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Nokia IS-IS Routing Protocol

Nokia 4A0-112

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QUESTION NO: 1

Two Nokia routers are required to establish an IS-IS Level 1 adjacency over an Ethernet interface.

Which conditions must be met for the Level 1 adjacency to be established? (Choose all that apply.)

A. Both interfaces must support Level 1 operation.

B. The routers must have at least one matching area address.

C. Level 1 hello authentication parameters must match when authentication is enabled.

D. The routers must use the same system ID.

E. The routers must be configured with identical Level 2 area addresses.

ANSWER: A B C

Explanation:

A Level 1 adjacency requires both routers to operate at Level 1 on the interface and to have at least one common area address. Level 1 routing is area scoped, so an L1 adjacency is not formed when the routers do not share an area address. If IS-IS authentication is configured for Level 1 hello PDUs, the authentication parameters must also be compatible or the received hello PDUs are rejected.

The routers do not require matching system IDs; each IS-IS router must have a unique system ID. Level 2 adjacencies, unlike Level 1 adjacencies, are not restricted by matching area addresses. IS-IS adjacency requirements are specified in RFC 1195.

QUESTION NO: 2

Routers R1, R2, R3, and R4 are running IS-IS. Assuming all interfaces are added to IS-IS as point-to-point and no commands are issued at the interface level to restrict adjacencies, which of the following statements is TRUE?

A. Routers R1 and R2 are L2 routers. Routers R3 and R4 are L1 routers.

B. Routers R1 and R2 are L2 routers. Routers R3 and R4 are L1/L2 routers.

C. Routers R1 and R2 are L1/L2 routers. Routers R3 and R4 are L1 routers.

D. All four routers are L1/L2.

ANSWER: C

Explanation:

Routers R1 and R2 are L1/L2 routers. Routers R3 and R4 are L1 routers. IS-IS operates with two routing levels: Level 1 provides intra-area routing, while Level 2 provides inter-area routing. An L1/L2 router participates at both levels and can therefore form the appropriate adjacency type on a point-to-point interface according to its configured level capability and its neighbor's advertised capabilities. With no interface-level command restricting adjacency formation, the router-level IS-IS level configuration is what determines whether a router is capable of Level 1 only or both Level 1 and Level 2 operation. In the described topology, R1 and R2 must support both levels, making them the L1/L2 devices that can provide the Level 1-to-Level 2 connection. R3 and R4 operate only at Level 1 within their respective IS-IS area. This division is consistent with IS-IS's hierarchical design: Level 1 routers use an L1/L2 router as the path toward destinations outside their local area, while the L1/L2 routers also maintain Level 2 connectivity for inter-area reachability. The IS-IS level definitions and the behavior of Level 1/Level 2 systems are specified in RFC 1195; Nokia's IS-IS routing documentation is available in the Nokia SR OS IS-IS guide.

QUESTION NO: 3

You work as the network administrator at ABC.com. The ABC.com network has of a domain named ABC.com. The servers at the ABC.com network run Windows Server 2003 and the workstations, Windows XP Professional.

The ABC.com network contains a server named ABC-SR20. ABC-SR20 contains an in-house application that runs as a service named NetApp1, which fails from time to time. During the course of the day you have received instructions from the CIO to implement the following process for NetApp1:

• The NetApp1 service should be restarted if it fails after running for at least a day.

• ABC-SR20 should be restart if the NetApp1 service fails unsuccessful the entire workday, the server should be rebooted.

What actions must you take to implement this plan? (Choose all that apply.)

A. You need to enable the Master Key perfect forward secrecy (PFS).

B. You need to set up the first and second failure responses to restart NetApp1, and the subsequent failure response to restart the computer.

C. You need to apply the Securews.inf security template.

D. You need to set up the Reset fail count after value for NetApp1 to 1 day.

E. You need to disable all services that are not required.

ANSWER: B D

Explanation:

The recovery configuration for NetApp1 must define restart actions for the initial failures and a computer restart for a later, repeated failure. In the service's Recovery properties, configure the first failure and second failure actions to restart NetApp1. Configure the subsequent-failure action to restart the computer, ensuring that a persistent service failure can reboot ABC-SR20 after the restart attempts have not restored normal operation. This is the Windows Service Control Manager recovery-action model: individual failure occurrences are assigned ordered actions, including restarting the service or rebooting the host.

