



OpenFabrics Alliance

Interoperability Working Group (OFA-IWG)

April 2007 Interoperability Event Report

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May 22, 2007
 Report Rev1.0

Enclosed are the results from OFA Interoperability testing performed on the following devices under test (DUTs):

Data Direct Networks S2A 9550

The test suite referenced in this report is available at the OFA website, at test time release 1.10 (April 10, 2007) was used:

<http://www.openfabrics.org/docs/InteropTestPlan.pdf> <http://www.iol.unh.edu/services/testing/ofa/testplan.pdf>

Test Procedure	IWG Test Status	Result/Notes
IB Link Initialize	Mandatory	Passed – no issues seen
IB Fabric Initialization	Mandatory	Passed – no issues seen
IB IPoIB	Mandatory	Not applicable to DUT
TI iSER	Beta	Not applicable to DUT
IB SRP	Mandatory	Passed – no issues seen
TI SDP	Mandatory	Not applicable to DUT
IB SM Failover	Beta	Partially tested due to time constraints of test period
TI MPI - OSU	Beta	Not applicable to DUT
TI MPI - Intel	Beta	Not applicable to DUT
TI uDAPL	Beta	Not applicable to DUT
FibreChannel Gateway(IB)	Beta	Not available for test
Ethernet Gateway(IB)	Beta	Not available for test

For specific details regarding issues please see the corresponding test result.

