[2024 4A0-220 Dumps are Available for Instant Access [Q16-Q33

[2024 4A0-220 Dumps are Available for Instant Access Valid 4A0-220 Dumps for Helping Passing 4A0-220 Exam!

Nokia 4A0-220 exam focuses on GMPLS-controlled optical networks, which are a critical component of modern telecommunications infrastructure. 4A0-220 exam is designed for individuals who want to demonstrate their expertise in designing, configuring, and troubleshooting GMPLS-controlled optical networks using Nokia equipment. 4A0-220 exam covers a range of topics such as network architecture, network management, and network security.

Q16. What is a Label Switched Path (LSP)?
* A protocol used by nodes to exchange information about the state of labels
* A switched protection path
* The path created by MPLS nodes
* A High Order Container for client signal

Explanation

A Label Switched Path (LSP) is the path created by MPLS nodes that use labels to forward packets across the network. A label is a short identifier that is attached to each packet and indicates the next hop or destination of the packet. The nodes use a label

forwarding table to switch packets based on their labels, without inspecting the packet headers. This can improve the performance, security, and quality of service of the network. An LSP can be established by using GMPLS protocols such as OSPF-TE and RSVP-TE, which exchange information about the network topology, resources, and constraints. References : Nokia GMPLS-controlled Optical Networks Course | Nokia, GMPLS – Nokia

Q17. What is the function of the OSPF-TE protocol?
* To monitor the availability of the links interconnecting adjacent nodes
* To exchange with other nodes data about the state of links
* To assign different priority to various types of transported signals
* To create an MPLS tunnel between two or more end points

Explanation

The OSPF-TE protocol is an extension of the Open Shortest Path First (OSPF) protocol that is used to exchange information about the state of links in a GMPLS network. OSPF-TE advertises link attributes such as bandwidth, latency, priority, protection, or switching capabilities to other nodes in the same area. OSPF-TE enables nodes to build a Traffic Engineering Database (TED) that contains the topology and resource information of the network. OSPF-TE helps nodes to perform CSPF calculations and establish LSPs using RSVP-TE signaling. References : Open Shortest Path First – Wikipedia, Understand Open Shortest Path First (OSPF) – Design Guide, RSVP-TE and OSPF-TE extensions for GMPLS

Q18. What is the definition of Constrained Shortest Path First (CSPF)?
* It is the SPF algorithm applied to low bandwidth LSPs.
* It is the 5FP algorithm applied after pruning links that do not meet the specified constraints.
* It is the SPF algorithm applied for low latency LSPs.
* It is a combination between OSPF-TE and RSVP-TE.

Explanation

Constrained Shortest Path First (CSPF) is an extension of the shortest path first (SPF) algorithm that is used to find the best path for a Label Switched Path (LSP) in a GMPLS network. CSPF takes into account additional constraints such as bandwidth, latency, priority, or node or link inclusion or exclusion. CSPF works by pruning those links that do not meet the specified constraints and then applying the SPF algorithm to the remaining links. This way, CSPF can find a path that satisfies both the shortest distance and the constraints. References : Constrained Shortest Path First – Wikipedia, Constrained Shortest Path First (CSPF) – Metaswitch

Q19. Which of the following information is present in every GMPLS-enabled node?
* The bandwidth of each client path in the entire network
* The frequency of each client path in the entire network
* The state of each link in the entire network
* The list of LSPs created in the entire network

Explanation

GMPLS-enabled nodes use routing protocols, such as OSPF-TE or ISIS-TE, to exchange information about the topology and the state of the links in the network12. This information includes the link attributes, such as bandwidth, wavelength, protection, and shared risk link groups (SRLGs)3. The state of each link indicates whether it is up or down, available or reserved, and so on. This information is used by GMPLS-enabled nodes to compute feasible paths for LSPs and to avoid routing loops or conflicts. The bandwidth and the frequency of each client path are not present in every GMPLS-enabled node, but only in the ingress and egress nodes that initiate and terminate the LSPs. The list of LSPs created in the entire network is also not present in every GMPLS-enabled node, but only in the nodes that are involved in the LSPs or that maintain a global view of the network. References:

* 1: GMPLS – Nokia

* 2: Generalized Multi-Protocol Label Switching – Wikipedia

* 3: Nokia GMPLS-controlled Optical Networks Course | Nokia

Q20. What is the Link Maintenance window?
* A centralized view of the TE-link for the operator
* A wizard with commands to set links and nodes to maintenance
* A wizard for modifying TE-link attributes
* A centralized alarm manager

Explanation

The Link Maintenance window is a feature of NFM-T that allows the user to perform maintenance tasks on links and nodes in a GMPLS network. The Link Maintenance window is a wizard that provides commands to set links and nodes to maintenance mode, which prevents them from being used for routing new LSPs or carrying traffic. The user can also use the Link Maintenance window to reroute existing LSPs away from the links and nodes that are in maintenance mode, either manually or automatically. The Link Maintenance window helps the user to perform network maintenance operations without disrupting the service availability or quality12. References:

* 1: Nokia GMPLS-controlled Optical Networks Course | Nokia

* 2: Nokia Network Functions Manager for Transport User Guide | Nokia

Q21. What is the Commissioning File in GMRE nodes?
* A file with commissioned GMRE nodes for NPA implementation
* A file of optical impairment parameters for power balance
* A file with target values that determine whether a given LSP is possible
* A control checklist for the operator

Explanation

The Commissioning File in GMRE nodes is a file with target values that determine whether a given LSP is possible. The Commissioning File contains parameters such as power, OSNR, Q-factor, and dispersion that are used to evaluate the feasibility of an LSP request. The Commissioning File is generated by the Network Planning Application (NPA) based on the network design and optical impairments. The Commissioning File is uploaded to each GMRE node and is used by the CSPF algorithm to find a suitable path for the LSP. References : Nokia GMPLS-controlled Optical Networks Course | Nokia, Network Planning Application (NPA) | Nokia

Q22. How can you modify the SNC Nominal Route in NFM-T?
* By changing the SRG constraints
* By using the Reroute Wizard to modify the constraints
* By using the Constraint Wizard to modify the constraints
* By putting the LSP in Test mode and moving traffic

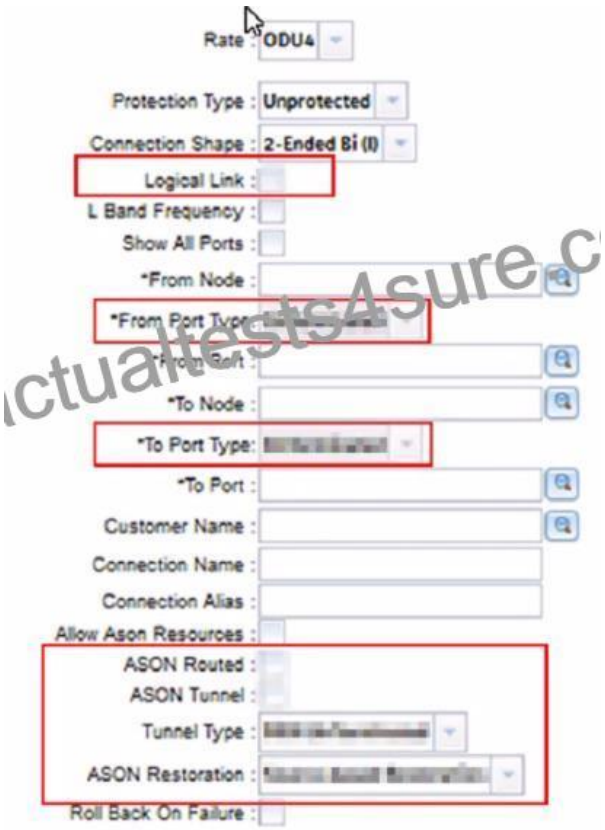
Explanation

The SNC Nominal Route is the default or preferred route that is assigned to an LSP when it is created. The SNC Nominal Route is determined by the constraints that are specified by the user during the LSP creation process, such as cost, SRLG, color, bandwidth, protection, and regeneration. The user can modify the SNC Nominal Route in NFM-T by using the Constraint Wizard, which is a tool that allows the user to change the constraints for an existing LSP. The Constraint Wizard will then compute a new SNC Nominal Route based on the modified constraints and update the LSP accordingly34. References:

* 3: Nokia GMPLS-controlled Optical Networks Course | Nokia

* 4: Nokia Network Functions Manager for Transport User Guide | Nokia

Q23. How do you configure the Trail template in NFM-T for an Uplink board (such as 2UC400) in an MRN network with LO and LI restoration capabilities?



