

StorTrends iTX 2.6.1011 Compatibility with ESX Server 3.0.1

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Chapter 1 Basic Connectivity

Preface

Listed below are the different configurations with their corresponding description for testing the compatibility between AMI's latest iTX storage products (1100i and 3100i) and VMware's latest ESX Server. All tests used iTX's two gigabit ethernet ports on different subnets for redundant connectivity to the ESX server (using QLogic QLA4010c^{A-3} (HBAa), QLogic QLA4050c^{A-4} (HBAb) and its own iSCSI initiator) and the virtual machines. The two iTX storage systems use RAID to protect data on its Network-attached Storage (NAS) and Storage Area Network (SAN) volumes in the following tests.

Basic Connectivity with the ESX Server

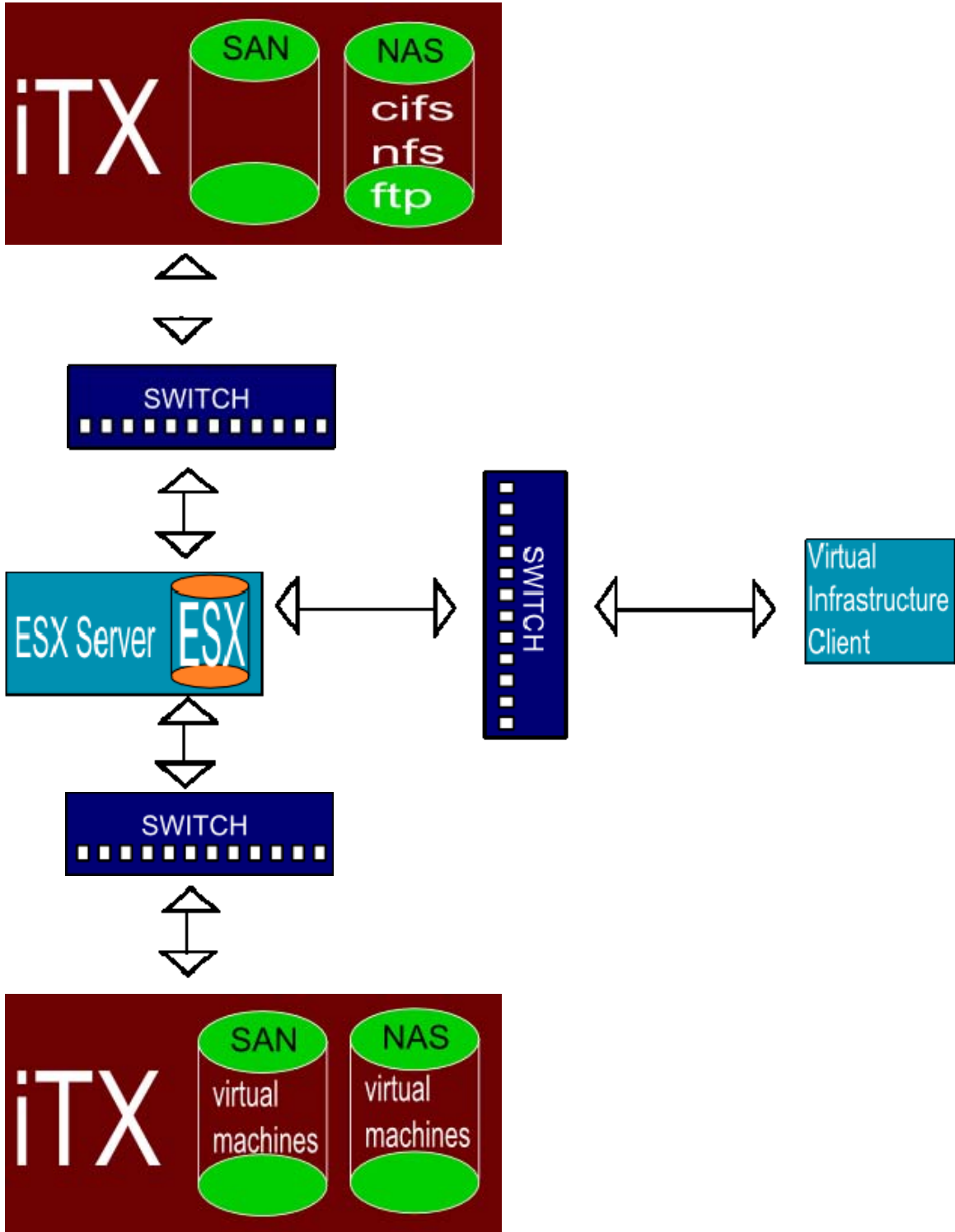
The ESX server was installed on a local computer^{A-1}. Using VMware's Virtual Infrastructure Client, the basic setup for the ESX server included using VMware's iSCSI Software Adapter to login to a 100-gigabyte iTX SAN volume. This SAN volume was configured and formatted for storage using the VMware Add Storage wizard. Also using this wizard, a 100-gigabyte iTX NFS share was added to the ESX server's available storage. The basic connectivity test is complete with these two iTX storage volumes available for use on the ESX Server.