Testing Completed 4/27/2007

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Review Completed 5/22/2007

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Report Revision History

v1.0 Initial Release

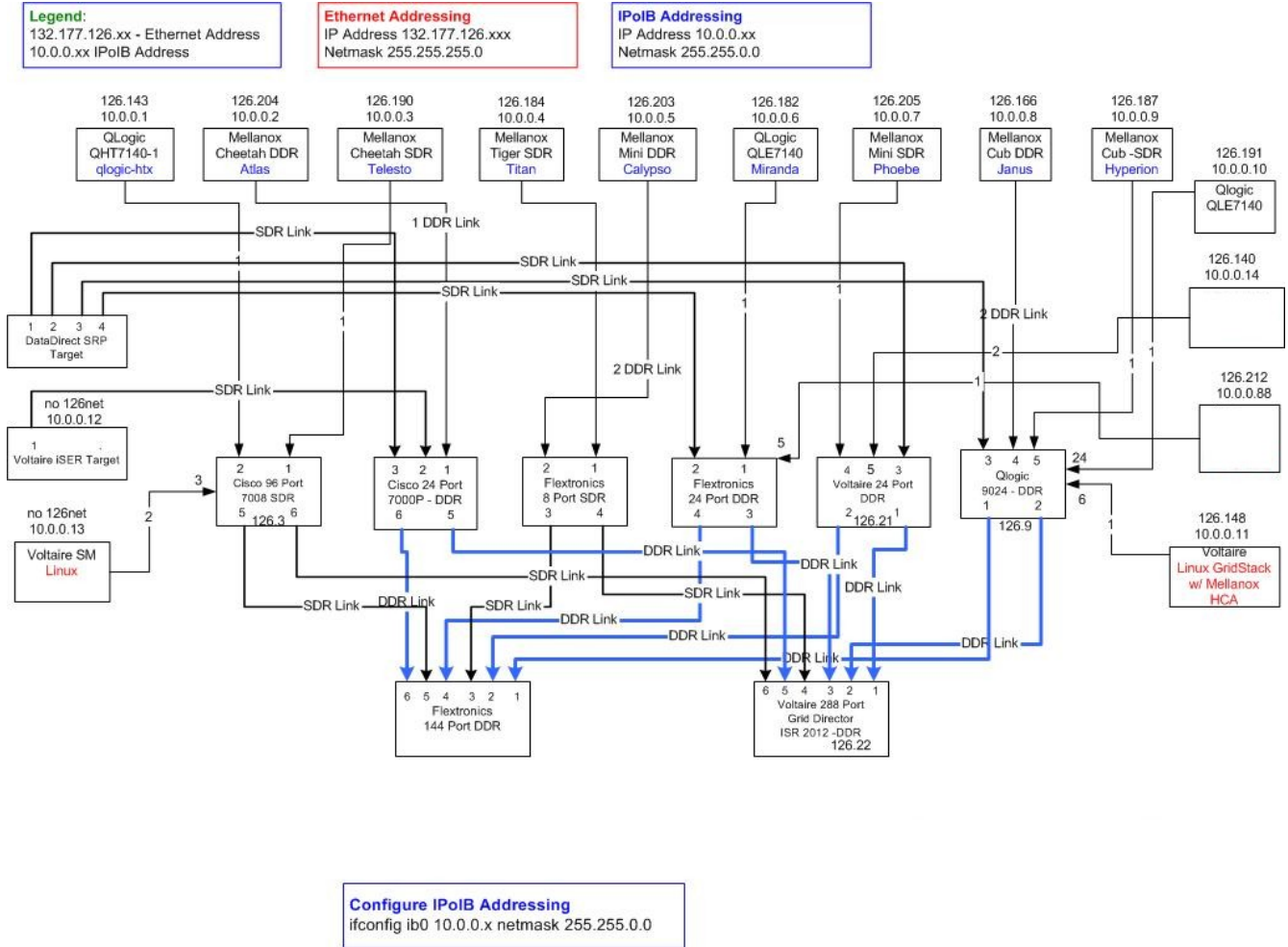
Table 1: Result Key

The following table contains possible results and their meanings:

Result:	Description:
PASS	The Device Under Test (DUT) was observed to exhibit conformant behavior.
PASS with Comments	The DUT was observed to exhibit conformant behavior however an additional explanation of the situation is included, such as due to time limitations only a portion of the testing was performed.
FAIL	The DUT was observed to exhibit non-conformant behavior.
Warning	The DUT was observed to exhibit behavior that is not recommended.
Informative	Results are for informative purposes only and are not judged on a pass or fail basis.
Refer to Comments	From the observations, a valid pass or fail could not be determined. An additional explanation of the situation is included.
Not Applicable	The DUT does not support the technology required to perform this test.
Not Available	Due to testing station limitations or time limitations, the tests could not be performed.
Borderline	The observed values of the specified parameters are valid at one extreme and invalid at the other.
Not Tested	Not tested due to the time constraints of the test period.

Table 2: DUT and Test Setup Information

Figure 1: The IB fabric configuration utilized for any tests requiring a multi-switch configuration is shown below.



DUT #1 Details			
Manufacturer	Data Direct Networks, Inc.	Firmware Rev	3.07d
Model	S2A 9550	Hardware Rev	N/A
Speed	SDR		
Additional Comments/Notes			
Data Direct Networks IB connected storage system (SRP Target)			

Mandatory Tests - IB Device Test Summary Results:

The following tables detail results for tests identified by the OFA-IWG as mandatory tests for the OFA Interoperability Logo Program (OFILP) per the OFA-IWG Interoperability Test Plan Release 1.10 (April 10, 2007)

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 1: IB Link Initialize	Test #1: Phy link up all ports	Link partners link as expected	PASS
	Test #2: Logical link up all ports switch SM	ibstatus reports active links	PASS
	Test #3: Logical link up all ports HCA SM	ibstatus reports active links	PASS

Discussion: Test #1: Phy link up all ports

DDR cables were used for all link tests. Device LEDs validated visually. Link width and link speed validated via use of “ibdiagnet -lw 4x” and ibdiagnet -ls 10”

Discussion: Test #2 & 3: Logical link up all ports switch SM / HCA SM

The switch-under-test's SM, OFED's OpenSM, and the Voltaire SMHost (GVFM) SM were all used to validate that the link could be brought to the Active state as verified via the “ibstatus” command. All SMs were initially off as the switch was powered up. After checking for an initial physical link, the SM under test was started and the state of the link verified. Note, for HCA to HCA link checks, the nature of the direct cable connection prevented the validation of any SM but the OpenSM. Refer to the table below for specific link configurations tested.

