

## BPDU (Bridge Protocol Data Units):

- o Bridge Protocol Data Units (BPDUs) are messages exchanged between the switches.
- o BPDUs frames contain info about switch ID, originating switch port & MAC address.
- o BPDUs frames also contain info regarding switch port priority, switch port cost etc.
- o Bridge Protocol Data Units (BPDUs) frames are sent out as multicast messages regularly.
- o BPDUs frames use the multicast destination MAC address which is **01:80:c2:00:00:00**.
- o When BPDUs are received, the Switch uses a mathematical formula called the STA.
- o Spanning Tree Algorithm (STA) know when there is a Layer 2 Switch loop in network.
- o Spanning Tree Algorithm determines which of redundant ports needs to be shut down.
- o **Three types of BPDUs** are **Configuration BPDU**, Topology Change Notification (TCN) BPDU.
- o The last one BPDU type is the Topology Change Notification Acknowledgment (TCA).
- o Basic purpose of BPDUs & Spanning Tree Algorithm is to avoid Layer 2 Switching loops.
- o Basic purpose of BPDUs and Spanning Tree Algorithm to avoid Layer 2 Broadcast storms.
- o Configuration BPDUs are used to elect the Root Bridges, root ports, and designated ports.
- o When topology change occurs, Switch send TCN BPDU out its root port, destined for Root.
- o TCN contains no information about the change – it only indicates that a change occurred.
- o By responding with a TCN with the Topology Change Acknowledgement (TCA) flag set.
- o Once Root Bridge receives the TCN, it will send out a configuration BPDU to all switches.

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v Spanning Tree Protocol
  Protocol Identifier: Spanning Tree Protocol (0x0000)
  Protocol Version Identifier: Spanning Tree (0)
  BPDU Type: Configuration (0x00)
  v BPDU flags: 0x01, Topology Change
    0... .... = Topology Change Acknowledgment: No
    .... ...1 = Topology Change: Yes
  v Root Identifier: 32768 / 1 / aa:bb:cc:00:01:00
    Root Bridge Priority: 32768
    Root Bridge System ID Extension: 1
    Root Bridge System ID: aa:bb:cc:00:01:00 (aa:bb:cc:00:01:00)
    Root Path Cost: 0
  v Bridge Identifier: 32768 / 1 / aa:bb:cc:00:01:00
    Bridge Priority: 32768
    Bridge System ID Extension: 1
    Bridge System ID: aa:bb:cc:00:01:00 (aa:bb:cc:00:01:00)
    Port identifier: 0x8001
    Message Age: 0
    Max Age: 20
    Hello Time: 2
    Forward Delay: 15
```