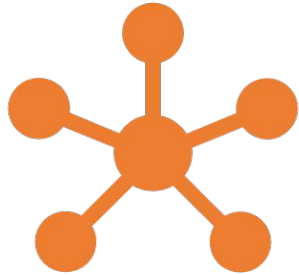


Job Interview Presentation

Your Name:

PELUMI JOHNSON

The interview will focus on networking fundamentals and consist of 10 questions.



Networking



Devices



Protocols

United States Cyber Command uses state-of-the art technology. However, the fundamentals are as important as any innovative technology. Given that, what are the three basic local area network (LAN) topologies called?



Bus Topology



Star Topology



Circle Topology

The national mission teams operate on all types of networks. To defend a network, you must first understand the network design on which you are operating. Provide a brief description of each of the following network topologies ***and include at least two characteristics of each topology:***

Topology	Description
bus	Devices share one main communication cable. <ul style="list-style-type: none">- Easy and inexpensive to set up.- If the main cable fails, the entire network goes down.
star	Devices connect to a central hub or switch. <ul style="list-style-type: none">- If one device fails, it doesn't affect the others.- If the central hub fails, all network communication stops.
ring	Devices form a loop where data moves one way. <ul style="list-style-type: none">- Data travels around the circle until it reaches its destination- A single device failure can disrupt the entire network.
mesh	Every device connects to all others. <ul style="list-style-type: none">- Provides high reliability and redundancy.- Requires a lot of cabling and can be expensive to set up.
hybrid	Mix of two or more topologies. <ul style="list-style-type: none">- Flexible and scalable for large organizations.- More complex to design and maintain.

Our employees must have a theoretical and applicable understanding of how networking works. ***In the left column, name each layer of the OSI model, with the bottom layer at the bottom. In the right column, provide the name of the corresponding layer number.***

Layer	OSI Layer Name
7	Application
6	Presentation
5	Session
4	Transport
3	Network
2	Data Link
1	Physical

Briefly describe each function of the OSI model layer *using the same order as in the previous slide*. Provide the layer name in the left column. In the right column, provide one function of the layer and at least two characteristics of the layer. Include the protocol data unit (PDU) used by the OSI layers that have PDUs.

Layer	Function
Application (Layer 7)	Provides network services directly to end users and applications (PDU: Data).
Presentation (Layer 6)	Translates, encrypts, or compresses data so it's readable between different systems.
Session (Layer 5)	Establishes, manages, and ends communication sessions between applications.
Transport (Layer 4)	Ensures reliable data delivery through segmentation, flow control, and error checking (PDU: Segment).
Network (Layer 3)	Handles logical addressing and routing of data between networks (PDU: Packet).
Data Link (Layer 2)	Provides node-to-node data transfer and error detection on the same network (PDU: Frame).
Physical (Layer 1)	Transmits raw bits over physical media such as cables or radio signals (PDU: Bits).

United States Cyber Command requires an internet service provider (ISP) to connect to the internet. What is the point at which the operational control of ownership changes from the ISP to United States Cyber Command?



**Demarcation
Point**

Our teams operate and encounter all types of devices. ***Provide at least two characteristics*** for each of the following common network devices. ***For the first three networking devices, also include the OSI layer at which the device operates:***

Networking Device	Description
hub	Operates at Layer 1 (Physical Layer) broadcasts data to all connected devices; does not filter traffic or manage collisions efficiently.
router	Operates at Layer 3 (Network Layer) directs data between different networks using IP addresses, determines the best path for data packets.
switch	Operates at Layer 2 (Data Link Layer); forwards data to specific devices using MAC addresses; reduces network collisions and improves efficiency.
NIC	Connects a computer to the network; converts data into signals for transmission and receives incoming network data.

The national mission teams require implementation of common protocols. Provide the port numbers that each of the following protocols use (*some protocols use more than one port number*):

Protocol	Port
HTTP	80
HTTPS	443
SMTP	25
SMTP over TLS	465 or 587
SNMP	161
DNS	53
LDAPS	636
DHCP	67
TELNET	23

Provide the IP range for each network class.

(Note: The question is asking for the class range, not the private IP range for each class.)

Class A: 1.0.0.0 - 126.255.255.255

Class B: 128.0.0.0 - 191.255.255.255

Class C: 192.0.0.0 - 223.255.255.255

For each network class, provide the default subnet mask in the “Default Subnet Mask” column.

Class	Format	Default Subnet Mask
A	network.host.host.host	255.0.0.0
B	network.network.host.host	255.255.0.0
C	network.network.network.host	255.255.255.0

Give the definition of an autonomous system. Describe the operation of interior and exterior routing protocols as they relate to an autonomous system. Your answer must not exceed five sentences.

An autonomous system (AS) is a collection of connected IP networks under a single administrative authority that shares a unified routing policy. Within an AS, interior routing protocols (IRPs) such as OSPF or EIGRP operate to exchange routing information among routers inside the system, ensuring efficient internal data delivery. Exterior routing protocols (ERPs), like BGP, handle route exchange between different autonomous systems. This separation allows each AS to manage its internal routes independently while maintaining connectivity with external networks. Together, they form the hierarchical structure of the global Internet



Thank You!

Upload your PowerPoint
and video to the
Assignments folder to
receive a grade and
feedback.

