Design Considerations

NetApp Solutions

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Design Considerations

Network Design

The minimum configuration of a Cisco ACI fabric consists of two leaf switches and two spine switches with a cluster at least three APICs managing and controlling the whole fabric. All the workloads connect to leaf switches. Spine switches are the backbone of the network and are responsible for interconnecting all leaf switches. No two leaf switches can be interconnected. Each leaf switch is connected to each of the spine switches in a full-mesh topology.

With this two-tier spine-and-leaf architecture, no matter which leaf switch the server is connected to, it's traffic always crosses the same number of devices to get to another server attached to the fabric (unless the other server is located on the same leaf). This approach keeps latency at a predictable level.

Compute Design

The minimum number of compute nodes required for a highly available infrastructure using NetApp HCI is two. NetApp HCI provides two options for cabling: two-cable and six-cable. NetApp HCI H410C compute nodes are available with two 1GbE ports (ports A and B) and four 10/25GbE ports (ports C, D, E, and F) on board. For a two-cable option, ports D and E are used for connectivity to uplink switches, and, for a six-cable option, all ports from A to F are used. Each node also has an additional out-of-band management port that supports Intelligent Platform Management Interface (IPMI) functionality. This solution utilizes the two-cable option for compute nodes.

For VMware deployments, NetApp HCI comes with an automated deployment tool called the NetApp Deployment Engine (NDE). For non-VMware deployments, manual installation of hypervisors or operating systems is required on the compute nodes.

Storage Design

NetApp HCI uses four-cable option for storage nodes. NetApp HCI H410S storage nodes are available with two 1GbE ports (ports A and B) and two 10/25GbE ports (ports C and D) on board. The two 1GbE ports are bundled as Bond1G (active/passive mode) used for management traffic and the two 10/25GbE ports are bundled as Bond10G (LACP active mode) used for storage data traffic.

For non-VMware deployments, the minimum configuration of NetApp HCI storage cluster is four nodes. For NetApp HCI versions earlier than 1.8 with VMware deployments, the minimum configuration is four storage nodes. However, for HCI version 1.8 with VMware deployments, the minimum configuration for NetApp HCI storage cluster is two nodes. For more information on NetApp HCI two-node storage cluster, see the documentation here.

Next: VMware vSphere: NetApp HCI with Cisco ACI

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