



**Vendor:** Cisco

**Exam Code:** 300-610

**Exam Name:** Designing Cisco Data Center Infrastructure  
(DCID)

**Version:** DEMO

### QUESTION 1

A network design must include a solution to run CLI commands remotely on Cisco Nexus 9000 Series Switches. The customer's security policy requires secure login credentials and an encrypted underlying transport. The command output will be processed using tools that support XML or JSON encoding.

Which two components should be included in the design? (Choose two.)

- A. NX-API
- B. HTTPS
- C. HTTP
- D. Bash shell
- E. SSH

**Answer:** AB

**Explanation:**

NX-API supports HTTPS. All communication to the device is encrypted when you use HTTPS. NX-API is integrated into the authentication system on the device. Users must have appropriate accounts to access the device through NX-API. NX-API uses HTTP basic authentication. All requests must contain the username and password in the HTTP header.

You should consider using HTTPS to secure your user's login credentials.

[https://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus9000/sw/6-x/programmability/guide/b\\_Cisco\\_Nexus\\_9000\\_Series\\_NX-OS\\_Programmability\\_Guide/b\\_Cisco\\_Nexus\\_9000\\_Series\\_NX-OS\\_Programmability\\_Configuration\\_Guide\\_chapter\\_0101.html](https://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus9000/sw/6-x/programmability/guide/b_Cisco_Nexus_9000_Series_NX-OS_Programmability_Guide/b_Cisco_Nexus_9000_Series_NX-OS_Programmability_Configuration_Guide_chapter_0101.html)

### QUESTION 2

An engineer manages hundreds of Cisco Nexus 3000 Series and 9000 Series Switches that are installed at several data centers and wants to use one of the built-in automation tools of the Cisco NX-OS Guest Shell to automate daily activities. The engineer requires a tool that uses imperative language, has extensive library support, and is object-oriented.

Which automation tool should be used to meet these requirements?

- A. Python
- B. Bash
- C. Perl
- D. YAML

**Answer:** A

**Explanation:**

Python is object-oriented and imperative language.

YAML is declarative.

### QUESTION 3

A network architect designs a high-availability architecture for the Cisco UCS Fabric Interconnects that are installed in a data center. The architecture must support clustering and redundancy.

Which architecture meets these requirements?

- A. dual connections from port L1 to L1 and one connection from port L1 to L1 with twinax cables

- B. dual connections from port L1 to L2 and one connection from port L2 to L1 with twinax cables
- C. dual connections from port L1 to L2 and one connection from port L2 to L1 with Ethernet cables
- D. dual connections from port L1 to L1 and one connection from port L2 to L2 with Ethernet cables

**Answer: D**

**Explanation:**

[https://subscription.packtpub.com/book/networking\\_and\\_servers/9781782170662/10/ch10lv1sec92/configuring-high-availability-clustering](https://subscription.packtpub.com/book/networking_and_servers/9781782170662/10/ch10lv1sec92/configuring-high-availability-clustering)

[https://www.cisco.com/c/en/us/td/docs/unified\\_computing/ucs/sw/gui/config/guide/1-0-2/b\\_GUI\\_Config\\_Guide/GUI\\_Config\\_Guide\\_chapter4.pdf](https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/sw/gui/config/guide/1-0-2/b_GUI_Config_Guide/GUI_Config_Guide_chapter4.pdf)

To use the cluster configuration, the two fabric interconnects must be directly connected together using Ethernet cables between the L1 (L1-to-L1) and L2 (L2-to-L2) high availability ports, with no other fabric interconnects in between. This allows the two fabric interconnects to continuously monitor the status of each other and quickly know when one has failed.

#### QUESTION 4

An engineer must connect an existing Cisco UCS Fabric Interconnect to an IP-based storage array. The connection must be a port channel made directly between the fabric interconnect expansion module and the storage array. The engineer must also consider that the environment is running FCoE for storage and uses QoS to prioritize traffic.

Which port type should be used to meet these requirements?

- A. network
- B. uplink
- C. server
- D. appliance

**Answer: D**

**Explanation:**

<https://www.cisco.com/c/en/us/support/docs/servers-unified-computing/ucs-5100-series-blade-server-chassis/116075-ucs-app-connectivity-tshoot-00.html>

Definition of a Unified Storage Port

Prior to UCS Release 2.1(1a), appliance ports only worked for IP-based storage traffic, such as the Network File System (NFS) and the Internet Small Computer System Interfaces (iSCSIs). In UCS Releases 2.1(1a) and later, the ability for both IP-based storage and Fibre Channel over Ethernet (FCoE) to be used on the same interface was added. This type of interface is called a Unified Storage port. In order to use this feature, the storage controller must have a Converged Network Adapter (CNA) that is capable of FCoE and traditional Ethernet on the same port.

