



# Cisco Qualification NX-OS 4.2(1b) with VSM & Sun StorageTek configurations

Version 1.0

**FICON Systems  
Implementations**

**Sun Mainframe Customer  
Emulation Test (MCET) lab**



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## Change History

Document Description	
Document owner	Dennis Frederickson Sun Microsystems Inc. Malcolm MacAskill Sun Microsystems Inc. Mike Blair Cisco Systems Inc.

Revision	Date	Description
V1.0		Initial draft
V2.0	12/07/2009	Final

## Audience

This documentation is intended for Sun and Cisco personnel and partners who are interested in learning more about the Sun Storage VSM FICON solutions with Cisco products.

## Related Publications

## 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 14+2 line cards are the hardware portion of the Cisco channel extension solution for the 9222i and 95xx series switches. Cisco code version 4.2(1b) was tested for interoperability with the devices and microcode described in this document.

## Product and Software

Equipment used in the test configurations.

Host Mainframe: IBM Z10 with FICON Express4 channels. Host OS: z/OS 1.10

Application Software: IEBDG, IEGBENER, DFSMS/DSS Backup/Restore, FDR Backup/Restore, SyncSort and DFSort

Library/VSM Control Software: NCS/VTCS 6.2

Sun Microsystems VSM4 firmware versions D02.08.xx, D02.09.xx with VCF2 Cards.

Sun Microsystems VSM5 firmware versions D02.08.xx D02.09.xx with VCF4 Cards.

Cisco 95xx: **v4.2(1b)**

Sun Microsystems 8500 Silo tape libraries with the following tape drives.

Sun 9840B: Firmware level 1\_43\_306

Sun 9840C: Firmware level 1\_44\_509

Sun 9840D: Firmware level 1\_44\_709

Sun 9940B: Firmware level 1\_43\_406

Sun T10000A: Firmware level 1\_44\_106

Sun T10000B: Firmware level 1\_44\_206

GigE WAN interfaces Connected through Anue Network Distance Emulator providing distances up to 4800 kilometers. Distances emulated were 200km to 4800km

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), there are many possible configurations.

## Configurations Tested

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

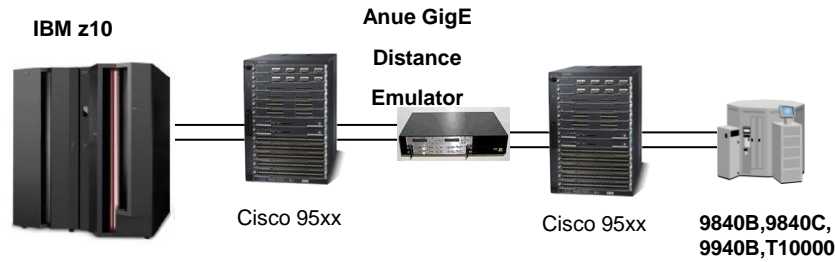


Figure 1 – Native tape CHPID

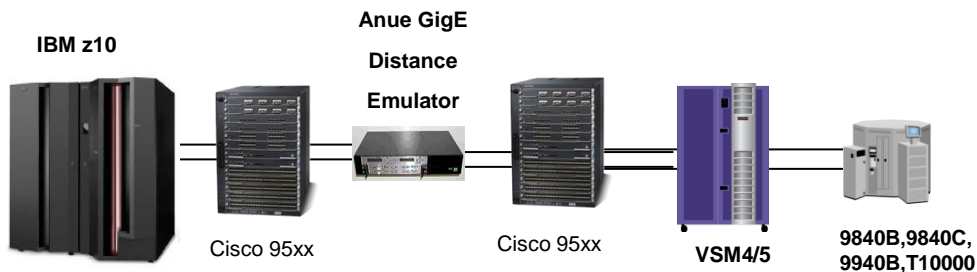


Figure 2 – VSM Front End CHPID

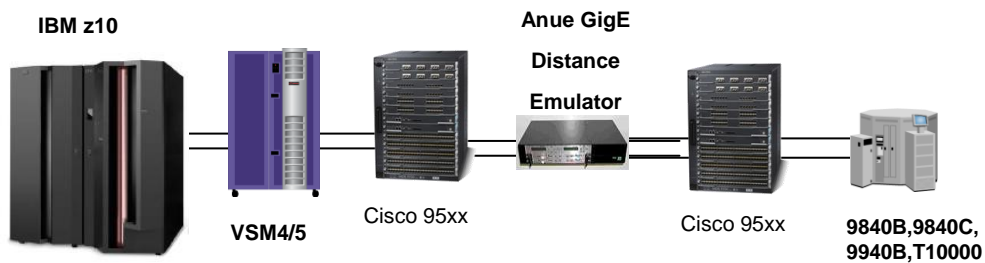


Figure 3 – VSM Back End RTD

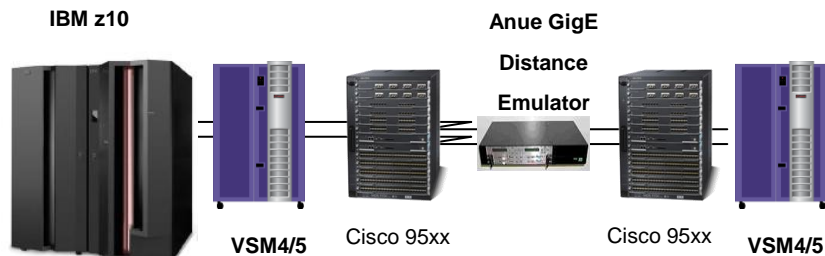


Figure 4 VSM Clink

## Test process and results

The Cisco 95xx was tested on the “front-end” of the VSM5 and VSM4, the “back-end” (RTD communication) of the VSM5 and VSM4, 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 write 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 VTSSes), there are many possible configurations.

## Status

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

## Issues opened

6884130 - Cisco core dump running VSM front end channels. This problem was encountered on an earlier build of v4.2(1x) code and was resolved and verified as fixed with v4.2(1b).

## Qualification date

Qualified by: Malcolm MacAskill

Lab: Mainframe Customer Emulation Test (MCET)

Date: November 9th, 2009