Any Level of Redundancy with Additional FCF(s) per Virtual Domain
12-312v2 is two protocols in one document

- The first is a HA protocol state machine and related DS_ILS(s): Build-Dist-Sw (BDS), Exchange-Dist-Sw-Param (EDSP), VDS, and RHello
- The second is to allow additional FCF(s) to discover the virtual domain topology and forward traffic to FcDF(s)
  - Two DS_ILS(s) are used for this purpose: DSD & DSS

The **Distributed Switch Distribution** is used by the Primary Controlling Switch to distribute information (e.g., Virtual Domain_ID, Virtual Domain Switch_Name) to the Secondary Controlling Switch and additional FCF(s), if any

The **Distributed Switch Sync** DS_ILS is used to distribute the switch topology and allocated address info to other FCF(s)

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<thead>
<tr>
<th>Item</th>
<th>Size [byte]</th>
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<tbody>
<tr>
<td>DS_ILS code = XX00 00XXh</td>
<td>4</td>
</tr>
<tr>
<td>Destination Controlling Switch Switch_Name</td>
<td>8</td>
</tr>
<tr>
<td>Originating Controlling Switch Switch_Name</td>
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</tr>
<tr>
<td>Descriptor list length = variable</td>
<td>4</td>
</tr>
<tr>
<td>Distributed Switch Distribution descriptor</td>
<td>see 1.3.1.7</td>
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<td>FCDF Topology descriptor</td>
<td>see 1.3.1.5</td>
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<tr>
<td>FCDF Address Identifier Allocation descriptor</td>
<td>see 1.3.1.6</td>
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These two protocols need not be tied together
Additional FCF(s) for forwarding add value irrespective of HA

- Forwarding and trunking topology becomes more flexible
- This enables a topologically flatter network potentially saving on cost
- Fewer L3 hops reduce latency and remove potential choke points
- More options for FcDF connectivity and forwarding enhance load balancing (i.e. increase throughput and lower latency)
  - HA design with more than one FCF is optional
  - A customer with redundant service processors under the hood, may deploy a single highly reliable FCF per virtual domain, and a dual air gap fabric to avoid the HA complexity
  - However additional data path should be available for load balancing
- Load balancing reduces lost traffic in fail over events reducing negative impact on applications
  - During a switch over from primary to secondary FCF data traffic is black holed for duration of Down_Interval+
  - Load balancing using additional FCF(s) reduces the volume of lost data traffic and reduces impact on applications
Decouple redundancy from forwarding

- There is no reason for the level of redundancy to be tied to the number of FCF(s) in a virtual domain

- A customer should have a choice to configure redundancy and number of FCF(s) available for forwarding in a virtual domain independently
  - They each solve a different problem

- For example a customer should be able to chose to operate with:
  - No FCF redundancy and multiple FCF(s)
  - Dual redundancy, e.g. as in 12-035vx and two or more FCF(s)
  - Redundancy with more than two FCF(s), e.g. as attempted in 12-032v2, and multiple FCF(s) etc
Pick your desired redundancy level (& perhaps protocol), say dual redundancy as in 12-035vx

Add a list of “Additional FCF Switch Set”, e.g. SW5/2/6/3

Add Dist-Sw-Dist (DSD) & Dist-SW-Sync (DSS) DS_ISL(s) to the existing VA_Port protocol in 12-036v2, & use them to keep the “additional FCF switch set” in sync for data path forwarding only

For data plain purposes, decouple the new HA protocol in 12-032v2: state machine, Build-Dist-Sw (BDS), Exchange-Dist-Sw-Param (EDSP), etc as Primary/Secondary FCF(s) know the status of “Other FCF Switch Set” through FSPF
A New Proposal -- Recap

- The working group has included the following text: 12-034v2, 12-035v2, and 12-036v1 in FCF-SW-6

- 12-312v2 “Controlling Switch Redundancy Protocol (for three or more Controlling Switches)” remains as work in progress

- We can decouple the data plane flexibility of the above proposal, i.e. DS_ILS(s): DSD and DSS, from its HA protocol & move it forward

- Technically there is no reason to tie these two mechanisms together
  - There is value add in separating them giving customer flexibility

- We seem to have enough c/FCF redundancy for now:
  - Implementations of FCF(s) as datacenter switches may be redundant to begin with (x2),
  - We have added HA (12-035vx) with dual redundancy (x2) x2,
  - And there is the traditional air gap fabric redundancy ((x2) x2) x2 for x8 times redundancy

- What we need more of is data path flexibility – FCF by pass being a major goal of SW6
Thank You