Chương 10
Spanning Tree Protocol

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- Email : duyn@uit.edu.vn

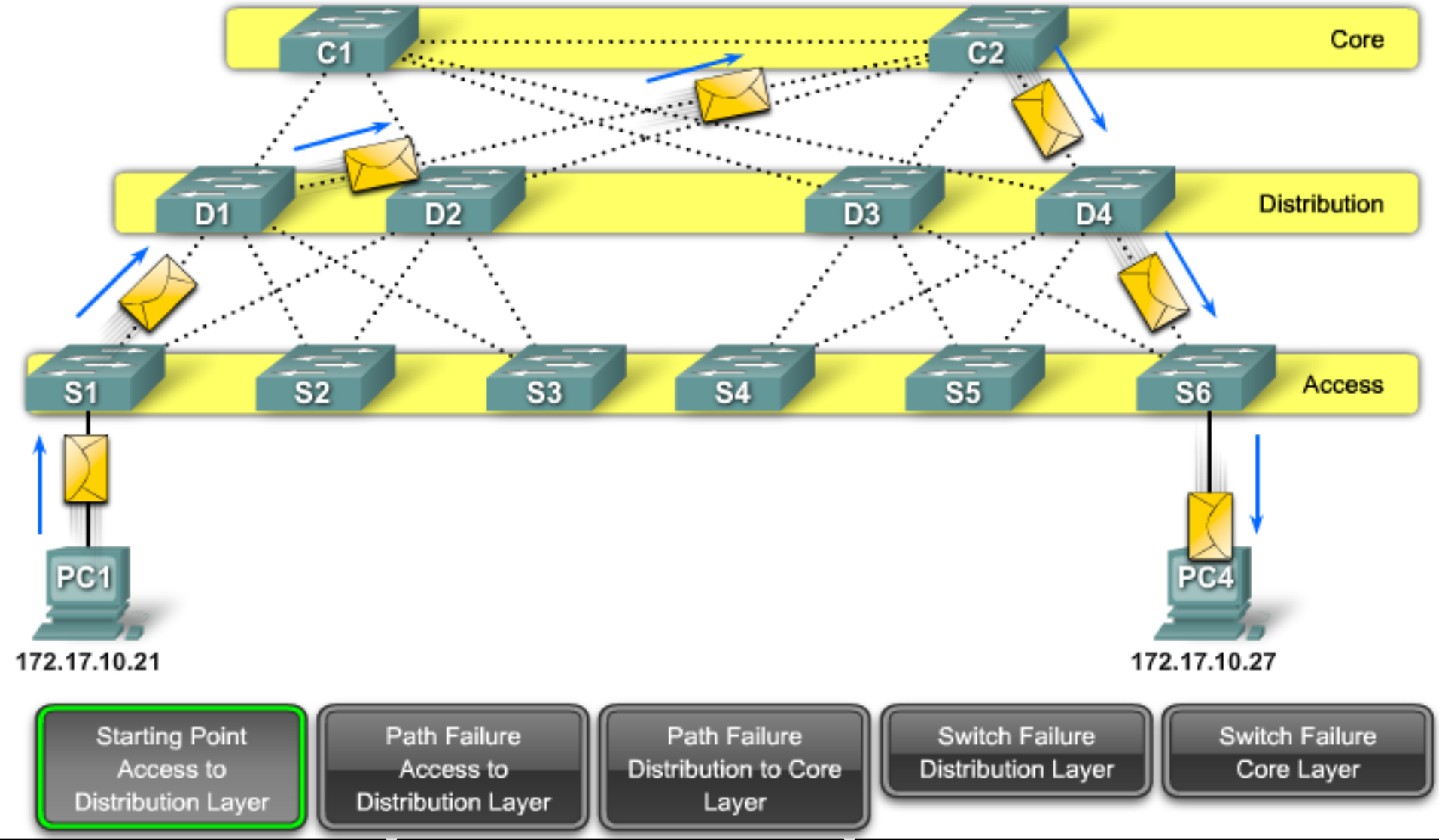
Nội Dung

- Nguyên nhân gây ra Loop ở L2
- Khái niệm về STP
- Cơ chế hoạt động của STP

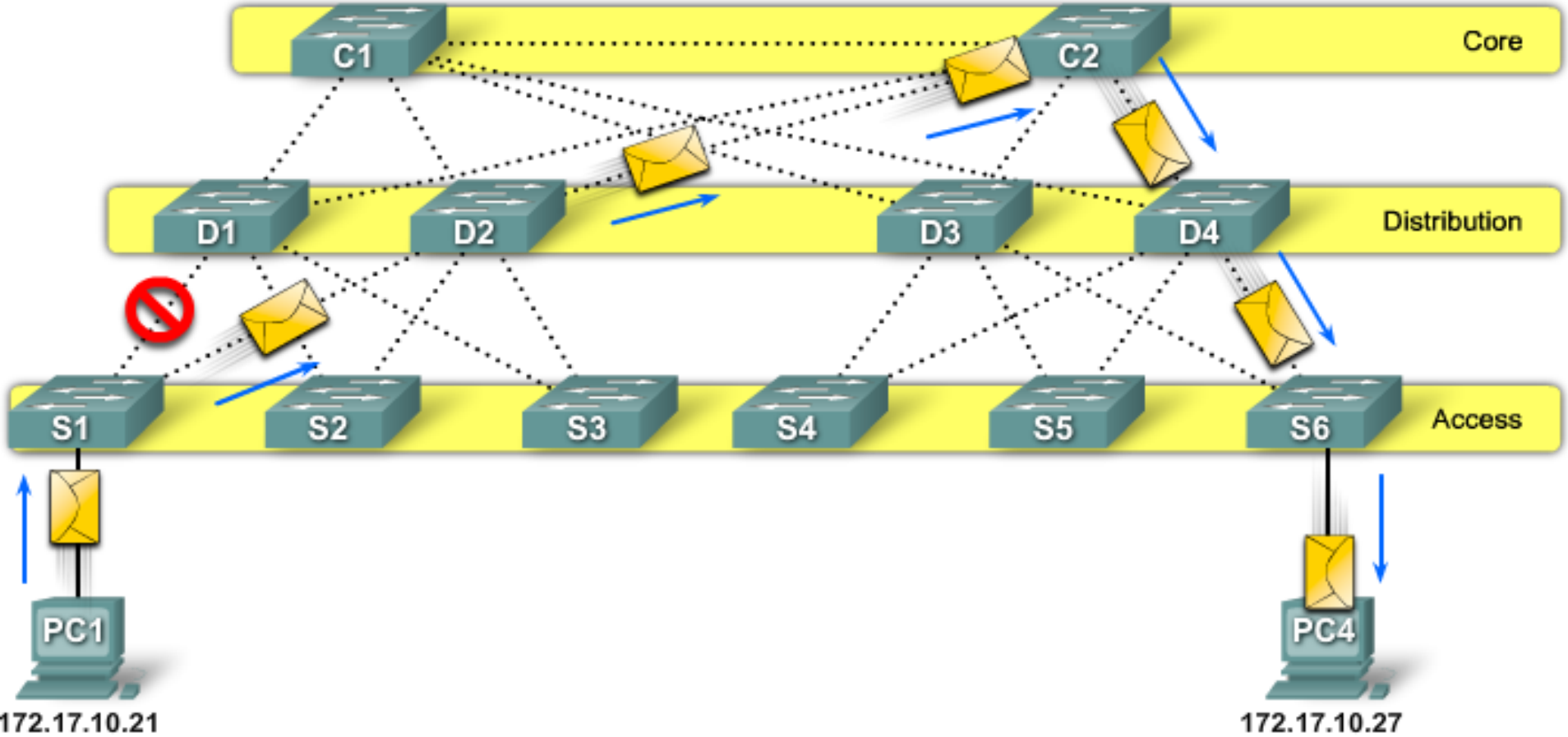
Nội Dung

- **Nguyên nhân gây ra Loop ở L2**
- Khái niệm về STP
- Cơ chế hoạt động của STP

Redundancy


C1
C2
Core
D1
D2
D3
D4
Distribution
S1
S2
S3
S4
S5
S6
Access
PC1
PC4
172.17.10.21
172.17.10.27
Starting Point
Access to
Distribution Layer
Path Failure
Access to
Distribution Layer
Path Failure
Distribution to Core
Layer
Switch Failure
Distribution Layer
Switch Failure
Core Layer

Redundancy



Starting Point Access to Distribution Layer

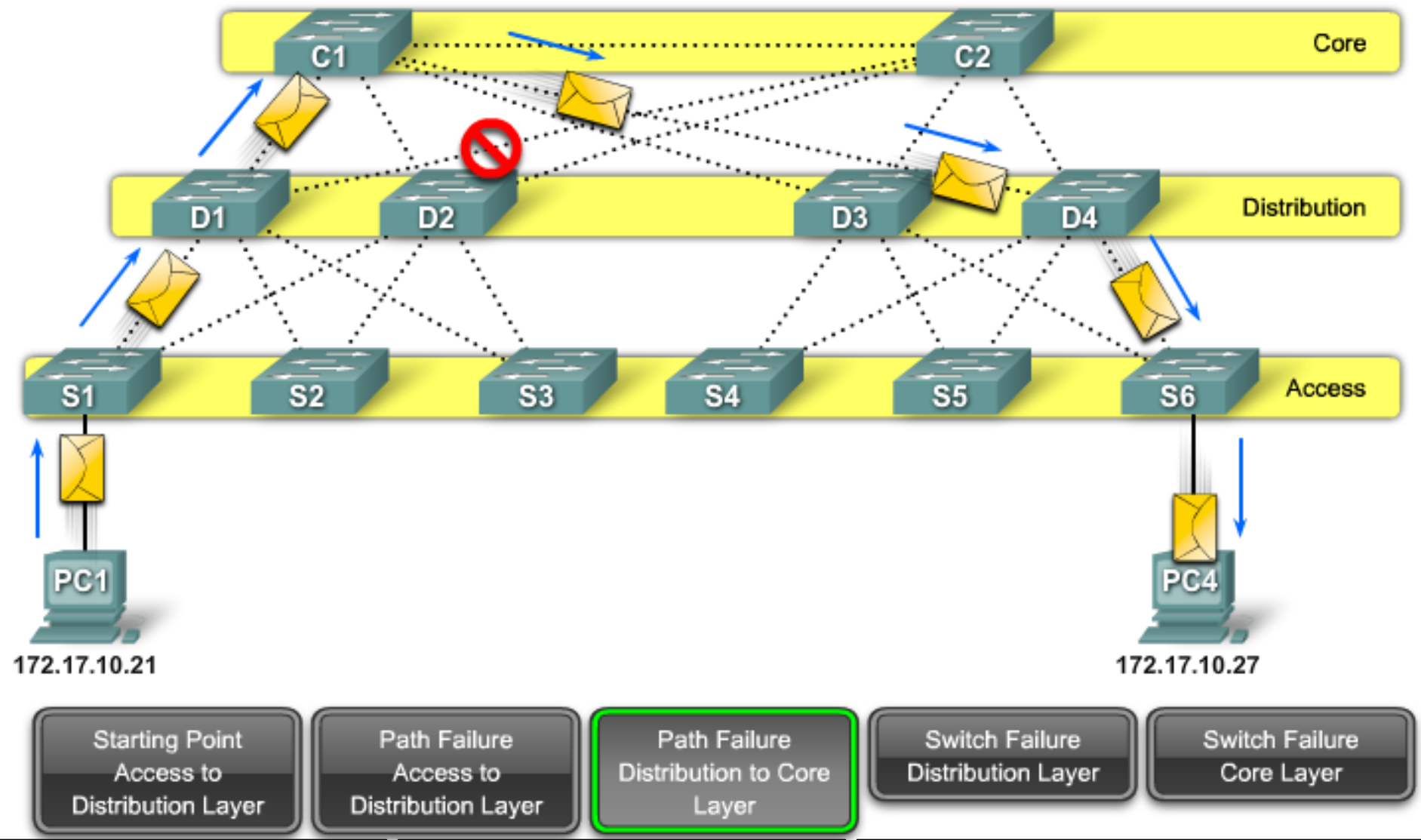
Path Failure Access to Distribution Layer

Path Failure Distribution to Core Layer

Switch Failure Distribution Layer

Switch Failure Core Layer

Redundancy


Core
C1
C2
Distribution
D1
D2
D3
D4
Access
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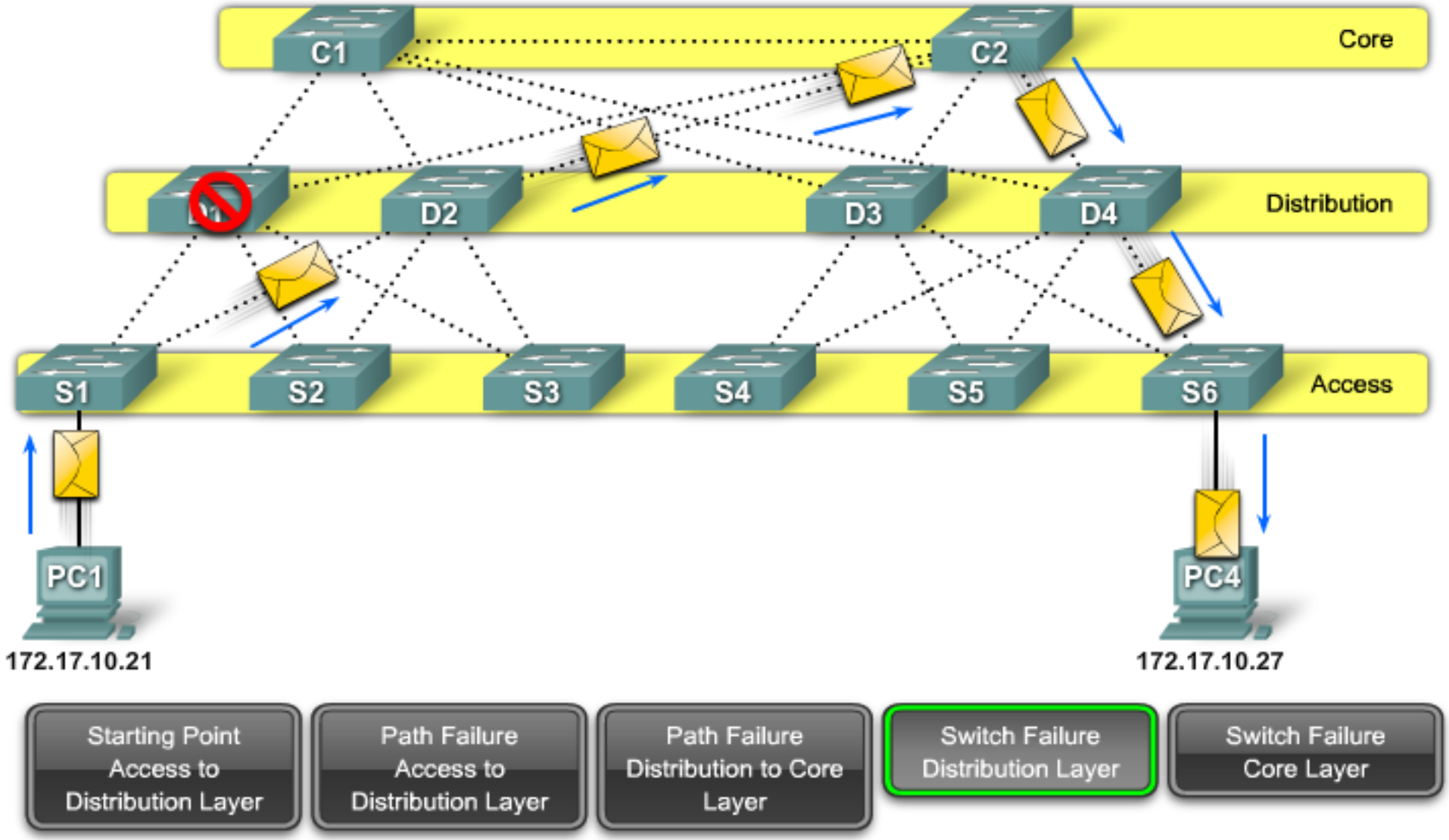
Redundancy


C1
C2
Core
D1
D2
D3
D4
Distribution
S1
S2
S3
S4
S5
S6
Access
PC1
PC4
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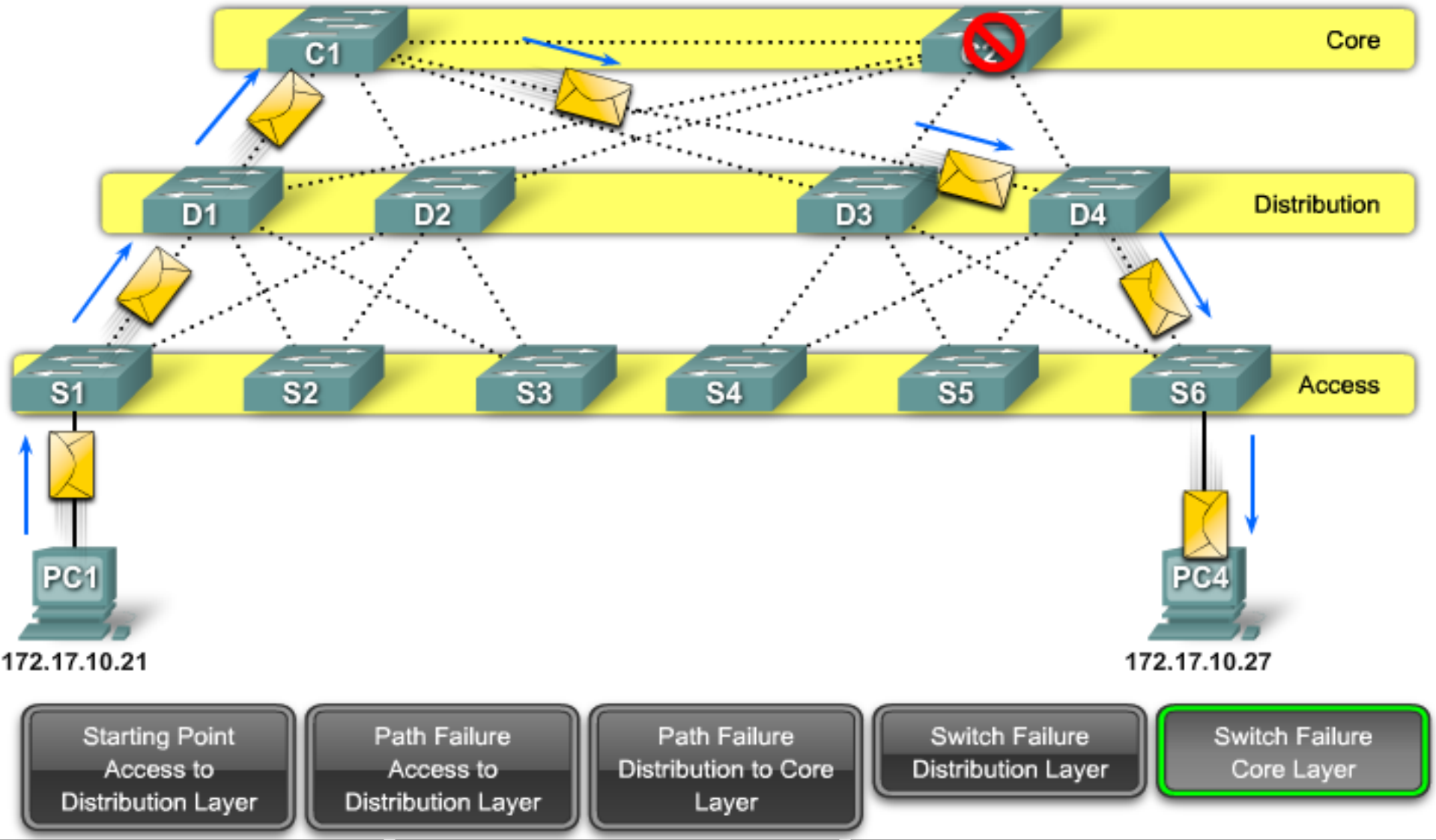
172.17.10.27
Starting Point Access to Distribution Layer
Path Failure Access to Distribution Layer
Path Failure Distribution to Core Layer
Switch Failure Distribution Layer
Switch Failure Core Layer

