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QUESTION 1:

Certkiller uses EIGRP as the primary routing protocol in their network. How does EIGRP advertise subnet masks for each destination network?

A. EIGRP advertises a fixed length subnet mask for each destination network.
B. EIGRP advertises only a classful subnet mask for each destination network.
C. EIGRP, like IGRP and RIP, does not advertise a subnet mask for each destination network.
D. EIGRP advertises a prefix length for each destination network.
E. None of the above

Answer: D

Explanation:
Enhanced Interior Gateway Routing Protocol (EIGRP) is a Cisco-proprietary routing protocol based on IGRP. Unlike IGRP, which is a classful routing protocol, EIGRP supports CIDR, allowing network designers to maximize address space by using CIDR and VLSM. Compared to IGRP, EIGRP boasts faster convergence times, improved scalability, and superior handling of routing loops.
The prefix length field signifies the subnet mask to be associated with the network number specified in the destination field. Thus, if an EIGRP router is configured as follows:
1. ip address 172.16.1.1 255.255.255.0
it will advertise 172.16.1.0 with a prefix length of 24.
Likewise, if the router is configured as follows:
1. ip address 172.16.250.1 255.255.255.252
it will advertise 172.16.250.0 with a prefix length of 30.

QUESTION 2:

The Certkiller network uses EIGRP. Identify three characteristics of EIGRP feasible successors? (Select three)

A. Traffic will be load balanced between feasible successors with the same advertised distance.
B. If the advertised distance of the non-successor route is less than the feasible distance of best route, then that route is identified as a feasible successor.
C. If the successor becomes unavailable, then the feasible successor can be used immediately without recalculating for a lost route.
D. The feasible successor can be found in the routing table.
E. A feasible successor is selected by comparing the advertised distance of a non-successor route to the feasible distance of the best route.

Answer: B, C, E

Explanation:
Once a neighbor relationship has been formed, called an Adjacency, the routers exchange routing update information and each router builds its own topology table. The Updates contain all the routes known by the sender. For each route, the receiving router calculates a distance for that route based on the distance that is conveyed and the cost to that neighbor that advertised the particular route. If the receiving router sees several routes to a particular network with different metrics, then the route with the lowest metric becomes the Feasible Distance (FD) to that network. The Feasible Distance is the metric of a network advertised by the connected neighbor plus the cost of reaching that neighbor. This path with the best metric is entered into the routing table because this is the quickest way to get to that network.
With the other possible routes to a particular network with larger metrics, the receiving router also receives the Reported Distance (RD) to this network via other routers. The Reported Distance being the total metric along a path to a destination network as advertised by an upstream neighbor. The Reported Distance for a particular route is compared with the Feasible Distance that it already has for that route. If the Reported Distance is larger than the Feasible Distance then this route is not entered into the Topology Table as a Feasible Successor. This prevents loops from occurring. If the Reported Distance is smaller than the Feasible Distance, then this path is considered to be a Feasible Successor and is entered into the Topology table. The Successor for a particular route is the neighbor/peer with the lowest metric/distance to that network.
If the receiving router has a Feasible Distance to a particular network and it receives an update from a neighbor with a lower advertised distance (Reported Distance) to that network, then there is a Feasibility Condition. In this instance, the neighbor becomes a Feasible Successor for that route because it is one hop closer to the destination network. There may be a number of Feasible Successors in a meshed network environment, up to 6 of them are entered into the Topology table thereby giving a number of next hop choices for the local router should the neighbor with the lowest metric fail. What you should note here, is that the metric for a neighbor to reach a particular network (i.e. the Reported Distance) must always be less than the metric (Feasible Distance) for the local router to reach that same network. This way routing loops are avoided. This is why routes that have Reported Distances larger than the Feasible Distance are not entered into the Topology table, so that they can never be considered as successors, since the route is likely to loop back through that local router.
Incorrect Answers:
D: The feasible successors are found in the topology table, but not the active routing table.
E: With EIGRP, traffic is load balanced across equal cost links in the routing table, but not between feasible successors.
Reference: http://www.rhyshaden.com/eigrp.htm

QUESTION 3:

Two Certkiller EIGRP routers are attempting to establish themselves as neighbors.
Which EIGRP multicast packet type is responsible for neighbor discovery?

