BROCADE

Controlling Switch Redundancy

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T11/11-215v0

Agenda

- Terminology ☺
- Current model summary (informational)
- Requirements
- Functionality

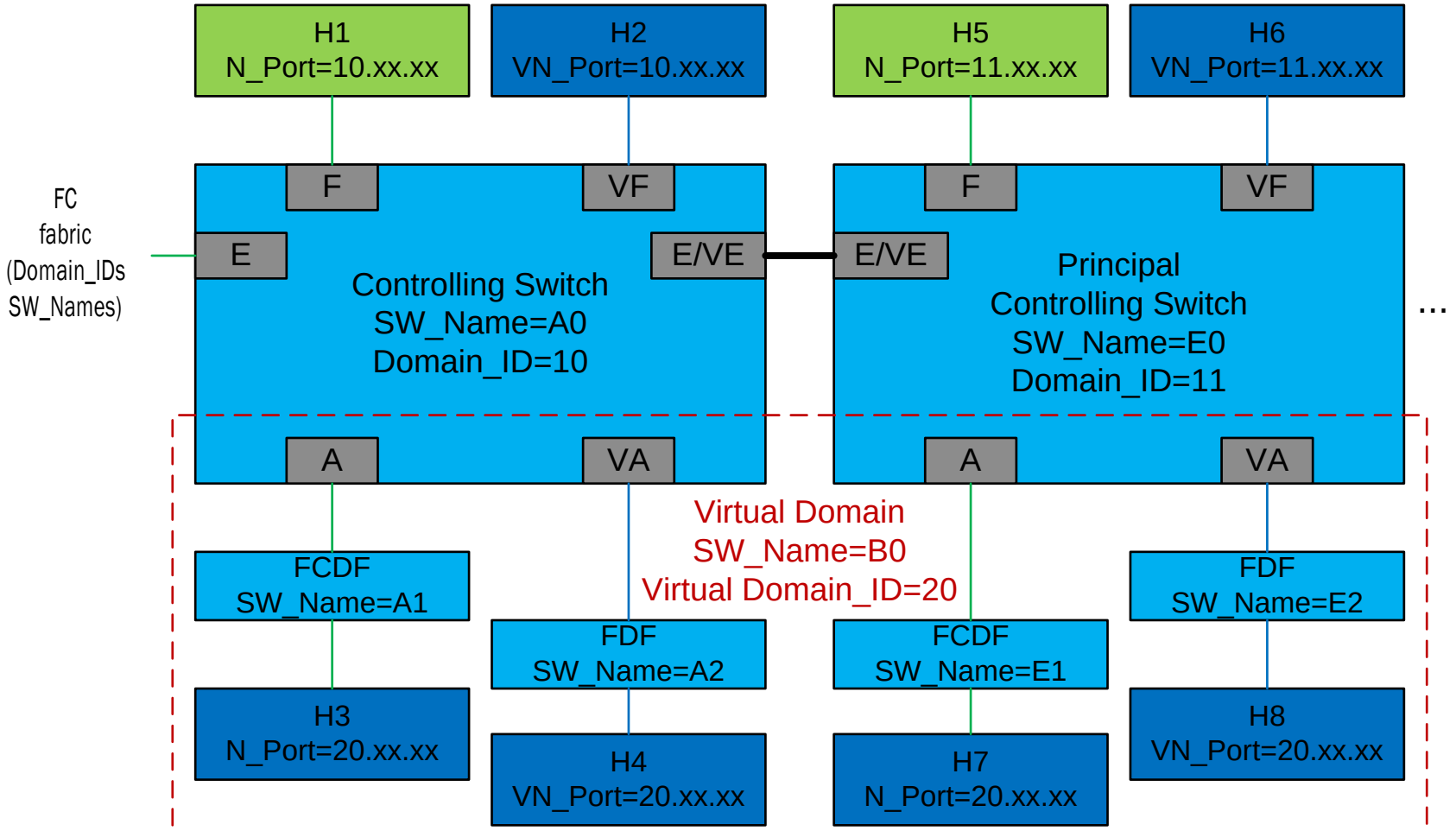
Terminology

Level set

- Virtual Domain == Distributed Switch/FCF
- Controlling Switch == Controlling Switch/FCF
- Virtual Domain
  - Comprised of one or more Controlling Switch(es)
  - Presents Virtual Domain(_ID) to the fabric

