

A. Multi-selection (30%)

1. What is the best mechanism to prevent unicast flooding issues?
 - a. Bias the routing metrics to remove equal-cost routes.
 - b. Do not span VLANs across multiple access switches.
 - c. Span VLANs across multiple access switches.
 - d. Tune ARP timers so they exceed CAM timers.
 - e. Tune CAM timers so they exceed ARP timers.

2. Which design is most susceptible to black holing of service module traffic in the event of an uplink failure?
 - a. Layer 2 loop-free U
 - b. Layer 2 looped square
 - c. Layer 2 looped triangle
 - d. Layer 2 loop-free inverted U
 - e. Layer 2 looped inverted triangle

3. Which three are roles of the core layer in a LAN design? (Choose 3)
 - a. Provides high-speed data transport (O)
 - b. Performs packet filtering
 - c. Serves as a fast convergent infrastructure with a high level of redundancy (O)
 - d. Avoids data manipulation (O)
 - e. Performs mainly policy-based decisions
 - f. Provides access to the network

4. Which three factors are the biggest influences on OSPF scalability? (Choose 3)
 - a. Flooding paths and redundancy (O)
 - b. Amount of routing information in the OSPF area or routing domain (O)
 - c. Number of routers capable of Cisco Express Forwarding
 - d. Number of adjacent neighbors (O)
 - e. Other routing protocols in use

5. What are the characteristics of a Layer 3 access design model? (Choose 3)
 - a. VLANs do not expand to the aggregation layer. (O)
 - b. VLANs are extended to the aggregation layer.
 - c. All uplinks are active, and none are blocking. (O)

- d. Layer 2 server adjacency is supported across a single pair of access switches. (O)
- e. Layer 2 server adjacency is not supported across access switches.

B. Explanation of Terms (25%)

1. Autonomous Systems (CH4 p.62 Autonomous Systems)

Ans. An autonomous system is a region of the Internet that is administered by a single entity.

Examples of autonomous regions are:

- Campus network
- Backbone network
- Regional Internet Service Provider

2. VRF

VRF creates multiple, logical Layer 3 routing and forwarding instances inside a single physical router.

3. Bridge assurance

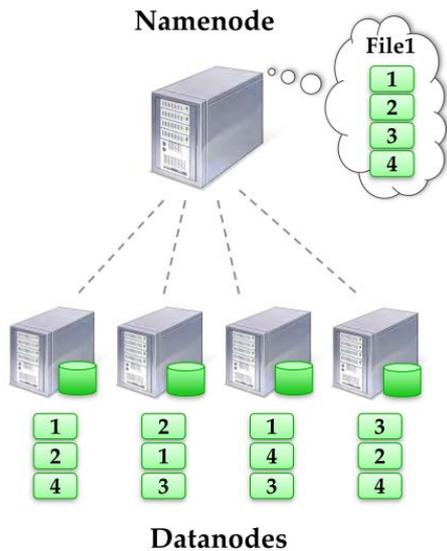
Ans. Bridge assurance can be used as protection against certain problems that can cause bridging loops in the network. (bridge assurance 能用在保護相關問題-引起 bridging loop)

4. EtherChannel (CH3 p.57 EtherChannel)

Ans. EtherChannel is a port link aggregation technology or port-channel architecture used primarily on Cisco switches.

Grouping of several physical Ethernet links to create one logical Ethernet link for the purpose of providing fault-tolerance and high-speed links between switches, routers and servers.

5. Namenode



C. Questions (45%)

1. Please list and describe the detail of three types of PVLAN ports. (15%)

Front-end Layer Functionality –PVLANS to segregate servers in the same subnet from each other.
Provide layer 2 isolation between ports within the same broadcast domain. (p.21)

- Promiscuous – can communicate with all interfaces, including the isolated and community ports within a PVLAN.
- Isolated – has complete layer 2 separation from the other ports within the same PVLAN, but not from the promiscuous ports.
 - PVLANS block all traffic to isolated ports except traffic from promiscuous ports.
 - Traffic from isolated port is forwarded only to promiscuous ports.
- Community – communicate among themselves and with their promiscuous ports.
 - These interfaces are separated at layer 2 from all other interfaces in other communities or isolated ports within their PVLAN.

Other important intelligent network services include (p.38)

- Private VLANs (PVLANS)
- Policy based routing (PBR).

2. OSPF relies on several types of Link State Advertisements (LSAs) to communicate link state information between neighbors.

Type 1 - Represents a router

Type 2 - Represents the pseudonode (designated router) for a multiaccess link

Type 3 - [A network link summary \(internal route\)](#)

Type 4 - Represents an ASBR

Type 5 - [A route external to the OSPF domain](#)

Type 7 - Used in stub areas in place of a type 5 LSA

Backbone area (area 0)

