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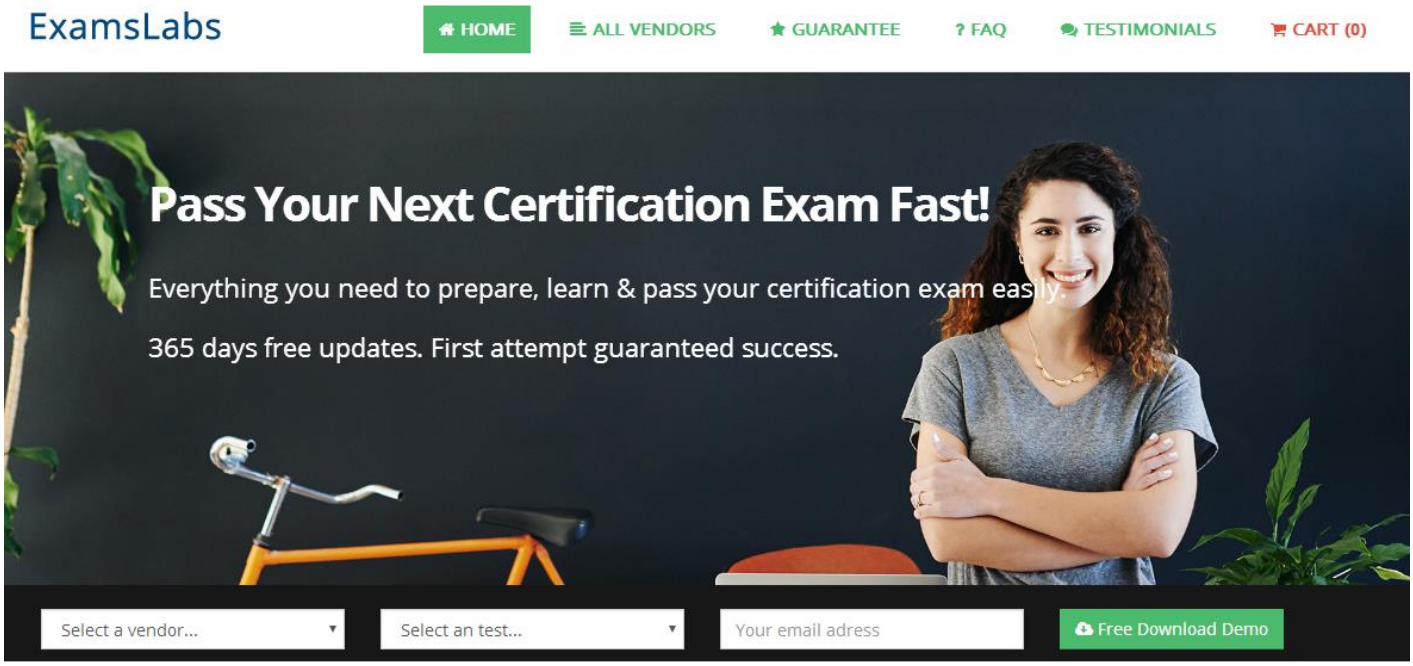

