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

Voltaire ISR 2004 DDR InfiniBand Managed Switch
Voltaire sRB-20210G InfiniBand-Ethernet Gateway switch module for Voltaire ISR 2004

The test suite referenced in this report is available at the OFA website, at test time release 1.17 (March 3, 2008) was used:

http://www.iol.unh.edu/services/testing/ofa/testplan.pdf

The following table highlights the Mandatory test results required for the OpenFabrics Interoperability Logo for the DUT per the testplan referenced above and the current OpenFabric Interoperability Logo Program (OFILP).

<table>
<thead>
<tr>
<th>Mandatory Test Procedures</th>
<th>IWG Test Status</th>
<th>Result/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1: IB Link Initialization</td>
<td>Mandatory</td>
<td>Passed – with comments</td>
</tr>
<tr>
<td>10.2: IB Fabric Initialization</td>
<td>Mandatory</td>
<td>Passed – with comments</td>
</tr>
<tr>
<td>10.3: IB IPoIB Connected Mode</td>
<td>Mandatory</td>
<td>Passed – no issues seen</td>
</tr>
<tr>
<td>10.9: TI iSER</td>
<td>Mandatory</td>
<td>Passed – no issues seen</td>
</tr>
<tr>
<td>10.10: SRP</td>
<td>Mandatory</td>
<td>Passed – no issues seen</td>
</tr>
<tr>
<td>10.11: SDP</td>
<td>Mandatory</td>
<td>Refer to Comments</td>
</tr>
</tbody>
</table>

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

Summary of all results follows on the second page of this report.
Table 1: Result Summary

The following table summarizes all results from the event pertinent to an IB device.

<table>
<thead>
<tr>
<th>Test Procedure</th>
<th>IWG Test Status</th>
<th>Result/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1: IB Link Initialization</td>
<td>Mandatory</td>
<td>Passed – with comments</td>
</tr>
<tr>
<td>10.2: IB Fabric Initialization</td>
<td>Mandatory</td>
<td>Passed – with comments</td>
</tr>
<tr>
<td>10.3: IB IPoIB Connected Mode</td>
<td>Mandatory</td>
<td>Passed – no issues seen</td>
</tr>
<tr>
<td>10.4: IB IPoIB Datagram Mode</td>
<td>Beta</td>
<td>Not Tested</td>
</tr>
<tr>
<td>10.9: TI iSER</td>
<td>Mandatory</td>
<td>Passed – no issues seen</td>
</tr>
<tr>
<td>10.10: SRP</td>
<td>Mandatory</td>
<td>Passed – no issues seen</td>
</tr>
<tr>
<td>10.11: SDP</td>
<td>Mandatory</td>
<td>Refer to Comments</td>
</tr>
<tr>
<td>10.12: IB SM Failover and Handover</td>
<td>Beta</td>
<td>Not Tested</td>
</tr>
<tr>
<td>10.13: TI MPI - OSU</td>
<td>Beta</td>
<td>Not applicable to DUT</td>
</tr>
<tr>
<td>10.14: TI MPI - Intel</td>
<td>Beta</td>
<td>Not applicable to DUT</td>
</tr>
<tr>
<td>10.15: HP MPI - HP</td>
<td>Beta</td>
<td>Not applicable to DUT</td>
</tr>
<tr>
<td>10.16: TI uDAPL</td>
<td>Beta</td>
<td>Not Tested</td>
</tr>
<tr>
<td>10.18: IB FibreChannel Gateway</td>
<td>Beta</td>
<td>Not applicable to DUT</td>
</tr>
<tr>
<td>10.19: IB Ethernet Gateway</td>
<td>Beta</td>
<td>Not applicable to DUT</td>
</tr>
<tr>
<td>10.20: IB Reliable Datagram Sockets</td>
<td>Beta</td>
<td>Not Tested</td>
</tr>
<tr>
<td>10.21: TI Basic RDMA Interoperability</td>
<td>Beta</td>
<td>Not Tested</td>
</tr>
<tr>
<td>10.23-24: TI RDMA Operations over Interconnect Components</td>
<td>Beta</td>
<td>Not Tested</td>
</tr>
</tbody>
</table>

