Week4 IEEE 802.1D 交换机的扩张树演算法 (Spanning Tree Algorithm)

Spanning Tree Algorithm 2

4.1 Assume a bridge receives a frame from port x, with destination MAC address D and source MAC address S. Which of the following statements about frame forwarding are NOT correct ?

假設一個橋接器由埠 X 接收到一個訊框，該訊框上的目的地 MAC 位址為 D 而其來源 MAC 位址為 S，下列關於該訊框轉送的敘述何者錯誤?

(a) The bridge will broadcast the frame to all ports if D is not found in the Filtering database of the bridge. 如果該 MAC 位址沒在橋接器的過濾資料庫中，則橋接器會將此訊框廣播到所有的埠.

(b) The bridge will broadcast the frame to all ports, except port x, if D is not found in the Filtering database. 如果該 MAC 位址沒在橋接器的過濾資料庫中，則橋接器會將此訊框廣播到除了埠 X 以外所有的埠.

(c) The bridge will filter the frame if D is found in the Filtering database and D belongs to port x. 如果該 MAC 位址有在橋接器的過濾資料庫中，則橋接器會將該訊框過濾掉，而 MAC 位址 D 屬於埠 X.

(d) The bridge will forward the frame to port y, if D is found in the Filtering database and D belongs to port y. 如果該 MAC 位址在橋接器的過濾資料庫中且資料顯示它屬於埠 Y，則橋接器會將該訊框前送到埠 Y.

Spanning Tree Algorithm 4

4.2 Assume a bridge receives a frame from port x, with destination MAC address D and source MAC address S. Let R = (address, port, timer) be a record in the Filtering database, where timer (in seconds) is the duration this record existed (initially, timer = 0). Which of the following statements about address learning are correct ?

假設橋接器由埠X收到了一個訊框，且該訊框的目的地MAC位址為D，來源MAC位址為S. 假設在過濾資料庫中的記錄R = (位址,埠,計時器) 其上的計時器記錄了該筆記錄存在的時間 (初始值為0).下列哪些關於位址學習的敘述是正確的?

(a) The bridge will add a new entry of R = (S,x,0) to the Filtering database if S is not found in the Filtering database. 該橋接器將會增加一筆記錄R = (S,x,0 到過濾資料庫中如果在過濾資料庫中找不到關於S的記錄.

(b) The bridge will new entry of R = (D,x,0) to the Filtering database if D is not found in the Filtering database. 如果過濾資料庫中沒有D的記錄，則橋接器會將一筆記錄R = (D,x,0) 新增到過濾資料庫中.

(c) If an entry R = (S, y, 20) already existed in the Filtering database, then the bridge will update the entry to (S, x, 0). 如果已經有一筆記錄R = (S, y, 20) 存在於過濾資料庫中，則橋接器會更新該筆記錄成 (S, x, 0).

(d) If an entry R = (S, x, 20) already existed in the Filtering database, then the bridge will update the entry to (S, x, 0). 如果已經有一筆記錄R = (S, x, 20) 存在於過濾資料庫中，則該橋接器會更新該筆記錄成 (S, x, 0).

4.3 Consider the following BLAN configuration. Initially, assume the Filtering databases are empty. Fill in each entry (an integer to present a port number) in the following table after the following five transmissions. Use integer "0" to indicate if a station is not learned in the corresponding filtering database.

考慮下列關於橋接器網路的設定。初始時，假設過濾資料庫為空。在下列五個訊息傳輸後，依據當下橋接器的狀況，填滿下方的表格。數字0代表該工作站的位址尚未被對應的過濾資料庫學習到。

(1) Station A transmits a frame to station B 工作站A傳輸了一個訊框到工作站B.

(2) Station B transmits a frame to station C 工作站B傳輸了一個訊框到工作站C.

(3) Station D transmits a frame to station A 工作站D傳輸了一個訊框到工作站A.

(4) Station E transmits a frame to station D 工作站E傳輸了一個訊框到工作站D.

(5) Station C transmits a frame to station B 工作站C傳輸了一個訊框到工作站B.

Station	Port number of Filtering database X	Port number of Filtering database Y	Port number of Filtering database Z
A	(a)	(b)	(c)
B	(d)	(e)	(f)
C	(g)	(h)	(i)
D	(j)	(k)	(l)
E	(m)	(n)	(o)

Station	Port number of Filtering database X	Port number of Filtering database Y	Port number of Filtering database Z
A	1	2	1
B	2	2	1
C	2	1	0
D	2	3	1
E	0	3	2

Spanning Tree Algorithm 5

4.4 Which of the following statements are correct?

下列有關橋接網路的敘述何者正確?

☑ (a) To provide a reliable network connectivity, many physical loops may exist in a bridged LAN (BLAN). 為了提供網路穩定連結, 橋接網路(BLAN) 拓樸可以存在一些迴圈.

☐ (b) No physical loop is allowed in a bridge LAN. 橋接網路拓樸不允許存在迴圈.

☑ (c) Before transmitting frames, the spanning tree of a BLAN should be constructed first. 在傳輸訊框以前, 橋接網路的擴張樹必須先建立好.