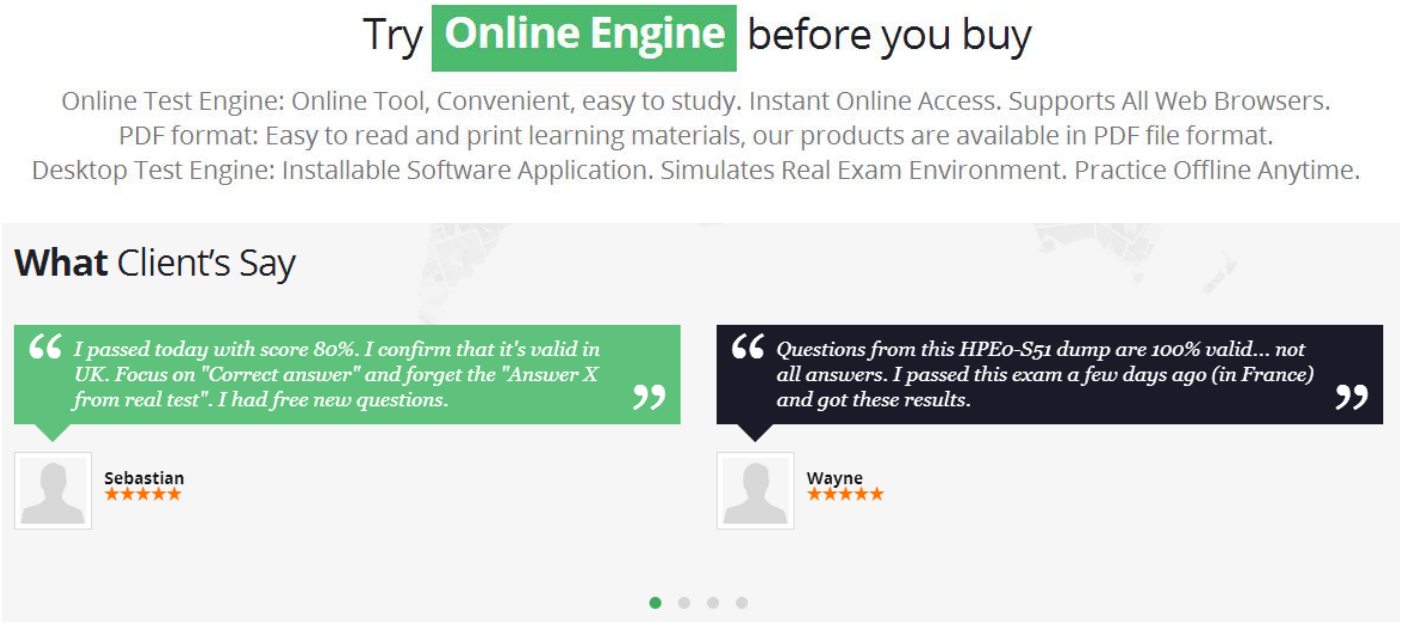

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Exam : **HPE3-U01**

Title : Aruba Certified Network Technician Exam

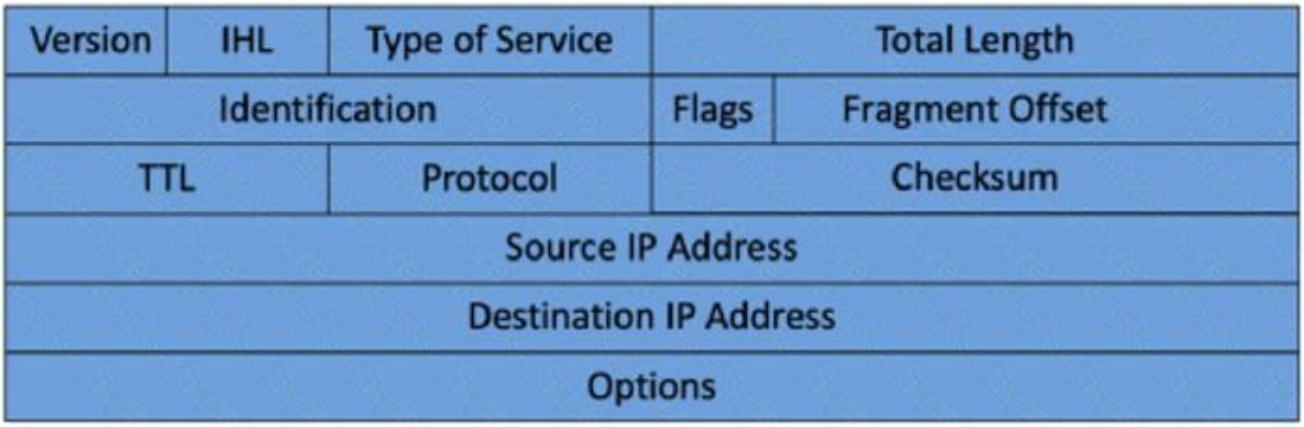
Vendor : HP

Version : DEMO

NO.1 What is part of the 5 GHz band?
A. Channels 149 to 161
B. U-NII 5
C. Channel 14
D. Channel 12 and 13
Answer: A
Explanation
The 5 GHz band is a radio frequency band used for Wi-Fi communications. It has a higherdata bandwidth than the 2.4 GHz band, but a shorter range and less penetration through walls. The 5 GHz band is divided into several sub-bands, each with a different set of channels. One of these sub-bands is the U-NII-3 band, which covers the frequency range from 5725 MHz to 5850 MHz. This sub-band contains 24 non-overlapping channels, numbered from 149 to 172. Channels 149 to 161 are part of the 5 GHz band and can be used for Wi-Fi communications. Channels 165 and 169 are restricted to indoor use only, and channel 173 is not allowed in some regions. Channels 12, 13, and 14 are not part of the 5 GHz band, but belong to the 2.4 GHz band, which has a different set of channels and regulations. U-NII-5 is not a valid sub-band name, but a proposed extension of the 5 GHz band to include the frequency range from 5925 MHz to 7125 MHz. This extension is not yet approved or implemented, and therefore not part of the 5 GHz band. References: List of WLAN channels, What's the Difference Between 2.4 and 5 GHz Wi-Fi (and Which Should I Use)?, What is the difference between 2.4 GHz, 5 GHz, and 6 GHz wireless frequencies?

