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Question 1

Question Type: MultipleChoice

When using a spectrum to look for non Wi-Fi interference sources, you notice significant interference across the entire 2.4 GHz band (not on a few select frequencies) within the desktop area of a users workspace, but the interference disappears quickly after just 2 meters. What is the most likely cause of this interference?

Options:

A- USB 3 devices in the user's work area

B- Bluetooth devices in the user's work area

C- Excess RF energy from a nearby AP

D- Unintentional radiation from the PC power supply

Answer:

A

Explanation:

USB 3 devices in the user's work area are the most likely cause of this interference when using a spectrum analyzer to look for non-Wi-Fi interference sources. A spectrum analyzer is a tool that measures and visualizes the radio frequency activity and interference in the wireless environment. A spectrum analyzer can show the spectrum usage and energy levels on each frequency band or channel and help identify and locate the sources of interference. Interference is any unwanted signal that disrupts or degrades the intended signal on a wireless channel. Interference can be caused by various sources, such as other Wi-Fi devices, non-Wi-Fi devices, or natural phenomena. Interference can affect WLAN performance and quality by causing signal loss, noise, distortion, or errors. USB 3 devices are non-Wi-Fi devices that use USB 3.0 technology to transfer data at high speeds between computers and peripherals, such as hard drives, flash drives, cameras, or printers. USB 3 devices can generate electromagnetic radiation that interferes with Wi-Fi signals in the 2.4 GHz band, especially when they are close to Wi-Fi devices or antennas. USB 3 devices can cause significant interference across the entire 2.4 GHz band (not on a few select frequencies) within the desktop area of a user's workspace, but the interference disappears quickly after just 2 meters. This is because USB 3 devices emit broadband interference that affects all channels in the 2.4 GHz band with a high intensity near the source but a low intensity at a distance due to attenuation. The other options are not likely to cause this interference pattern when using a spectrum analyzer to look for non-Wi-Fi interference sources. Bluetooth devices in the user's work area are non-Wi-Fi devices that use Bluetooth technology to communicate wirelessly between computers and peripherals, such as keyboards, mice, headphones, or speakers. Bluetooth devices can cause interference with Wi-Fi signals in the 2.4 GHz band, but they use frequency hopping spread spectrum (FHSS) technique that changes frequencies rapidly and randomly within a range of 79 channels. Therefore, Bluetooth devices do not cause significant interference across the entire 2.4 GHz band (not on a few select frequencies), but rather intermittent interference on some channels at different times. Excess RF energy from a nearby AP is not a non-Wi-Fi interference source but rather a Wi-Fi interference source that occurs when an AP transmits more power than necessary for its coverage area. Excess RF energy from a nearby AP can cause co-channel interference (CCI) with other APs or client devices that use the same channel within range of each other. CCI reduces performance and capacity because it causes contention and collisions on the wireless medium,

Question 2

Question Type: MultipleChoice

You are deploying a WLAN monitoring solution that utilizes distributed sensor devices. Where should sensors be deployed for best results? Choose the single best answer.

Options:

A- In switching closets

B- Every 5 meters and alongside each AP

C- In critical areas where WLAN performance must be high

D- Above the plenum on each floor

Answer:

C

Explanation:

Sensors should be deployed in critical areas where WLAN performance must be high for best results when using a WLAN monitoring solution that utilizes distributed sensor devices. A WLAN monitoring solution is a system that collects, analyzes, and reports on the

status and performance of a WLAN. A WLAN monitoring solution can use different methods to gather data from the WLAN, such as embedded software agents, external hardware probes, or distributed sensor devices. Distributed sensor devices are dedicated devices that are deployed throughout the WLAN coverage area to monitor the wireless traffic and environment. Distributed sensor devices can perform various functions, such as scanning the spectrum, capturing wireless frames, measuring signal quality, detecting rogue access points, testing connectivity, and generating alerts. Distributed sensor devices can provide more accurate and comprehensive data than other methods, but they also require more planning and deployment costs. Therefore, it is important to deploy sensors strategically in critical areas where WLAN performance must be high, such as high-density zones, high-priority applications, or high-security locations. By deploying sensors in critical areas, the WLAN monitoring solution can ensure optimal WLAN performance and reliability in those areas and identify and resolve any issues or problems that may arise. The other options are not the best places to deploy sensors for best results. Deploying sensors in switching closets is not effective because sensors need to be close to the wireless medium to monitor it properly. Deploying sensors every 5 meters and alongside each AP is not efficient because sensors may overlap or interfere with each other and cause unnecessary redundancy or complexity.Deploying sensors above the plenum on each floor is not practical because sensors may not capture the wireless traffic and environment accurately due to attenuation or reflection from the ceiling materials or objects.Reference:CWNA-109 Study Guide, Chapter 14: Troubleshooting Wireless LANs, page 4831

Question 3

Question Type: MultipleChoice

You are a small business wireless network consultant and provide WLAN services for various companies. You receive a call from one of your customers stating that their laptop computers suddenly started experiencing much slower data transfers while connected to the WLAN. This company is located in a multi-tenant office building and the WLAN was designed to support laptops, tablets and mobile

phones. What could cause a sudden change in performance for the laptop computers?

