



March 2014

Cisco MDS NX-OS 6.2(5)a Qualification with Oracle VSM & StorageTek configurations

Ficon Systems Implementations

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Introduction

The purpose of this document is to provide certification information to personnel that would use this as proof of configuration acceptance. The following information will include examples of configurations with all equipment identified. Test reports will be provided if necessary but the overall status will be provided. This document is not intended to be a standalone document. It should be used with the associated documentation to implement a VSM-Cluster configuration with Cisco switches/directors.

Overview

Cisco 18/4 and SSN-16 line cards are the hardware portion of the Cisco channel extension solution for the 9222i and 95xx series switches. Cisco code version 6.2(5a) was tested for interoperability with the devices and microcode described in this document.

Products and Software

Host Mainframe: IBM Z10 with FICON Express8 channels
Host OS: z/OS 1.13
Application Software: IEBDG, IEBGENER, DFSMS/DSS Backup/Restore, FDR Backup/Restore, SyncSort and DFSort

Library/VSM Control Software: ELS 7.1

Cisco 95xx: v6.2(5a)

StorageTek VSM4: D02.18.11.00 with VCF2 cards

StorageTek VSM5: D02.18.11.00 with VCF4 cards

StorageTek VSM6: 6.0.6.12.000

StorageTek 9840C: 1.46.503

StorageTek 9840D: 1.46.703

StorageTek T10000A: 1.50.103

StorageTek T10000B: 1.50.203

StorageTek T10000C: 1.61.301

StorageTek T10000D: 4.07.106

Distances emulated were 200km to 5000km. All testing was done using the GigE WAN interfaces connected through an Anue Network Distance Emulator.

Cisco Systems MDS 9xxx series Switches/Directors with 18/4, SSN-16 and Supervisor 2(a) cards with NX-OS level 6.2(5a) installed.

Configurations Tested

Example configuration may not be exact to every customer configuration. This is used to identify what would benefit most customers and understanding the testing of these general types of configurations.

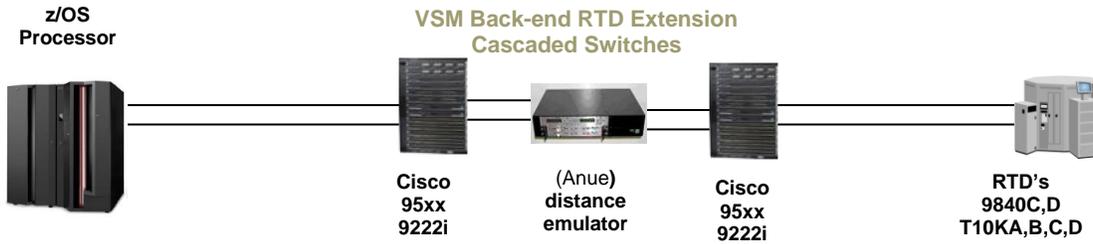


Figure 1 – Native tape CHPID

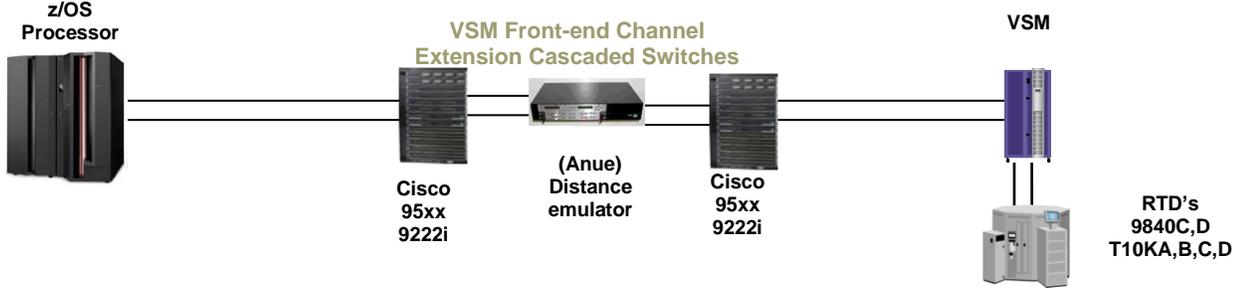


Figure 2 – VSM Front End CHPID

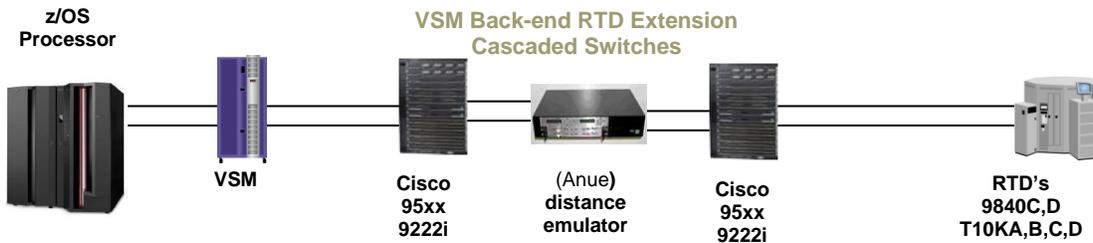


Figure 3 – VSM Back End RTD



Figure 4 – VSM CLINK

Test Process and Results

The Cisco 95xx was tested on the “front-end” of the VSM, the “back-end” (RTD communication) of the VSM, and as a method of extending clustering CLINKs between a VSM5 and VSM4, and as a method of extending direct attach native tape drives. The GigE ports on the 95xx were routed through an Anue Network Emulator to simulate the network latency.

Testing consisted of mainframe jobs that read and wrote to VTDs (Virtual Tape Drives) or native drives using IEBDG and IEBGENER, DFSMS/DSS Backup/Restore, FDR Backup/Restore, SyncSort and DFSort. Total run time for testing was 72 hours for each configuration tested.

Error Injection Testing

In addition, error injection testing was performed by disconnecting cables, GigE links, forcing Check-0 errors on the VSM5 and VSM4, and disabling switch ports, to test error recovery of the solution. No abnormalities were found. Expected results were seen after each disruption. After reestablishing connectivity, all connections recovered as expected.

Limitations

Testing is limited to interoperability testing, meaning the testing of whether hardware and software interoperate without error under normal usage and under the errors injected as described.

What is not covered are:

- **Performance** testing (whether performance would be acceptable under all circumstances)
Acceptable performance is a subjective judgment, and also highly dependent on the particular customer needs.
- **Suitability** testing (whether the tested configuration are suitable for a particular customer)
The VSM solution can be configured in many different ways, and because of this the best suited solution for a particular customer may not be any of the configurations tested.
- **Network error injection** testing (whether real life network errors would cause problems)
The MCET test lab does not have the resources nor the expertise to test injection of errors into the communications network between switches. It is left to the switch vendor to do such testing.

No performance measurements were taken. Because the VTSS can have switches located in-front (between mainframe and VTSS), in back (between VTSS and RTDs) and on a CLINK (between two VTSS's), there are many possible configurations.

Status

All testing met expectations and status is PASS.

Definitions

“Front-end” means Z10 Host CHPID to VSM VCF card.

“Back-end” means VSM VCF card to a Real Tape Drive (RTD).

“CLINK” means VSM VCF card to VSM VCF card (Cluster).

“Native tape” means that the physical tape drives are run directly from the mainframe channel.

Qualification Information

Qualified by: Malcolm MacAskill

Lab: Mainframe Customer Emulation Test (MCET)

Date: March 18, 2014



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