NO.2 How many IP assignable addresses are contained in 10.0.128.0/23?
A. 4094
B. 254
C. 510
D. 512
Answer: C
Explanation
The IP address 10.0.128.0/23 is a Class A private address with a subnet mask of 255.255.254.0. This means that the network prefix is 10.0.128.0 and the host identifier is the last 9 bits of the address. To find the number of IP assignable addresses, we need to subtract 2 from the total number of possible hosts, which is29=512.
This is because the network address (10.0.128.0) and the broadcast address (10.0.129.255) are reserved and cannot be assigned to any host. Therefore, the number of IP assignable addresses is 512 - 2 =
510.References:IP Subnet Calculator,CIDR Calculator for IPv4 addresses,Free online IPv4 subnet calculator

NO.3 Refer to Exhibit.



To which protocol does the header belong?

A. Internet Protocol version 6

B. User Datagram Protocol

C. Ethernet Protocol

D. Transmission Control Protocol

E. Internet Protocol

Answer: E

Explanation

The header in the exhibit belongs to the Internet Protocol version 4 (IPv4), which is the most widely used protocol for routing and delivering packets across networks. IPv4 is a connectionless and unreliable protocol that operates at the network layer of the OSI model. The IPv4 header consists of 20 bytes (160 bits) of fixed fields and up to 40 bytes (320 bits) of optional fields. The fixed fields include:

* Version: 4 bits that indicate the version of the IP protocol, which is 4 for IPv4.
* IHL (Internet Header Length): 4 bits that indicate the length of the IP header in 32-bit words, which is 5 for the minimum header size of 20 bytes.
* Type of Service: 8 bits that indicate the quality of service (QoS) parameters for the packet, such as precedence, delay, throughput, and reliability.
* Total Length: 16 bits that indicate the total length of the IP packet in bytes, including the header and the data.The maximum value is 65535 bytes.
* Identification: 16 bits that identify the packet for fragmentation and reassembly purposes.
* Flags: 3 bits that control the fragmentation of the packet. The first bit is reserved and must be zero. The second bit is the Don't Fragment (DF) bit, which indicates whether the packet can be fragmented or not.

The third bit is the More Fragments (MF) bit, which indicates whether the packet is the last fragment or

* not.
* Fragment Offset: 13 bits that indicate the position of the fragment in the original packet, measured in units of 8 bytes.
* TTL (Time To Live): 8 bits that indicate the maximum number of hops that the packet can traverse before being discarded. The TTL is decremented by one at each hop, and the packet is dropped if the TTL reaches zero.
* Protocol: 8 bits that indicate the protocol of the data carried in the packet, such as TCP, UDP, ICMP, etc. The protocol numbers are defined in the List of IP protocol numbers.
* Header Checksum: 16 bits that provide error detection for the IP header. The checksum is

calculated by adding the 16-bit words of the header and taking the one's complement of the result.The checksum is recomputed and verified at each hop.
* Source IP Address: 32 bits that indicate the IP address of the sender of the packet.
* Destination IP Address: 32 bits that indicate the IP address of the receiver of the packet.
* Options: Variable-length field that contains optional information for the IP packet, such as security, routing, timestamp, etc. The options are padded with zeros to make the header length a multiple of 32 bits.
The IPv4 header can be distinguished from other protocol headers by the value of the Version field, which is 4 for IPv4. Other protocol headers have different values for the Version field or do not have a Version field at all. For example, the IPv6 header has a Version field of 6, the UDP header does not have a Version field, the Ethernet header has a Type field instead of a Version field, and the TCP header has a Data Offset field instead of a Version field. References:
* Aruba Certified Network Technician (ACNT) | HPE Aruba Networking
* Aruba Documentation Portal
* Introduction and IPv4 Datagram Header - GeeksforGeeks
* Protocol header - Oxford Reference
* List of IP protocol numbers - Wikipedia