#### QUESTION 5

An engineer designs a Cisco UCS solution that must provide guaranteed and deterministic bandwidth to a specific server in the environment. The solution must apply to network and storage traffic of C-Series and B-Series servers.

Which solution should be included to meet these requirements?

- A. Pin the vNICs and the vHBAs of the service profile to dedicated uplink ports.
- B. Pin the IOM ports of the service profile to dedicated server ports.
- C. Pin the server ports of the service profile to dedicated uplink ports.
- D. Pin the vNICs and vHBAs of the service profile to dedicated server ports.

**Answer: A**

**Explanation:**

[https://www.cisco.com/c/en/us/td/docs/unified\\_computing/ucs/sw/gui/config/guide/2-2/b\\_UCSM\\_GUI\\_Configuration\\_Guide\\_2\\_2/b\\_UCSM\\_GUI\\_Configuration\\_Guide\\_2\\_2\\_chapter\\_010.html#concept\\_7DE33CE2E37A47C6992C012D51CA37D4](https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/sw/gui/config/guide/2-2/b_UCSM_GUI_Configuration_Guide_2_2/b_UCSM_GUI_Configuration_Guide_2_2_chapter_010.html#concept_7DE33CE2E37A47C6992C012D51CA37D4)

### Pinning

Pinning in Cisco UCS is only relevant to uplink ports. You can pin Ethernet or FCoE traffic from a given server to a specific uplink Ethernet port or uplink FC port.

When you pin the NIC and HBA of both physical and virtual servers to uplink ports, you give the fabric interconnect greater control over the unified fabric. This control ensures more optimal utilization of uplink port bandwidth.

Cisco UCS uses pin groups to manage which NICs, vNICs, HBAs, and vHBAs are pinned to an uplink port. To configure pinning for a server, you can either assign a pin group directly, or include a pin group in a vNIC policy, and then add that vNIC policy to the service profile assigned to that server. All traffic from the vNIC or vHBA on the server travels through the I/O module to the same uplink port.

- Guidelines for Pinning

### Guidelines for Pinning

When you determine the optimal configuration for pin groups and pinning for an uplink port, consider the estimated bandwidth usage for the servers. If you know that some servers in the system will use a lot of bandwidth, ensure that you pin these servers to different uplink ports.

## QUESTION 6

A customer needs to deploy a three-tier network architecture that will consist of web, app, and other business-critical applications. The solution will include Cisco UCS 6324 Fabric Interconnects managing B and C series servers. The fabric interconnects will be connected to the Cisco Nexus 7706 Series Switch for network access. A storage array will be directly connected to the UCS fabric interconnects.

Which UCS deployment type must be used to meet these requirements?

- A. UCS interconnect in Ethernet switching mode  
UCS interconnect in Fibre Channel switching mode  
Fabric Interconnects uplinked to the Nexus device using an LACP port-channel in passive mode
- B. UCS interconnect in Ethernet end-host mode  
UCS interconnect in Fibre Channel end-host mode  
Fabric Interconnects uplinked to the Nexus device using an LACP port-channel in passive mode
- C. UCS interconnect in Ethernet end-host mode  
UCS interconnect in Fibre Channel switching mode  
Fabric Interconnects uplinked to the Nexus device using an LACP port-channel in active mode
- D. UCS interconnect in Ethernet switching mode  
UCS interconnect in Fibre Channel end-host mode  
Fabric Interconnects uplinked to the Nexus device using an LACP port-channel in active mode

**Answer: C**

**Explanation:**

FC must be in switching mode for Direct Attached Storage.

## QUESTION 7

A network engineer must design a Cisco HyperFlex solution based on these requirements:

- two clusters in the main data center consisting of five HyperFlex nodes
- one edge node for the remote branch
- cluster nodes that use one rack unit of space

Which two devices should be used in the remote branch cluster for this design? (Choose two.)