Redundancy


Core
C1
Distribution
D1
D2
D3
D4
Access
S1
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Starting Point
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Distribution Layer
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Switch Failure
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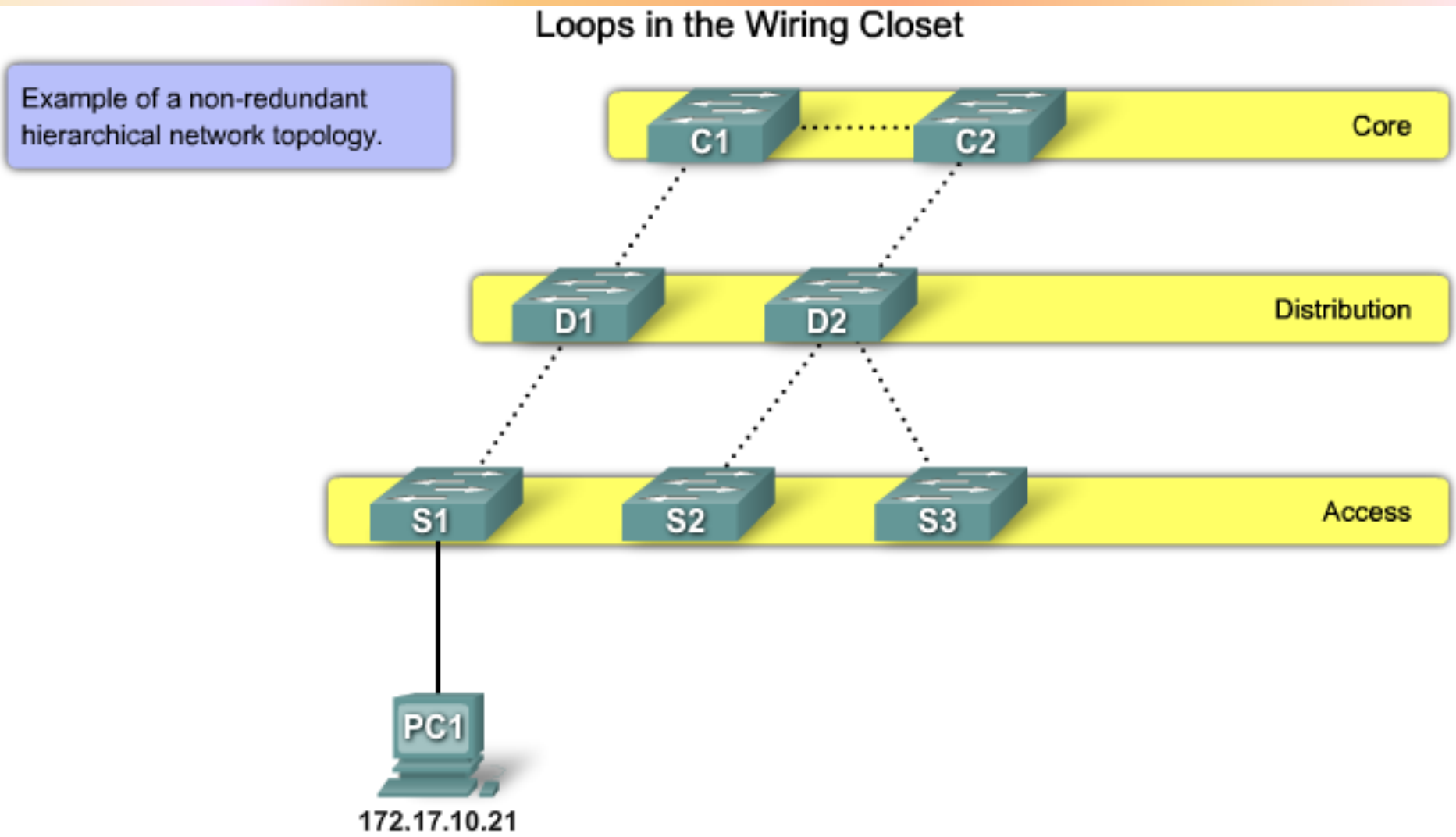
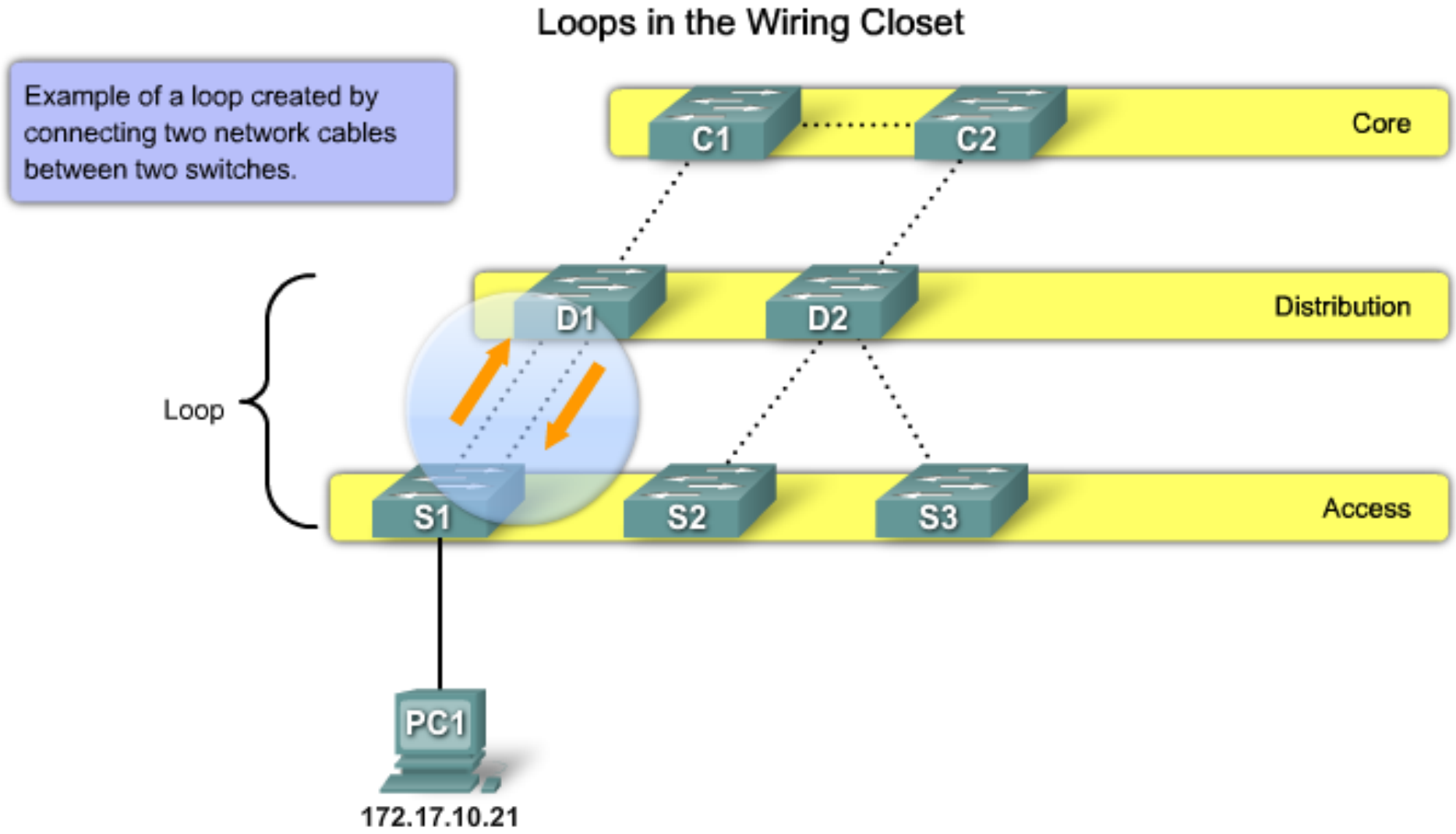
Core Layer

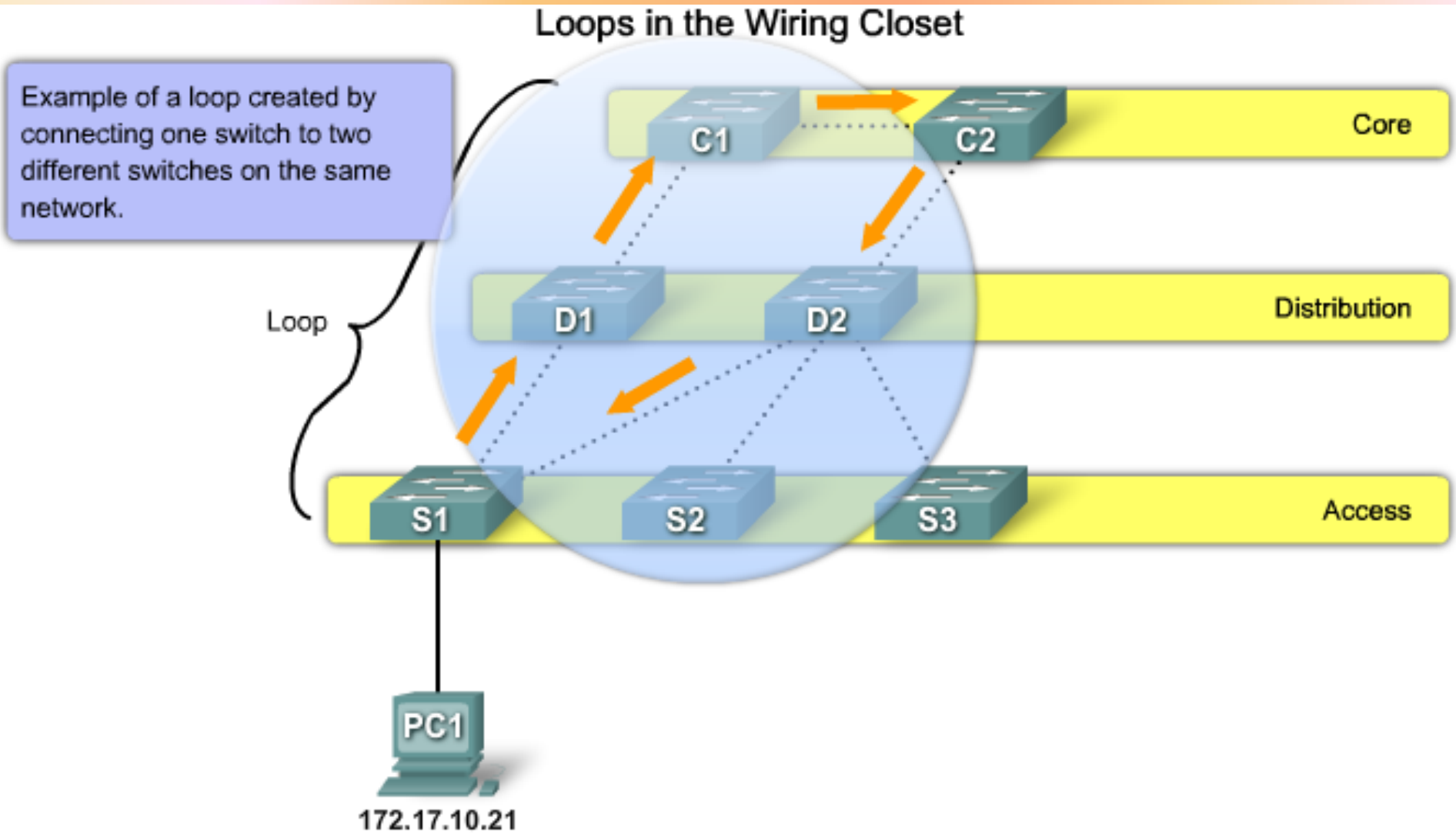
Nguyên nhân gây ra Loop



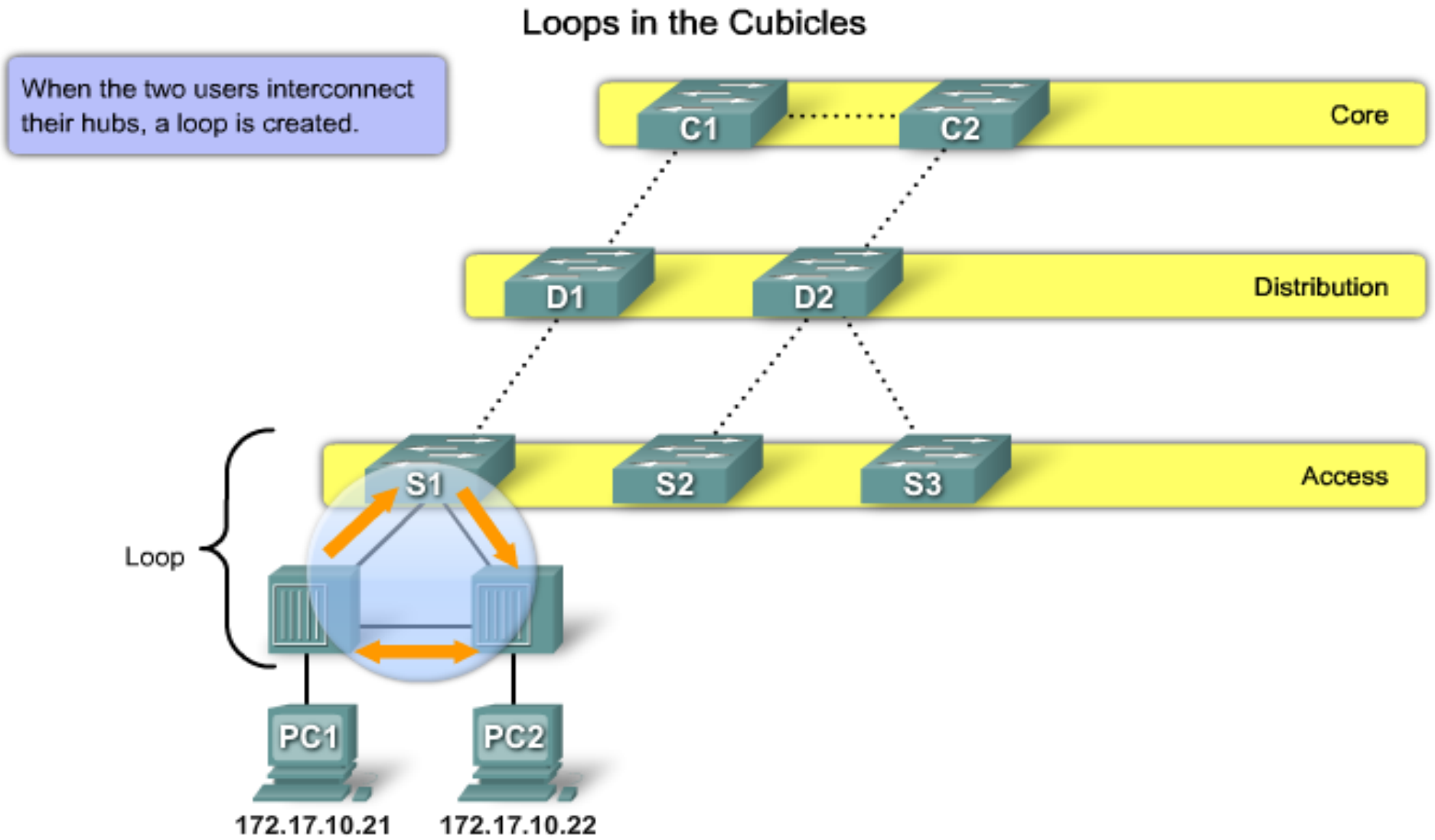
Nguyên nhân gây ra Loop



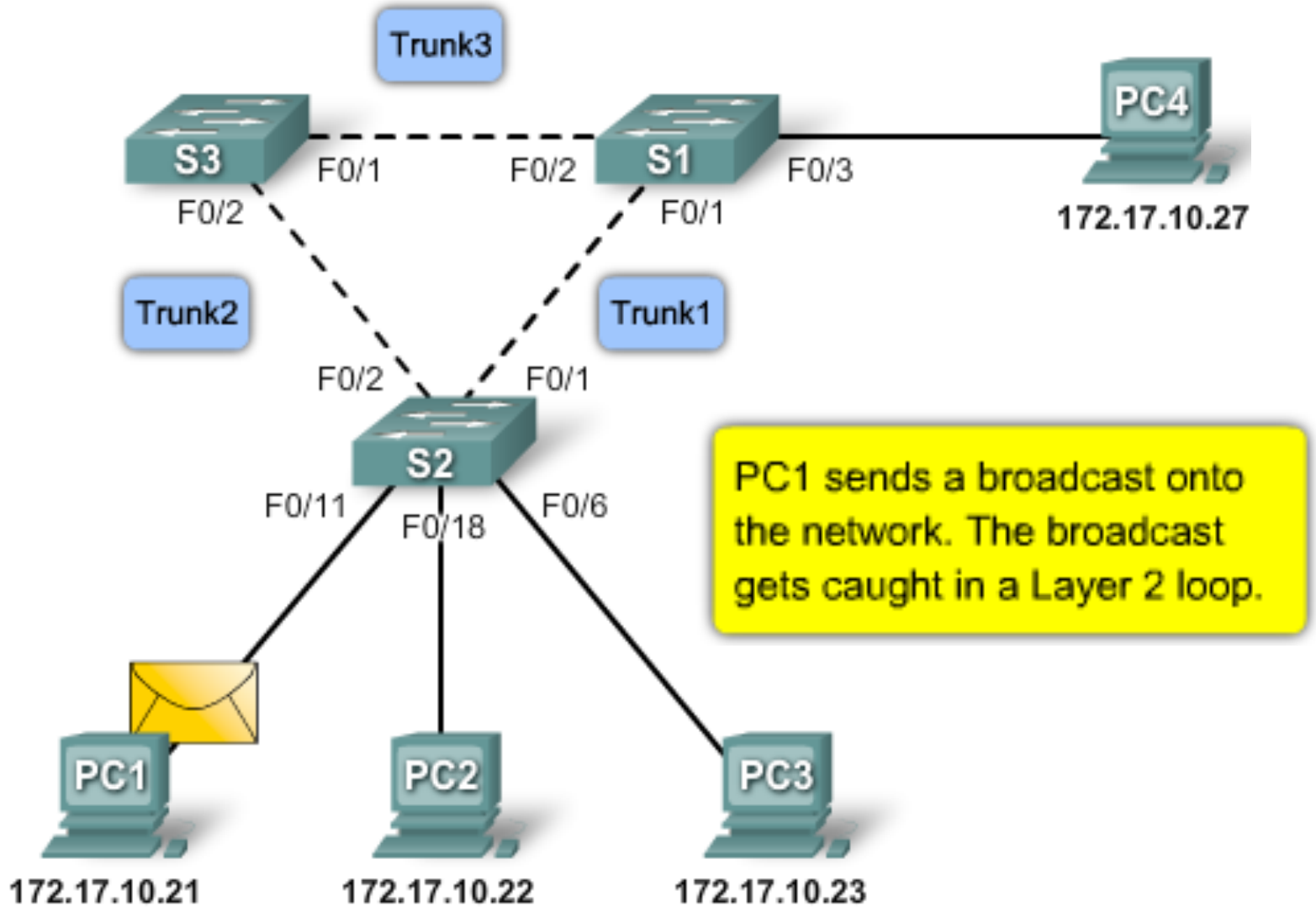
Nguyên nhân gây ra Loop



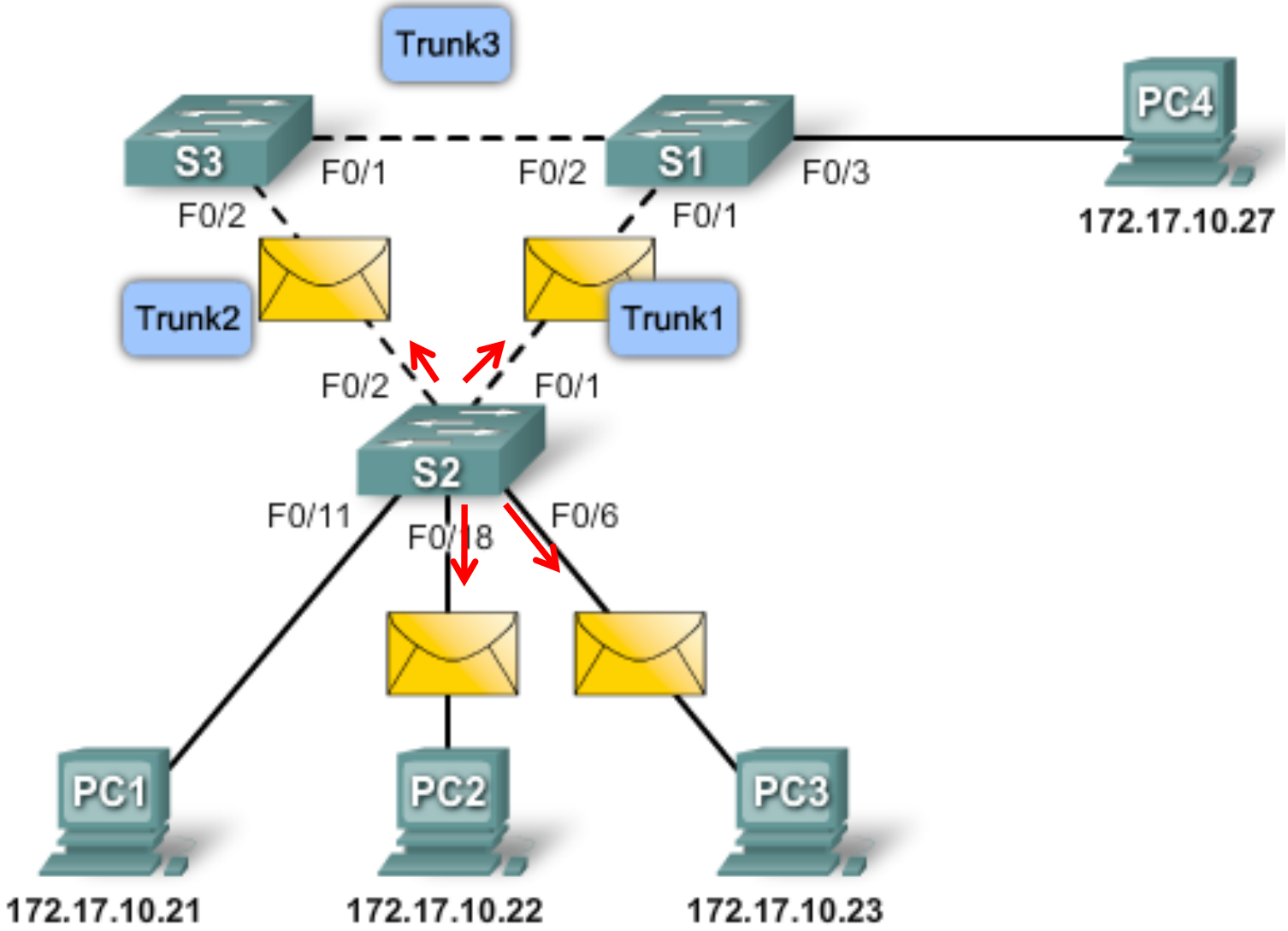
Nguyên nhân gây ra Loop



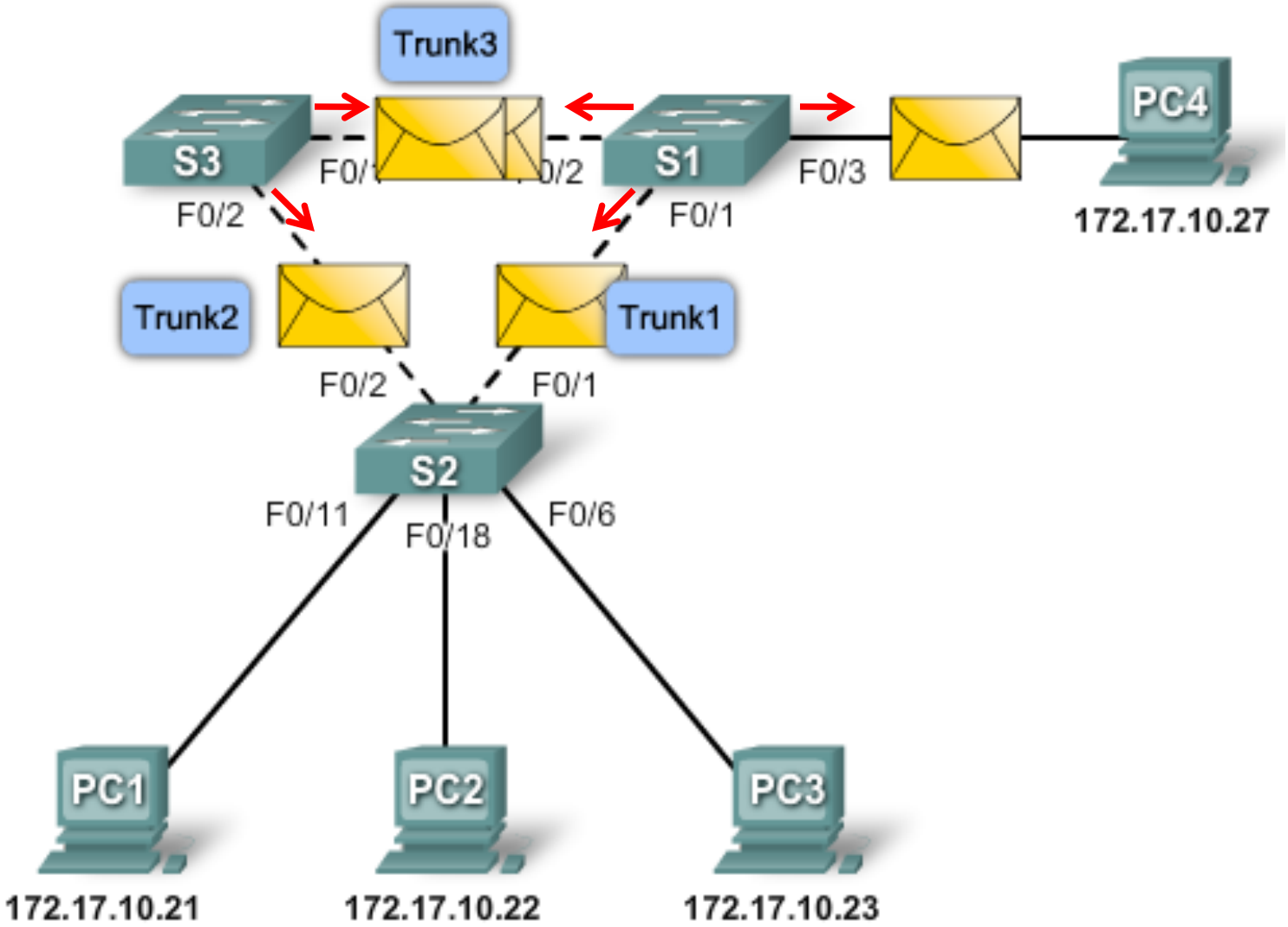
Broadcast storm



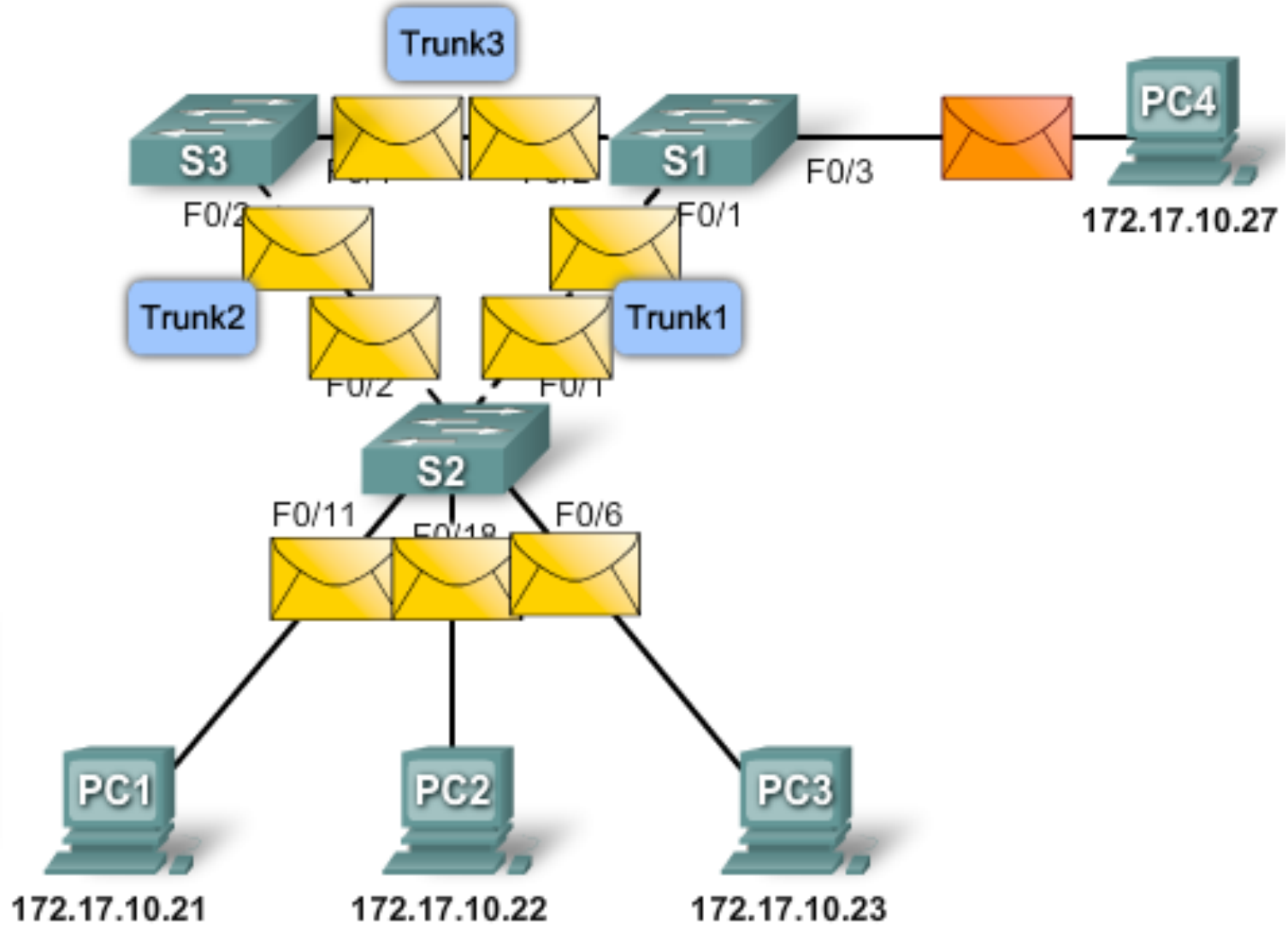
Broadcast storm



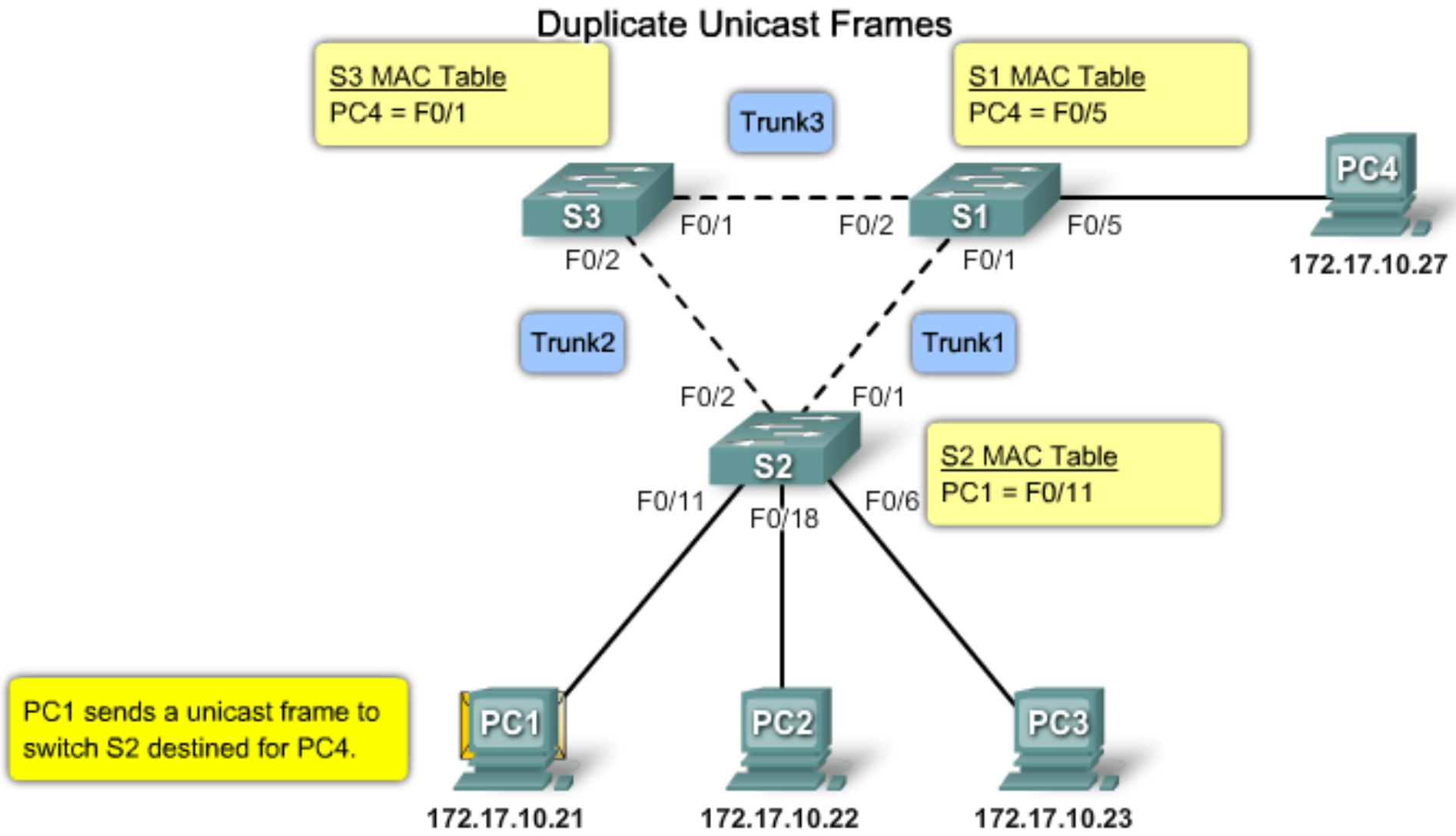
Broadcast storm



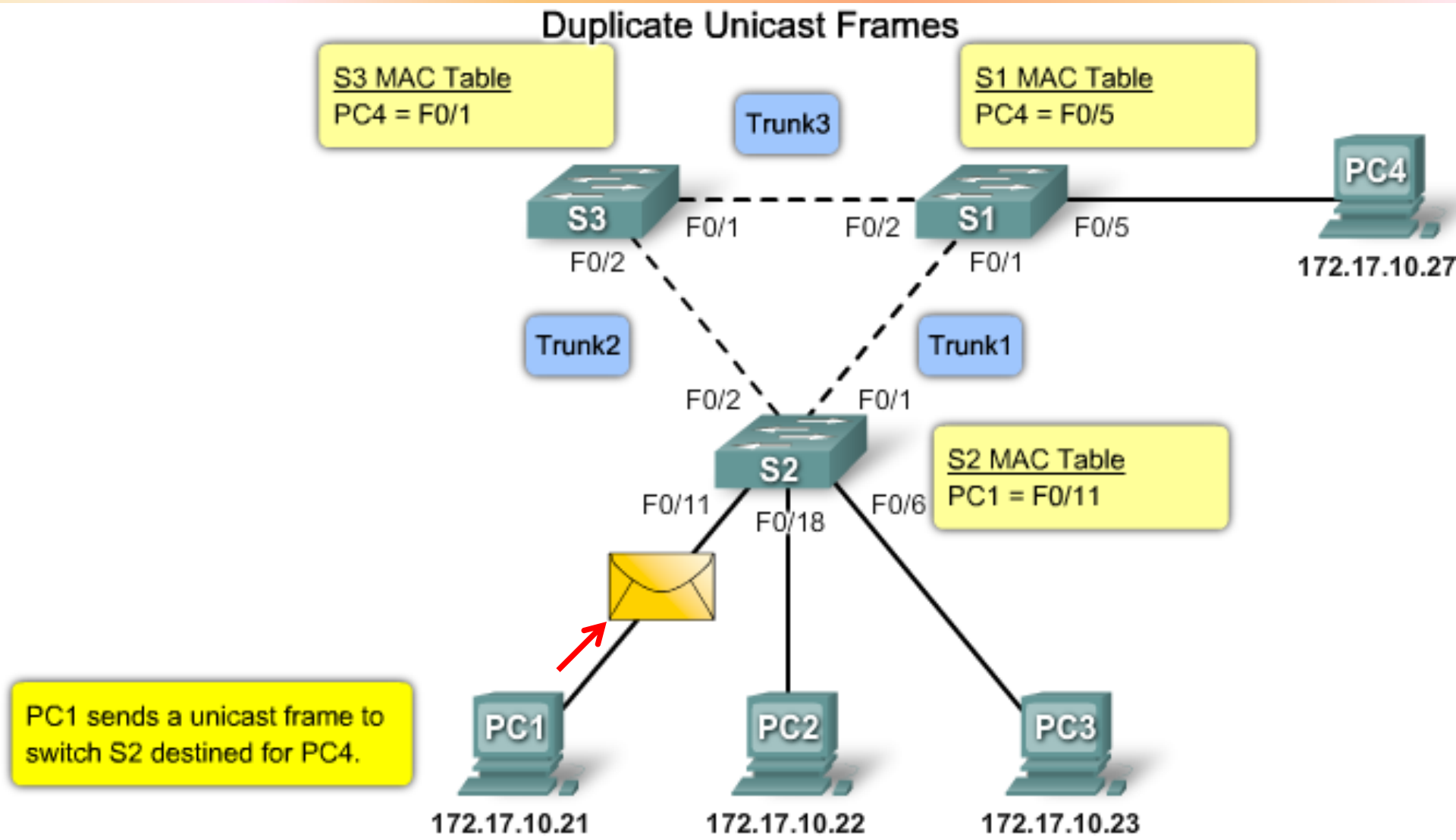
Broadcast storm



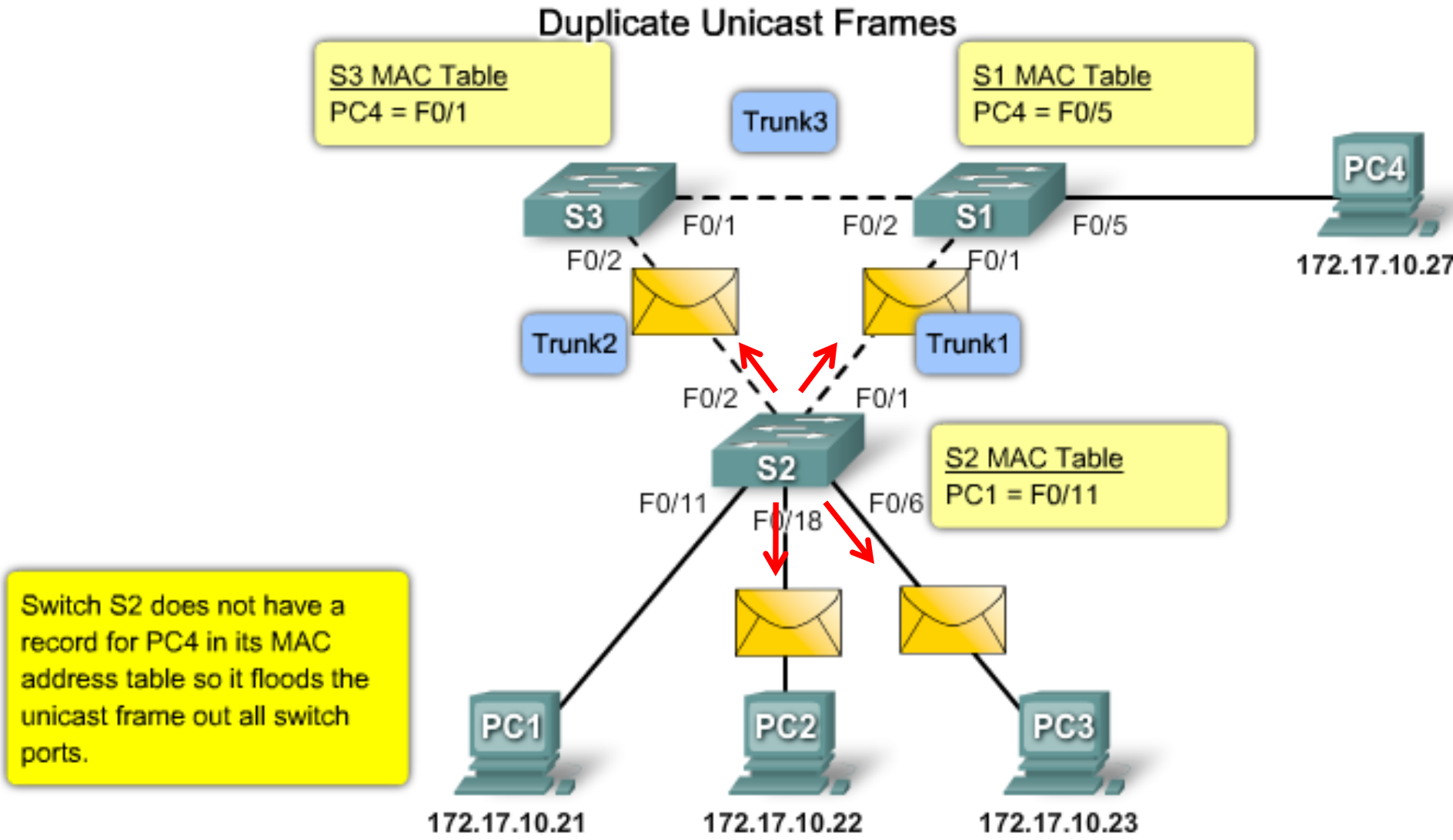
Deplicate Unicast Frames



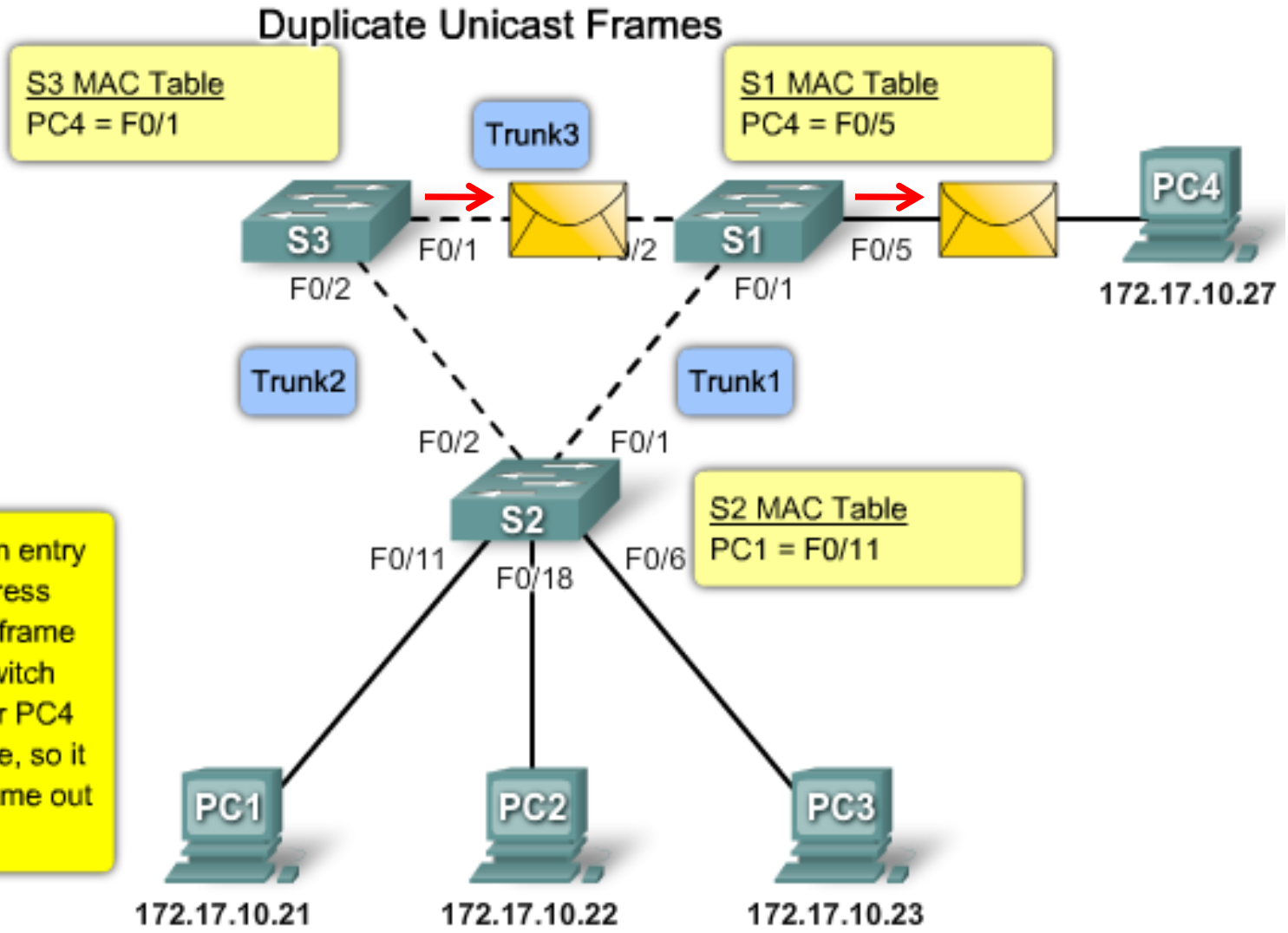
Deplicate Unicast Frames



Deplicate Unicast Frames

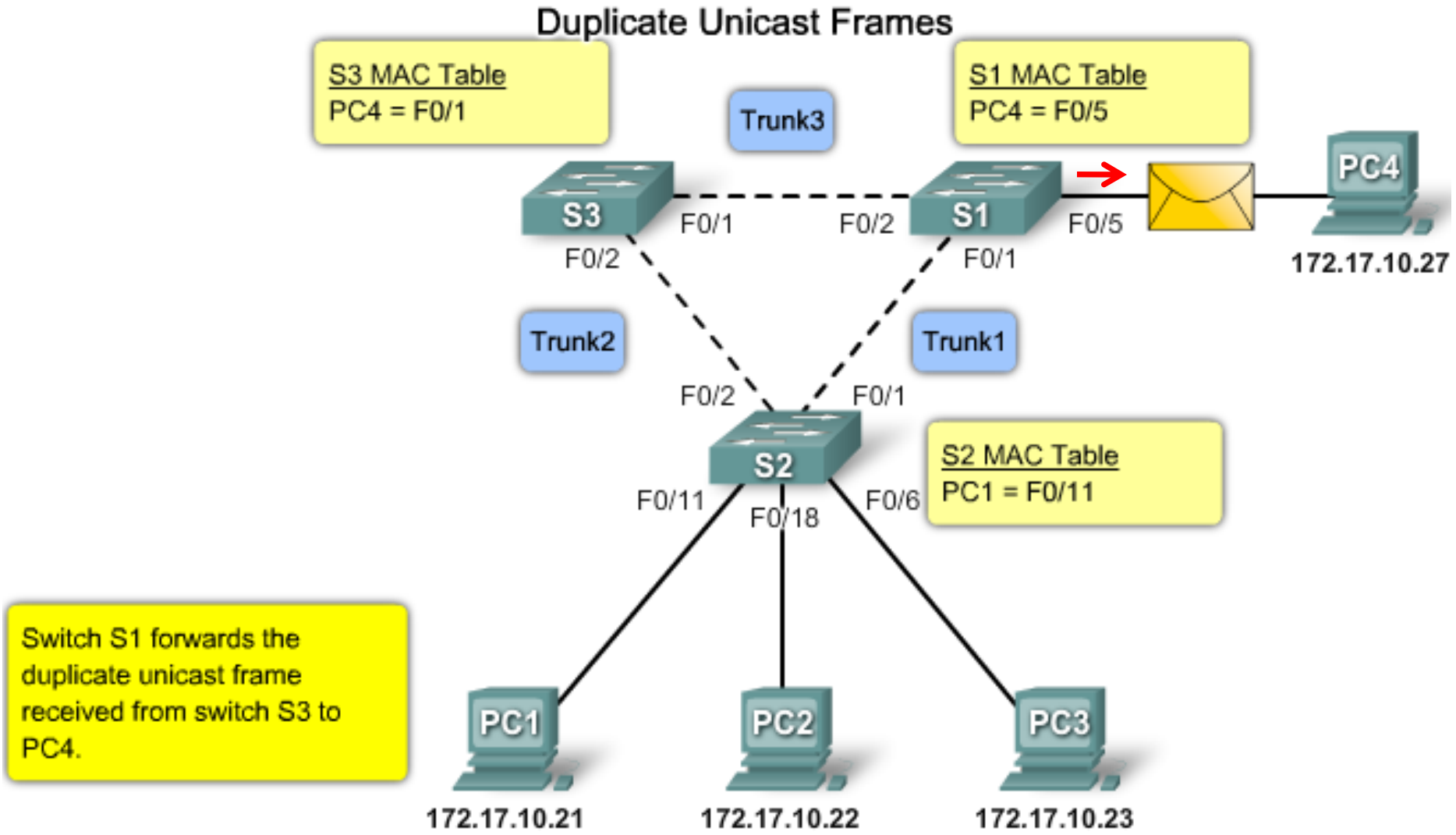


Deplicate Unicast Frames



Switch S1 does have an entry for PC4 in its MAC address table so it forwards the frame to PC4 on port F0/5. Switch S3 also has a record for PC4 in its MAC address table, so it forwards the unicast frame out Trunk3 to switch S1.

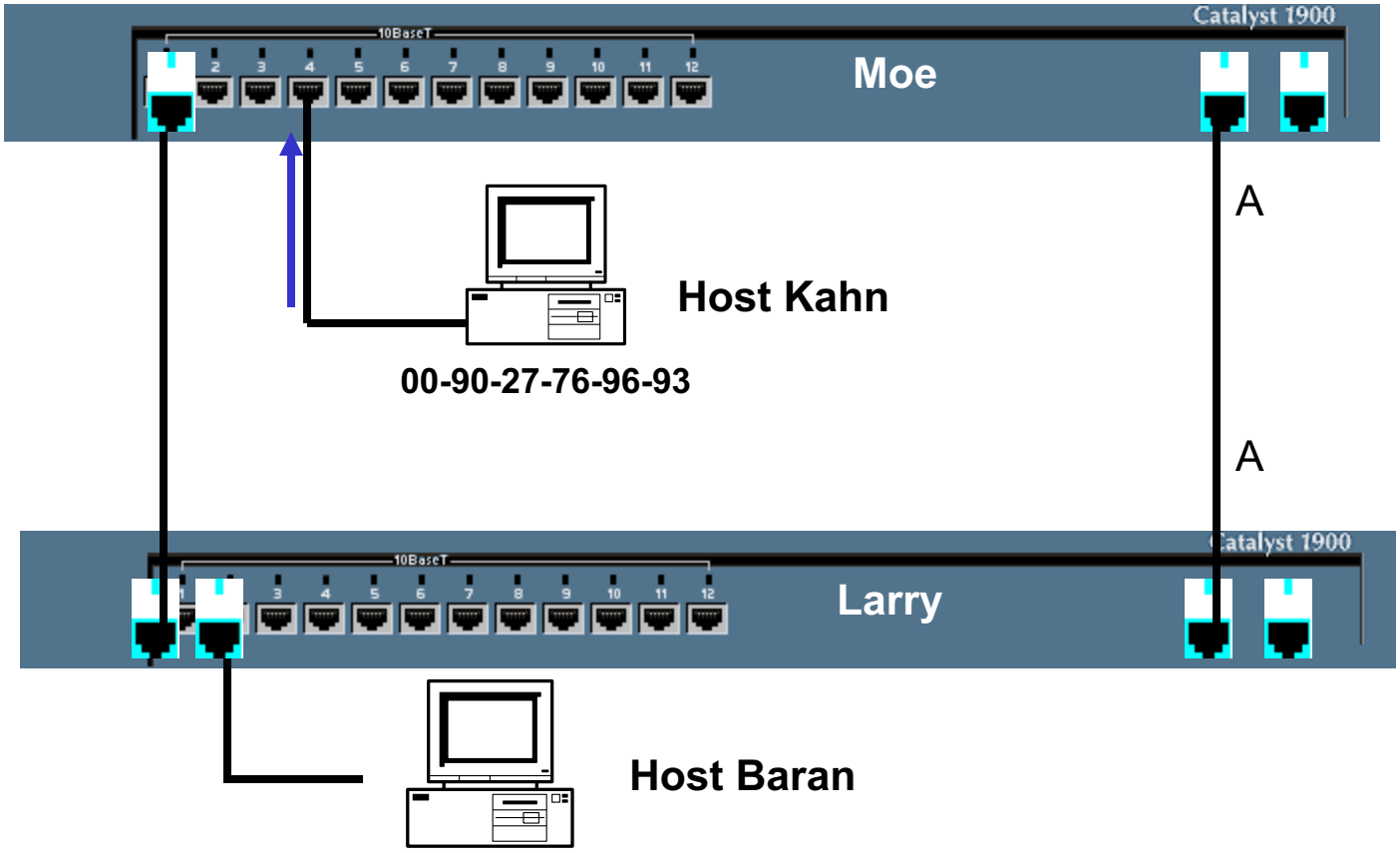
Deplicate Unicast Frames



Unknown Unicast

Switch Moe learns Kahns' MAC address.

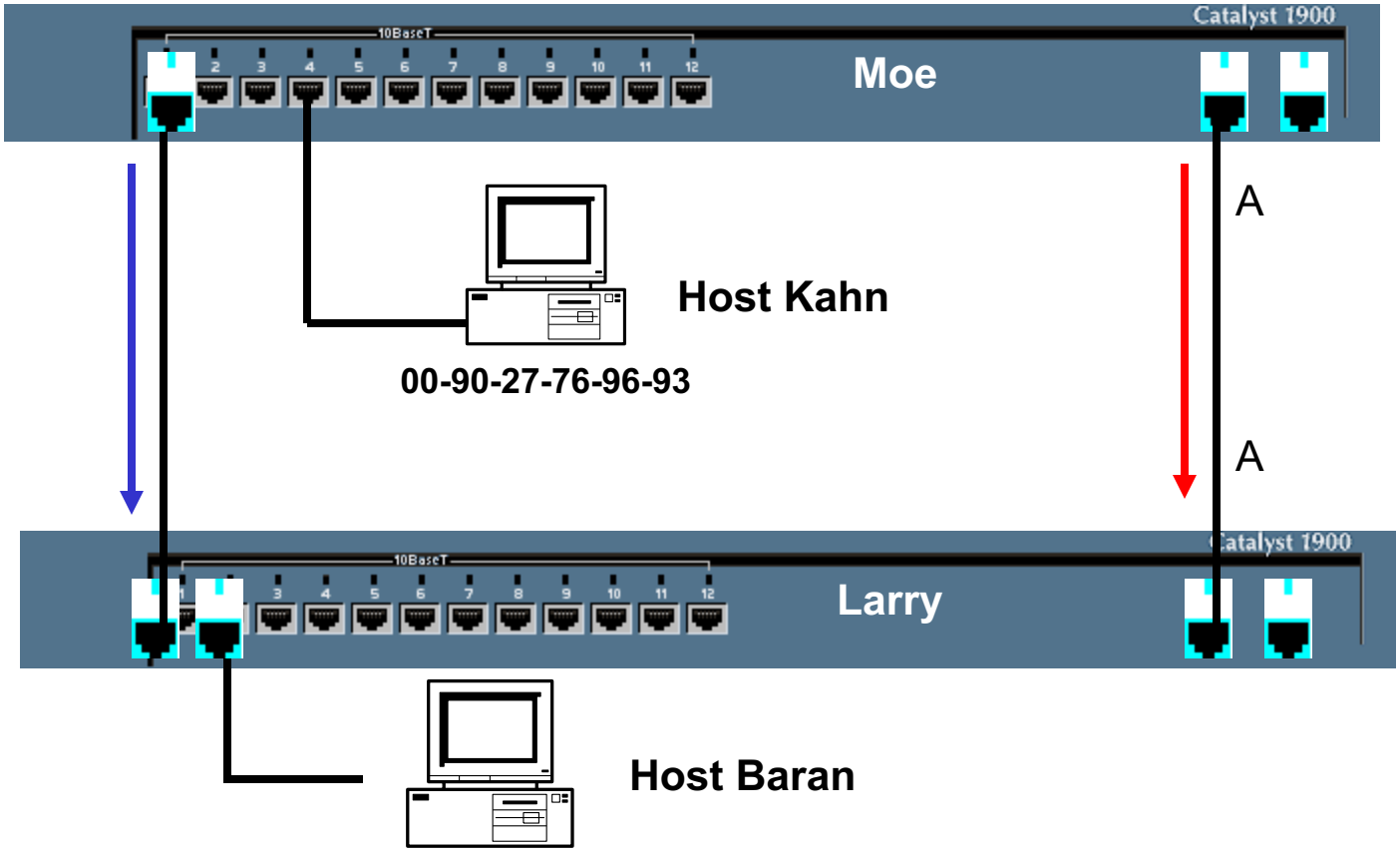
```
SAT (Source Address Table)
Port 4:  00-90-27-76-96-93
```



Unknown Unicast

Destination MAC is an unknown unicast, so Moe floods it out all ports.

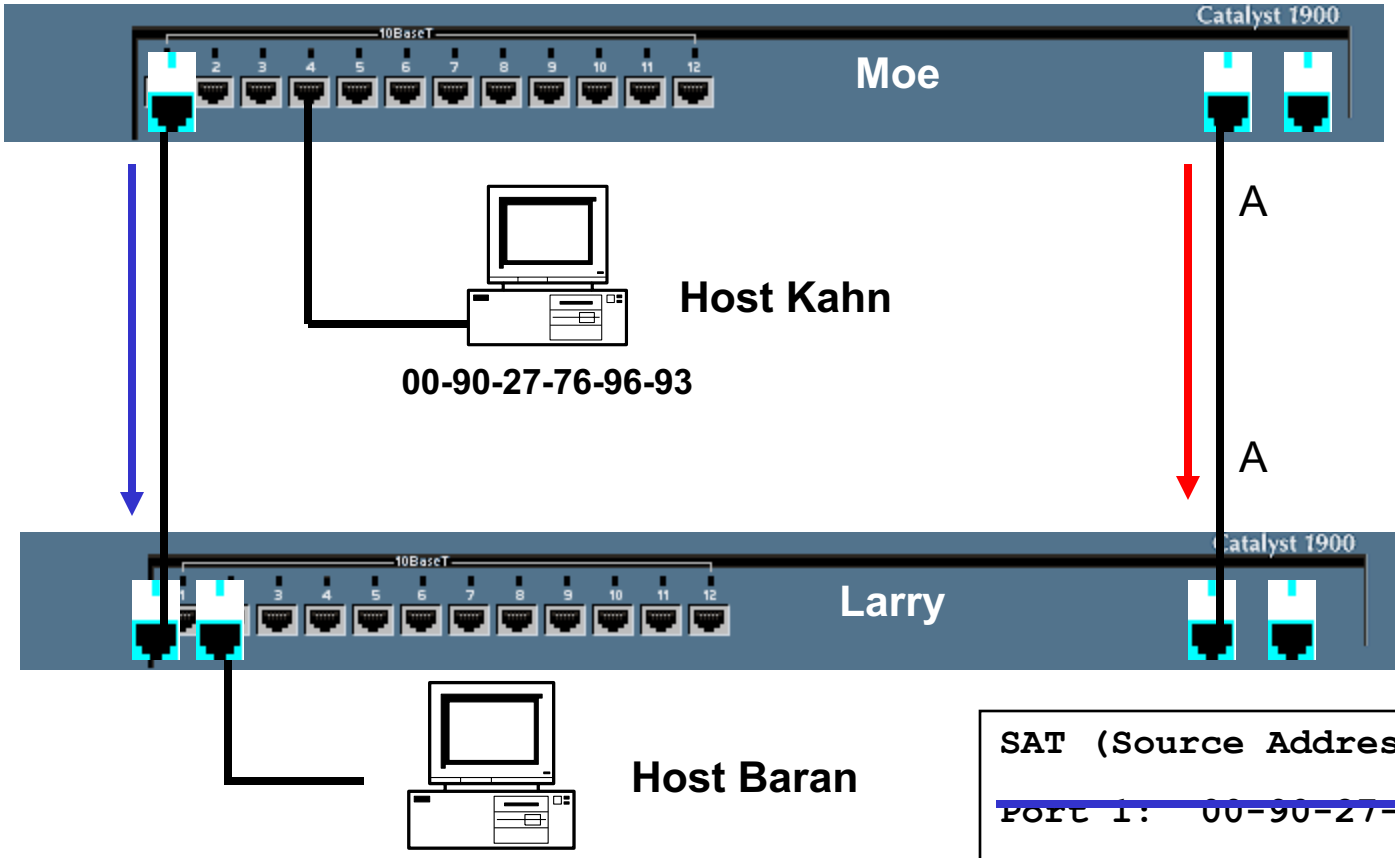
```
SAT (Source Address Table)

Port 4:   00-90-27-76-96-93
```



Unknown Unicast

Switch Larry records the Source MAC of the frame twice with the last one being the most recent.

```
SAT (Source Address Table)

Port 4:   00-90-27-76-96-93
```

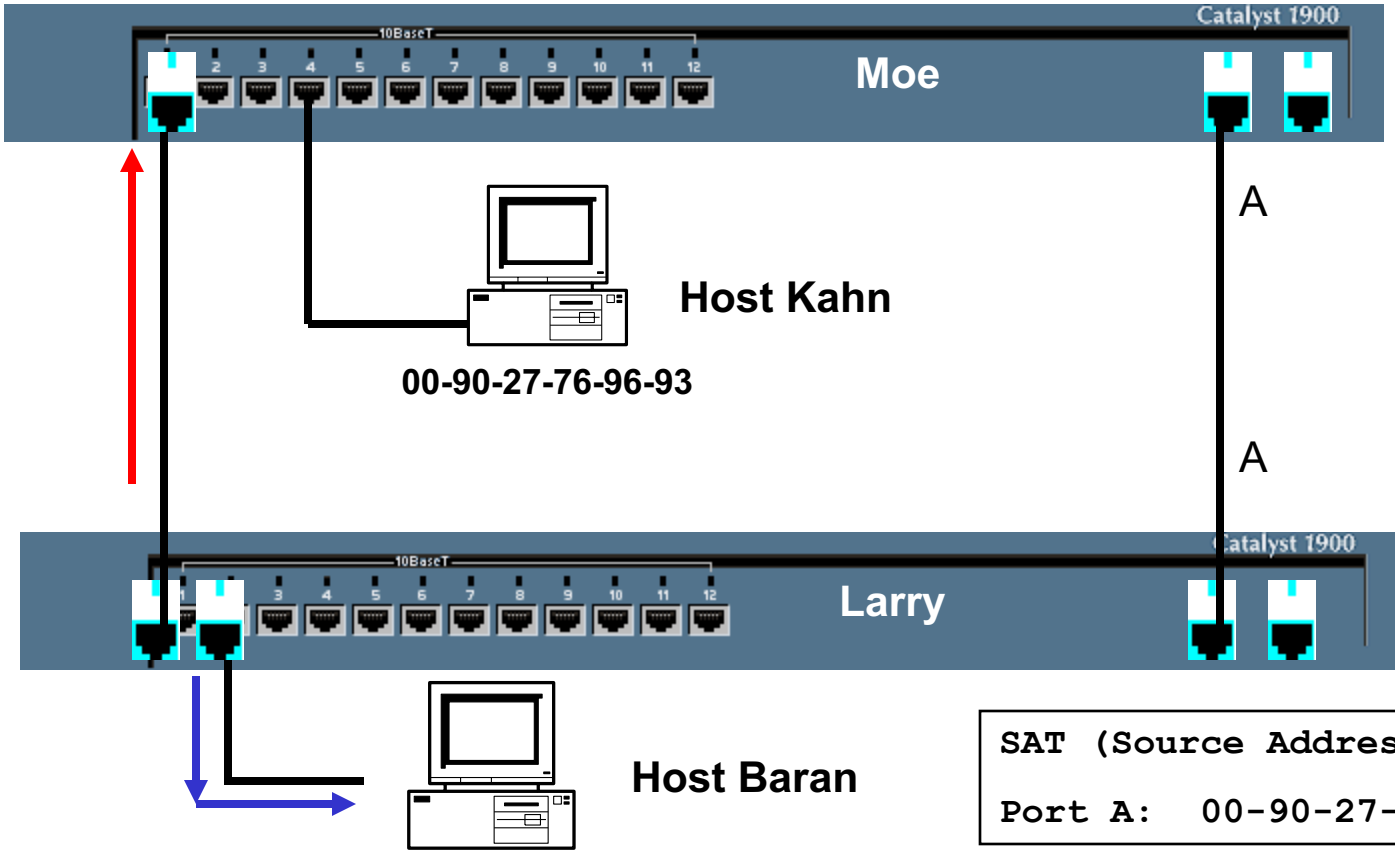



```
SAT (Source Address Table)

Port 1:   00-90-27-76-96-93

Port A:   00-90-27-76-96-93
```

Unknown Unicast

Switch Larry floods the unknown unicast out all ports, except the incoming port.

```
SAT (Source Address Table)

Port 1:   00-90-27-76-96-93
```

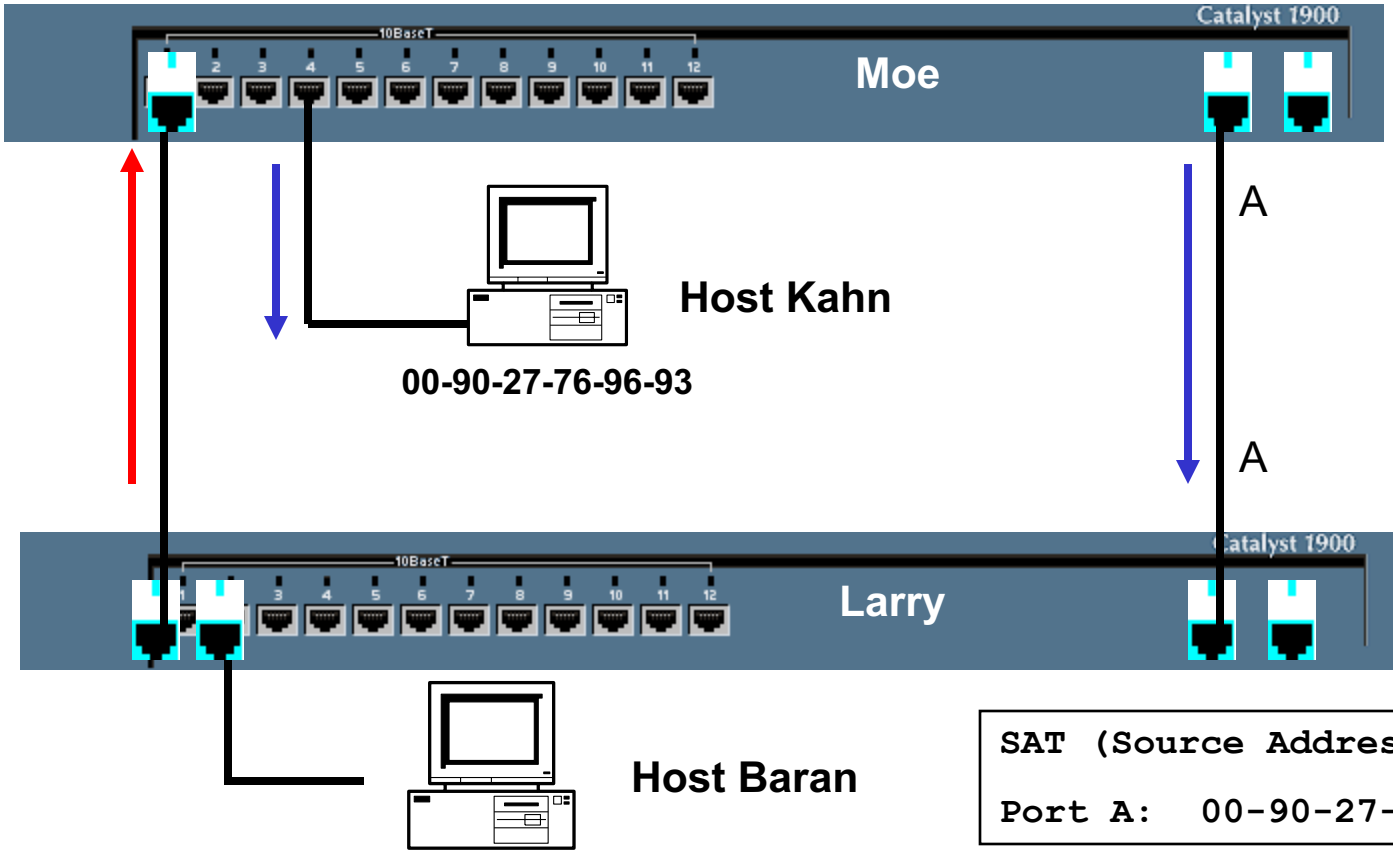



```
SAT (Source Address Table)

Port A:   00-90-27-76-96-93
```

Unknown Unicast

Switch Moe receives the frame, changes the MAC address table with newer information and floods the unknown unicast out all ports.

```
SAT (Source Address Table)

Port 4:   00-90-27-76-96-93

Port 1:   00-90-27-76-96-93
```

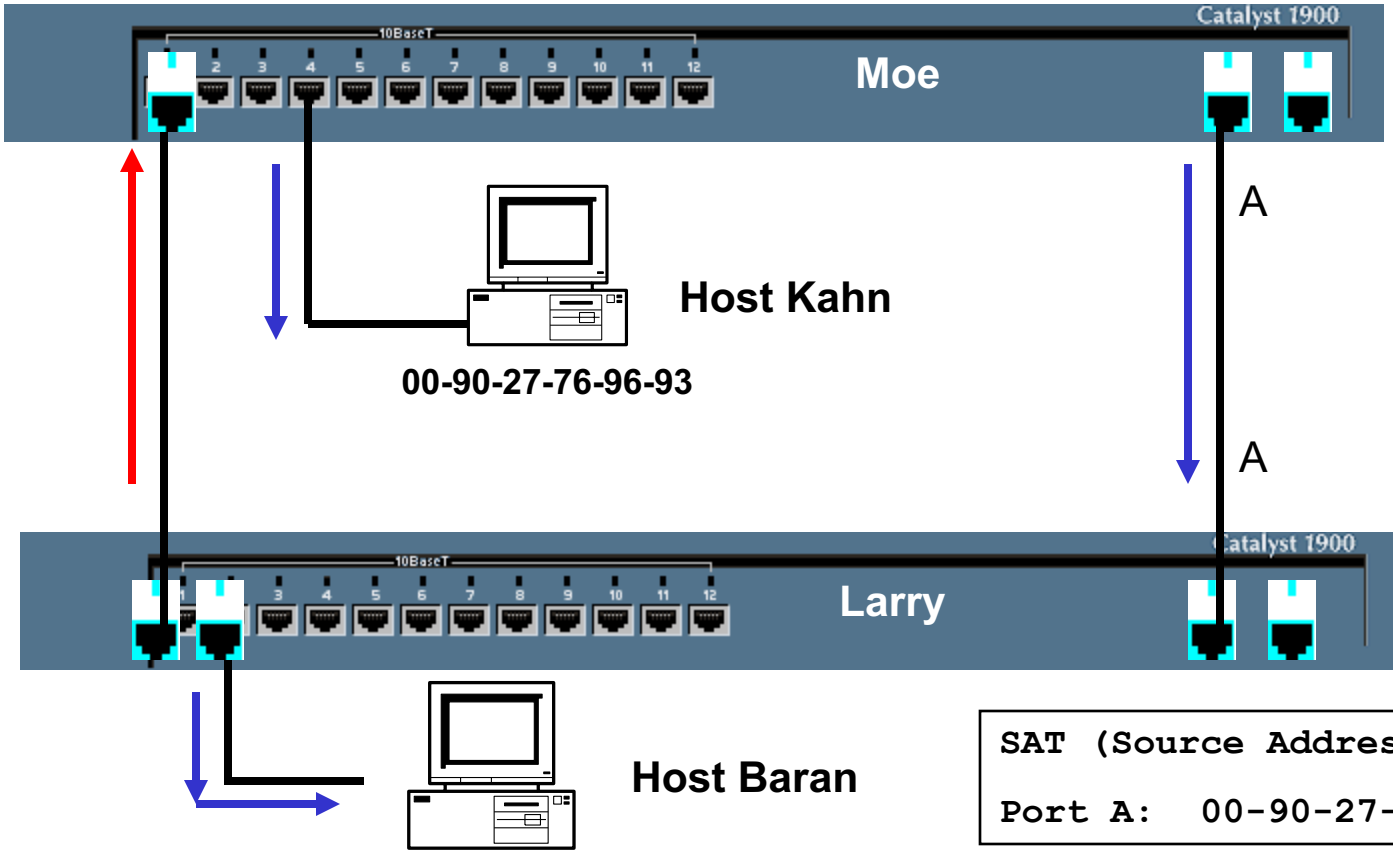



```
SAT (Source Address Table)

Port A:   00-90-27-76-96-93
```