Terminology

Virtual Domain example – 2 Controlling Switches



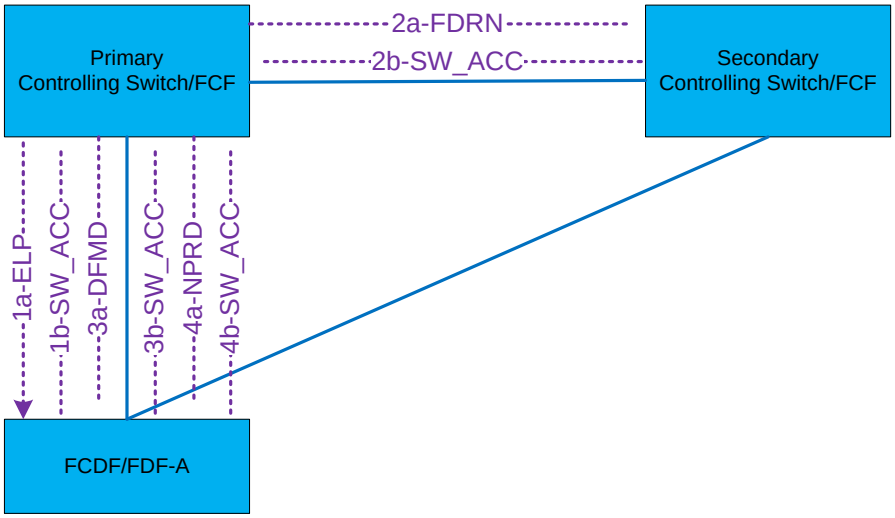
Current model summary (informational)

Primary/Secondary

- Links are established using ELP
  - E/VE<->E/VE: Controlling Switch/FCF – higher Switch_Name is Primary Controlling Switch/FCF for the Virtual Domain
  - A/VA<->A/VA – Primary Controlling Switch/FCF
    - Initiates ELP with FCDF/FDF or Receives FDRN from FCDF/FDF
    - Sends FDRN to Secondary Controlling Switch/FCF for each ELP and received FDRN
    - Sends DFMD to the requesting FCDF/FDF
    - Recomputes N_Port_ID routes and sends NPRD to each FCDF/FCF
- FLOGIs are sent to FCDF/FCF (or Controlling Switch/FCF for direct attach)
  - FCDF/FDF encapsulates FLOGI with VNRN SW_ILS and sends to Primary Controlling Switch/FCF
  - Primary Controlling Switch/FCF
    - sends VNRN SW_ACC to FCDF/FDF
    - allocates N_Port_ID, sends RSCN(s), updates Name Server
    - recomputes Zoning ACLs and sends NPZD to Secondary Controlling Switch/FCF and each FCDF/FCF
    - FCDF/FDF receives NPZD and sends FLOGI LS_ACC