☑ (d) Based on the spanning tree structure, there is only one communication path between each pair of bridges. 根據擴張樹的結構, 任兩個橋接器之間只會有一個傳輸路徑.

☐ (e) For the spanning tree constructed by the IEEE 802.1D spanning tree algorithm, the communication path between each pair of bridges is optimized (shortest). 由IEEE 802.1D 擴張樹演算法所造出的擴張樹, 任兩個橋接器之間的傳輸路徑一定最佳的 (最短的).

4.5 What may happen if loops exist in a bridged LAN and the spanning tree is not established ?

當橋接網路存在迴圈, 且擴張樹尚未建立時, 下列哪些狀況可能會發生?

☑ (a) The receiver may receive duplicated frames. 接收者可能會重複收到訊框.

☑ (b) The bridges may learn wrong ports for MAC addresses. 橋接器可能會將MAC位址對應的隸屬埠學習錯誤.

☐ (c) The frames will be filtered by bridges correctly. 橋接器可以正確的過濾訊框.

☐ (d) Each frame will be delivered to the destination via the shortest path between the source and destination stations. 每個訊框都可以經由傳送端與接收端之間最短路徑來傳送.

4.6 Which bridge in a bridged LAN will become the "root bridge" of the spanning tree ?

橋接網路中的哪個橋接器將會成為擴張樹中的根橋接器 (root bridge) ?

◯ (a) The bridge is selected randomly 該橋接器是隨機選取的

◯ (b) The bridge with the largest bridge ID 擁有最大識別碼的橋接器

◉ (c) The bridge with the smallest bridge ID 擁有最小識別碼的橋接器

◯ (d) The bridge in the "center" of the bridged LAN 位於橋接網路最中心位置的橋接器

Spanning Tree Algorithm 6

4.7 What is the "bridge ID" of a bridge in a bridged LAN ?

在橋接網路中，一個橋接器的橋接器辨識碼是?

○ 6 bytes, MAC address of the bridge 6 位元組, 橋接器的MAC位址

● 8 bytes, priority (2 bytes) + MAC address of the bridge (6 bytes) 8 位元組, priority (2個位元組) + 橋接器的MAC 位址(6個位元組)

○ 10 bytes, IP address (4 bytes) + MAC address of the bridge (6 bytes) 10位元組, IP 位址 (4個位元組) +橋接器的MAC 位址(6個位元組)

○ 6 bytes, priority (2 bytes) + IP address of the bridge (4 bytes) 6位元組, priority (2個位元組) +橋接器的IP 位址 (4個位元組)

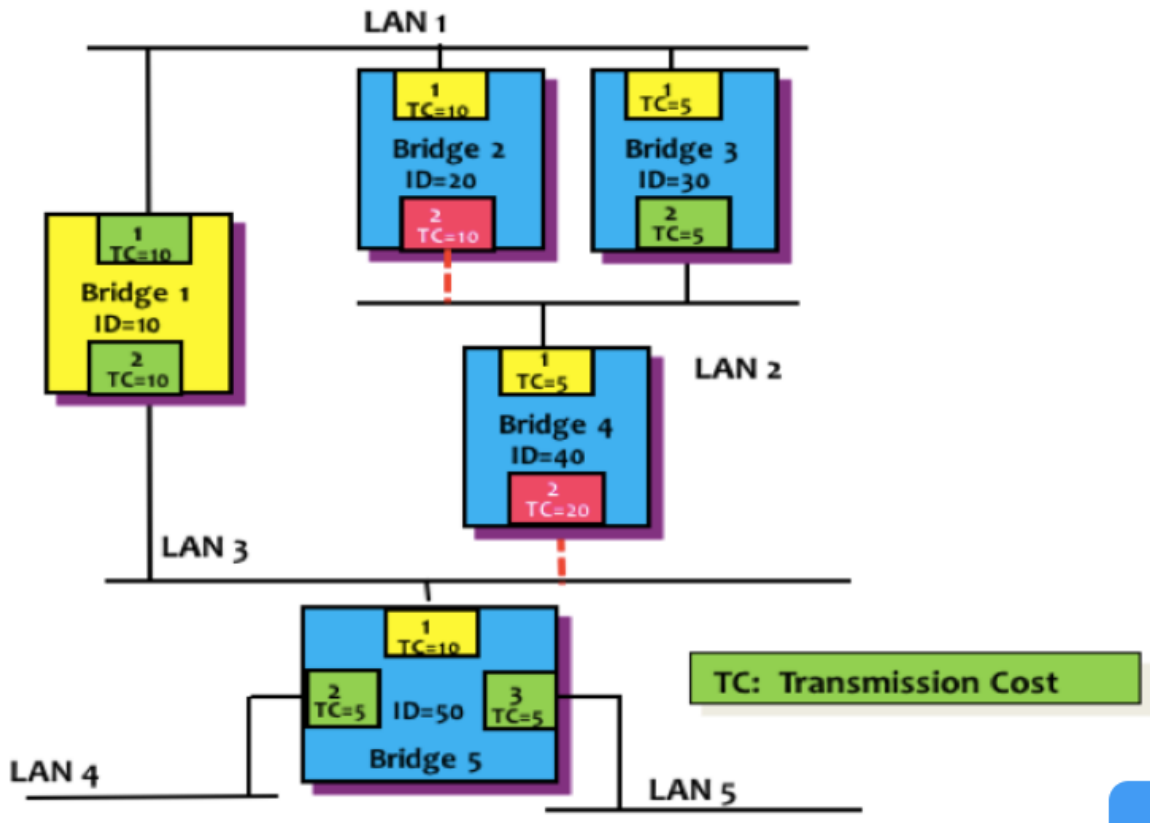4.8 Which of the following statements are correct about the ID of a bridge ?