NO.4 Which condition allows 5Ghz channels to avoid Adjacent Channel Interference?
A. transmit at 40 MHz bandwidth
B. transmit at high power levels
C. transmit at low power levels
D. transmit at 20 MHz bandwidth
Answer: A
Explanation
Adjacent Channel Interference (ACI) is a type of interference that occurs when two or more wireless devices use channels that are close to each other in the same frequency band. ACI reduces the signal quality and throughput of the wireless devices, as they have to compete for the same spectrum and deal with the noise from the neighboring channels12 The 5 GHz band has more non-overlapping channels than the 2.4 GHz band, which means that there is less chance of ACI in the 5 GHz band. However, ACI can still occur in the 5 GHz band if the wireless devices use wider channel bandwidths, such as 40 MHz or 80 MHz, which are supported by 802.11n and 802.11ac standards. Wider channel bandwidths can increase the data rate and performance of the wireless devices, but they also occupy more spectrum and reduce the number of available channels134 Therefore, one condition that allows 5 GHz channels to avoid ACI is to transmit at 20 MHz bandwidth, which is the narrowest channel bandwidth supported by 802.11a/n/ac standards. By transmitting at 20 MHz bandwidth, the wireless devices can use more non-overlapping channels in the 5 GHz band and minimize the impact of ACI. However, this alsomeans that the wireless devices will have lower data rates and performance than using wider channel bandwidths134 Another condition that can help avoid ACI in the 5 GHz band is to use channel bonding, which is a technique that combines two or more adjacent channels into one wider channel. Channel bonding can increase the data rate and performance of the wireless devices, but it also requires careful planning and coordination to avoid overlapping with other wireless devices. Channel bonding can be done with 40 MHz or 80 MHz channel bandwidths, but not with 20 MHz channel bandwidths134 References:
https://www.ti.com/pdfs/bcg/80211_acr_wp.pdf
https://www.ti.com/pdfs/bcg/80211_acr_wp.pdf

NO.5 Which command should you enter to access the second interface of the third slot in a modular ArubaOS-CX switch?

A. Interface 0/3/2

B. Interface 0/2/3

C. Interface 1/3/2

D. Interface 3/1/2

Answer: C

Explanation

The command to access the second interface of the third slot in a modular ArubaOS-CX switch is interface 1/3/2. This is because the interface numbering format for modular switches is interface slot/module/port, where slot is the chassis slot number, module is the module number within the slot, and port is the port number within the module1. The slot number starts from 1, the module number starts from 0, and the port number starts from 12. Therefore, the second interface of the third slot is interface 1/3/2. The other options are incorrect because they do not follow the correct interface numbering format. References: AOS-CX 10.06 Command-Line Interface Guide 8320, 8

NO.6 Which accurately describes the 051 Model?

A. It is a reference model that describes data flow over the network using four layers.

B. It is a reference model that is used to convert binary bits into analog signals.

C. It is a reference model that explains how data is created by the application layer.

D. It is a reference model that describes how data communications occur on a network.

Answer: D

Explanation

The 051 Model is a reference model that describes how data communications occur on a network using five layers: physical, data link, network, transport, and application. The 051 Model is based on the OSI Model, which has seven layers, but it simplifies the presentation and session layers into the application layer. The 051 Model is used to understand the functions and interactions of different network components, such as devices, protocols, and services. Each layer of the 051 Model has a specific role and responsibility in the data communication process, as follows:

* The physical layer defines the electrical and mechanical characteristics of the transmission medium, such as cables, connectors, and signals. It also determines how data is encoded into bits and transmitted over the medium.
* The data link layer defines the rules and methods for accessing and sharing the transmission medium among multiple devices. It also provides error detection and correction mechanisms to ensure reliable data delivery.
* The network layer defines the logical addressing and routing schemes for data packets across different networks. It also provides congestion control and fragmentation/reassembly functions to optimize network performance.
* The transport layer defines the end-to-end communication and reliability services for data segments between applications. It also provides flow control and multiplexing/demultiplexing functions to manage data streams.
* The application layer defines the protocols and services that enable user applications to exchange data over the network. It also provides functions such as encryption, authentication, and

compression to enhance data security and efficiency.
References:
* 051 Model
* OSI Model
* Network Fundamentals