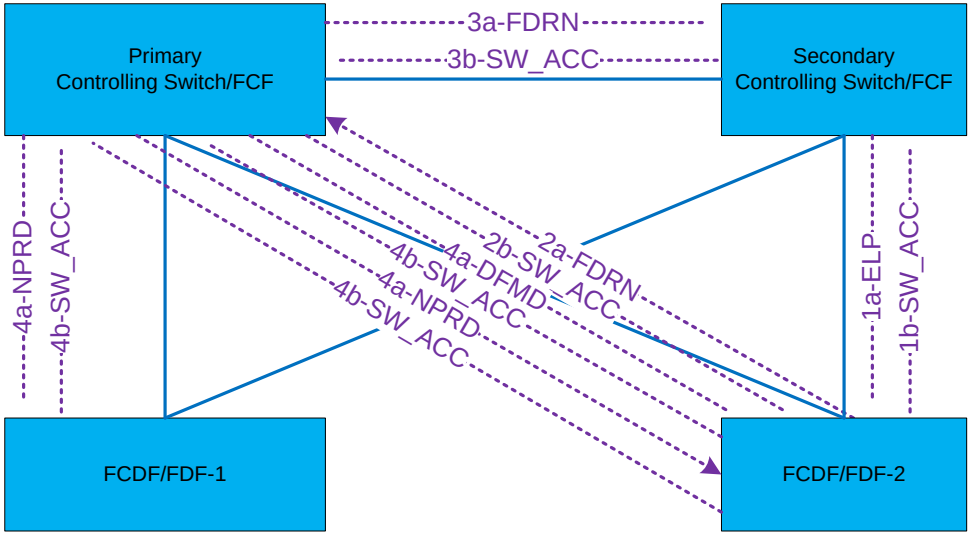
Current model

1st FCDF/FDF



Current model

2nd FCDF/FDF



Requirements

- Operates in native FC and FCoE
- Minimum of TWO Controlling Switches
- Controlling Switches must be directly connected via E_Ports
- Controlling Switches must be able to access the same set of FCDF(s)/FDF(s)
- Synchronous replication of database (i.e., maintain coherence)
- Use TLV formats

New model summary

Initialization

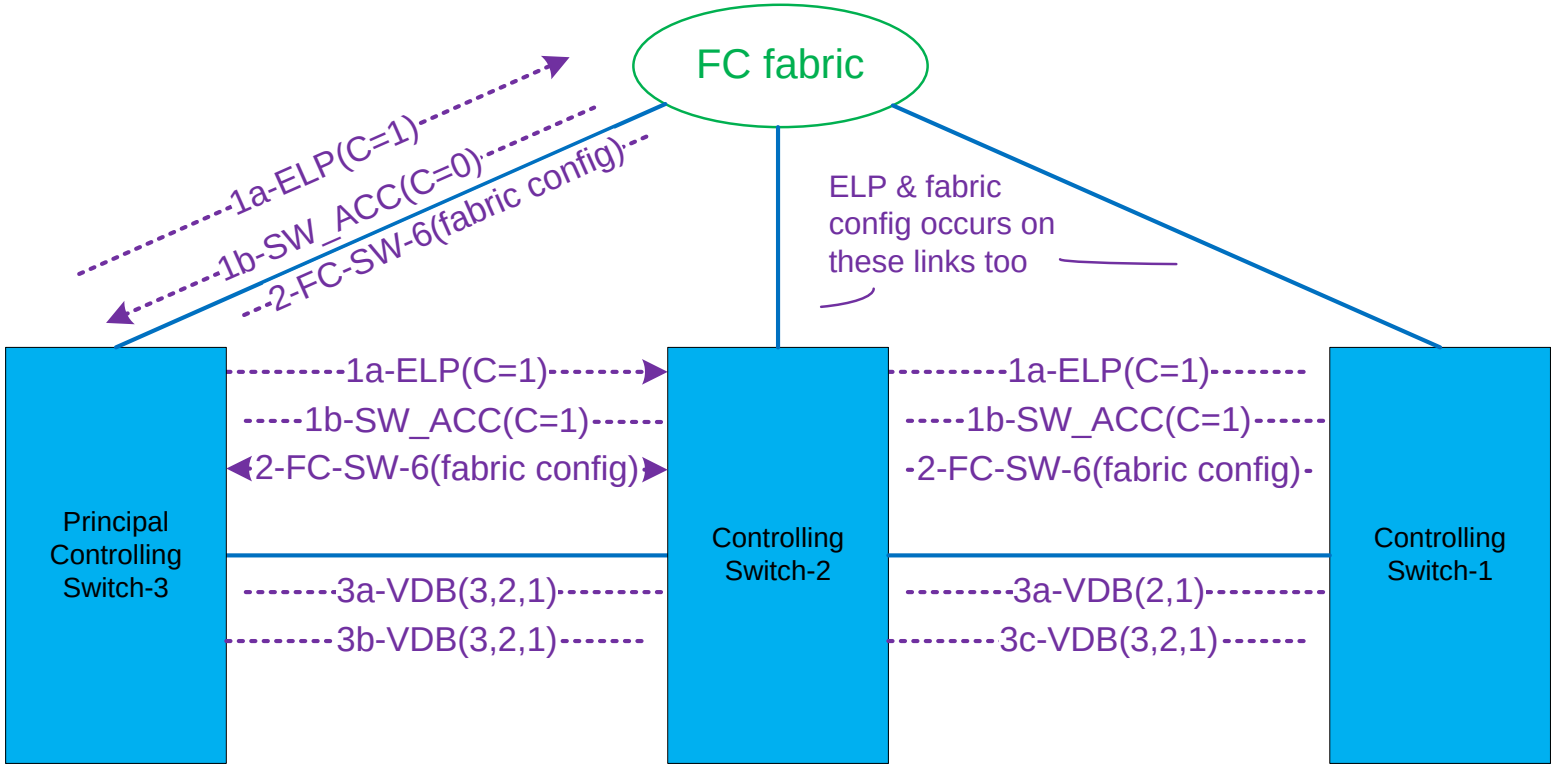
- E/VE_Port links are established using ELP with C=1
  - Controlling Switches know of attached peer(s)
- Normal FC-SW-5 fabric configuration occurs
  - Switches know SW_Name(s)/Domain_ID(s) and Principal Switch for the Fabric

