Application Note

Portchannels with EMC SRDF/A

SUMMARY

This application note focuses on the issues pertaining to EMC's SRDF/A replication software running over Fibre Channel over IP (FCIP) on Cisco® MDS 9000 Family directors and switches. The problem as reported in EMC Knowledge Base report emc116534 is that SRDF/A will go into a suspend or failed state when a failed FCIP tunnel recovers; be it within a PortChannel or over equal-cost path links. The root of this problem has been identified in Cisco bugID CSCei08541. This problem has been resolved in Cisco MDS 9000 SAN-OS Software Release 2.1(2b) and later. For customers running versions of SAN-OS Software prior to 2.1(2b), there are workarounds to prevent the problem.

DETAILS

Typically, there are two types of environments with SRDF/A, where customers have dual fabrics (Fabric A and Fabric B) where the Remote Adapter (RA) ports connect. In one scenario there are only two RA ports (one in each fabric) and the other scenarios has four RA ports (two in each fabric). The workaround for each scenario is different, but involves similar steps. The first step is to ensure that there are no FCIP PortChannels or equal-cost Fabric Shortest Path First (FPSP) paths between the Cisco MDS 9000 switches. For the scenario with a single RA port per fabric, this requires removing one of the FCIP tunnels. In the scenario with two RA ports per fabric, this involves separating each RA port into its own virtual storage area network (VSAN). The second part of the workaround involves using the Cisco MDS port-tracking feature to shut down the switch port connected to the RA port when the FCIP interface goes down. The following diagrams show the topology and the workaround for each scenario.

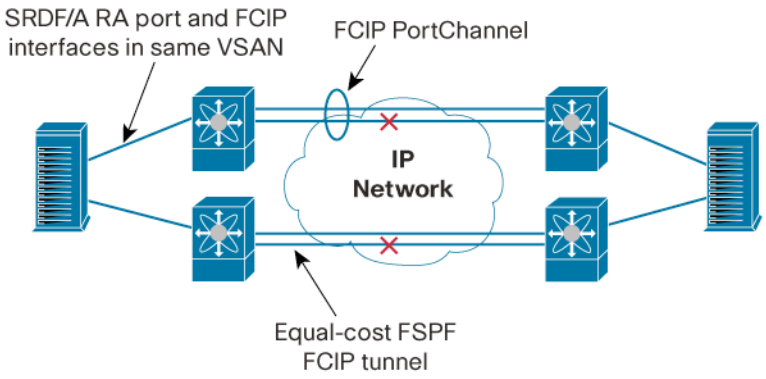
Note: The requirements for the FCIP Write Acceleration feature place some restrictions on the deployed solutions:

- In SAN-OS Release 1.x, FCIP Write Acceleration is not supported over PortChannels or equal-cost FSPF paths
- In SAN-OS Release 2.x, FCIP Write Acceleration is supported over PortChannels, but not supported over equal-cost FSPF paths

Single RA Port per Fabric

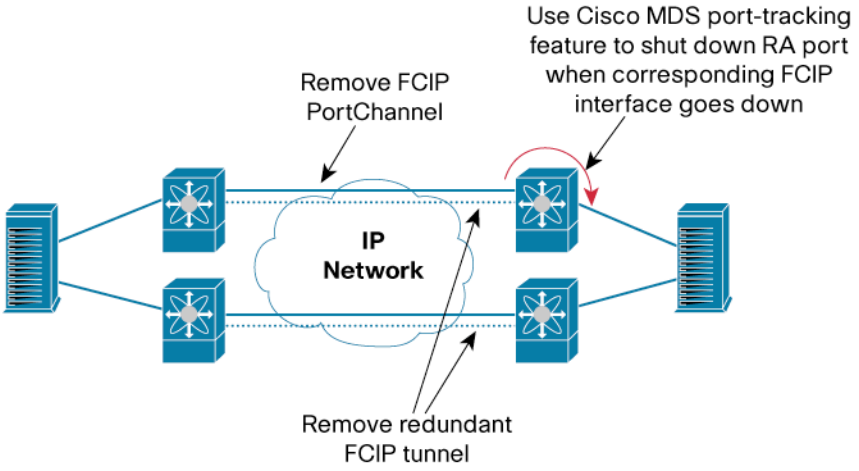
In this scenario (Figure 1), there is one RA port per fabric that traverses multiple FCIP tunnels. The upper half of the diagram shows two FCIP tunnels as part of a PortChannel. The lower half of the diagram shows the two FCIP tunnels with equal FSPF costs. The problem as described by the EMC knowledge base can occur if an FCIP tunnel in either path fails.