下列哪些對於橋接器辨識碼的敘述是正確的?

☐ The ID is fixed. 辨識碼是固定的.

☐ The ID is programmable by setting MAC address 辨識碼是可以經由設定MAC位址來調整的

☑ The ID is programmable by setting priority value 辨識碼是可以經由設定priority 的值來調整的

☐ ID 1 > ID 2 if the MAC address of ID 1 > MAC address of ID 2. 辨識碼 1 > 辨識碼 2, 如果辨識碼 1的MAC位址 > 辨識碼 2的MAC位址.

☑ ID 1 > ID 2 if the priority value of ID 1 > the priority value of ID 2. 辨識碼 1 > 辨識碼 2, 如果辨識碼 1的priority值 > 辨識碼 2的 priority值.

Spanning Tree Algorithm 7

4.9 The "root path cost" (RPC) of a bridge is defined as the summation of the transmission costs of the bridges along the path from the bridge to the root bridge. Consider the following BLAN configuration, the RPC of bridge 2 is __(a)__, and the RPC of bridge 4 is __(b)__.

一個橋接器的 "根路徑費用 (RPC)" 定義為該橋接器到根橋接器的路徑上所有傳輸成本的總合. 下列橋接網路架構中，橋接器 2的根路徑費用為___(a)___，而橋接器4的根路徑費用為__(b)__.

LAN 1

1
TC=10
Bridge 2
ID=20
2
TC=10

1
TC=5
Bridge 3
ID=30
2
TC=5

1
TC=10
Bridge 1
ID=10
2
TC=10

1
TC=5
Bridge 4
ID=40
2
TC=20

LAN 2

LAN 3

1
TC=10
2
TC=5 ID=50 3
TC=5
Bridge 5

TC: Transmission Cost

LAN 4

LAN 5

(a) 10 ✅

(b) 10 ✅

4.10 Let (A) be the procedure to find the "root bridge" of a BLAN, (B) be the procedure to find the "root port" of a bridge, and (C) be the procedure to find a "designated bridge" of a LAN, (D) be the procedure to find a "designated port" of a LAN. What is the sequential procedure to establish the spanning tree of a BLAN ?

✅ 令 (A)為尋找橋接網路中的根橋接器的過程。(B)為尋找橋接器根埠 (root port) 的過程。 (C)為尋找區域網路的代理橋接器(designated bridge)的過程。(D)為尋找區域網路代理埠 (designated port) 的過程。下列哪個是建立一個橋接網路上擴張樹的順序?

➡️ 🔘 A, B, C

⚪ A, C, B

⚪ A, C, D

⚪ B, A, C

4.11 Consider the following state diagram of a bridge port. Initially, a port is in the "blocking" state. The state of a port is changed to "listening" state when a port is selected as a "root" (R) port or a "designated" (D) port. The state of a port is changed to "blocking" state when a port is no more an R port or a D port. The state of a port is changed to "learning" state from "listening" state after a forwarding delay. The state of a port is changed to "forwarding" state from "learning" state after another forwarding delay. Which of the following statements are correct ?