The failure-count reset period must also be set to one day. This period determines when Windows clears the accumulated failure count for the service. With a one-day reset interval, a failure after the service has operated successfully for at least a day is treated as a new first failure and invokes the configured service-restart action. Failures that continue within the same day retain their sequence, allowing the first and second recovery actions to restart NetApp1 and the later configured action to restart the server. Microsoft documents these failure actions and the reset-period setting through the Service Controller `failure` configuration, where the reset value is specified in seconds. See sc failure and sc overview.

QUESTION NO: 4

A Nokia router is configured with the IS-IS overload bit. The router remains reachable through its directly connected and locally originated prefixes.

How do other IS-IS routers treat the overloaded router when calculating transit paths?

A. They avoid using the router as a transit node.

B. They remove all routes advertised by the router from the routing table.

C. They establish only Level 1 adjacencies with the router.

D. They elect the router as DIS only when no other router is available.

ANSWER: A

Explanation:

Other routers avoid using the overloaded router as a transit router. The overload bit indicates that the originating router should not be used to forward traffic between other routers, normally because it is starting up, has insufficient resources, or

is intentionally being removed from transit service. Routes to prefixes directly advertised by the overloaded router can still be used, allowing the router and its attached networks to remain reachable.

IS-IS overload-bit behavior is described in RFC 5304.

QUESTION NO: 5

A routing domain is using a single-area link-state routing protocol. Which of the following is NOT information that a router can share with other routers in the domain using protocol-specific messages?

A. The IP prefixes of subnets directly attached to the router.

B. IP prefixes known by the router because it is running ad additional routing protocol.

C. A copy of the local routing table.

D. The local router ID and the router IDs of neighboring routers.

ANSWER: C

Explanation:

A copy of the local routing table. is correct because link-state routing protocols do not distribute their calculated routing tables to other routers. Instead, each router originates protocol-specific information describing its own directly connected links, neighbor relationships, and reachable prefixes. This information is flooded throughout the routing domain and retained in a link-state database. Every router then independently applies the shortest-path-first calculation to its synchronized view of the topology, producing its own local routing table and forwarding decisions. Consequently, a routing table is a derived, local result of the protocol operation rather than an item advertised or flooded between routers. In IS-IS, Link State Protocol Data Units carry information such as neighbor adjacencies and IP reachability information using TLVs; the receiving routers use that information to construct the topology and calculate routes. The IS-IS protocol specification describes the exchange and flooding of link-state information, while IP reachability extensions define how IPv4 prefixes are carried. See RFC 1195 and RFC 5308.

QUESTION NO: 6

You work as the network administrator at ABC.com. The ABC.com network consists of a domain named ABC.com. The servers at the ABC.com network run Windows Server 2003 and the workstations, Windows XP Professional.

ABC.com contains a SMTP server named ABC-SR21. During the course of the CIO has instructed you to look at the SMTP requests to ABC-SR21 that occurred in the last hour.

What actions must you take?

A. You should run the Netsh ipsec dynamic show all.

B. You should run the Net start /show all.

C. You should use a new capture and thereafter set up a display filter.

D. You should create a log of the Network Interface counter.

ANSWER: C

Explanation:

You should use a new capture and thereafter set up a display filter. A packet capture is the appropriate method for examining SMTP requests because it records the actual network frames exchanged with ABC-SR21, including the TCP session establishment and SMTP protocol commands. The capture should be taken on the relevant interface or network segment during the required observation interval. After stopping the capture, a display filter narrows the recorded data to traffic involving ABC-SR21 and SMTP, making the administrator's review practical without discarding packets from the underlying capture.

SMTP submission and relay traffic conventionally uses TCP port 25, so a filter can focus on packets whose source or destination is ABC-SR21 and whose TCP port is 25. The administrator can then inspect the timestamps to identify the relevant one-hour interval and review individual SMTP conversations. This approach provides protocol-level evidence of the requests rather than merely aggregate interface statistics or service status. The Internet Assigned Numbers Authority lists SMTP under TCP port 25 in its Service Name and Transport Protocol Port Number Registry. Microsoft's network tracing documentation also describes collecting network trace data for subsequent analysis.

QUESTION NO: 7

A Nokia IS-IS router operates on a broadcast LAN. The Level 1 DIS fails and another Level 1 router becomes the DIS.

Which statements are correct? (Choose all that apply.)