- A. UCS B200

- B. Gigabit Ethernet Switch
- C. Fabric Interconnect 6300
- D. HX240c
- E. HX220c

**Answer:** BE

**Explanation:**

HX240 is excluded because it is 2RU, while the requirement is to have one rack unit of space. UCS B200 and FI 6300 are excluded because the solution is required in a branch.  
[https://www.cisco.com/c/en\\_in/products/hyperconverged-infrastructure/hyperflex-hx240c-m4-nodes-ucs-b200-blade-servers/index.html](https://www.cisco.com/c/en_in/products/hyperconverged-infrastructure/hyperflex-hx240c-m4-nodes-ucs-b200-blade-servers/index.html)

**QUESTION 8**

An engineer installs a B-Series server in a Cisco UCS chassis that contains a pair of UCS-IOM-2208XP I/O modules. The full bandwidth of the I/O module must be utilized.

Which two elements should be used in this environment? (Choose two.)

- A. four twinax cables from each I/O module to each fabric interconnect
- B. Cisco UCS VIC 1225
- C. eight twinax cables from each I/O module to each fabric interconnect
- D. Cisco UCS M81KR
- E. Cisco UCS VIC 1280

**Answer:** CE

**Explanation:**

2208 has 8 uplinks. VIC 1225 only works on C-Series UCS. M81KR has only 2x10G ports. VIC 1280 has 8x10G ports.  
<https://www.connection.com/product/cisco-vic-1280-dual-40gb-capable-2nd-gen-virtual-interface-card/ucs-vic-m82-8p/13785476>

**QUESTION 9**

A network architect proposes a distinct Fibre Channel fabric to be used for a Cisco UCS blade server that hosts critical applications.

Which action should be implemented for the Fibre Channel traffic from the vHBA of this server to pass through the I/O Module in the Cisco UCS chassis to a specified uplink Fibre Channel port?

- A. Update the applied global QoS policy.
- B. Update the applied Fibre Channel adapter policy.
- C. Enable Persistent Binding in the vHBA policy.
- D. Include a SAN pin group in the vHBA policy.

**Answer:** D

**Explanation:**

[https://www.cisco.com/c/en/us/td/docs/unified\\_computing/ucs/ucs-manager/GUI-User-Guides/Storage-Mgmt/3-2/b\\_UCSM\\_GUI\\_Storage\\_Management\\_Guide\\_3\\_2/b\\_UCSM\\_GUI\\_Storage\\_Management\\_Guide\\_3\\_2\\_chapter\\_0110.pdf](https://www.cisco.com/c/en/us/td/docs/unified_computing/ucs/ucs-manager/GUI-User-Guides/Storage-Mgmt/3-2/b_UCSM_GUI_Storage_Management_Guide_3_2/b_UCSM_GUI_Storage_Management_Guide_3_2_chapter_0110.pdf)

## SAN Pin Groups

Cisco UCS uses SAN pin groups to pin Fibre Channel traffic from a vHBA on a server to an uplink Fibre Channel port on the fabric interconnect. You can use this pinning to manage the distribution of traffic from the servers.

### QUESTION 10

An engineer is experiencing performance issues on a Cisco UCS blade server. The B-Series blade server contains four CPUs, most of which are idle. The engineer notices that the CPU is suffering from too many requests sent by the NIC. Additionally, the number of queues appears to be insufficient and only a single CPU is processing the network traffic.

Which policy must be used to alleviate these issues?

- A. LAN connectivity
- B. dynamic vNIC connection
- C. Ethernet adapter
- D. vNIC placement

**Answer: C**

**Explanation:**

[https://www.cisco.com/en/US/docs/unified\\_computing/ucs/sw/gui/config/guide/141/UCSM\\_GUI\\_Configuration\\_Guide\\_141\\_chapter19.html](https://www.cisco.com/en/US/docs/unified_computing/ucs/sw/gui/config/guide/141/UCSM_GUI_Configuration_Guide_141_chapter19.html)

Ethernet adapter policy is the only policy that is having configuration that is related to CPU.

### QUESTION 11

An engineer must secure the payload traversing across the DCI. The solution must support confidentiality and integrity and it must be open standard. The solution must encrypt Ethernet frames regardless of the upper layer protocol used.

Which technology must be used to support these requirements?

- A. GRE
- B. OTV
- C. MACsec
- D. IPsec

**Answer: C**

**Explanation:**

The key to solution is "Ethernet frames". Frames are layer 2. IPsec encrypts at layer 3.

<https://developers.redhat.com/blog/2016/10/14/macsec-a-different-solution-to-encrypt-network-traffic/>

### QUESTION 12

An engineer must interconnect two geographically separated data centers. The service provider offers a Layer 2 Metro Ethernet link. The strict security policy requires that the information that is shared between two sites must be sent encrypted. The application deployed between two sites requires a line-rate throughput regardless of the packet size and speed.