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Report Revision History

- v1.0 Initial Release
- v1.01 Editorial/formatting improvements

Table 2: Result Key

The following table contains possible results and their meanings:

<table>
<thead>
<tr>
<th>Result</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASS</td>
<td>The Device Under Test (DUT) was observed to exhibit conformant behavior.</td>
</tr>
<tr>
<td>PASS with Comments</td>
<td>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.</td>
</tr>
<tr>
<td>FAIL</td>
<td>The DUT was observed to exhibit non-conformant behavior.</td>
</tr>
<tr>
<td>Warning</td>
<td>The DUT was observed to exhibit behavior that is not recommended.</td>
</tr>
<tr>
<td>Informative</td>
<td>Results are for informative purposes only and are not judged on a pass or fail basis.</td>
</tr>
<tr>
<td>Refer to Comments</td>
<td>From the observations, a valid pass or fail could not be determined. An additional explanation of the situation is included.</td>
</tr>
<tr>
<td>Not Applicable</td>
<td>The DUT does not support the technology required to perform this test.</td>
</tr>
<tr>
<td>Not Available</td>
<td>Due to testing station limitations or time limitations, the tests could not be performed.</td>
</tr>
<tr>
<td>Borderline</td>
<td>The observed values of the specified parameters are valid at one extreme and invalid at the other.</td>
</tr>
<tr>
<td>Not Tested</td>
<td>Not tested due to the time constraints of the test period.</td>
</tr>
</tbody>
</table>
Table 3: 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: Voltaire  
Model: ISR 2004  
Speed: DDR 4x  
Firmware Rev: Ver 10.16 fw.1.0.0  
IP Address in Fabric: N/A  
Additional Comments/Notes: Voltaire ISR 2004 DDR InfiniBand Managed Switch

DUT #2 Details
Manufacturer: Voltaire  
Model: sRB-20210G  
Speed: DDR 4x InfiniBand / 10 Gigabit Ethernet  
Firmware Rev: 1.0.42  
IP Address in Fabric: N/A  
Additional Comments/Notes: Voltaire sRB-20210G InfiniBand-Ethernet Gateway switch module for Voltaire ISR 2004
Mandatory Tests - IB Device Test Summary Results:

The following tables detail results for tests identified by the OPA-IWG as mandatory tests for the OFA Interoperability Logo Program (OFILP) per the OFA-IWG Interoperability Test Plan Release 1.17 (March 3, 2008)

<table>
<thead>
<tr>
<th>Test Number and Name</th>
<th>Part(s)</th>
<th>Summary Note(s)</th>
<th>Result(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1: IB Link Initialize</td>
<td>Test #1: Phy link up all ports</td>
<td>Phy link is established</td>
<td>PASS with Comments</td>
</tr>
</tbody>
</table>

Discussion: Test #1: Phy link up all ports

Physical link initialization was verified between this device and every other device in the fabric. DDR cables were used for all link tests. Link status was observed visually via status lights on the device.

Comment #1:

We observed that a physical connection could not be established between the Voltaire ISR 2004 switch and QLogic QLE7140 SDR HCA. The HCA does not support lane reversal, and is not required to support it.

Comment #2:

After updating the firmware on the Voltaire ISR 2004, the switch can establish a link to the QLogic QLE7140 SDR HCA.