* Check the Logical Link box

Set the Port Type to Unterminated Check the ASON Routed box Uncheck the ASON Tunnel box
* Uncheck the Logical Link box Set the Port Type to Terminated Check the ASON Routed box Uncheck the ASON Tunnel box
* Check the Logical Link box

Set the Port Type to Unterminated Check the ASON Routed box Check the ASON Tunnel box
* Uncheck the Logical Link box Set the Port Type to Terminated Check the ASON Routed box Check the ASON Tunnel box
Explanation

To configure the Trail template in NFM-T for an Uplink board (such as 2UC400) in an MRN network with LO and LI restoration capabilities, you need to check the Logical Link box, set the Port Type to Unterminated, check the ASON Routed box, and uncheck the ASON Tunnel box. This configuration allows you to create a logical link between two Uplink boards that can be used for LO or LI restoration. The logical link is not terminated at the Uplink board, but at the OTU board. The ASON Routed option enables the GMPLS control plane for the logical link, while the ASON Tunnel option is not applicable for Uplink boards. References : Nokia Advanced Optical Network Management with NFM-T Course | Nokia, Nokia 1830 PSS-4, PSS-8, PSS-16 and PSS-32 Platforms – NATO

Q24. What does the SNC state with an uppercase “N” mean in a resource in NFM-T?
* Indicates it’s using a link other than the Nominal

* Indicates the nominal resource on a TE-link that is not in use
* Indicates if s a higher alarm state level
* Indicates it’s currently using the Nominal resource assigned to it

Explanation

The SNC state with an uppercase “N” means that the resource is currently using the nominal resource assigned to it. As explained in the previous question, a nominal resource is the default or preferred resource that is assigned to an LSP when it is created. If an LSP is using the nominal resource on a TE-link, it means that the LSP has not been rerouted or switched due to any failure or constraint violation. In this case, the SNC state of the resource will be “N”, indicating that it is in use by an LSP12. References:

* 1: Nokia GMPLS-controlled Optical Networks Course | Nokia

* 2: Nokia Network Functions Manager for Transport User Guide | Nokia

Q25. Which of the following best describes Quality of Service in GMPLS?

* The ability to switch back to the nominal route after a failure is repaired without impacting existing traffic
* The amount of information that is possible to store in the Traffic Engineering Database (TED)
* The ability to set constraints such as latency and priority for different kinds of services
* The possibility to have L0 and L1 switching treated with the same quality level in the same network

Explanation

Quality of Service (QoS) in GMPLS is the ability to set constraints such as latency and priority for different kinds of services. This means that GMPLS can allocate network resources according to the specific requirements of each service, such as voice, video, or data. For example, a voice service may need low latency and high priority, while a data service may need high bandwidth and low priority. GMPLS can use Traffic Engineering (TE) extensions to OSPF and RSVP protocols to advertise and reserve network resources based on QoS parameters. References : [Nokia GMPLS-controlled Optical Networks Course | Nokia], [Quality of Service – Nokia]

Q26. What does Test Mode do in an SNC?

* The LSP will not be restored and will behave like an unprotected service
* It initiates the LMP link verification by sending Test Messages
* Source nodes of affected client services will not be notified in case of failure
* It clears the ASONTOPO alarms

Explanation

Test Mode is a feature of the Link Management Protocol (LMP) that allows testing the connectivity and functionality of a link or a TE-link. Test Mode can be initiated by either end of a link or a TE-link by sending a Test Message with a Test ID and a Test Pattern. The Test Message is sent over the control channel of the link or the TE-link and contains information such as the source and destination IP addresses, the link ID, and the test parameters. The receiving node then verifies the Test Message and sends back a TestStatusAck message with the same Test ID and Test Pattern. The TestStatusAck message indicates whether the test was successful or not, and if not, what was the reason for failure. Test Mode can be used to check if a link or a TE-link is operational, if it has any errors or faults, or if it supports certain features or capabilities. References : Nokia GMPLS-controlled Optical Networks Course | Nokia, RFC 4204 – Link Management Protocol (LMP)

Q27. Which label is swapped in an MPLS label stack at an intermediate node?