For DDN S2A 9550 (SRP Target)	Switch SM	OpenSM	Voltaire SMHost (GVFM)
Cisco SFS 7000D 24-port DDR (Switch)	PASS	PASS	PASS
Cisco SFS 7008 96-port SDR (Switch)	PASS	PASS	PASS
Flextronics 8 Modular SDR (Switch)	PASS	PASS	PASS
Flextronics 24 Modular DDR (Switch)	PASS	PASS	PASS
Flextronics 144 Modular DDR (Switch)	PASS	PASS	PASS
Mellanox MHEA28-1TC (HCA)	PASS	PASS	PASS
Mellanox MHEA28-XT (HCA)	PASS	PASS	PASS
Mellanox MHGA28-1TC (HCA)	PASS	PASS	PASS
Mellanox MHGA28-XTC (HCA)	PASS	PASS	PASS
Mellanox MHES14-XT (HCA)	PASS	PASS	PASS
Mellanox MHES18-XTC (HCA)	PASS	PASS	PASS
Mellanox MHGS18-XTC (HCA)	PASS	PASS	PASS
Qlogic SilverStorm 24-port DDR (Switch)	PASS	PASS	PASS
Qlogic QHT-7140 (HCA)	PASS	PASS	PASS
Qlogic QLE-7140 (HCA)	PASS	PASS	PASS
Voltaire Gridstack (HCA)	PASS	PASS	PASS

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 2: IB Fabric Initialization	Test #1: Verify all SMs configure fabric	Port is Active with all SMs	PASS

Discussion: Test #1: Verify all SMs configure fabric

The fabric configuration shown in Figure 1 was used for this test. 'ibdiagnet -c 1000' showed no Port errors counters increment. Only one SM is run at a time. All switches are power cycled between SM trials. All links are validated via use of 'ibdiagnet' and on each host 'ibstatus' to validate speed, width and link state. Refer to the table below for SM details.

For DDN S2A 9550 (SRP Target)	All ports Armed/Active	No Dup GUIDs	No Port errors
Cisco SFS 7000D 24-port DDR (Switch)	PASS	PASS	PASS
Cisco SFS 7008 96-port SDR (Switch)	PASS	PASS	PASS
OFED 1.2 RC1 OpenSM	PASS	PASS	PASS
Qlogic SilverStorm 24-port DDR (Switch)	PASS	PASS	PASS
Voltaire ISR 9024D-M 24-port DDR (Switch)	PASS	PASS	PASS
Voltaire ISR 2012 288-port DDR (Switch)	PASS	PASS	PASS
Voltaire SMHost (GVFM) (HCA)	PASS	PASS	PASS

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 3: IPoIB	Test #1-3	Not Applicable to DUT	Not Applicable

Discussion:

The OFA Logo Program does not require these tests for an iSER Target under test.