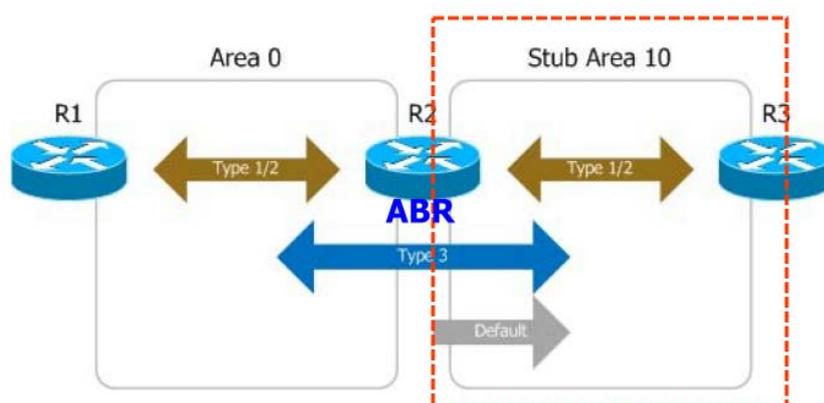
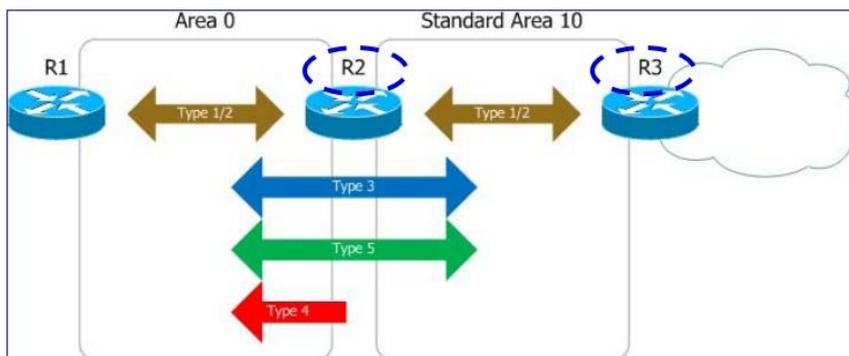
Standard area

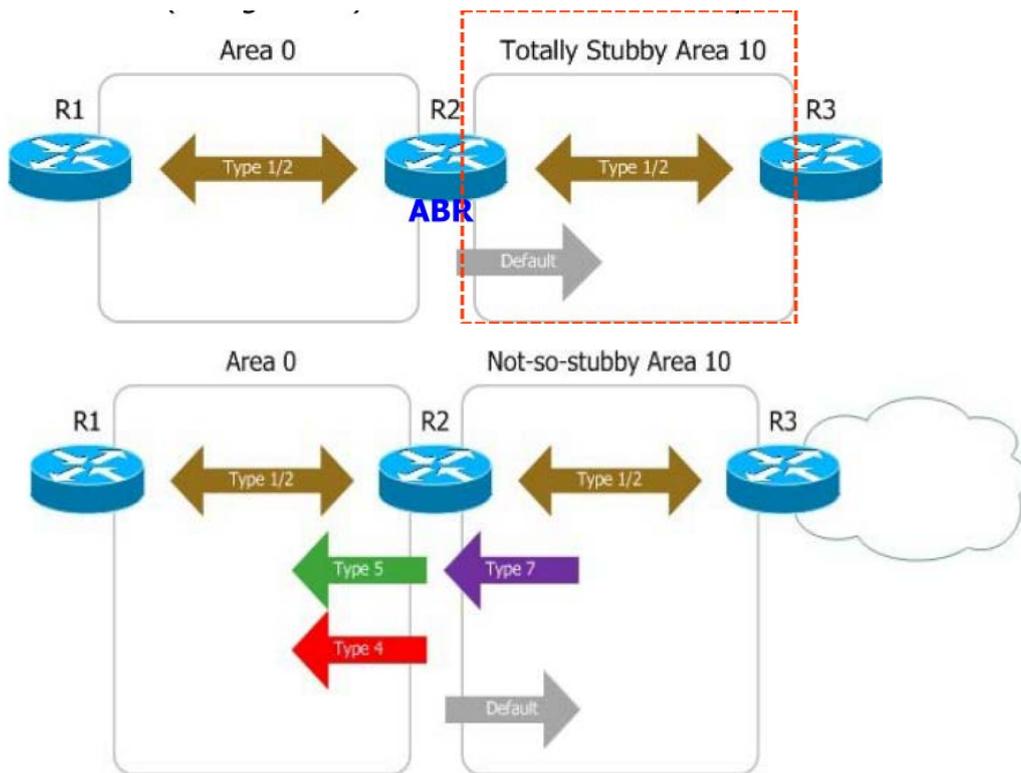
Stub area

Totally stubby area

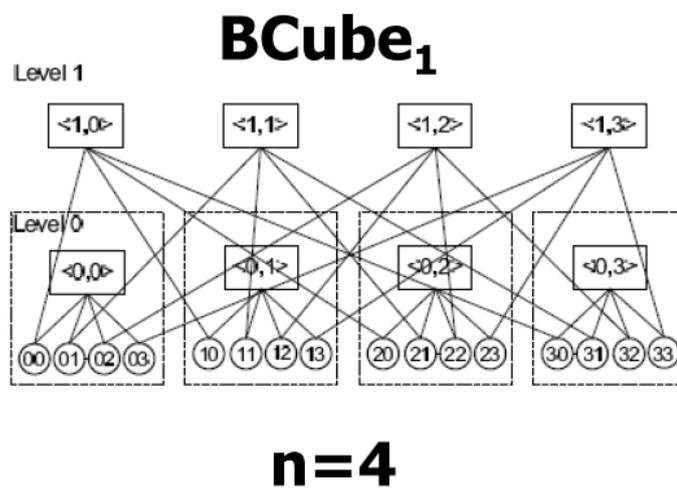
Not-so-stubby area (NSSA)

- Backbone router
- Internal router
- ABR (area border router)
- ASBR (autonomous system border router)





3. BCube₁



4. The Benefits for Separation Layer

1. Layer 2 domain sizing:-在 aggregation layer 決定
2. Service module support:降低 TCO
3. Support for a mix of access layer models:L3+L2 混合
4. Support for network interface card (NIC) teaming and high-availability clustering: