<table>
<thead>
<tr>
<th>Port</th>
<th>Switch A</th>
<th>Switch B</th>
<th>Switch C</th>
<th>Switch D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>[A,0,A,2]/D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>--</td>
</tr>
</tbody>
</table>
## BPDU

### Diagram

![BPDU Diagram](image)

### Table

<table>
<thead>
<tr>
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<th>Switch A</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Port 1</td>
<td>BPDU/Status</td>
<td>BPDU/Status</td>
<td>BPDU/Status</td>
<td>BPDU/Status</td>
</tr>
<tr>
<td>Port 2</td>
<td>[A,0,A,2]/D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port 3</td>
<td>[A,0,A,3]/D</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- BPDU: Bridge Protocol Data Unit
- DP: Designated Port
- Root: Root Switch

**Note:**
- The values in the table represent the BPDU message details and port status.
- Switch A's Port 2 and Port 3 have specific BPDU messages indicating they are in a designated port state.
- Switch C and D have generic BPDU/Status indicating standard forwarding status.
- Port 1 on all switches is in a forwarding state.

---

**Explanation:**

- The diagram illustrates a network topology involving four switches (A, B, C, D) connected via various links.
- Each link is labeled with bandwidth and direction, indicating the flow of data.
- Switch A is marked as the root switch due to its central position and lower path costs.
- Ports 2 and 3 on Switch A have specific BPDU messages, indicating they are part of the designated path selection process.
- Switches B, C, and D have generic BPDU messages, indicating standard forwarding and no specific path designation.

---

**Analysis:**

- The network topology and BPDU messages help in determining the network's root switch, designated ports, and overall path selections.
### BPDU

#### Switch A
- Port 1: --
- Port 2: \([A,0,A,2]/D\)
- Port 3: \([A,0,A,3]/D\)

#### Switch B
- Port 2: --

#### Switch C
- Port 2: \([A,0,A,2]\)

#### Switch D
- Port 3: --

**Network Diagram**:
- Switches A and B are connected with a link labeled 19 (100Mb/s) and Switch C with a link labeled 19 (100Mb/s).
- The link between Switch A and D is labeled 4 (1Gb/s).
- The Root is connected to Switch B through a direct link.
- Switches C and D are connected through a direct link.
BPDU

<table>
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<tbody>
<tr>
<td>1</td>
<td>BPDU/Status</td>
<td>BPDU/Status</td>
<td>BPDU/Status</td>
<td>BPDU/Status</td>
</tr>
<tr>
<td>2</td>
<td>[A,0,A,2]/D</td>
<td></td>
<td></td>
<td>[A,0,A,3]</td>
</tr>
<tr>
<td>3</td>
<td>[A,0,A,3]/D</td>
<td></td>
<td>[A,0,A,2]</td>
<td>--</td>
</tr>
</tbody>
</table>
BPDU

Root

Switch A | Switch B | Switch C | Switch D
---|---|---|---
BPDU/Status | BPDU/Status | BPDU/Status | BPDU/Status
Port 1 | -- | [A,4,D,2] | [A,0,A,3]
Port 2 | [A,0,A,2]/D | | [A,4,D,2]
Port 3 | [A,0,A,3]/D | [A,0,A,2] | --

D is better port
BPDU
C is better port

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<td>Port 1</td>
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<td>[A,4,D,2]</td>
<td>[A,4,C,1]</td>
<td>[A,0,A,3]</td>
</tr>
<tr>
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<td>[A,0,A,2]/D</td>
<td></td>
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</tr>
<tr>
<td>Port 3</td>
<td>[A,0,A,3]/D</td>
<td>[A,4,C,1]</td>
<td>[A,0,A,2]</td>
<td>--</td>
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</table>
BPDU

Switch A | Switch B | Switch C | Switch D
---|---|---|---
BPDU/Status | BPDU/Status | BPDU/Status | BPDU/Status
Port 1 | -- | [A,4,D,2] | [A,4,C,1] | [A,0,A,3]
Port 2 | [A,0,A,2]/D | [A,4,C,2] | [A,4,C,2] | [A,4,D,2]
Port 3 | [A,0,A,3]/D | [A,4,C,1] | [A,0,A,2] | --

C is better port
BPDU
## Root Port

**Best Root Path (RP):**
Root Port

**Cost of** 0 + 4 = 4

### Diagram:

- **Switches:**
  - Switch A
  - Switch B
  - Switch C
  - Switch D
- **Links:**
  - Connection between Switch A and Switch B: 19 (100 Mb/s)
  - Connection between Switch B and Switch C: 19 (100 Mb/s)
  - Connection between Switch C and Switch D: 19 (100 Mb/s)
  - Connection between Switch A and Root: 4 (1 Gb/s)

### Table:

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<tr>
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<td>[A,0,A,3]/D</td>
<td>[A,4,C,1]</td>
<td>[A,0,A,2]/R</td>
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Root Port

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Best Root Path Cost of 0 + 4 = 4

Root Port
Root Port

Root Bridge = A (tie)
Internal Root Path Cost P1 = 23 (tie)
Internal Root Path Cost P2 = 23 (tie)
Internal Root Path Cost P3 = 23 (tie)
Sending BID = C (tie)
Sending Port ID = 1 (win)

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Designated Port

Each segment has one designated port. Single port that sends/receives traffic to/from that segment to the root bridge.

Both agree that D (Sending BID) is the Designate Port

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Designated Port

Each segment has one designated port. Single port that sends/receives traffic to/from that segment to the root bridge.

Both agree that C (Sending BID) is the Designate Port.
Designated Port

Each segment has one designated port. Single port that sends/receives traffic to/from that segment to the root bridge.

Both agree that C (Sending BID) is the Designate Port.
All other ports are blocked ports

Both agree that C (Sending BID) is the Designate Port

<table>
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<th>Port</th>
<th>Switch A BPDU/Status</th>
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<tbody>
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<td>Port 1</td>
<td>--</td>
<td>[A,4,D,2]/B</td>
<td>[A,4,C,1]/D</td>
<td>[A,0,A,3]/R</td>
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<td>[A,0,A,2]/R</td>
<td>--</td>
</tr>
</tbody>
</table>
Brad to Rick

(MAC Add Tables have all addresses)
Brad to Rick

(MAC Add Tables have all addresses)
Brad to Rick

(MAC Add Tables have all addresses)
Brad to Rick

(MAC Add Tables have all addresses)
Brad to Rick

(MAC Add Tables have all addresses)
Brad to Rick

(MAC Add Tables have all addresses)
Brad to Rick
(Unknown Unicast)
Etherchannel

Both physical links look as one logical link to STP. Both links are used.