New model summary

Principal Controlling Switch Selection

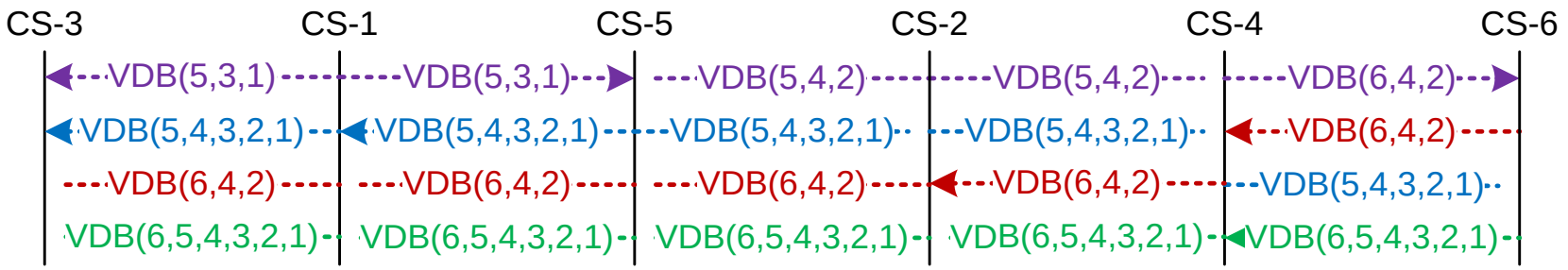
- Controlling Switch with lower SW_Name sends Virtual Domain Build (VDB) SW_ILS with it's view of Principal Controlling Switch and Controlling Switch list to neighbor Controlling Switch(es)
- If a Controlling Switch receives a VDB SW_ILS with the Principal Controlling Switch Switch_Name less than or equal to it's SW_Name, and it believes it is the Principal Controlling Switch, it updates the Controlling Switch list and sends an VDB SW_ILS to downstream Controlling Switch(es)
- If a Controlling Switch receives a VDB SW_ILS with the Principal Controlling Switch Switch_Name less than it's current Principal Controlling Switch_Name value, but greater than or equal to it's SW_Name, then the VDB SW_ILS is forwarded to upstream Controlling Switch(es)
    - Note: if there are no new Controlling Switch(es) the VDB does not need to be forwarded.
- If a Controlling Switch receives a VDB SW_ILS with the Principal Controlling Switch Switch_Name less than it's current Principal Controlling Switch_Name value and less than it's SW_Name, the VDB SW_ILS is discarded
- If a Controlling Switch receives a VDB SW_ILS with the Principal Controlling Switch_Name greater than or equal to it's current Principal Controlling Switch_Name value, it updates it's Controlling Switch list and sends the VDB SW_ILS to downstream Controlling Switch(es)
- After (configurable) Virtual Switch Stability Timeout (VS_S_TOV) the Principal Controlling Switch is known