Unknown Unicast

And the cycle continues!

```
SAT (Source Address Table)
Port 4:   00-90-27-76-96-93
Port 1:   00-90-27-76-96-93
```

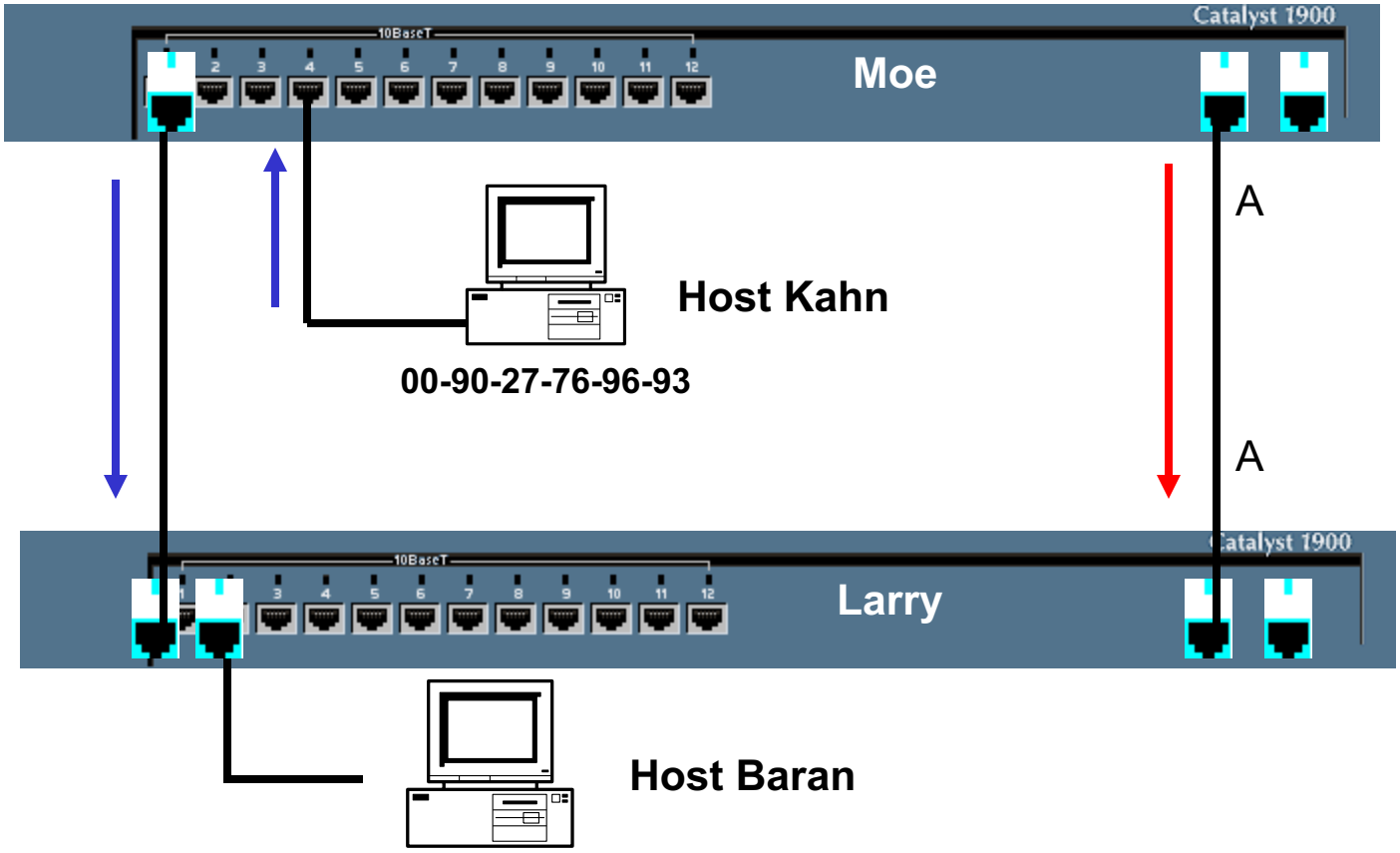



```
SAT (Source Address Table)
Port A:   00-90-27-76-96-93
```

Layer 2 Broadcast

Host Kahn sends an ARP Request, a Layer 2 broadcast

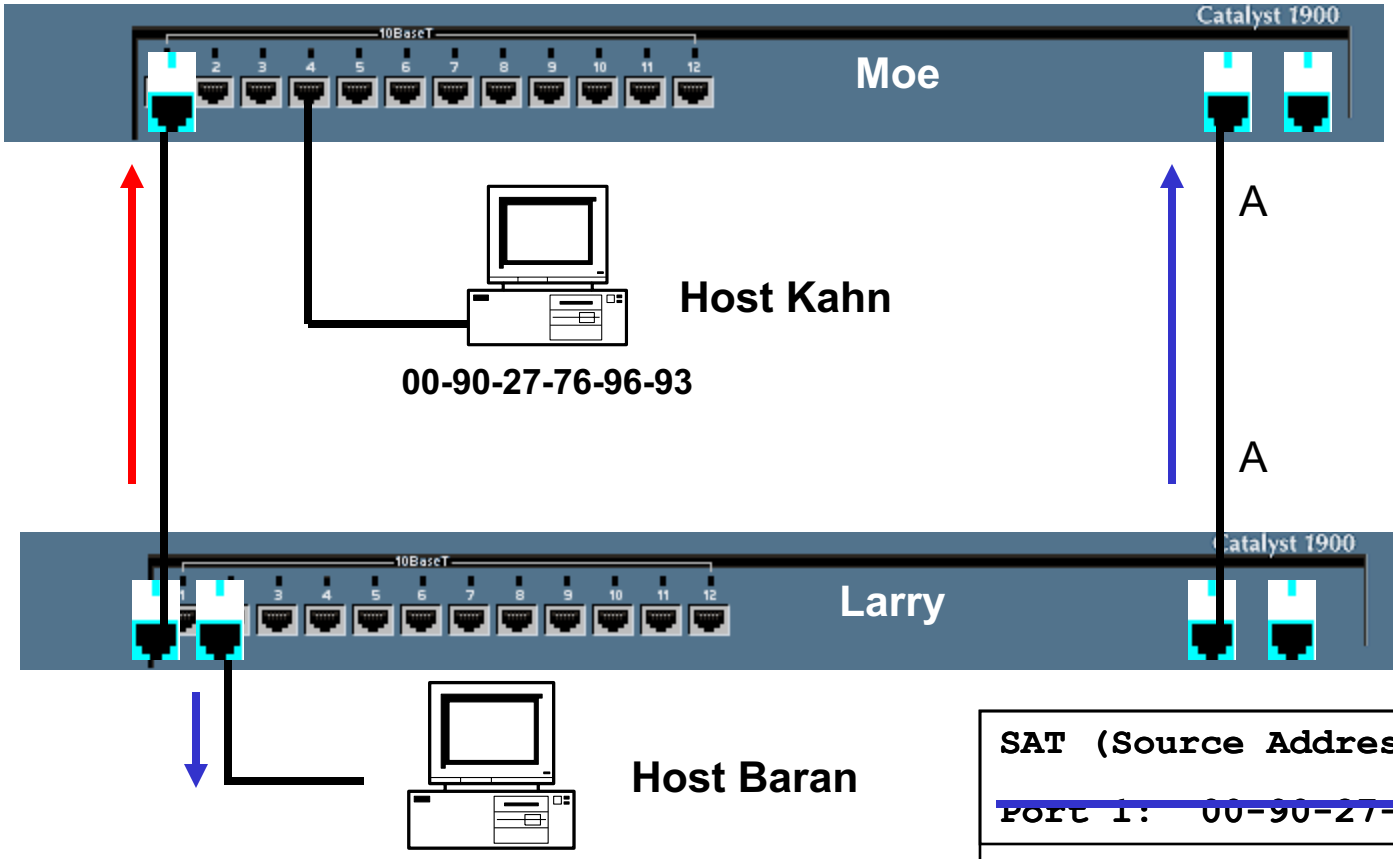
```
SAT (Source Address Table)

Port 4:   00-90-27-76-96-93
```



Layer 2 Broadcast

Switch Moe floods the frame.
Switch Larry floods the frames.
Switches continue to flood duplicate frames.
Switches constantly modifying MAC Address Tables

SAT (Source Address Table)
Port 1: 00-90-27-76-96-93



SAT (Source Address Table)
~~Port 1: 00-90-27-76-96-93~~
Port A: 00-90-27-76-96-93

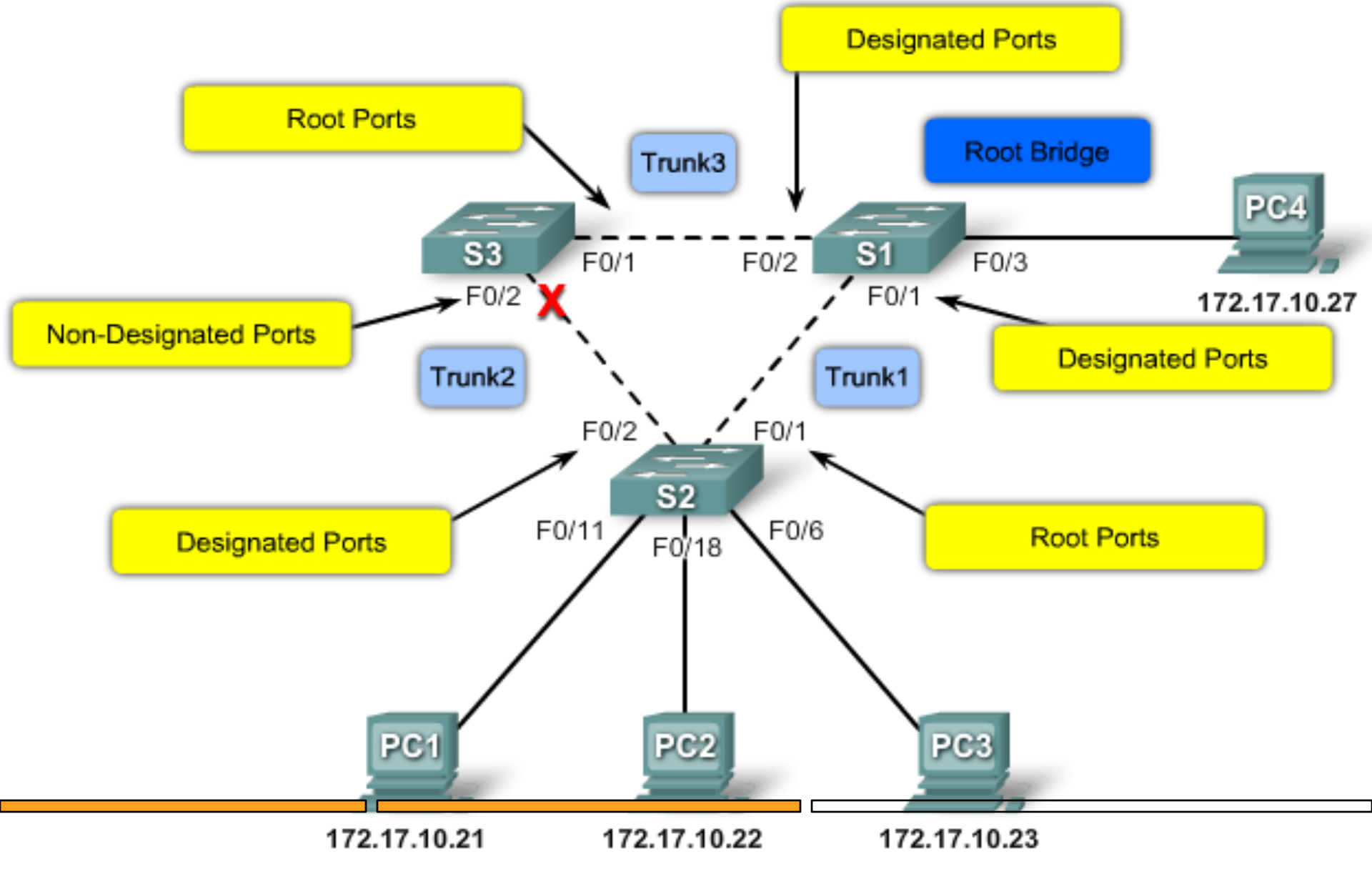
Nội Dung

- Nguyên nhân gây ra Loop ở L2
- **Khái niệm về STP**
- Cơ chế hoạt động của STP

Khái niệm về STP

- STP là giao thức giúp cho Switch có thể tránh loop
- Giao thức này mặc định được bật trên Switch
- Chắc chắn chỉ có 1 đường duy nhất tới đích
- STP là giao thức sử dụng thuật toán Spanning Tree để Switch xác định nên block port nào để tránh Loop

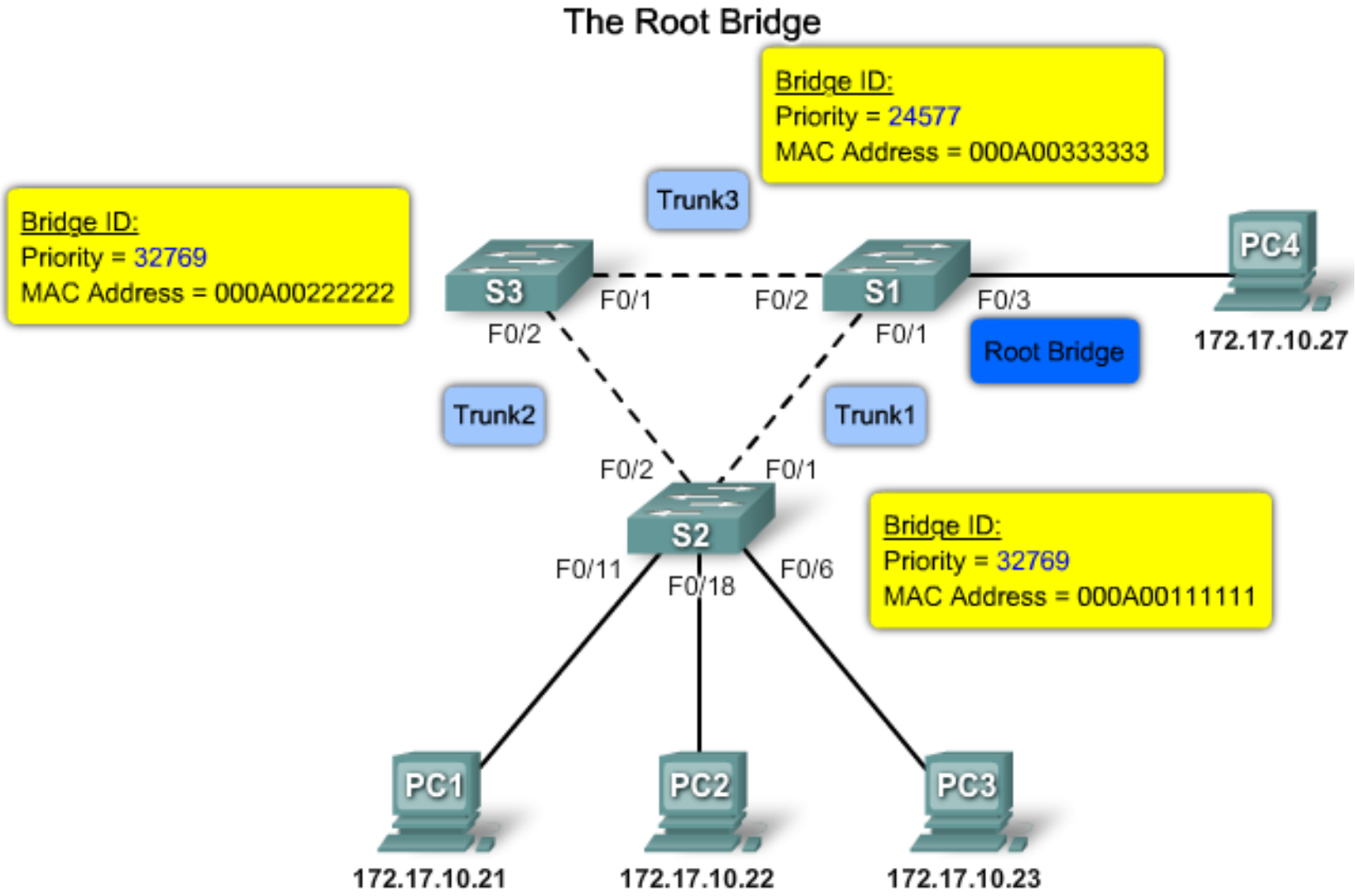
Khái niệm về STP



Khái niệm về STP

- **Root Bridge** : là Switch được chọn làm Root Bridge. Thuật toán STP lấy Root Bridge làm điểm gốc để tính toán
  - Priority : thấp nhất
  - MAC : thấp nhất
- **Root Port** : là Port trên những Switch khác (không phải Root Bridge) mà đường đi thông qua port này đến Root Bridge là ngắn nhất
- **Designated Port** : không phải Root Port nhưng vẫn được sử dụng để forward gói tin
- **Non-Designated Port** : là những Port bị block sau khi thực thi thuật toán STP

Root Bridge


The Root Bridge
Bridge ID:
Priority = 24577
MAC Address = 000A00333333
Bridge ID:
Priority = 32769
MAC Address = 000A00222222
Trunk3
S3
S1
PC4
F0/1
F0/2
F0/2
F0/1
F0/3
Root Bridge
172.17.10.27
Trunk2
Trunk1
F0/2
F0/1
S2
Bridge ID:
Priority = 32769
MAC Address = 000A00111111
F0/11
F0/18
F0/6
PC1
PC2
PC3
172.17.10.21
172.17.10.22
172.17.10.23

Nội Dung

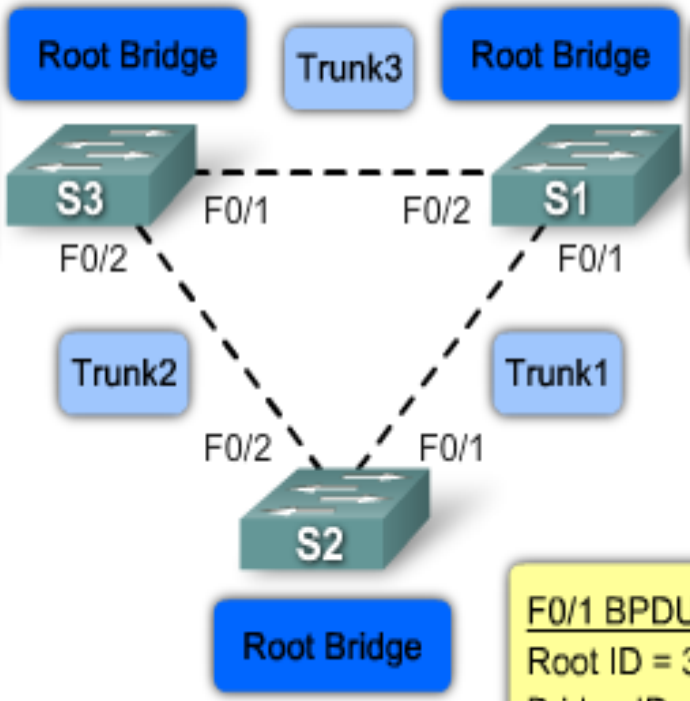
- Nguyên nhân gây ra Loop ở L2
- Khái niệm về STP
- **Cơ chế hoạt động của STP**

Cơ chế hoạt động của STP

Three Steps

Step 1: Elect a Root Bridge
Step 2: Elect the Root Ports
Step 3: Elect the Designated and Non-Designated ports

Quá trình bầu chọn Root Bridge



F0/2 BPDU
Root ID = 32769.000A00222222
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

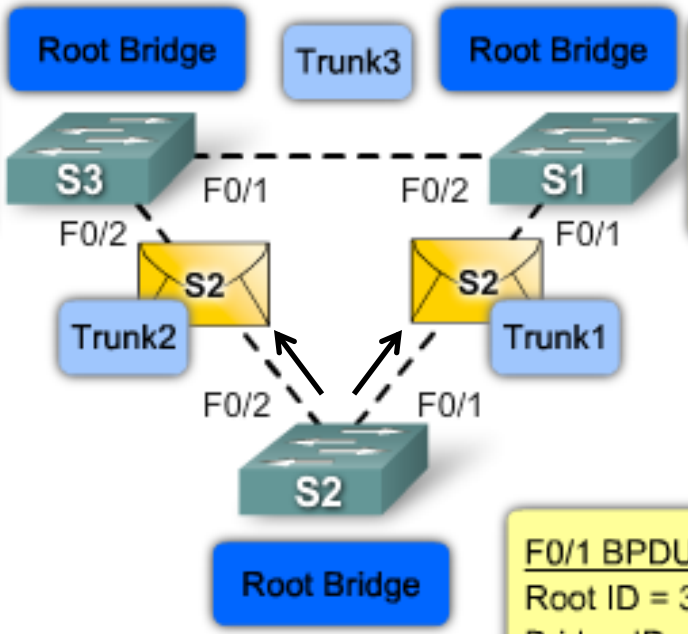
Switch S2 forwards out BPDU frames out all switch ports. The BPDU frame contains switch S2 bridge ID and root ID populated, indicating that switch S2 is the root bridge.