參考下列關於一個橋接器埠的狀態轉換圖。初始時,一個埠會處在 "blocking" 狀態. 該埠會在其被選為" 根埠" 或" 指定埠" 時,轉為 "listening" 狀態。一個埠的狀態將會在當其不再是" 根埠" 或" 指定埠" 時轉為 "blocking" 狀態。一個埠的狀態將會在經過一個轉送延遲(forward delay)後,由 "listening" 狀態轉為 "learning" 狀態. 一個埠的狀態將會在一個轉送延遲後,由 "learning" 狀態轉為 "forwarding" 狀態 . 下列哪些敘述是正確的?
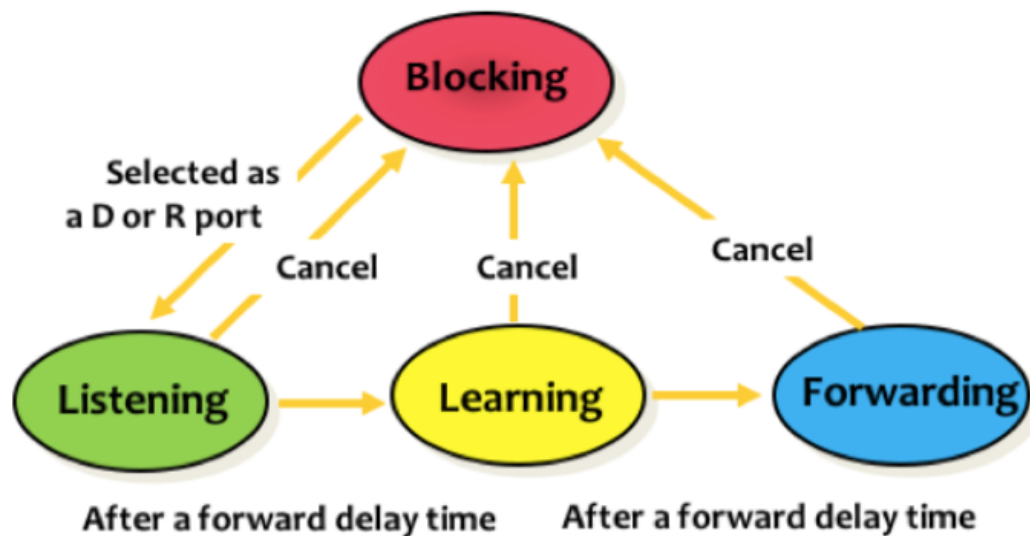
Before the spanning tree is completely constructed, the state of a port may be changed among these four states. 在擴張樹完全確定建立前，一個埠的 狀態可能會在上述的四個狀態間做轉換。 .

☐ After the spanning tree is constructed, the state of a port is either in the "learning" state or "forwarding" state. 擴張樹建立完成後，每一個埠的狀態將會是"learning" 狀態或"forwarding" 狀態。

☑ A port in the "forwarding" state will be an R port or a D port. 一個在"forwarding" 狀態的埠將會是"根埠" 或"指定埠".

☑ A port in the "learning" state is able to learning the source MAC address of a received frame but unable to forward frames. 一個處於 "learning" 狀態的埠可以學習一個接收訊框的來源MAC位址，但無法轉送訊框.

☑ A port in the "forwarding" state is able to forward or filter the received frames. 一個處於"forwarding"狀態的埠可以過濾或轉送收到的訊框.

Spanning Tree Algorithm 8

4.12 Which of the following statements about the spanning tree maintenance are correct ?

下列哪些關於擴張樹維護的敘述是正確的？

☑ The root bridge will send a "Hello" BPDU periodically to each of its ports. 根橋接器會定期發送"Hello" BPDU到他所有的埠.

☑ The "Hello" BPDUs are delivered into each of the LANs along the paths of the spanning tree. "Hello" BPDUs 將會沿著擴張樹的路徑傳遞到所有的區域網路中.

☐ To have better reliability, each bridge will also forward the "Hello" BDPUs into each of its ports. 為了要有更好的可靠度，每一個橋接器也都會轉送"Hello" BDPUs 到他所有的埠.

☑ For the "root bridge", all it's ports are "designated ports" 根橋接器的每一個埠都是一個代理埠.

4.13 To construct the spanning tree of a BLAN, initially, each bridge assume itself is the "root bridge", set each of it's ports as a "designated" port, and send a BPDU to each port with its bridge ID, root bridge ID (itself), and the root path cost of 0. Which of the following statements are correct when a bridge (with root bridge ID = w, rpc = p) receives a BPDU (with root bridge ID = m, rpc =q) from port x (with a transmission cost of c) ?

為了建置一個橋接網路的擴張樹，首先，每個橋接器都會將自己視為根橋接器，並將每個埠都設為代理埠，也會傳送 BPDU 到每個埠，此BPDU會包含其自己的橋接器識別碼，根橋接器辨識碼(自己的)，以及根路徑成本為0的資訊。當一個橋接器 (假設其根橋接器辨識碼為w,根路徑費用為p)，由埠x (假設其傳輸費用為c) 收到一個BPDU (其根橋接器辨識碼為m,根路徑費用為q) 時,下列哪些敘述是正確的？

☑ port x will be selected as a new R port if w > m 埠x將會被選為新的R port 如果 w > m

☑ port x will be selected as a new R port if w = m and p > q+c 埠x將會被選為新的R port 如果 w = m 而且 p > q+c

☐ port x will be selected as a new R port if p > q 埠x 將會被選為新的R port如果p > q

☐ port x will be selected as a new R port if w < m 埠x將會被選為新的R port 如果w < m

4.14 Consider the procedure to construct the spanning tree. When a bridge (with root bridge ID = w, rpc = p) receives a BPDU (with root bridge ID = m, rpc =q) from port x (with a transmission cost of c). Assume w > m. Then what will happen ?

考慮建立擴張樹的過程.當一個橋接器 (假設其根橋接器識別碼=w,根路徑費用=p) 由埠x (假設其傳輸費用為c) 收到一個BPDU(其上的根橋接器辨識碼=m, 根路徑費用=q)的時候。假設w>m,則下列何者會發生?

☑ Port x will be selected as a new R port. 埠x將會被選為新的R port.

☐ port x will be selected as a new D port 埠x將會被選為新的D port.