Controlling Switch initialization



Principal Controlling Switch selection

VDB SW_ILS example



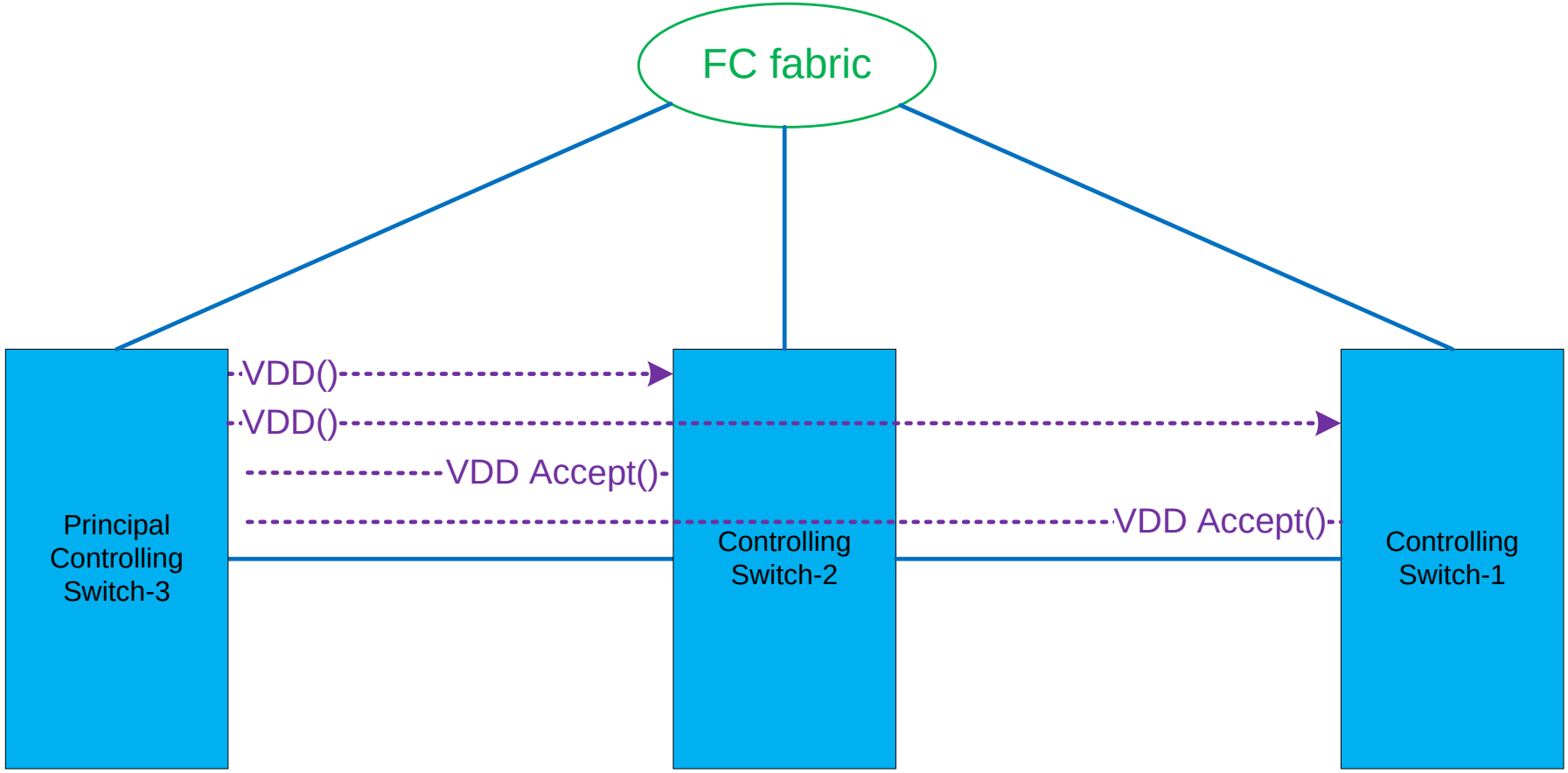
Principal Controlling Switch

Virtual Domain Distribution (VDD) SW_ILS

- Sends Virtual Switch Distribution (VDD) SW_ILS to peer Controlling Switch(es) via Domain Controller
  - Virtual Domain_ID
  - Virtual Switch Switch_Name
  - Principal Controlling Switch Switch_Name
  - Controlling Switch Switch_Name(s)

