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Exam : **MSC-235**

Title : Design and Deploy for MOTOTRBO Connect Plus Solutions BETA

Version : Demo

1.You are planning to add a new site to an existing Connect Plus network.
What is the correct sequence in which to perform the logical steps below?
1 Program new frequency file into a number of testing subscriber units.
2 Test the system using testing subscriber units.
3 Configure the new Site Controller.
4 Physically install the RF equipment and IP-Backbone equipment.
5 Update multisite tables at all sites and verify multisite connectivity for the new site.
6 Distribute the new frequency file OTA to the network.
7 Create a new network frequency file.
8 Make any necessary changes based on testing results.
A. 3-2-5-7-1-4-6-8
B. 4-3-5-7-1-2-8-6
C. 4-5-3-2-1-8-7-6
D. 4-3-5-7-1-2-6-8
Answer: D

2.A customer has the following requirement: when the radio user presses the programmed Emergency button on the subscriber, an emergency call will be started. This emergency call will be joined by all users on the same talkgroup at the same site, but it will not propagate to other sites, even if the same talkgroup is registered at other sites.
Can this requirement be met in a Connect Plus system?
A. No
B. Yes, this can be implemented using Emergency Alerts
C. Yes, if Site All Call is used as the Emergency Revert Group
D. Yes, using a custom Option Board
Answer: C

3.You are discussing link bandwidth capacity with a new multisite Connect Plus customer. You explain that certain items, when added to a system, may impact the amount of bandwidth required.
Which of the following places the most additional demand on your network?
A. The number of repeater timeslots at the site which are reserved for multisite calls
B. Continuous use of the Network Manager Real Time Display
C. The update interval or cadence of GPS location updates
D. The number of sites that audio must be shared with
Answer: D

4.You are designing a multisite Connect Plus system with 12 sites. There are 8 repeaters at each site. The customer wants to know how channel priority works. They are concerned about how the system handles multiple transmissions across sites for the same talkgroup call, such as when multiple subscribers at different sites key up simultaneously during hangtime.
Which of the following is the BEST explanation to provide the customer?
A. The priority of the individual users determines whose transmissions are heard and whose attempts are preempted.
B. The Master site controller for the call determines which audio stream is distributed to all involved sites.

C. Site Controllers use the multisite Arbitration Time to delay audio and make it more likely that the same audio will be heard at all sites in a multisite call.
D. Repeaters use a configurable jitter buffer to ensure that the same audio is heard at all sites.
Answer: C

5.NOTE: This is a scenario based item associated with an Oil Corporation. Please reference the information accessible from the “Oil Corporation Scenario” button at the bottom as part of responding to this item.

You have met with a new customer who may be interested in a Connect Plus system. Use the information in this scenario to answer the items that follow.

Prospective Customer:
Oil Exploration and Development Corporation

Environment:
Surface mining operation in wilderness area: cold winters, mild summers, with a flat topology.

Current System:
- MTR 2000 Repeaters
- Conventional Analog
- UHF
- 2 sites:
  - 12 channels at one site
  - 6 channels at second site

Limitations of Current System:
- Running out of capacity: they need more channels, but don't have the spectrum available
- Lacks modern capabilities like Automatic Vehicle Location and Text Messaging
- Lacks security: it is easy to eavesdrop on calls and steal repeater time on the current system

Customer Requirements:
- Coverage Area: 250 square miles (648 square kilometers)
- System needs to link two mining sites which are physically separated by 45 miles (72 kilometers)
- Ability to extend coverage to other sites as mining operation expands/migrates
- Eliminate system congestion to minimize busy channels
- Incorporate multiple wireline console positions at each mining site
- Incorporate sophisticated system usage monitoring ability (streaming airtime info, and more)
- Automatic Vehicle Location for all mobiles
- Text messaging ability between all subscribers
- Customer desires maximum availability/redundancy and fault tolerance
- 1500 subscribers: 500 mobiles, 1000 portables

You are putting together an equipment list for this customer that includes the site controller, subscribers, repeaters, and RF distribution equipment.
Which requirement in the scenario would necessitate an XRT 9000 Gateway?
A. Automatic vehicle location for all mobiles
B. Sophisticated system usage monitoring
C. Text messaging ability between all subscribers
D. Coverage to link two mining sites which are physically separated by 45 miles (72 km)
Answer: B