Basic Connectivity with the Virtual Machines

Using the previous setup, various operating systems were loaded onto the iTX NFS and the iTX SAN storage volumes. More basic connectivity testing included using the virtual machines for tasks such as accessing an iTX NAS share via NFS, CIFS and FTP. Also to test for basic connectivity, the virtual machines were used to access an iTX SAN volume. With the accessibility and use of these NAS and SAN volumes, the iTX is verified as compatible with VMware's virtual machines, as well as, VMware's ESX Server.

Basic Connectivity Continued

In the picture below, the complete setup of the ESX Server and its virtual machines for the basic connectivity testing is shown.

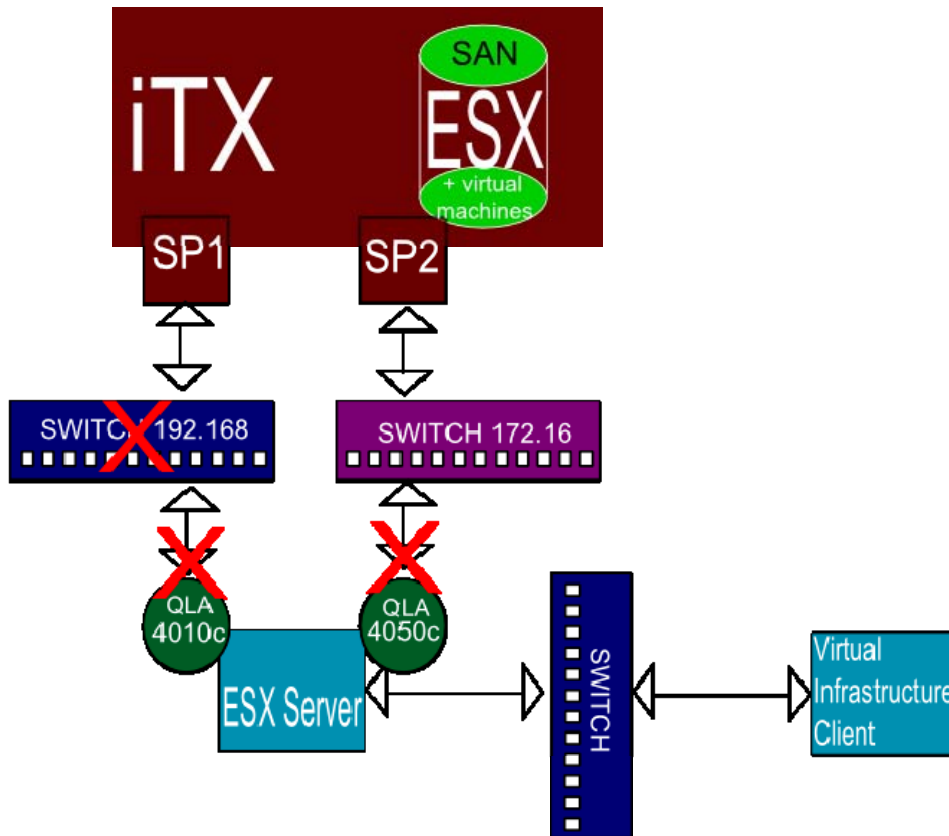


Chapter 2 Multipathing with HBA Failover

Multipathing with HBA Failover

Two different configurations were run to determine compatibility of multipathing with HBA failover. The initial configuration used the Dell PowerEdge 4600^{A-2} with the ESX Server installed on its internal SCSI drive and used the HBAA connection to an iTX SAN volume for its virtual machines. The other configuration, using the Dell PowerEdge 4600 had ESX Server installed on a 2-terabyte^{A-8} iTX SAN volume booted from HBAA^{A-7}. Both configurations have a redundant path from HBAb on a different network to that same iTX SAN volume. After setting up the server, the datastore Path Setting was changed to 'Most Recently Used' (to also failover (failback) from the other HBA). Below are the tests that were run to simulate an HBA failing.