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 5: IB SRP	Test #1: Basic dd application	dd read completes successfully	PASS
	Test #2: Kill IB SM	dd read completes successfully	PASS
	Test #3: Disconnect Host	dd works after link restored	PASS
	Test #4: Disconnect Target	works after link restored in 5sec	PASS
Discussion: Test #1: Basic dd application			
<p>Note, the test plan v1.10 was modified from requiring only “2 HCAs” to include 6 representative hosts from all vendors used for validation of the DataDirect Network's SRP target. For this test, 6 hosts logged into the DataDirect Network's SRP targets and performed simultaneous reads via the command 'dd if=/dev/sdb of=/dev/null count=600 bs=10M'. On the hosts, the ib_srp module is loaded and 'ibsrpdm -c' and 'lsscsi' is used to find the correct info to add the targets. An example of the add target command used on each host follows: 'echo id_ext=23000001ff0401d4,ioc_guid=23000001ff0401d4,dgid=fe800000000000023000001ff0401d4,pkey=ffff,service_id=d40104ff01000023 > /sys/class/infiniband_srp/srp-mthca0-1/add_target'</p>			
Discussion: Test #2: Kill IB SM			
<p>Note, during testing the SM should not be stopped until login and data transfer on all connections is confirmed, thus ensuring all devices have properly logged in and commenced transfers before terminating the current SM. In all cases for all SMs, each host was observed to complete the current in-progress transfer when the SM is killed. SMs tested included: Cisco SFS 7000D 24-port DDR (Switch), OFED 1.2 RC1 OpenSM, Qlogic SilverStorm 24-port DDR (Switch), Voltaire SMHost (GVFM) SM, Voltaire ISR 9024D-M 24-port DDR (Switch)</p>			
Discussion: Test #3: Disconnect Host			
<p>Note, per test plan v1.10, one host was used for this “Step B” of IB SRP testing. The host (Voltaire Gridstack HCA) was logged into lun2 of the DataDirect Networks SRP target and could perform dd operation without issue. The link to the host was then disconnected and then reconnected. The same dd operation could still be performed without additional user intervention/commands.</p>			
Discussion: Test #4: Disconnect Target			
<p>After consultation, it was determined that a target should drop login information if a link is removed for an extended period of time, however it was deemed reasonable for a target to maintain login information if the link is removed for less than 30seconds. For this test, the host used (Mellanox MHGA28-1TC) was used to login to lun2 and dd was performed. The link to interface 2 (lun2) of the DataDirect Networks SRP target was then removed and restored 5 seconds later. Within 10seconds the logical link was up for the link and the DDN SRP target was observed to still maintain the login information, which was confirmed when the host could again perform the same dd operation without additional user intervention/commands.</p>			

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 6: TI SDP	Test #1-3	Not Applicable to DUT	Not Applicable
Discussion: Test #1-4			
The OFA Logo Program does not require these tests for an iSER Target under test.			

Beta Tests - IB Device Test Results:

The following table details results for tests identified by the OFA-IWG as beta tests for the OFA Interoperability Logo Program (OFILP) per the OFA-IWG Interoperability Test Plan Release 1.10 (April 10, 2007)

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 4: TI iSER	Test #1-5	Not Applicable to DUT	Not Applicable
Discussion: Test Results			
The OFA Logo Program does not require these tests for an iSER Target under test.			

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 5: IB SM Failover/Handover	Test #1-4	No issues observed	Refer to Comments
Discussion: Test Results			
Testing time prevented complete execution of all switch permutations. Modifications to the v1.10 test plan were developed during the testing event to further clarify the process, and additional clarifications are sought to better test true handover from on SM to another from the same vendor and allow for failover testing for SMs from different vendors. Due to these pending modifications, and the incomplete execution of the current test plan procedure, further testing is required for this Beta test process. Note – of the same-vendor SMs tested, no issue was observed for: <ul style="list-style-type: none"> ● standby SMs becoming master SMs in the event that the current master SM is removed, or ● the standby SM's priority is adjusted to a priority higher than the current master SM, or ● the standby SM's priority is adjusted to the same priority of the current master SM but the GUID of the standby SM is lower than the current master. 			

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 8: TI MPI – Ohio State University	Test #1-14	Not tested due to lack of time	Not Available
Group 9: MPI – Intel MPI	Test #1-21	Not tested due to lack of time	Not Available
Discussion: Test Results			
Testing time prevented execution of these tests. Further automation and early execution of IB link and fabric initialization tests should allow for greater test time within the testing week of future events.			

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 10: TI uDAPLTEST Commands	Test #1-10	Not applicable to DUT	Not Applicable
Discussion: Test Results			
The OFA Logo Program does not require these tests for an iSER Target under test.			

Test Number and Name	Part(s)	Summary Note(s)	Result(s)
Group 12: Fibre Channel Gateway (IB)	Test #1-10	No supporting devices available	Not Available
Group 13: Ethernet Gateway (IB)	Test #1-7	No supporting devices available	Not Available
Discussion: Test Results			
These beta tests could not be performed as no such gateway devices were available during the testing period.			

Appendix A: Example Testing Scripts

Examples of some testing scripts employed during the testing period are embedded below for reference.



Also included below are two samples of scripts used for SRP testing.