☑ A BPDU with (with root bridge ID = m, rpc =q+c) will be forwarded to all the ports, except port x. 一個BPDU (根橋接器辨識碼=m,根路徑費用=q+c) 將會被轉送到除了埠x外所有的埠.

☐ A BPDU with (with root bridge ID = m, rpc =q) will be forwarded to all the ports, except port x. 一個BPDU (根橋接器辨識碼= m, 根路徑費用=q) 將會被轉送到除了埠x外所有的埠.

☐ A BPDU with (with root bridge ID = m, rpc =p+q) will be forwarded to all the ports, except port x. 一個BPDU (根橋接器辨識碼= m, 根路徑費用=p+q) 將會轉前送到除了埠x外所有的埠.

4.15 Consider the procedure to construct the spanning tree. When a bridge (with root bridge ID = w, rpc = p) receives a BPDU (with root bridge ID = m, rpc =q) from port x (with a transmission cost of c). Assume w < m. Then what will happen ?

考慮建立擴張樹的過程。當一個橋接器 (根橋接器辨識碼=w,根路徑費用= p) 由埠x (假設傳輸費用為c) 收到一個BPDU (根橋接器辨識碼=m, 根路徑費用= q)。假設w < m. 則下列何者會發生?

☐ Port x will be selected as a new R port. 埠x將會被選為新的R port.

☑ The BPDU will be dropped directly. 該BPDU 將會被直接丟棄.

☑ A BPDU (with root bridge ID = w, rpc = p) will be forwarded to port x.)一個BPDU (根橋接器辨識碼 = w, 根路徑費用 = p) 將會被轉送到埠x.

☐ A BPDU (with root bridge ID = w, rpc =q+c) will be forwarded to port x. A BPDU (根橋接器辨識碼= w, 根路徑費用=q+c) 將會被轉送到埠x.

4.16 Consider the procedure to construct the spanning tree. When a bridge (with root bridge ID = w, rpc = p) receives a BPDU (with root bridge ID = m, rpc =q) from port x (with a transmission cost of c). Assume w = m and p > q+c. Then what will happen ?

考慮建立擴張樹的過程。當一個橋接器 (根橋接器辨識碼=w, 根路徑費用= p) 由埠x (其傳輸費用為c) 收到一個BPDU (根橋接器辨識碼= m, 根路徑費用= q) .假設w = m且 p > q+c. 則下列何者會發生?

☑ Port x will be selected as a new R port. 埠x將會被選為新的R port.

☐ The BPDU will be dropped directly. 該BPDU 將會被直接丟棄.

☑ A BPDU with (with root bridge ID = m, rpc =q+c) will be forwarded to all the ports, except port x. 一個BPDU (根橋接器辨識碼=m, 根路徑費用=q+c) 將會被轉送到除了埠x外的所有埠.

☐ A BPDU (with root bridge ID = w, rpc =q+c) will be forwarded to port x. 一個BPDU (根橋接器辨識碼=w, 根路徑費用=q+c) 將會被轉送到埠x.

Spanning Tree Algorithm 9

4.17 What is the major feature of the spanning tree constructed by the IEEE 802.1D spanning tree algorithm ?

下列哪個是經由IEEE 802.1D 擴張樹演算法所建造的擴張樹的主要特色？

○ It is a minimum cost spanning tree. Thus, the summation of the cost of each link is minimized. 這是一個最低成本擴張樹。也就是擴張樹上的每個鏈結的成本加總值最小.

◉ It is a spanning tree that includes the minimum cost path of each bridge/LAN to the root bridge 這是一個包含每個 橋接器/區域網路 到根橋接器(root bridge)最短路徑的擴張樹.

○ It is a spanning tree that includes the minimum cost path of each pair of bridges/LANs 此擴張樹將會包含任何一對橋接器/區域網路 之間最少成本的路徑.

○ It is a minimum delay spanning tree. 這是一個傳輸延遲最小的擴張樹.

Spanning Tree Algorithm 10

4.18 Consider the procedure to maintain the spanning tree. For a bridge B with three ports x,y,z and root bridge ID = w, rpc = p. Assume port x is an R port, port y is a D port of a LAN1, port z is blocked and connected to a LAN2. Which of the following statements are correct for Bridge B ?

考慮維護擴張樹的過程。對於一個橋接器B，其上有三個埠，x,y,z，而其根橋接器辨識碼=w, 根路徑費用=p。假設埠x為一個R port，埠y為區域網路1的D port，埠z連接區域網路2且其目前在"blocking"狀態。下列哪些關於橋接器B的敘述是正確的?

○ The "hello" BPDUs will be received periodically only from port x. 只有埠x會週期性的收到"hello" BPDUs.

○ The "hello" BPDUs will be received periodically from ports x and y. 埠x和埠y將會週期性的收到"hello" BPDUs.

○ The "hello" BPDUs will be received periodically only from port z 只有埠z會週期性的收到"hello" BPDUs.

◉ The "hello" BPDUs will be received periodically from ports x and z. 埠x和埠z將會週期性的收到"hello" BPDUs.