- Pulled ethernet cable from HBAA (Current active connection):
RESULT: The ESX Server failed-over to HBAb as expected
- Pulled ethernet cable from HBAb (Current active connection):
RESULT: The ESX Server failed-back to HBAA as expected
- Disconnected power of switch (HBAA is ESX's current active connection):
RESULT: The ESX Server failed-over to HBAb as expected



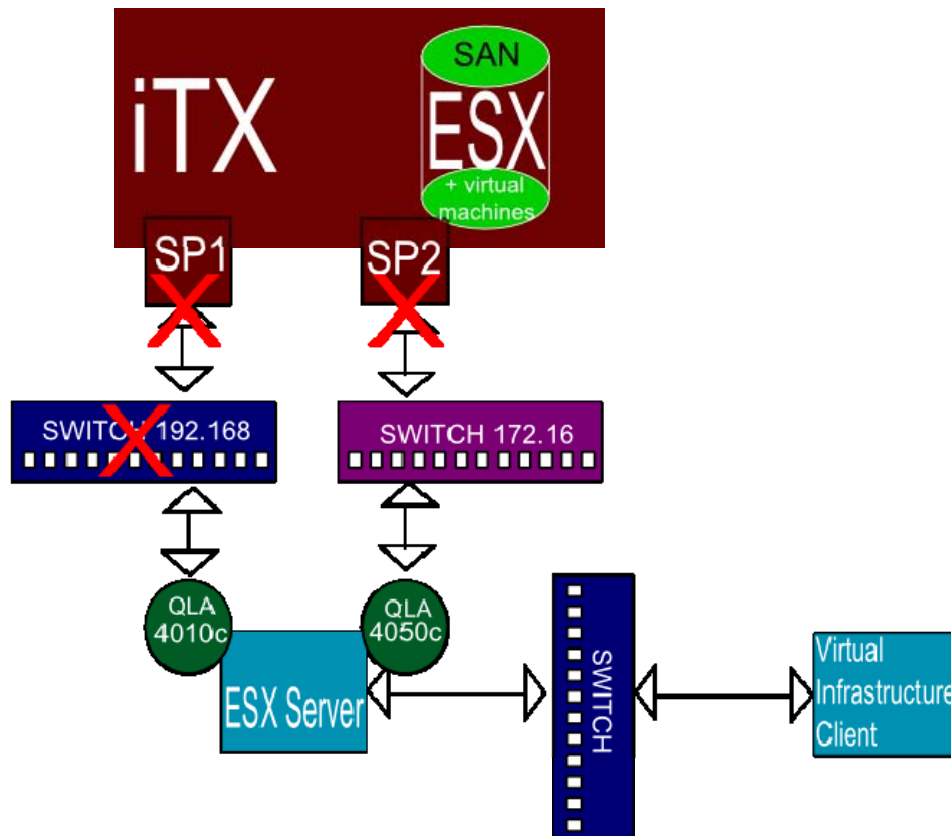
In this image: The red Xs mark the separate points of failure that were tested.

Chapter 3 Multipathing with Storage Port Failover

Multipathing with Storage Port Failover

Two configurations were run to determine compatibility of multipathing with storage port failover. The initial configuration used the Dell PowerEdge 4600^{A-2} with its internal SCSI drive installed with the ESX Server and used the HBAA connection to an iTX SAN volume for its virtual machines. The other configuration, using the Dell PowerEdge 4600 had ESX Server installed on a 2-terabyte^{A-8} iTX SAN volume booted from HBAA^{A-7}. Both configurations have a redundant path from HBAb on a different network to that same iTX SAN volume. After setting up the server, the datastore Path Setting was changed to 'Most Recently Used' (to also failover (failback) from the other HBA). Below are the tests that were run to simulate an iTX storage port failing.