F0/1 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/2 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

Quá trình bầu chọn Root Bridge

F0/2 BPDU
Root ID = 32769.000A00222222
Bridge ID = 32769.000A00222222
Path Cost = 19



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

Switch S2 forwards out BPDU frames out all switch ports. The BPDU frame contains switch S2 bridge ID and root ID populated, indicating that switch S2 is the root bridge.

F0/1 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

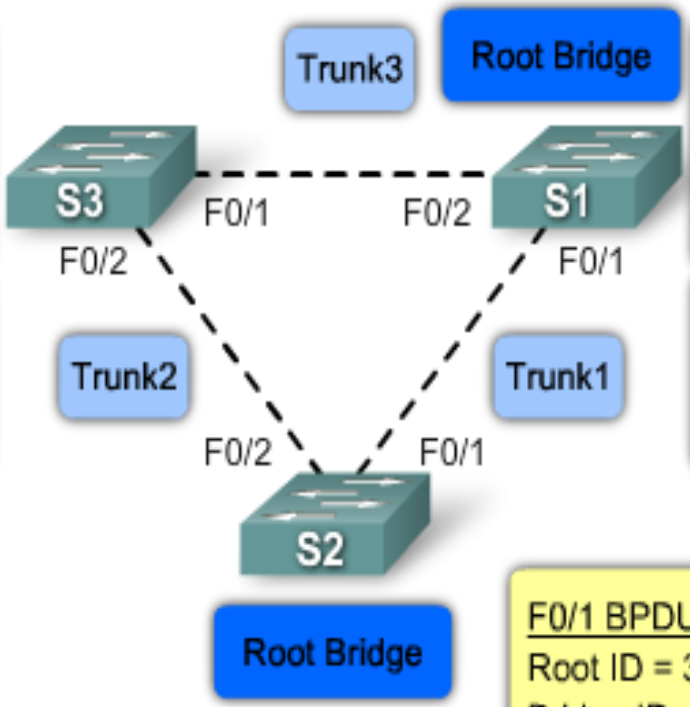
F0/2 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

Quá trình bầu chọn Root Bridge

F0/2 BPDU
Root ID = 32769.000A00222222
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/2 BPDU – S2
Root ID = 32769.000A00111111
Path Cost = 19

Switch S3 compares the received root ID with its own and identifies switch S2 as the lower root ID. Switch S3 updates its root ID with the root ID of switch S2. Switch S3 now considers switch S2 as the root bridge. Switch S3 updates the path cost to 19 since the BPDU was received on a fast Ethernet port.



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/1 BPDU – S2
Root ID = 32769.000A00111111
Path Cost = 19

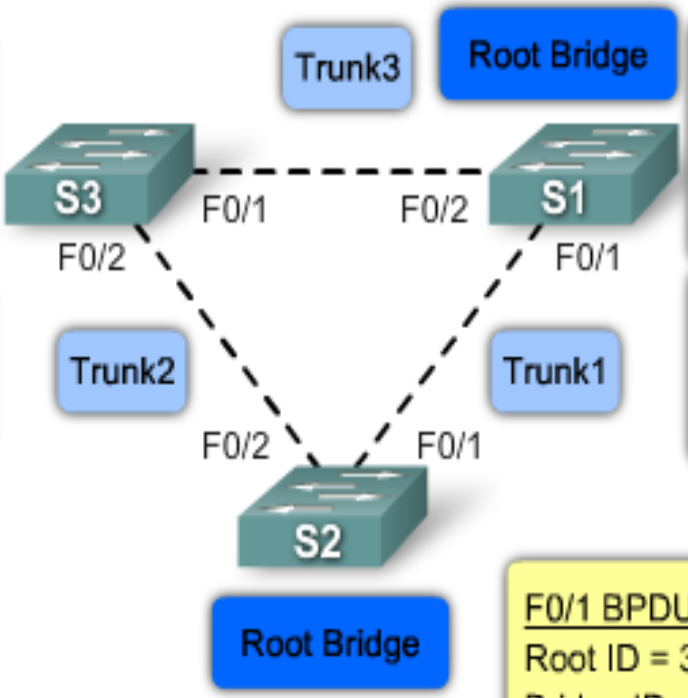
F0/1 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/2 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

Quá trình bầu chọn Root Bridge

F0/2 BPDU
Root ID = 32769.000A00222222
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/2 BPDU – S2
Root ID = 32769.000A00111111
Path Cost = 19



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/1 BPDU – S2
Root ID = 32769.000A00111111
Path Cost = 19

Switch S1 compares the root ID with its own and identifies its own root ID as the lower root ID. Switch S1 keeps its root ID as the root ID and does not increment the path cost to the root. Switch S1 still considers itself as the root bridge.

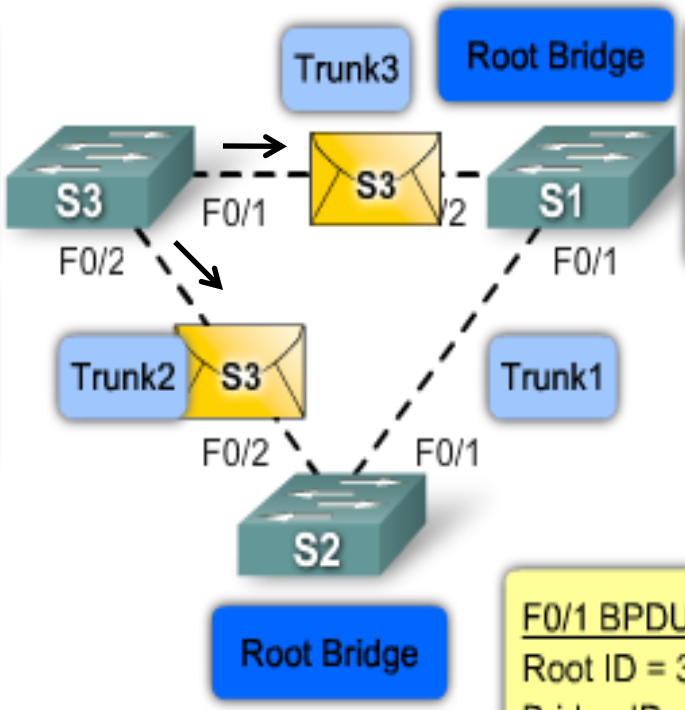
F0/1 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/2 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

Quá trình bầu chọn Root Bridge

F0/2 BPDU
Root ID = 32769.000A00222222
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/2 BPDU – S2
Root ID = 32769.000A00111111
Path Cost = 19



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

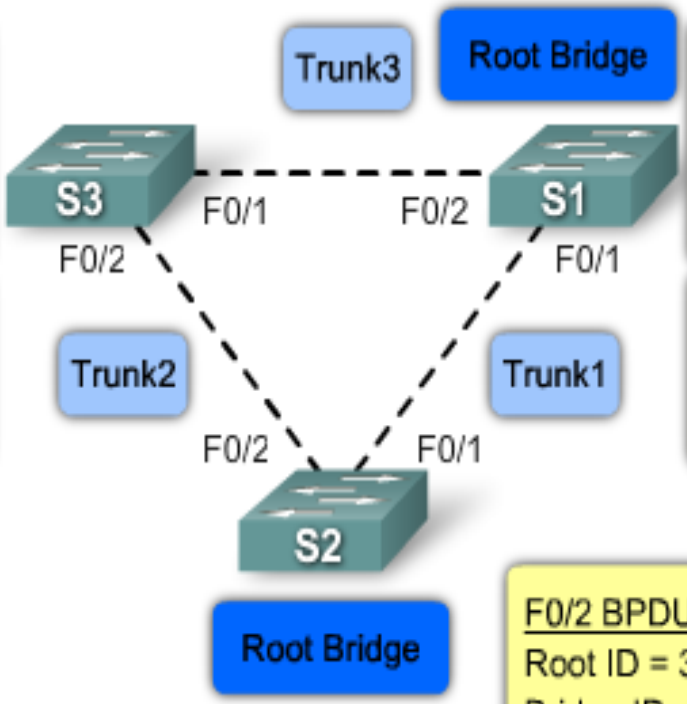
F0/1 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

Switch S3 forwards out BPDU frames out all switch ports. The BPDU frame contains switch S2 root ID populated, indicating that switch S2 is the root bridge.

Quá trình bầu chọn Root Bridge

F0/2 BPDU
Root ID = 32769.000A00222222
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/2 BPDU – S2
Root ID = 32769.000A00111111
Path Cost = 19



F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/1 BPDU – S3
Root ID = 32769.000A00111111
Path Cost = 38

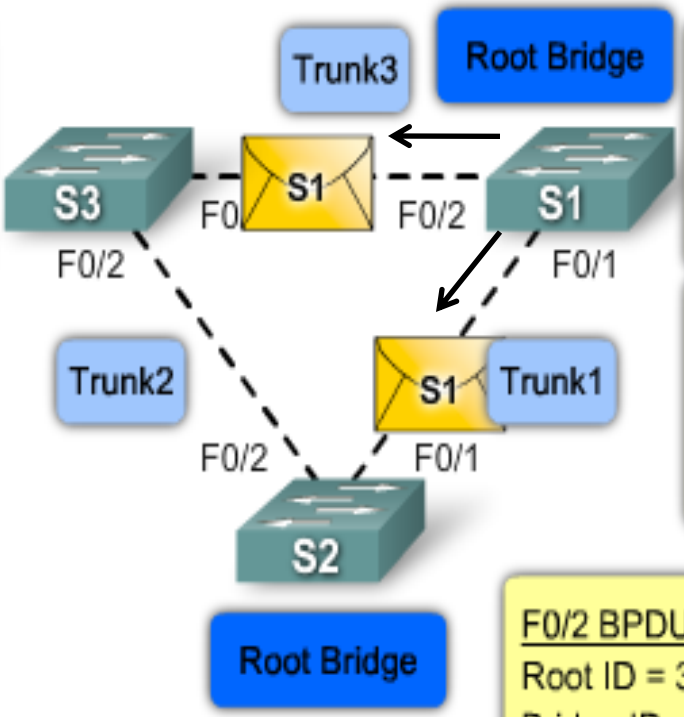
Switch S1 compares the received BPDU root ID with its own and identifies that its own is lower. Switch S1 continues to think it is the root bridge on the network. Switch S1 does not update the path cost.

F0/2 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/2 BPDU – S3
Root ID = 32769.000A00111111
Path Cost = 19

Quá trình bầu chọn Root Bridge

F0/2 BPDU
Root ID = 32769.000A00222222
Bridge ID = 32769.000A00222222
Path Cost = 19



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

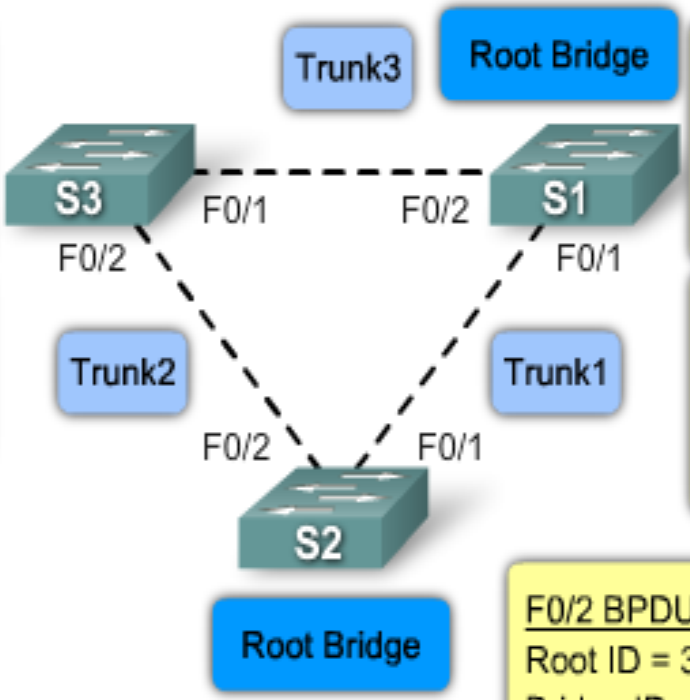
Switch S1 forwards out BPDU frames out all switch ports. The BPDU frame contains switch S1 bridge ID and root ID populated, indicating that switch S1 is the root bridge.

Quá trình bầu chọn Root Bridge

F0/1 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00222222
Path Cost = 38

F0/2 BPDU – S1
Root ID = 24577.000A00333333
Path Cost = 19

Switch S3 compares the received root ID with its own and identifies switch S1 as the lower root ID. Switch S3 updates its root ID with the root ID of switch S1. Switch S3 now considers switch S2 as the root bridge. Switch S3 updates the path cost to 19 since the BPDU was received on a fast Ethernet port.



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

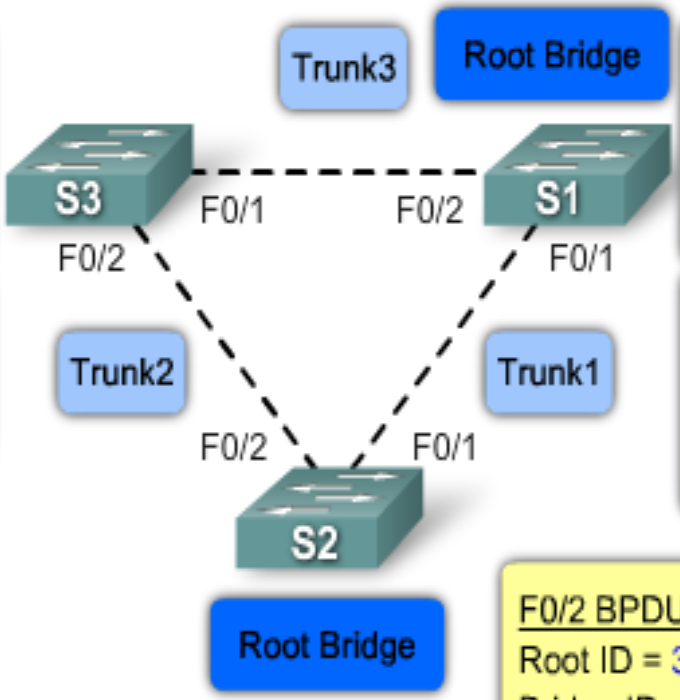
F0/2 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/1 BPDU – S1
Root ID = 24577.000A00333333
Path Cost = 19

Quá trình bầu chọn Root Bridge

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/2 BPDU – S1
Root ID = 24577.000A00333333
Path Cost = 19



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

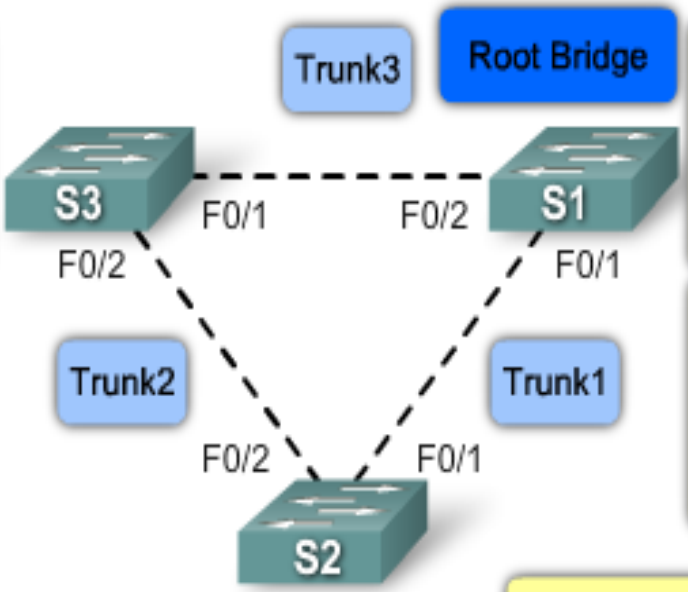
F0/2 BPDU
Root ID = 32769.000A00111111
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/1 BPDU – S1
Root ID = 24577.000A00333333
Path Cost = 19

Switch S2 compares the received root ID with its own and identifies switch S1 as the lower root ID. Switch S2 updates its root ID with the root ID of switch S1.