Options:

A- The sky was not as cloudy that day as it typically is and the sun also radiates electromagnetic waves.

B- A new tenant in the building has set their AP to the same RF channel that your customer is using.

C- The antennas in the laptops have been repositioned.

D- A few of your customer's users have Bluetooth enabled wireless headsets.

Answer:

B

Explanation:

A possible cause of a sudden change in performance for the laptop computers is thata new tenant in the building has set their AP to the same RF channel that your customer is using. This can create co-channel interference (CCI), which is a situation where two or more APs or devices use the same or overlapping channels in the same area. CCI can degrade the performance of WLANs by increasing contention, collisions, retransmissions, and latency. CCI can also reduce the effective range and throughput of WLANs by lowering the signal-to-noise ratio (SNR). To avoid or mitigate CCI, it is recommended to use non-overlapping channels, adjust transmit power levels, or implement channel management techniques such as dynamic frequency selection (DFS) or load balancing. The sky condition, antenna position, or Bluetooth headset are not likely to cause a sudden change in performance for the laptop computers.Reference:[CWNP Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109], page 81; [CWNA:

Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109], page 71.

Question 4

Question Type: MultipleChoice

802. 11ax (HE) introduces Resource Units that can be used to allow communications with multiple devices at the same time, on the same channel, in the same BSS. What feature of 802.1 lax provides this functionality?

Options:

A- 6 GHz support

B- TWT

C- Wi-Fi-LTE

D- OFDMA

Answer:

D

Explanation:

The feature of 802.11ax (HE) that provides this functionality isOFDM

A . OFDMA stands for Orthogonal Frequency Division Multiple Access and is a technology that allows multiple devices to communicate simultaneously on the same channel in the same BSS. OFDMA works by dividing a channel into smaller subchannels called Resource Units (RUs), which are composed of groups of subcarriers or tones. Each RU can be assigned to a different device based on its bandwidth requirement and signal quality. This way, OFDMA can increase the efficiency and capacity of the channel by reducing overhead, contention, and latency. OFDMA can also support both uplink and downlink multi-user transmissions using trigger frames and buffer status reports. 6 GHz support, TWT, and Wi-Fi-LTE are not features of 802.11ax that provide this functionality.Reference:[CWNP Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109], page 226; [CWNA: Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109], page 216.

Question 5

Question Type: MultipleChoice

ABC Company is planning to install a new 802.11ac WLAN, but wants to upgrade its wired infrastructure first to provide the best user experience possible. ABC Company has hired you to perform the RF site survey. During the interview with the network manager, you are told that the new Ethernet edge switches will support VoIP phones and 802.11 access points, both using 802.3 PoE.

After hearing this information, what immediate concerns do you note?

Options:

A- The power budget in the edge switches must be carefully planned and monitored based on the number of supported PoE devices.

B- The edge Ethernet switches should support Ether-channel to get the best results out of the network.

C- VoIP phones and 802.11 access points should not be powered by the same edge switch due to distortion.

D- If the switches are in optimal locations for VoIP phones, they are likely to be suboptimal locations for 802.11 APs

Answer:

A

Explanation:

An immediate concern that you note after hearing this information is thatthe power budget in the edge switches must be carefully planned and monitored based on the number of supported PoE devices. PoE stands for Power over Ethernet and is a technology that allows Ethernet switches to deliver power along with data to devices such as VoIP phones and 802.11 access points. PoE devices are classified into different classes based on their power consumption and output. The edge switches have a limited power budget that determines how many PoE devices they can support simultaneously. If the power budget is exceeded, some PoE devices may not receive enough power or may shut down unexpectedly. Therefore, it is important to plan and monitor the power budget in the edge switches based on the number and class of PoE devices connected to them. Using Ether-channel, placing switches in optimal locations, or avoiding distortion are not immediate concerns related to PoE devices.Reference:[CWNP Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109], page 234; [CWNA: Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109], page 224.

Question 6

Question Type: MultipleChoice

What frame type is used to reserve the wireless medium for the transmission of high data rate frames that may not be understood by all clients connected to the BSS?

Options:

A- RTS

B- ACK

C- Beacon

D- PS-Poll

Answer:

A

Explanation:

The frame type that is used to reserve the wireless medium for the transmission of high data rate frames that may not be understood by all clients connected to the BSS isRTS. RTS stands for Request to Send and is a control frame that is sent by a station to request access to the medium for a specified duration. The RTS frame contains the source and destination MAC addresses, as well as a Network Allocation Vector (NAV) value that indicates how long the medium will be occupied. The destination station responds with a Clear to Send (CTS) frame that echoes the NAV value and grants permission to the source station. All other stations in the BSS hear either the RTS or CTS frame and update their NAV timers accordingly, deferring their transmissions until the medium is free. The RTS/CTS mechanism can be used to prevent hidden node problems, reduce collisions, and protect high data rate frames that use features such as 802.11n or 802.11ac that may not be compatible with legacy stations. ACK, Beacon, and PS-Poll are not used to reserve the medium for high data rate frames.Reference:[CWNP Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109], page 112; [CWNA: Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109], page 102.