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Given this scenario, which of these customer requirements would require that the customer purchase the XRT 9000 Gateway?
A. Wireline console positions, only
B. Automatic Vehicle Location, only
C. Text Messaging and Sophisticated system usage monitoring
D. Wireline console positions and Sophisticated system usage monitoring
Answer: C

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In addition to the information in the scenario, what more do you need to know about the customer's IP network to effectively propose a solution?
A. Type and characteristics of the available IP network links to be used between sites
B. Bandwidth, jitter and Packet loss of LAN at each site
C. Distance in meters between the Site Controller's switch and the switch for the repeaters
D. If T1/E1lines are to be used for the multisite links, then the Controller T1/E1protocol feature must be ordered
Answer: A

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Which of the following are Connect Plus feature(s) and should be specified in order to meet the requirement for maximum availability/redundancy and fault tolerance?
A. Multiple Control Channel-Capable repeaters at every site
B. Redundant site controller at primary site
C. Redundantsite routers
D. Redundant site links
Answer: C

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In addition to the information in the scenario, which of the following would you also need to know about the customer's Automatic Vehicle Location requirements in determining the most effective design for their Connect Plus system?
A. Update rate per subscriber
B. Availability of a revert channel
C. Current repeater's licensing status for enhanced GPS
D. Whether or not the customer wants subscriber Latitude/Longitude display capability
Answer: A

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Which of the following is critical for calculating Connect Plus bandwidth requirements for the site links?
A. Determining the number of location updates each subscriber is programmed to transmit
B. Defining the quality of service desired
C. Determining the number of voice/data timeslots for each site
D. Including bandwidth for the backup controller(s)
Answer: C

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In addition to the information in the scenario, which of the following would you also need to know to determine the most effective design for their Connect Plus system?
A.
Which channels they currently utilize the most
B. Number of registrations user will send per day
C. How many subscribers/talkgroups will be registered at the same time
D. The preferred site for each radio user
Answer: C

12.Your customer has a large IP Site Connect system that they wish to migrate to a Connect Plus system. The system was installed and configured about 2 years ago. They have approximately 800 portable MOTOTRBO subscriber radios that they would like to use in the new system. From the selections below, pick THREE things your customer should know about repurposing these subscribers for use with Connect Plus (select THREE)?
A. These subscribers may not be used with a new Connect Plus system.
B. Option boards must be purchased for and installed in each subscriber.
C. If necessary, Radio IDs must be changed to fall into the range of 1 through 64,351,454.

D. Subscriber’s main board firmware will need to be updated.
E. If necessary, Radio IDs must be changed to fall into the range of 1 through 16,776,351.
Answer: B,D,E