Figure 1. Scenario with One RA Port per Fabric



The workaround requires removing the redundant FCIP tunnel and turning on the Cisco MDS port-tracking feature on each switch. Each switch is configured to shut down the Fibre Channel port that connects to the RA port when the FCIP tunnel goes down.

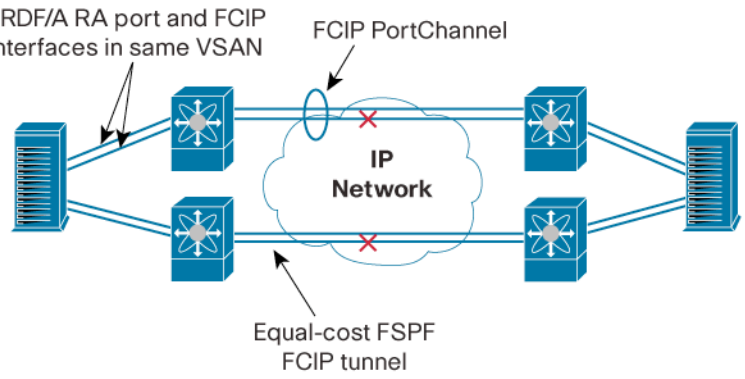
Figure 2. Workaround with One RA Port per Fabric



Two RA Ports per Fabric

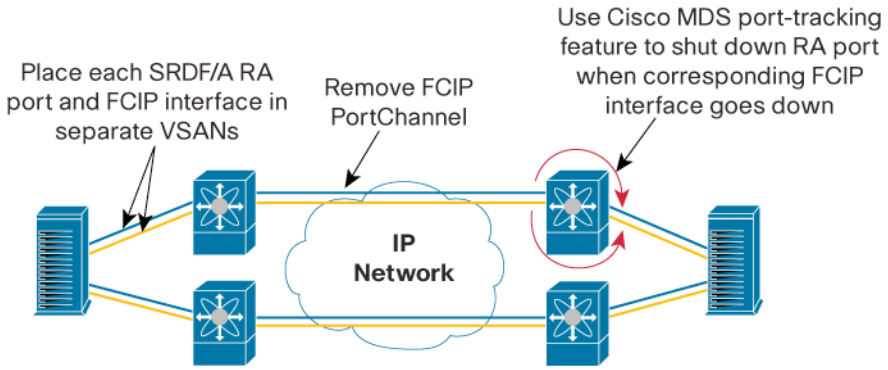
In this scenario (Figure 3), there are two RA ports per fabric that traverse multiple FCIP tunnels. The upper half of the diagram shows two FCIP tunnels as part of a PortChannel. The lower half of the diagram shows the two FCIP tunnels with equal FSPF costs. The problem as described by the EMC knowledge base can occur if a FCIP tunnel in either path fails

Figure 3. Scenario with Two RA Ports per Fabric



The workaround (Figure 4) requires configuring separate VSANs for the redundant FCIP tunnels, placing each RA port into the separate VSANs, and turning on the Cisco MDS port-tracking feature on each switch. Each switch is configured to shut down the Fibre Channel port that connects to the RA port when the FCIP tunnel goes down.

Figure 4. Workaround with Two RA Ports per Fabric



CONCLUSION

Testing has been done to re-create the original problem, the validity of the workaround, and the correction of the original problem. With the release of Cisco MDS 9000 SAN-OS 2.1(2b), there is no need to implement the workarounds described in this document.

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