Principal Controlling Switch

VDD SW_ILS distribution example



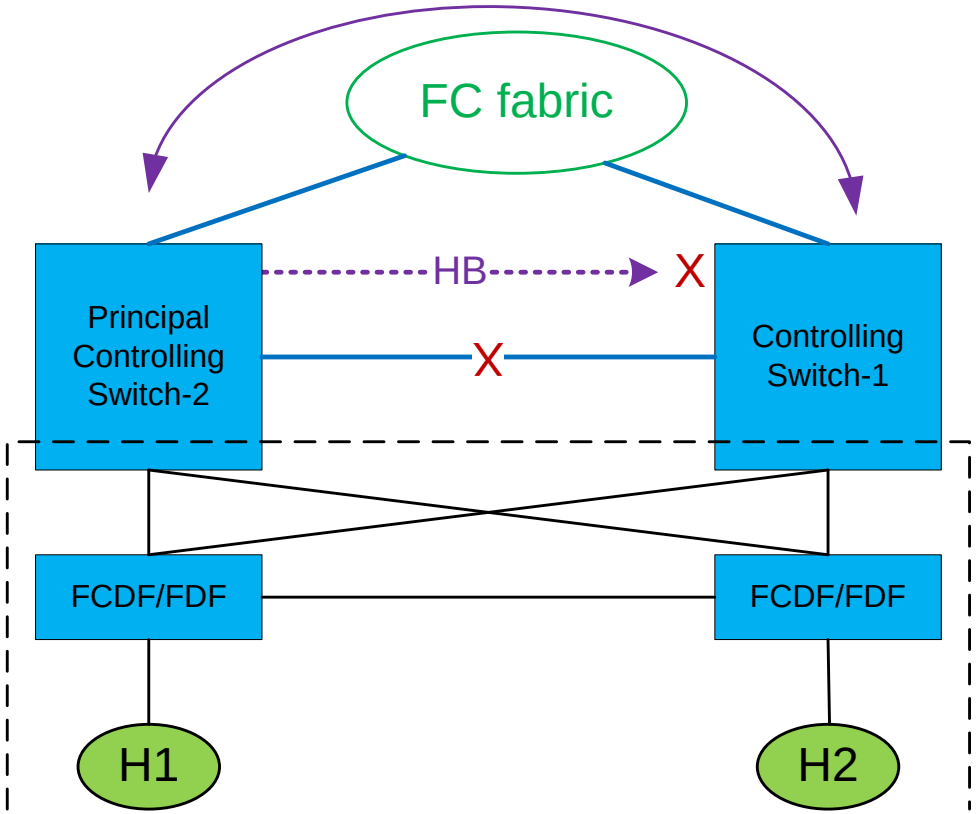
Principal Controlling Switch

Virtual Domain Heartbeat (VDHB) SW_ILS

- Is a heartbeat needed given FSPF capabilities?

Principal Controlling Switch

VDHB SW_ILS failure example



Direct link(s) fail. Does communication between primary and secondary continue via FC fabric path?

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Thank You!