4.19 Consider the procedure to maintain the spanning tree. For a bridge B with three ports x,y,z and root bridge ID = w, rpc = p. Assume port x is an R port, port y is a D port of a LAN1, port z is blocked and connected to a LAN2. For bridge B, what actions will be taken if the hello BPDUs suppose to be received from port z are lost for a long time (a timeout event) ?

考慮維護擴張樹的過程。對於一個橋接器B，其上有三個埠，x,y,z，而其根橋接器辨識碼=w, 根路徑費用=p。假設埠x為一個R port，埠y為區域網路1的D port，埠z連接區域網路2且其目前在"blocking"狀態。當原本應該由埠z收到的hello BPDU遺失很長一段時間(逾時)時，橋接器B會採取什麼舉動?

☐ Port z is selected as a new R port. 埠z 將會被選為新的R port.

☑ Port z is selected as a D port. 埠z 將會被選為新的D port.

☐ A BPDU with (with root bridge ID = w, rpc =p) is forwarded to port x 一個BPDU(根橋接器識別碼=w, 根路徑費用=p) 將會被轉送到埠x.

☐ A BPDU (with root bridge ID = w, rpc =p) is forwarded to port y. 一個BPDU (根橋接器識別碼=w, 根路徑費用=p) 將會被轉送到埠y.

☑ A BPDU (with root bridge ID = w, rpc =p) is forwarded to port z. 一個BPDU(根橋接器識別碼=w, 根路徑費用=p) 將會被轉送到埠z.

4.20 Consider the procedure to maintain the spanning tree. For a bridge B with three ports x,y,z and root bridge ID = w, rpc = p. Assume port x is an R port, port y is a D port, port z is blocked and connected to a LAN m. For bridge B, what actions will be taken if the hello BPDUs suppose to be received from port x are lost for a long time (a timeout event) ?

考慮維護擴張樹的過程。對於一個橋接器B，其上有三個埠，x,y,z，而其根橋接器辨識碼=w, 根路徑費用=p。假設埠x為一個R port，埠y為D port，埠z連接區域網路m且其目前在" blocking" 狀態。當原本應該由埠x收到的hello BPDU遺失很長一段時間(逾時)時，橋接器B會採取什麼舉動？

☑ Bridge B will consider itself as a new root bridge and start the procedure to construct the spanning tree. 橋接器B 將會視自己為新的根橋接器並且開始進行建立擴張樹。

☐ port y is selected as a new R port. 埠y將會被選為新的R port.

☑ Ports x,y,z are selected as D port.埠 x,y,z 將會被選為D port.

☑ A BPDU with (with root bridge ID = B, rpc =0) is forwarded to ports x, y,z. 一個BPDU (根橋接器識別碼= B, 根路徑費用=0) 將會被轉送到埠x, y,z.

☐ A BPDU (with root bridge ID = w, rpc =q) is forwarded to port z. 一個BPDU (根橋接器識別碼=w, 根路徑費用=q) 將會被轉送到埠z.

4.21 Consider the procedure to maintain the spanning tree. For a bridge B with three ports x,y,z and root bridge ID = w, rpc = p. Assume port x is an R port, port y is a D port, port z is blocked and connected to a LAN m. Which of the following statements are correct for the transmission of TCN (topology change notification) BDPU ?

考慮維護擴張樹的過程。對於一個橋接器B，其上有三個埠，x,y,z，而其根橋接器辨識碼=w, 根路徑費用=p。假設埠x為一個R port，埠y為D port，埠z連向區域網路m且其目前在" blocking" 狀態。下列哪些關於傳輸 "拓樸架構變更(TCN)" BDPU 的敘述是正確的？

☑ A TCN BPDU will be sent to port x if state of port z is changed to forwarding state. 如果埠z的狀態改為forwarding狀態時，一個TCN BPDU 將會被送到埠x.

☑ A TCN BPDU will be sent to port x if state of port y is changed to blocking state. 如果埠y的狀態改為blocking 狀態，則一個TCN BPDU將會被送到埠x.