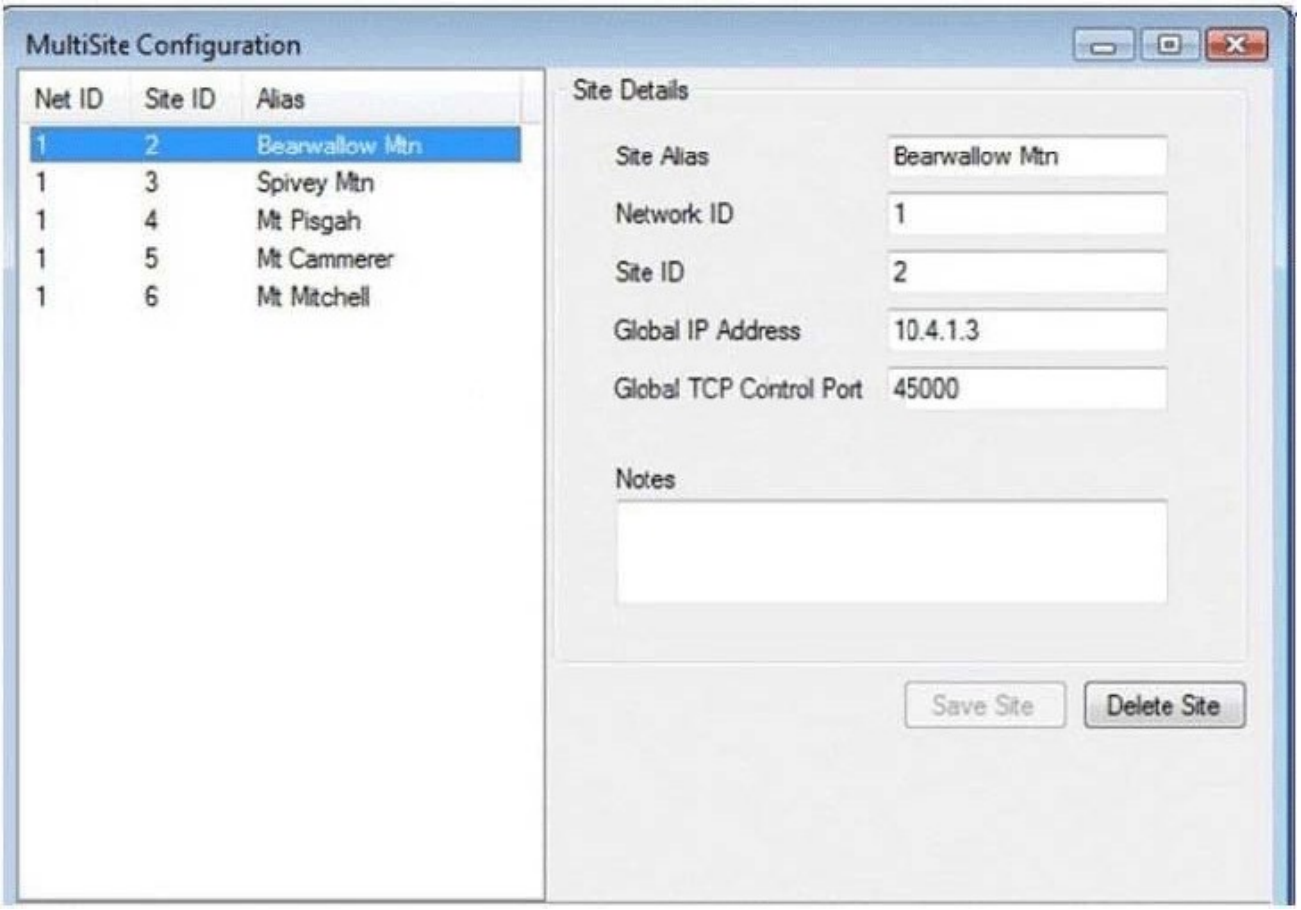
13.Your customer is a large utility company that will have three Connect Plus sites and a total of approximately 600 subscribers. They want to utilize Emergency Alert at one site, Emergency Voice at another site, and inhibit the use of the emergency feature for all users at another site.

Which of the following BEST describes the possibility of implementing this with a Connect Plus system?
A. Yes, this is possible. The radios must be site-restricted to the same sites as other radios that share their emergency programming.
B. Yes, this is possible. The subscribers will have to select a different default emergency revert group that corresponds to the site that they are operating in. They must switch to this group when they register at the new site.
C. Yes, this is possible. Each site should have a corresponding Connect Plus zone in the subscriber’s option board codeplug.
D. No, this is not possible with a Connect Plus system.
Answer: C

14.You are adding a new site to an existing Connect Plus system. The four existing sites are in a level, rural area with minimal to no coverage overlap. The new site will be in an urban area with many tall structures. Will adding this site require configuration changes to the subscriber radios, and, if so, what type of changes?
A. Yes.A new Connect Plus Option Board will need to be installed in the subscribers.
B. No.The changes will only be necessary at the network level, not the subscriber level.
C. Yes.A new version of the network frequency file must be created and distributed to the subscribers. In addition, the differing topology of the new site may require changes to the Roaming and Search settings in the subscribers.
D. Yes.A new version of the Connect Plus option board codeplug must be created and distributed to the subscribers. The differing topology of the new site may require additional changes to the power-level settings in the subscribers.
Answer: D

15.A security-conscious client asks about the capabilities of a subscriber that is disabled from the network.
All of the following are correct, EXCEPT:
A. Disabled subscribers cannot receive system text messages
B. Disabled subscribers cannot receive calls
C. Disabled subscribers cannot initiate calls
D. Disabled subscribers cannot respond to location updates
Answer: D

16.Given the XRC multisite table screen shot shown in Exhibit B below, how many sites are in this Connect Plus network?