- Pulled ethernet cable from iTX SP-1 (logically^{A-5} connected to HBAA):
RESULT: The ESX Server failed-over to HBAb as expected
- Pulled ethernet cable from iTX SP-2 (logically^{A-5} connected to HBAb):
RESULT: The ESX Server failed-back to HBAb as expected
- Disconnected power of switch (HBAA is ESX's active connection)^{A-6}:
RESULT: The ESX Server failed-over to HBAb as expected

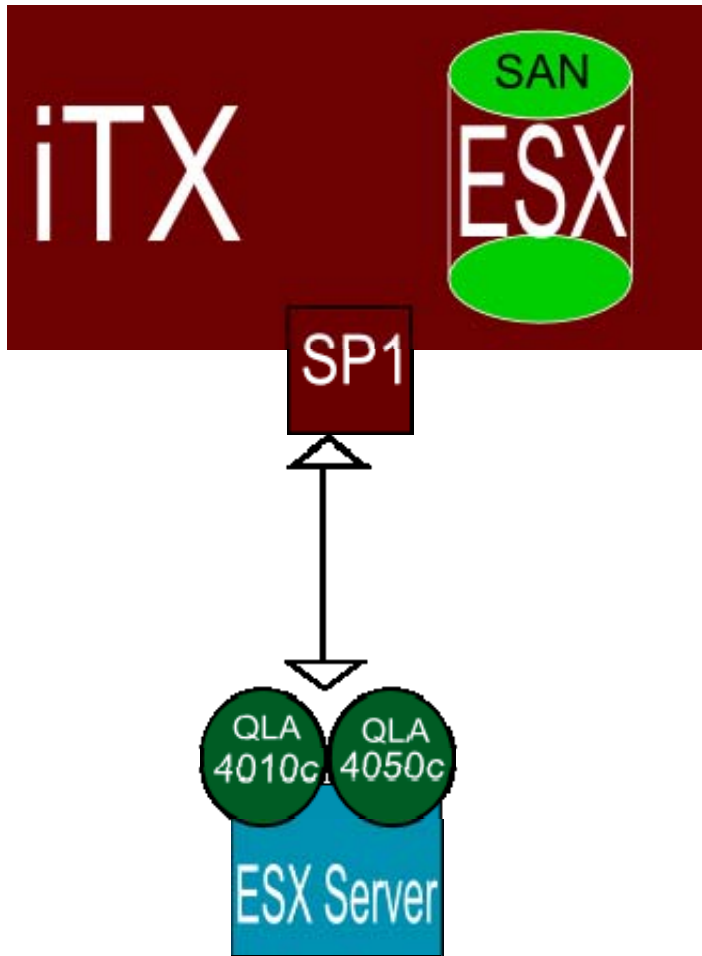


In this image: The red Xs mark the separate points of failure that were tested.

Chapter 4 Boot From SAN

Boot from SAN

This test was simply HBAa connected to an iTX SAN volume through a switch, the ESX Server installed to this SAN volume and lastly, the ESX Server booting from that HBA^{A-7}.