Quá trình bầu chọn Root Bridge

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 19



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 19

Switch S2 now considers switch S1 as the root bridge. Switch S2 updates the path cost to 19 since the BPDU was received on a fast Ethernet port.

Quá trình bầu chọn Root Bridge

```
S1#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    24577
              Address     000A.0033.3333
              This bridge is the root
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
  Bridge ID   Priority    24577  (priority 24576 sys-id-ext 1)
              Address      000A.0033.3333
              Aging Time 300

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------
Fa0/1            Desg FWD 19        128.1    Shr
Fa0/2            Desg FWD 19        128.2    Shr

S1#
```

Quá trình bầu chọn Root Bridge

```
S2#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    24577
              Address     000A.0033.3333
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
  Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address     000A.0011.1111
              Aging Time 300

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------
Fa0/1            Root FWD 19        128.1    Shr
Fa0/2            Desg FWD 19        128.2    Shr

S2#
```

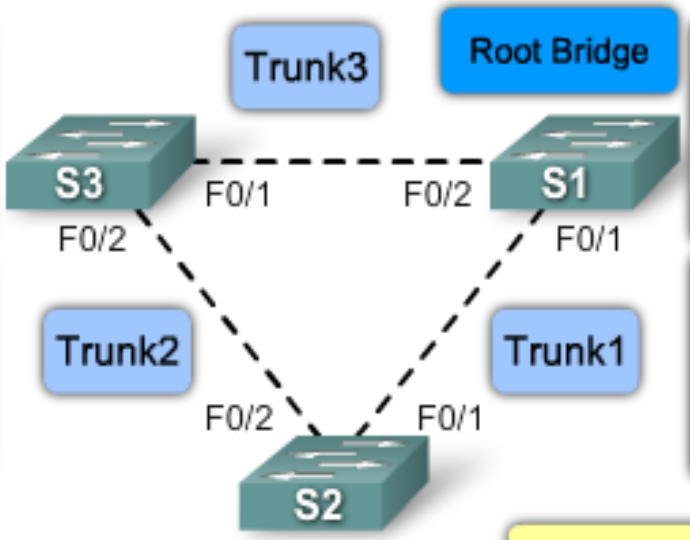
Quá trình bầu chọn Root Bridge

```
S3#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    24577
              Address     000A.0033.3333
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
  Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address     000A.0022.2222
              Aging Time 300

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Fa0/1            Root FWD 19        128.1    Shr
Fa0/2            Altn BLK 19        128.2    Shr

S3#
```

Quá trình bầu chọn Root Port

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

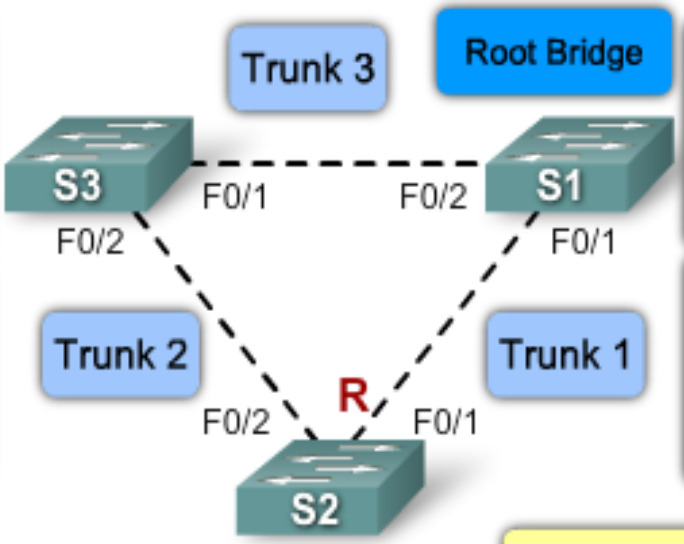
Switch S2 compares the path costs for each of its switch ports.

1 2 3 4

Quá trình bầu chọn Root Port

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

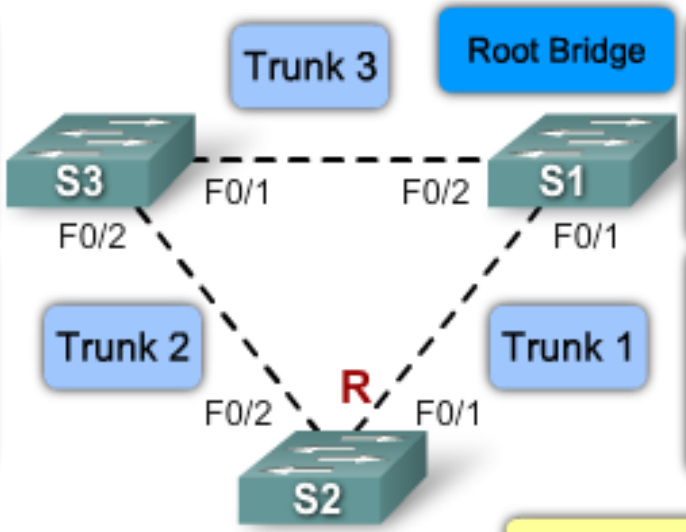
F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

Switch S2 port F0/1 has a lower path cost to the root bridge and therefore becomes the root port.

1 2 3 4

Quá trình bầu chọn Root Port



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

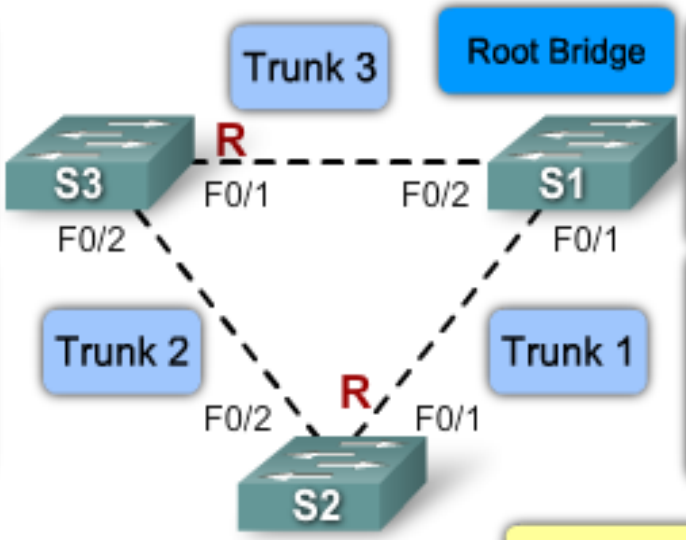
Switch S3 compares the path costs for each of its switch ports.

1 2 3 4

Quá trình bầu chọn Root Port

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38



F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 24577.000A00333333
Path Cost = 19

F0/1 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 19

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

Switch S3 port F0/1 has a lower path cost to the root bridge and therefore becomes the root port.

1 2 3 4

Quá trình kiểm tra Root Port

```
S1#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    24577
              Address     000A.0033.3333
              This bridge is the root
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
  Bridge ID   Priority    24577  (priority 24576 sys-id-ext 1)
              Address     000A.0033.3333
              Aging Time 300

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------
Fa0/1            Desg FWD 19        128.1    Shr
Fa0/2            Desg FWD 19        128.2    Shr

S1#
```

Quá trình kiểm tra Root Port

```
S2#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    24577
              Address     000A.0033.3333
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
  Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address     000A.0011.1111
              Aging Time 300

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------
Fa0/1            Root FWD 19        128.1    Shr
Fa0/2            Desg FWD 19        128.2    Shr

S2#
```

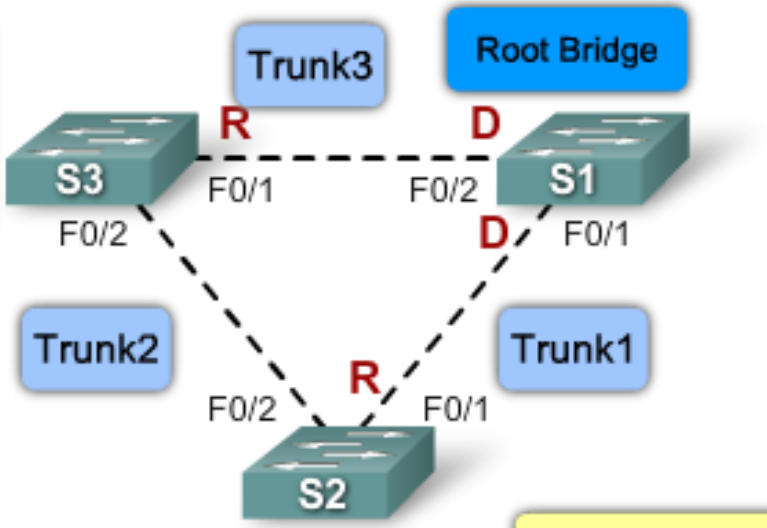
Quá trình kiểm tra Root Port

```
S3#show spanning-tree

VLAN0001
  Spanning tree enabled protocol ieee
  Root ID     Priority    24577
              Address     000A.0033.3333
              Hello Time   2 sec  Max Age 20 sec  Forward Delay 15 sec
  Bridge ID   Priority    32769  (priority 32768 sys-id-ext 1)
              Address     000A.0022.2222
              Aging Time 300

Interface        Role Sts Cost      Prio.Nbr Type
---------------- ---- --- --------- -------- --------------------------------
Fa0/1            Root FWD 19        128.1    Shr
Fa0/2            Altn BLK 19        128.2    Shr

S3#
```

Quá trình bầu chọn

Designated Port - Non Designated Port

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38



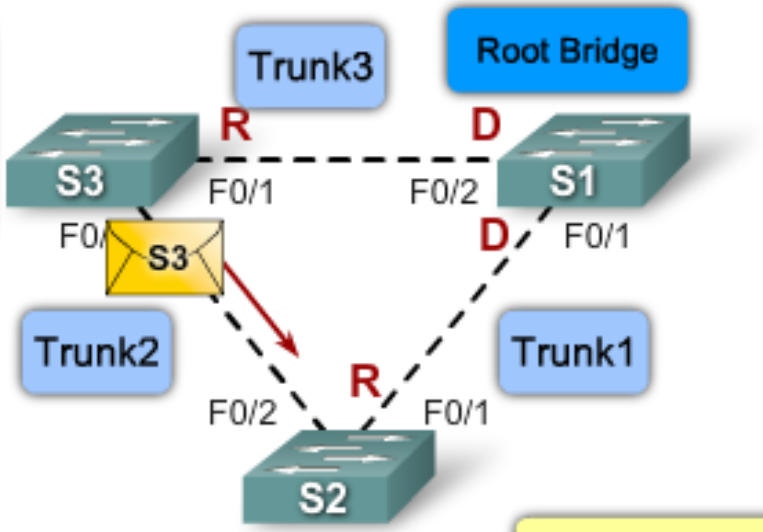
F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

Switch S1 configures both of its switch ports in the designated role since it is the root bridge.

Quá trình bầu chọn

Designated Port - Non Designated Port

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38



F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

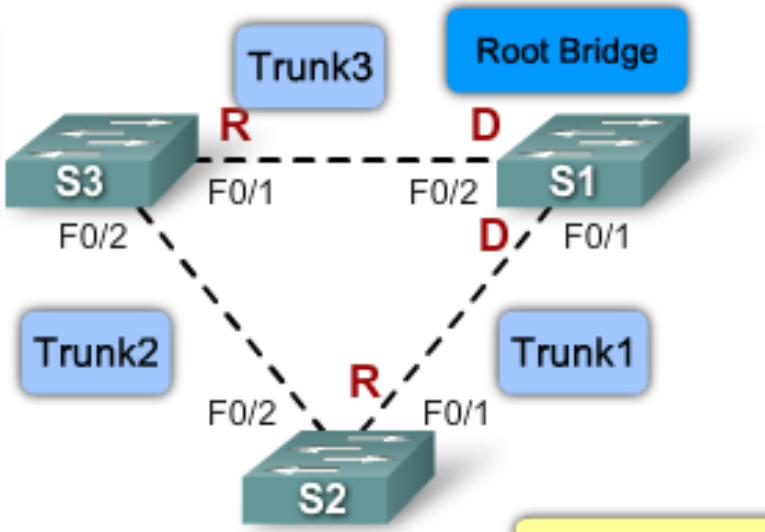
Switch S3 sends out a BPDU frame to switch S2.

1 2 3 4 5 6 7

Quá trình bầu chọn

Designated Port - Non Designated Port

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38



F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

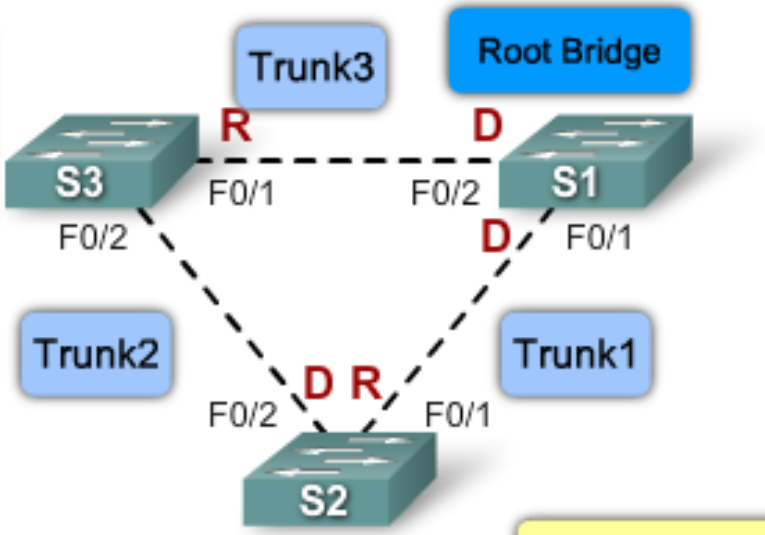
F0/2 BPDU – S3
Bridge ID = 32769.000A00222222
Path Cost = 38

Switch S2 compares BID values and determines that it has the lower value.

Quá trình bầu chọn

Designated Port - Non Designated Port

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38



F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

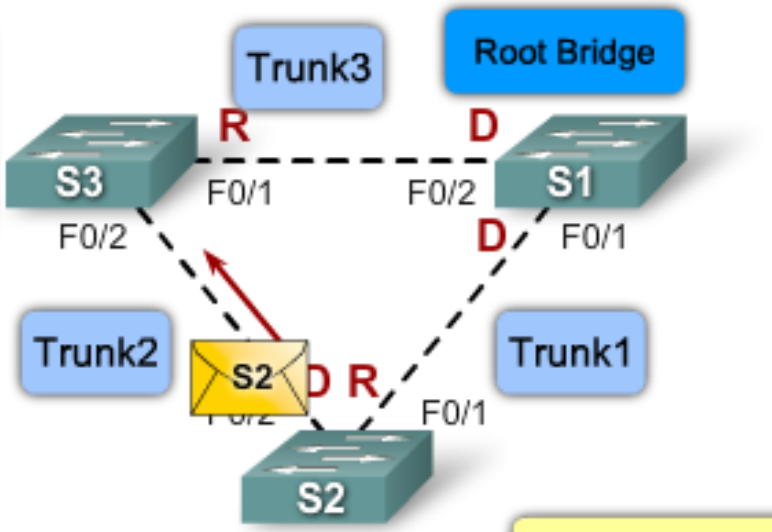
Switch S2 configures port F0/2 in the designated role.

1 2 3 4 5 6 7

Quá trình bầu chọn

Designated Port - Non Designated Port

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38



F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

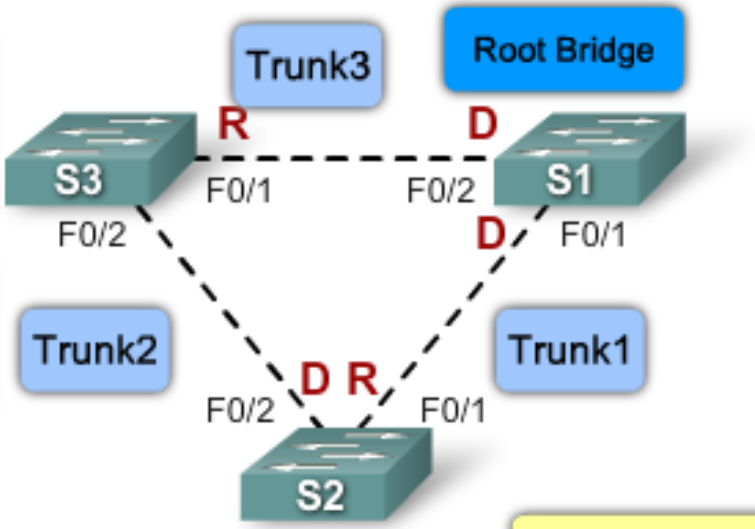
Switch S2 sends out a BPDU frame to switch S3.

Quá trình bầu chọn

Designated Port - Non Designated Port

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38

F0/2 BPDU
Bridge ID = 32769.000A00111111
Path Cost = 38



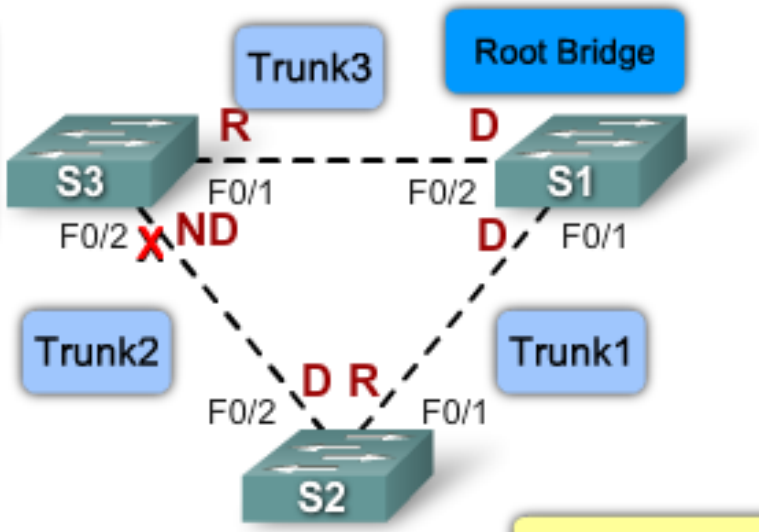
F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

Switch S3 compares BID values and determines that it has the higher value.

Quá trình bầu chọn

Designated Port - Non Designated Port

F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00222222
Path Cost = 38



F0/2 BPDU
Root ID = 24577.000A00333333
Bridge ID = 32769.000A00111111
Path Cost = 38

Switch S3 configures port F0/2 to a non-designated role.

1 2 3 4 5 6 7

Câu hỏi ôn tập

1) Nguyên nhân gây ra Loop
2) Hiểu rõ 3 khái niệm : Broadcast storm, Duplicate Unicast Frame và Unknown Unicast
3) Spanning Tree Protocol là gì ?
4) Trình bày thuật toán được sử dụng trong STP ?