Question 7

Question Type: **MultipleChoice**

You are attempting to locate the cause of a performance problem in two WLAN cells in a mostly overlapping coverage are

a. You note that one AP is on channel 1 and the other is on channel 2. When you document your findings, what term do you use to describe the problem in this configuration?

Options:

A- CCC

B- Non-Wi-Fi interference

C- CCI

D- ACI

Answer:

C

Explanation:

The term used to describe the problem in this configuration is Co-Channel Interference (CCI)1.CCI occurs when multiple access points are on the same or overlapping channels, causing interference and degradation in network performance1.In this case, one AP is on channel 1 and the other is on channel 2, which are overlapping channels, leading to CCI1.

Question 8

Question Type: MultipleChoice

What feature of 802.1 lax (HE) may impact design decisions related to AP placement and the spacing between same-channel BSS cells (3SAs) because it is designed to reduce overlapping BSS contention?

Options:

A- TWT

B- BSS Color

C- uplink MU-MIMO

D- 6 GHz band support

Answer:

B

Explanation:

In the 802.11ax (High Efficiency, HE) amendment, one of the key features introduced is BSS (Basic Service Set) Coloring. This feature is designed to mitigate issues arising from overlapping BSSs (OBSS), which can lead to contention and interference in dense wireless environments. BSS Coloring works by:

Assigning a 'color' (a small number) to each BSS: This helps devices differentiate between frames from their own BSS and those from neighboring BSSs.

Reducing Inter-BSS Interference: Devices can ignore frames from different BSSs (with a different 'color') under certain conditions, reducing the impact of OBSS interference.

Improving Spatial Reuse: By distinguishing between transmissions from different BSSs, devices can make more informed decisions about when to transmit, improving the efficiency of spatial reuse and reducing unnecessary contention.

This feature directly impacts design decisions related to AP placement and the spacing between same-channel BSS cells, as it allows for closer placement of APs on the same channel without significantly increasing interference, thus improving overall network capacity and efficiency.

The other options, while features of 802.11ax, do not directly pertain to reducing overlapping BSS contention in the same manner:

TWT (Target Wake Time) optimizes device sleep schedules to conserve power.

Uplink MU-MIMO enhances uplink data transmission capabilities but doesn't specifically address OBSS contention.

6 GHz Band Support introduces new spectrum for Wi-Fi use but is not a feature aimed at reducing OBSS contention within the 802.11ax framework.

Therefore, the correct answer is B, BSS Color.

IEEE 802.11ax-2021: Enhancements for High Efficiency WLAN.

CWNA Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109, by David D. Coleman and David A. Westcott.

Question 9

Question Type: MultipleChoice

Your consulting firm has recently been hired to complete a site survey for a company desiring an indoor coverage WI-AN. Your engineers use predictive design software for the task, but the company insists on a pre-design site visit.

What task should be performed as part of the pre-design visit to prepare for a predictive design?

Options:

A- Install at least one AP on each side of the exterior walls to test for co-channel interference through these walls

B- Collect information about the company's security requirements and the current configuration of their RADIUS and user database servers

C- Test several antenna types connected to the intended APS for use in the eventual deployment

D- Evaluate the building materials at the facility and confirm that the floor plan documents are consistent with the actual building

Answer:

D

Explanation:

A pre-design site visit in preparation for a predictive wireless LAN design is essential for gathering physical and environmental data about the site. The key tasks to be performed during such a visit include:

Evaluating Building Materials: Different materials (concrete, glass, wood, etc.) have varying effects on RF signal propagation. Understanding the materials present helps in accurately predicting how signals will behave within the environment.

Floor Plan Verification: Ensuring that the floor plan documents are an accurate representation of the actual building layout is crucial. Discrepancies between the floor plans and the physical layout can lead to inaccuracies in the predictive design.

The other options, while potentially valuable in other contexts, are not directly related to preparing for a predictive design:

Installing APs (option A) for testing co-channel interference is more aligned with an active site survey rather than a pre-design visit for a predictive design.

Collecting information about security requirements (option B) is important but is not directly related to the physical aspects of the site that would impact a predictive design.

Testing antenna types (option C) would typically be part of an active site survey or the actual deployment phase, not a pre-design visit for predictive modeling.

Therefore, option D is the correct answer, focusing on evaluating physical aspects crucial for accurate predictive modeling.

CWNA Certified Wireless Network Administrator Official Study Guide: Exam CWNA-109, by David D. Coleman and David

A . Westcott.

Best practices for conducting pre-design site visits in wireless network planning.