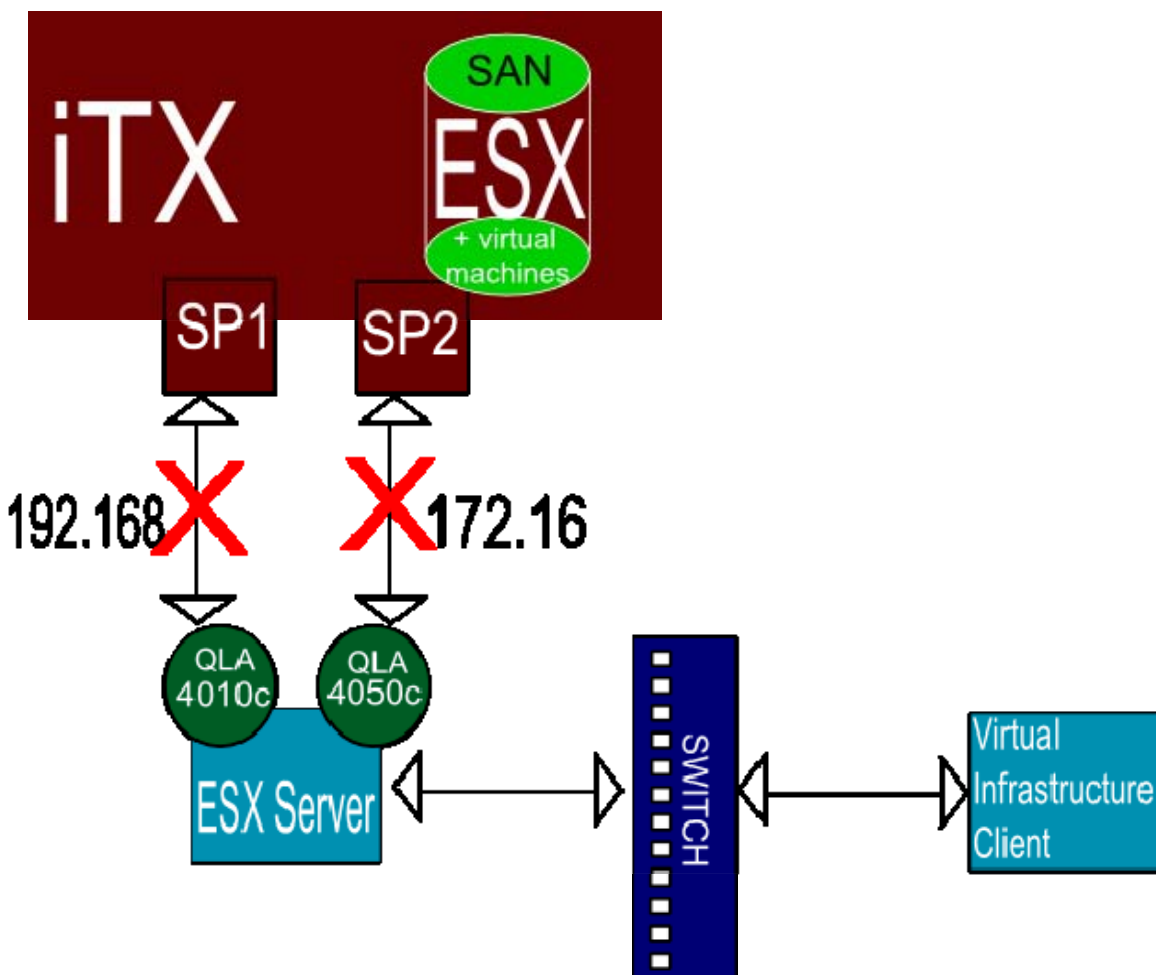
In this image: The different HBAs were tested individually.

Chapter 5 Direct Connect and Multipathing with HBA Failover

Direct Connect and Multipathing with HBA Failover

This test is 2 HBAs directly connected to an iTX SAN volume (on which ESX server is loaded) through 2 iTX ethernet ports using ethernet crossover cables and no switches. Booting from the SAN volume, the ESX server is setup and the datastore's Path Setting was changed to 'Most Recently Used.' Below are the tests that were run to simulate a directly connected HBA failure.

- Pulled ethernet cable from iTX SP-1 (directly connected to HBA^{A-7}):
RESULT: The ESX Server failed-over to HBA_b as expected
- Pulled ethernet cable from iTX SP-2 (directly connected to HBA_b):
RESULT: The ESX Server failed-back to HBA_a as expected



In this image: The red Xs mark the separate points of failure that were tested.

Appendix A

^{A-1} Computer Description: Computer

- Intel 1.2 GHz Celeron Processor
- Memory
 - 20 GB IDE drive
 - 512 MB RAM
- Network Interface Cards
 - Onboard 82559 Fast Ethernet LAN [10/100]
 - Intel PRO/1000MT Desktop Adapter

^{A-2} Computer Description: Dell PowerEdge 4600

- Intel dual 2 GHz XEON Processors
- Memory
 - 20 GB SCSI drive
 - 512 MB RAM
- Network Interface Cards
 - Onboard 82557 Ethernet Pro 100
 - Broadcom BCM 5700 [10/100/1000]

^{A-3} Hardware Description: HBAA

- QLogic QLA4050c
 - Firmware Version 2.00.00.45

^{A-4} Hardware Description: HBAB

- QLogic QLA4010c
 - Firmware Version 3.00.00.04

^{A-5} For clarity, this failure is an active link on the HBA and an inactive link on the storage port.

^{A-6} For clarity, this is the same test as multipathing with HBA failover. The difference here is that the test result is to see how iTX handles the failure.

^{A-7} To cover all bases, this test has also been done with the ESX Server initially booting from QLogic QLA4010c HBA. Meaning the HBAB would initially failover to the HBAA and so forth.

^{A-8} NOTE: This is an ESX server VMFSv3 or QLogic maximum. We currently support up to 7 TB volumes (3100i's maximum capacity).