A. Update
B. Query
C. Acknowledgment
D. Reply
E. Hello
F. None of the above

Answer: E

Explanation:
Remember that simple distance vector routers do not establish any relationship with their neighbors. RIP and IGRP routers merely broadcast or multicast updates on configured interfaces. In contrast, EIGRP routers actively establish relationships with their neighbors, much the same way that OSPF routers do.
EIGRP routers establish adjacencies with neighbor routers by using small hello packets. Hellos are sent by default every five seconds. An EIGRP router assumes that as long as it is receiving hello packets from known neighbors, those neighbors (and their routes) remain viable. By forming adjacencies, EIGRP routers do the following:
1. Dynamically learn of new routes that join their network
2. Identify routers that become either unreachable or inoperable
3. Rediscover routers that had previously been unreachable

QUESTION 4:

Certkiller has chosen to use EIGRP for their network routing protocol. Which three statements are true regarding EIGRP? (Select three)

A. By default, EIGRP uses the Dijkstra algorithm to determine the best path to a destination network based on bandwidth and delay.
B. To speed convergence, EIGRP attempts to maintain a successor and feasible successor path for each destination.
C. EIGRP uses hellos to establish neighbor relationships.
D. By default, EIGRP performs auto-summarization across classful network boundaries.
E. EIGRP uses an area hierarchy to increase network scalability.

Answer: B, C, D

Explanation:
EIGRP routers establish adjacencies with neighbor routers by using small hello packets. Hellos are sent by default every five seconds. An EIGRP router assumes that as long as it is receiving hello packets from known neighbors, those neighbors (and their routes) remain viable. By forming adjacencies, EIGRP routers do the following:
1. Dynamically learn of new routes that join their network
2. Identify routers that become either unreachable or inoperable
3. Rediscover routers that had previously been unreachable

EIGRP routers keep route and topology information readily available in RAM so they can react quickly to changes. Like OSPF, EIGRP keeps this information in several tables, or databases.
* Successor - A successor is a route selected as the primary route to use to reach a destination. Successors are the entries kept in the routing table. Multiple successors for a destination can be retained in the routing table.
* Feasible successor - A feasible successor is a backup route. These routes are selected at the same time the successors are identified, but are kept in the topology table. Multiple feasible successors for a destination can be retained in the topology table.
EIGRP automatically summarizes routes at the classful boundary, the boundary where the network address ends as defined by class-based addressing. In most cases, auto summarization is a good thing, keeping the routing tables as compact as possible
In the presence of discontiguous subnetworks, automatic summarization must be disabled for routing to work properly. To turn off auto-summarization, use the following command:
Router(config-router)#no auto-summary

QUESTION 5:

You need to configure EIGRP on all routers within the Certkiller network. Which two statements are characteristics of the routing protocol EIGRP? (Select two)

A. Updates are sent as broadcast.
B. Updates are sent as multicast.
C. LSAs are sent to adjacent neighbors.
D. Metric values are represented in a 32-bit format for granularity.

Answer: B, D

Explanation:
EIGRP routers establish adjacencies with neighbor routers by using small hello packets. Hellos are sent by default every five seconds. An EIGRP router assumes that as long as it is receiving hello packets from known neighbors, those neighbors (and their routes) remain viable. By forming adjacencies, EIGRP routers do the following:
1. Dynamically learn of new routes that join their network
2. Identify routers that become either unreachable or inoperable

3. Rediscover routers that had previously been unreachable

Both EIGRP and IGRP use the following metric calculation:

metric = [K1 * bandwidth + (K2 * bandwidth)/(256 - load)+(K3 * delay)]* [K5/(reliability + K4)]

The following are the default constant values:

K1 = 1, K2 = 0, K3 = 1, K4 = 0, K5 = 0

When K4 and K5 are 0, the [K5/reliability + K4)] portion of the equation is not factored in to the metric. Therefore, with the default constant values, the metric equation is as follows:

metric = bandwidth + delay

IGRP and EIGRP, which scales the value of 256, use the following equations to determined the values used in the metric calculation:

bandwidth for IGRP = (10000000/bandwidth)
bandwidth for EIGRP = (10000000/bandwidth)*256
delay for IGRP = delay/10
delay for EIGRP = delay/10*256

QUESTION 6:

You have been tasked with setting up summarization in the Certkiller EIGRP network. Which two statements are true about EIGRP manual summarization? (Select two)

A. Manual summarization is configured on a per interface basis.
B. When manual summarization is configured, auto-summarization is automatically disabled by default.
C. The summary address is assigned an administrative distance of 10 by default.
D. Manual summaries can be configured with the classful mask only.
E. The summary address is entered into the routing table and is shown to be sourced from the Null0 interface.

Answer: A, E

Explanation:
EIGRP automatically summarizes routes at the classful boundary, the boundary where the network address ends as defined by class-based addressing. In most cases, auto summarization is a good thing, keeping the routing tables as compact as possible
In the presence of discontiguous subnetworks, automatic summarization must be disabled for routing to work properly. To turn off auto-summarization, use the following command:
Router(config-router)#no auto-summary
EIGRP also enables manual configuration of a prefix to use as a summary address. Manual summary routes are configured on a per-interface basis. The interface that will propagate the route summary must first be selected and then defined with the ip summary-address eigrp command, which has the following syntax:

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