A. 6
B. 5
C. 4
D. Not possible to tell from this screen.
Answer: A

17.A customer wants to build a private IP network to link their 5-site Connect Plus system.
Which of the following are the most important considerations and/or requirements (select TWO)?
A. Network jitter should not exceed 60 ms.
B. Repeaters require a static IP on the network.
C. Satellite links between sites are preferable to dial-up links.
D. A private DNS will also be required to enable Internet access over the network.
E. Max latency (delay) not to exceed 250 ms from any site to any other site.
Answer: B,D

18.You have been asked to estimate how many repeaters would be needed at a Connect Plus site that has the following:
- 150 subscribers registered to the site at any given time
- Low use of voice traffic -Low use of GPS location updating -2%GOS
How many repeaters would you estimate are needed?

4.3 Digital Repeater Loading for Connect Plus

Accounting for repeater loading is a critical step in designing a Connect Plus system. Such planning ensures that the designer is able to choose the number of channels required to support the customer's typical communication needs at the expected level of service. The first step is to estimate how much traffic a single slot (channel) can support. An important distinction in Connect Plus is the fact that it is digital trunking system, which means that the loading estimation models will be different than the other digital modes supported by MOTOTRBC. Since the traffic, consisting of voice, text messages, location updates, and registration requests, is mostly initiated by the end user, it is challenging to predict how often it occurs. Standard usage profiles of existing customers have been created for voice and data services. These profiles act as a baseline for estimating how much traffic a user creates on a system. If the standard profiles do not match your customer's expected usage, further estimations based on the trend lines need to be considered. After the system is used, and real life usage is identified, further adjustments may be required.

4.3.1 Voice and Data Traffic Profiles

The following table outlines the typical user traffic that is based on empirical data. These usage profiles are considered standard and are utilized to estimate the number of users that can be supported per channel. These estimates are depicted on graphs in the in the sections that follow. The same user traffic assumptions have been used for other non-Connect Plus digital configurations as well. The reader can refer to Digital Repeater Loading section in [1] for more details.

Profile Name	Traffic Type	Call Description	Traffic Per User Per Hour	
High Voice	Group Voice Call	10 second call, 2 transmissions per call	3.0 Calls per User per Hour	90%
	Individual Voice Call	20 second call, 4 transmissions per call		10%
Low Voice	Group Voice Call	10 second call, 2 transmissions per call	1.0 Calls per User per Hour	90%
	Individual Voice Call	20 second call, 4 transmissions per call		10%
High GPS	Location Updates	2 seconds per transmission	60 GPS Transmissions per User per Hour i.e. 1 Minute Update Period (Cadence)	
Low GPS	Location Updates	2 seconds per transmission	6 GPS Transmissions per User per Hour i.e. 10 Minute Update Period (Cadence)	
High Text Messaging	Text Messaging	100 characters per message	2.5 Text Messages per User per Hour	
Low Text Messaging	Text Messaging	100 characters per message	0.5 Text Messages per User per Hour	

Table 4-1 Voice and Data Traffic Profiles

Refer to the Digital Repeater Loading exhibit (from the System Planner) above.

A. 3 repeaters

B. 4 repeaters

C. 6 repeaters
D. 7 repeaters
Answer: B

19.You are designing a Connect Plus system.
What should you do to mitigate system failures (select TWO)?
A. Plan for and implement areas of overlapping coverage.
B. Configure at least one digital conventional zone into the subscriber’s option board codeplug.
C. Configure digital conventional channels into the subscriber’s frequency file.
D. Configure at least one digital conventional zone into the subscriber’s main board codeplug.
E. Configure the repeaters for in-cabinet repeat if the link is lost to the site connect master.
Answer: A,D

20.You are designing a new Connect Plus system that will include a single 3rd-party location tracking (LRRP) server. The server is located outside the Local Area Network of the site to which it directs its LRRP requests.
How do you ensure that the location updates are returned to the correct IP address and UDP port to reach this LRRP server?
A. Enable Override and configure the LRRP IP Message Forward parameters on the non-critical pane of the site configuration window.
B. Disable Override and use the LRRP configuration utility in the critical pane of the site configuration window.
C. Forwarding won’t be necessary unless the LRRP server is not subscribing to Presence Notification.
D. Override port forwarding in the site router to direct the traffic to the proper IP address and UDP port.
Answer: A