☐ A TCN BPDU will be sent to port y if state of port z is changed to forwarding state. 如果埠z的狀態改為forwarding狀態，則一個TCN BPDU將會被送到埠y .
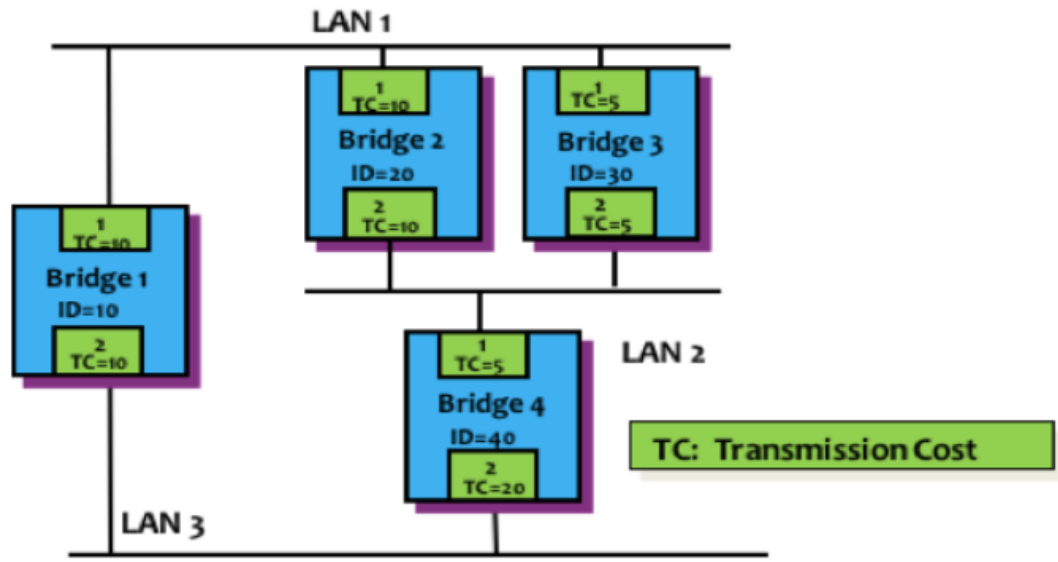
☐ A TCN BPDU will be sent to port z if state of port y is changed to blocked state. 如果埠y的狀態改為blocking狀態，則一個TCN BPDU將會被送到埠z.

4.22 Consider the procedure to maintain the spanning tree of a BLAN. Which of the following statements are correct for the transmission of TCN (topology change notification) BDPU？考慮維護擴張樹的過程。下列哪些關於傳輸 "拓樸架構變更(TCN)" BDPU 的敘述是正確的？

☑A bridge will send a TCN BDPU to the root bridge if one of its ports changed state (from blocking state to forwarding state, or vise versa) 一個橋接器的任何一個埠的狀態改變時 (由blocking狀態 轉為forwarding狀態, 或反過來), 此橋接器會傳送一個TCN BDPU到根橋接器

☑The TCN BPDU will be delivered to the root bridge along the spanning tree. 此 TCN BPDU將會沿著擴張樹的路徑傳送到根橋接器.

☐The TCN BPDU will be delivered to the root bridge along multiple communication paths. 此TCN BPDU將會沿著多條傳送路徑傳送到根橋接器.

☑The TCN BPDU is delivered via a reliable, hop-by-hop method. 此TCN BPDU將會由橋接器以接力的方式可靠的傳送到根橋接器.

☐The TCN BPDU is delivered via a best effort method. 此TCN BPDU將會以盡力方式傳送到根橋接器, 不保證根橋接器會收到.

Spanning Tree Algorithm 11

4.23 For the following bridged network configuration. Assume the spanning tree is constructed according to the IEEE 802.1D spanning tree algorithm. Please fill in the table for the constructed spanning tree. Use integer "0" to indicate the root port number if none of its ports of a bridge is a "root port".

針對下列橋接網路架構. 假設該擴張樹是依據 IEEE 802.1D 擴張樹演算法建造的. 請根據建造出來的擴張樹填妥下列表格 (每一空格請填入一數字).如果一個橋接器的所有埠都不是 "root port" ，請填入數字 "0" 來表示其root port 的埠編號.
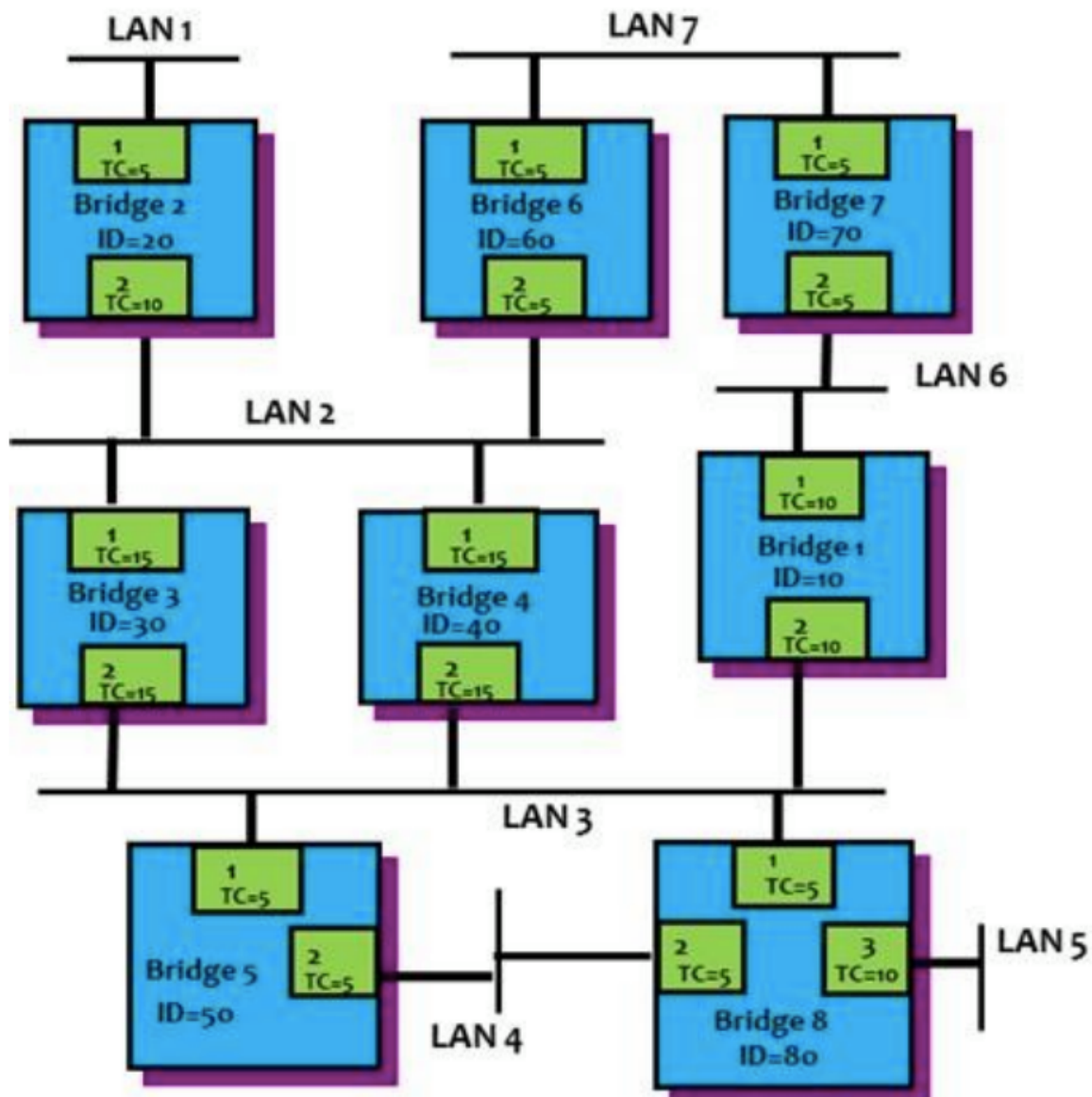