* The label on the bottom
* The label with the highest value
* The label with the lowest value
* The label on the top

Explanation

The label on the top of the MPLS label stack is swapped at an intermediate node. This is because the top label is the one that is visible to the node and determines the forwarding decision. The node looks up the top label in its label forwarding table and swaps it with a new label that corresponds to the next hop or destination. The node then forwards the packet to the next node, which repeats the same process. The bottom label is only used to indicate the end of the label stack and is not swapped. References : [Nokia GMPLS-controlled Optical Networks Course | Nokia], [MPLS Label Stack – Nokia]

Q28. Which categories of protocols are included in the GMPLS technology?
* Signaling, routing, and forwarding
* Link management, signaling, and switching
* Routing, grooming, and signaling
* Routing, signaling, and link management

Explanation

The GMPLS technology includes three categories of protocols: routing, signaling, and link management.

Routing protocols are used to exchange information about the network topology, resources, and constraints among the nodes. Signaling protocols are used to establish, modify, and release Label Switched Paths (LSPs) across the network. Link management protocols are used to verify the connectivity and status of the links between adjacent nodes. References : Nokia GMPLS-controlled Optical Networks Course | Nokia, 3. GMPLS

– Nokia

Q29. How do you add a 3R resource to the NPA in NFM-T?
* The 3R is added in the Node panel and automatically added to the NPA
* The 3R is added to the NPA through the Constraint Wizard
* The resource is discovered automatically
* The trail is provisioned with 3R constraints and discovered automatically

Explanation

The 3R resource is a type of optical regeneration resource that can be used to extend the reach of optical signals in a GMPLS-controlled optical network. The 3R resource performs three functions: reshaping, retiming, and reamplifying the optical signal. The 3R resource can be added to the Network Planning Application (NPA) in the Nokia Network Functions Manager for Transport (NFM-T) through the Constraint Wizard. The Constraint Wizard is a tool that allows the user to define various constraints and parameters for the network design, such as optical impairments, wavelength availability, protection schemes, and regeneration resources. The user can select the 3R resource from the list of available resources and specify its location, capacity, and cost. The NPA then uses this information to perform feasibility checks and path computation for the LSP requests12. References:

* 1: Nokia GMPLS-controlled Optical Networks Course | Nokia

* 2: Nokia Network Functions Manager for Transport User Guide | Nokia

Q30. How are L0 and L1 resources coordinated in case of a failure in an MRN?
* Coordination is achieved by setting the color constraints
* Coordination is achieved by comparing the Setup Priorities
* Coordination is achieved by segregation of color and colorless LSPs
* Coordination is achieved by setting the WSR parameter

Explanation

Coordination of L0 and L1 resources in case of a failure in an MRN is achieved by setting the color constraints. Color constraints are used to specify which wavelengths or timeslots can be used by a given LSP request. By setting the color constraints, the NFM-T can ensure that the L0 and L1 resources are compatible and consistent across the network. For example, if an L0 LSP request requires a specific wavelength, the NFM-T can set the color constraint to match that wavelength and assign it to the L0 LSP. Similarly, if an L1 LSP request requires a specific timeslot, the NFM-T can set the color constraint to match that timeslot and assign it to the L1 LSP. This way, the coordination of L0 and L1 resources is achieved by ensuring that the same color is used by both layers. References : Nokia GMPLS-controlled Optical Networks Course | Nokia, 3.

GMPLS – Nokia

Q31. Which of the following statements best describes a distributed control plane for GMPLS?
* The control plane is active in some network nodes and not in others.
* Each router has software to run the GMPLS protocols and can modify the node’s switching fabric.
* The network manager controls all the routing for the network.
* The network is managed by more than one network management system.

Explanation

A distributed control plane for GMPLS means that each router has software to run the GMPLS protocols and can modify the node’s switching fabric. This allows the routers to communicate with each other and establish Label Switched Paths (LSPs) across the network without relying on a centralized controller or network manager. A distributed control plane can improve the scalability, reliability, and efficiency of the network. References : Nokia GMPLS-controlled Optical Networks Course | Nokia, GMPLS – Nokia

Passing the Nokia 4A0-220 exam is a great achievement for network professionals as it validates their expertise in GMPLS-controlled optical networks. It also demonstrates their commitment to staying up-to-date with the latest technologies and trends in the industry, which is essential for maintaining a competitive edge in today's fast-paced networking environment.

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