A. The new DIS originates a new Level 1 pseudonode LSP.

B. The new DIS sends Level 1 CSNPs on the broadcast LAN.

C. The new Level 1 DIS automatically becomes the Level 2 DIS.

D. All routers on the LAN must reset their system IDs.

E. The new DIS changes the area addresses of the attached routers.

ANSWER: A B

Explanation:

The newly elected DIS creates and originates a new Level 1 pseudonode LSP for the LAN. The pseudonode represents the broadcast segment in the link-state database and describes the routers attached to that segment. The new DIS also sends Level 1 CSNPs on the broadcast LAN to synchronize the link-state databases of the attached routers.

The election of a Level 1 DIS does not automatically make the router the Level 2 DIS. DIS election is independent for Level 1 and Level 2. The failed router's former pseudonode LSP is aged out or purged as normal link-state database synchronization occurs. IS-IS LAN operation and pseudonodes are described in RFC 1195.

QUESTION NO: 8

Which of the following definitions best describes route redistribution?

A. It is the process of deciding at line-rate speed which packets will be dropped and which ones will be forwarded.

B. It is the process of redirecting packets to be processed by an intermediate network function before allowing them to be forwarded to their intended final destination.

C. It is the process of passing routing information from one routing domain to another, which usually means from one routing protocol to another.

D. It is the process of controlling which route advertisements received from routing peers are accepted and/or deciding which locally known prefixes are advertised to routing peers.

ANSWER: C

Explanation:

It is the process of passing routing information from one routing domain to another, which usually means from one routing protocol to another. Route redistribution is performed by a routing device that participates in more than one routing domain or protocol and injects selected routes learned through one source into another protocol's route advertisements. For example, routes learned through IS-IS can be redistributed into another routing protocol, subject to policy controls, metric handling, and route-tagging practices. The purpose is to provide reachability between portions of a network that use different routing protocols or administrative routing domains, rather than requiring every router to run the same protocol. In operational networks, redistribution is normally selective: import and export policies determine which prefixes are shared,

and metrics are assigned or translated so that receiving routers can make meaningful path-selection decisions. Careful policy design is essential because redistributed information becomes external routing information in the receiving domain and can affect routing decisions throughout that domain. The external-route behavior and advertisement concepts are described in RFC 2328; Nokia SR OS routing-policy documentation provides the policy mechanisms commonly used to control route exchange in Nokia SR OS Unicast Routing documentation.

QUESTION NO: 9

A Nokia router uses IS-IS over a point-to-point Ethernet interface. A new neighbor is connected, and the router must synchronize its link-state database with the neighbor.

Which statements are correct regarding IS-IS database synchronization on the point-to-point adjacency? (Choose all that apply.)

A. CSNPs can summarize the LSPs known by a router.

B. PSNPs can request missing or newer LSPs.

C. LSP flooding transfers the detailed topology information.

D. Hello PDUs carry the complete link-state database.

E. Database synchronization requires TCP session establishment between the routers.

ANSWER: A B C

Explanation:

IS-IS uses complete sequence number PDUs and partial sequence number PDUs to synchronize link-state databases and acknowledge LSPs. A CSNP provides a summary of LSPs known by a router, while a PSNP can request missing or newer LSPs and acknowledge received LSPs. Normal LSP flooding transfers the actual link-state information required to bring the databases into synchronization.

Hello PDUs establish and maintain the adjacency but do not carry the complete link-state database. The underlying synchronization procedures are defined in RFC 1195.

QUESTION NO: 10

A Nokia router has calculated two IS-IS paths to the same internal IPv4 prefix. Both paths are learned at Level 2 and have the same total IS-IS metric.

Which statements are correct regarding equal-cost multipath routing? (Choose all that apply.)

A. Multiple next hops can be installed when ECMP is enabled and the maximum-paths limit permits it.

B. Traffic can be load shared across the installed equal-cost next hops.

C. A higher-metric path is installed as ECMP because it reaches the same prefix.

D. A Level 1 route and a Level 2 route are always treated as equal-cost paths.

E. IS-IS must use only one next hop for every destination prefix.

ANSWER: A B

Explanation:

When equal-cost paths are eligible and ECMP is enabled within the configured maximum-paths limit, the router can install multiple next hops for the prefix. Traffic can then be load shared across the installed equal-cost next hops according to the platform's ECMP forwarding behavior. The paths must be of equal preference and equal cost for the same route; a higher-metric alternate does not become an ECMP path simply because it reaches the same destination.

IS-IS Level 1 and Level 2 routes are distinct route sources. A route with a more preferred route type is selected before metric comparison with a less preferred route type. IS-IS path calculation and metric advertisement are covered by RFC 1195 and RFC 5305.