cisco Nexus 9504 ACI-Mode Switch Hardware Installation Guide*
 - *Cisco Nexus 9508 ACI-Mode Switch Hardware Installation Guide*
 - *Cisco Nexus 9516 ACI-Mode Switch Hardware Installation Guide*

Step 1

Connect each APIC in the same ACI fabric to one (required minimum) or two (recommended for redundancy) leaf switches as follows:

- 1 On the APIC, connect a 10-Gigabit or 10GBASE-T interface cable to one of the two virtual interface card (VIC) ports.
 - VIC 1225 (module with optical ports)—You can connect this module to optical ports on leaf switches (for example, the Cisco Nexus 9396PX switch) using the SFP+ transceivers and cables listed for the Cisco Nexus 9000 Series (Fixed 9300) ACI mode at <http://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>.
 - VIC 1225T (module with copper ports)—You can connect this module to BASE-T ports on leaf switches (for example, the Cisco Nexus 93128TX or 9396TX switches) using a 10-Gigabit interface cable with RJ-45 connectors.
- 2 Connect the other end of the interface cable to a downlink port on a leaf switch. The leaf switch that you connect to depends on the VIC and interface cable used as follows:
 - If using a VIC 1225 module with an optical cable and transceivers, connect the other end of the cable to a Cisco Nexus 9396PX leaf switch downlink port.
 - If using a VIC 1225T with a copper cable and RJ-45 connectors, connect the other end of the cable to a Cisco Nexus 93128TX or 9396TX leaf switch downlink port.
- 3 If you are connecting the APIC to an additional leaf switch, repeat Steps 1a and 1b for that connection.

Step 2

Connect each leaf switch to each of the spine switches in the same ACI fabric as follows:

- 1 Connect a 40-gigabit interface cable to an active uplink optical port on the leaf switch.

Active ports have a lit (white) ACT LED below them. On the Cisco Nexus 93128TX switch, there are eight active uplink ports (leftmost eight uplink ports). On the Cisco Nexus 9396PX and 9396TX switches, there are 12 active uplink ports.

For a list of the supported transceivers for the leaf and spine switches, see the listing for N9K-X9736PQ I/O modules installed in a Cisco Nexus 9000 Series (Modular 9500) ACI Mode switch at <http://www.cisco.com/c/en/us/support/interfaces-modules/transceiver-modules/products-device-support-tables-list.html>):

- 2 Connect the other end of the interface cable to an optical 40-gigabit interface port on a spine switch. If connecting to a Cisco Nexus 9504, 9508, or 9516 switch, connect the interface cable to a port on a N9K-X9736PQ I/O module installed on the switch.

For information on setting up the optional console and management connections or initializing the ACI fabric, see the *Cisco API Fabric Getting Started Guide*.