	Root port number	Root path cost (RPC)	Designated bridge ID	Designated port number
Bridge 1	0	0		
Bridge 2	1	10		
Bridge 3	1	5		

Bridge 4	1	10		
LAN 1			10	1
LAN 2			30	2
LAN 3			10	2

4.24 For the following bridged network configuration. Assume the spanning tree is constructed according to the IEEE 802.1D spanning tree algorithm. Please fill in the table for the constructed spanning tree. Use integer "0" to indicate the root port number if none of its ports of a bridge is a "root port".

針對下列橋接網路架構. 假設該擴張樹是依據 IEEE 802.1D 擴張樹演算法建造的. 請根據建造出來的擴張樹填妥下列表格 (每一空格請填入一數字).如果一個橋接器的所有埠都不是 "root port" ,請填入數字 "0" 來表示其root port 的埠編號.

LAN 1

Bridge 2
ID=20
1 TC=5
2 TC=10

LAN 7

Bridge 6
ID=60
1 TC=5
2 TC=5

Bridge 7
ID=70
1 TC=5
2 TC=5

LAN 6

LAN 2

Bridge 3
ID=30
1 TC=15
2 TC=15

Bridge 4
ID=40
1 TC=15
2 TC=15

Bridge 1
ID=10
1 TC=10
2 TC=10

LAN 3

Bridge 5
ID=50
1 TC=5
2 TC=5

LAN 4

Bridge 8
ID=80
1 TC=5
2 TC=5
3 TC=10

LAN 5

	Root port number	Root path cost (RPC)	Designated bridge ID	Designated port number
Bridge 1	0	0		
Bridge 2	2	20		
Bridge 3	2	15		
Bridge 4	2	15		
Bridge 5	1	5		
Bridge 6	1	10		
Bridge 7	2	5		
Bridge 8	1	5		
LAN 1			20	1
LAN 2			60	2
LAN 3			10	2
LAN 4			50	2
LAN 5			80	3
LAN 6			10	1
LAN 7			70	1

4.25 Consider the spanning tree constructed in question 24. Please fill in the table for the re-constructed spanning tree when bridge 6 is failed. Use integer "0" to indicate the root port number if none of its ports of a bridge is a "root port".

參考第24題的所建置的擴張樹. 假設此時發生橋接器 6 毀損，請根據重新建造出來的擴張樹填妥下列表格 (每一空格請填入一數字).如果一個橋接器的所有埠都不是 "root port"，請填入數字 "0" 來表示其root port 的埠編號.

	Root port number	Root path cost (RPC)	Designated bridge ID	Designated port number
Bridge 1	0	0		
Bridge 2	2	25		
Bridge 3	2	15		
Bridge 4	2	15		
Bridge 5	1	5		
Bridge 6				
Bridge 7	2	5		
Bridge 8	1	5		

LAN 1			20	1
LAN 2			30	1
LAN 3			10	2
LAN 4			50	2
LAN 5			80	3
LAN 6			10	1
LAN 7			70	1