Which solution meets these requirements?

- A. L2TPv2
- B. IPsec
- C. MACsec
- D. L2TPv3

**Answer: C**

**Explanation:**

<https://www.cisco.com/c/dam/en/us/td/docs/solutions/Enterprise/Security/MACsec/WP-High-Speed-WAN-Encrypt-MACsec.pdf>

Furthermore, if the deployment requires that all traffic leaving/traversing the router must be encrypted, the overall throughput of the router is now restricted to the performance of the IPsec engine which, in most cases, can be a fraction of the router's aggregate forwarding capabilities. This is a huge factor from an economics perspective of cost per bit through the router and MACsec changes the encryption cost per bit through routing elements. For deployments requiring encryption and the capability of leveraging an Ethernet transport (public or private), MACsec offers a simplified, line-rate, per port encryption option for secure next-generation deployments.

### QUESTION 13

After experiencing traffic disruptions from the failure of a single router, a customer asks an engineer to design a solution that will prevent this from occurring in the future. While examining the customer's environment, the engineer discovers that the routers are manufactured by a variety of different vendors, and they have varying amounts of CPU and memory resources. Additionally, several of the customer's applications require the ability to fine-tune the load-balancing parameters between multiple gateway routers.

Which solution should be used to meet these requirements?

- A. VRRP
- B. FHRP
- C. HSRP
- D. GLBP

**Answer: A**

**Explanation:**

Load balancing can be done by having different VRRP groups and configuring different servers with different default gateways. HSRP and GLBP are Cisco proprietary.

### QUESTION 14

An engineer is implementing management access to a Cisco Nexus platform. The customer requires a solution that provides isolation between the data and control planes, in addition to management that uses encryption and authentication. The customer will manage the device using both IPv4 and IPv6.

Which two components should be used to meet these requirements? (Choose two.)

- A. mgmt0 interface
- B. SSH protocol
- C. SNMP
- D. SVI interface
- E. Telnet protocol

**Answer: AC**

**Explanation:**

We are talking about management only, so SSM is out. Since we need to separate between data and control plane, we should use mgmt0 interface, so SVI interface is out. Since we need to use encryption and authentication, this can be done in SNMPv3, while telnet does not support encryption, so telnet is out.

**QUESTION 15**

You are designing a fabric interconnect and Cisco UCS blade chassis solution for a client. The solution includes two vHBA interfaces per server in the blade chassis. Which two requirements for the servers to boot successfully are true? (Choose two.)

- A. On the server side, the amount of WWPNs must equal to the number of the vHBA interfaces multiplied by two.
- B. On the server side, the amount of WWPNs must equal to the number of the vHBA interfaces.
- C. On the server side, the amount of WWNNs must equal to the number of the vHBA interfaces.
- D. On the server side, each server must be allocated one WWPN.
- E. On the server side, each server must be allocated one WWNN.

**Answer:** BE

**Explanation:**

[https://www.cisco.com/en/US/docs/unified\\_computing/ucs/sw/gui/config/guide/141/UCSM\\_GUI\\_Configuration\\_Guide\\_141\\_chapter22.html](https://www.cisco.com/en/US/docs/unified_computing/ucs/sw/gui/config/guide/141/UCSM_GUI_Configuration_Guide_141_chapter22.html)  
WW node names assigned to the server  
WW port names assigned to the vHBA

**QUESTION 16**

An engineer must use OTV for Layer 2 connectivity between data centers to support virtual machine mobility between the customer sites. To support this requirement, the engineer must ensure the existence of the same default gateway on both sites. Additionally, the operations team reports high bandwidth utilization on site A and wants to optimize the outbound traffic flows to use a local DC exit point.

Which feature must be used to meet these requirements?

- A. data group
- B. FHRP filter
- C. ARP filter
- D. control group

**Answer:** B

**Explanation:**

[https://www.cisco.com/c/dam/en/us/products/collateral/switches/nexus-7000-series-switches/guide\\_c07-728315.pdf](https://www.cisco.com/c/dam/en/us/products/collateral/switches/nexus-7000-series-switches/guide_c07-728315.pdf)

It is critical that you **enable the filtering of FHRP messages** across the overlay because it allows the use of the same FHRP configuration in different sites. The end result is that the same default gateway is available, and it is characterized by the same virtual IP and virtual MAC addresses in each data center. Thus the **outbound traffic will be able to follow the optimal and shortest path, always using the local default gateway.**

The appendix has a sample configuration that can be copied into your Nexus 7000 Series in order to utilize this feature.



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