<table>
<thead>
<tr>
<th>Link Partner Device</th>
<th>Voltaire ISR 2004 with sRB-20210G</th>
</tr>
</thead>
<tbody>
<tr>
<td>QLogic SilverStorm 9024 (Switch)</td>
<td>PASS</td>
</tr>
<tr>
<td>QLogic SilverStorm 9040 (Switch)</td>
<td>PASS</td>
</tr>
<tr>
<td>Voltaire ISR 2004 (Switch)</td>
<td>PASS (same device)</td>
</tr>
<tr>
<td>Cisco 7000D (Switch)</td>
<td>PASS</td>
</tr>
<tr>
<td>Flextronics F-X430066 (Switch)</td>
<td>PASS</td>
</tr>
<tr>
<td>Flextronics F-X430044 (Switch)</td>
<td>PASS</td>
</tr>
<tr>
<td>Flextronics F-X430081 (Switch)</td>
<td>PASS</td>
</tr>
<tr>
<td>Voltaire IPSTOR iSER target</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Miranda HCA: QLogic QLE7140 SDR</td>
<td>PASS – With Comments</td>
</tr>
<tr>
<td>Host: Tarvos HCA: Mellanox Connectx SDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Hyperion HCA: Mellanox LionCub SDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Janus HCA: Mellanox Cougar SDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Phoebe HCA: Mellanox LionCub SDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Titan HCA: Mellanox Cheetah SDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Calypso HCA: Mellanox Tiger SDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Skathi, G2 PCI Express HCA: Mellanox Connectx DDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Farbauti, G2 PCI Express HCA: QLogic QLE7280 DDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Narvi, G2 PCI Express HCA: QLogic QLE7240 DDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Atlas HCA: Mellanox Connectx DDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Telesto HCA: Mellanox LionCub DDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Dione, G2 PCI Express HCA: Mellanox LionMini DDR</td>
<td>PASS</td>
</tr>
<tr>
<td>Host: Mimas HCA: Mellanox Cheetah DDR</td>
<td>PASS</td>
</tr>
</tbody>
</table>
## 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 with Comments**

### 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.

**Comment #1:**

In performing the procedure in test #1, we observed that the Cisco HSM did not configure the fabric when the Voltaire sRB-20210G InfiniBand-Ethernet gateway device was connected with the fabric. We determined that there are two issues that caused this behavior. First, the Voltaire gateway device was reporting an incorrect link speed for one of its interfaces. Second, the Cisco 7000D did not manage any other links in the fabric while the Voltaire gateway device was connected.

**Comment #2:**

After updating the firmware on the Voltaire sRB-20210G gateway device, the gateway now reports the correct link speed for all of its interfaces. A trial of the procedure in test #1 shows that issue described in comment 1 is resolved.

<table>
<thead>
<tr>
<th>For Voltaire ISR 2004</th>
<th>All ports Armed/Active</th>
<th>No Dup GUIDs</th>
<th>No Port errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFED OpenSM (SM Only)</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>QLogic SilverStorm 9024 (Managed Switch)</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>QLogic SilverStorm 9040 (Managed Switch)</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>Voltaire ISR 2004 (Managed Switch)</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>Cisco 7000D (Managed Switch)</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>Cisco High Performance (SM Only)</td>
<td>PASS</td>
<td>PASS</td>
<td>PASS</td>
</tr>
</tbody>
</table>

### Group 3: IPoIB Connected Mode
- Test #1-3
  - Tests succeeded between all IPoIB devices
  - **PASS**

### Discussion: Test #1-3

IPoIB capable devices were interoperable over a fabric incorporating this device. All IPoIB connected mode tests completed successfully between all IPoIB enabled devices in the fabric.

### Group 9: TI iSER
- Test #1-4
  - Tests succeeded between all iSER devices
  - **PASS**

### Discussion: Test #1-4

All iSER initiators were able to connect and perform data transfer operations with the iSER targets in a fabric incorporating this device. All iSER tests completed successfully.

<table>
<thead>
<tr>
<th>Voltaire IPSTOR iSER Target</th>
<th>All iSER tests succeeded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltaire ISR 2004</td>
<td>PASS</td>
</tr>
<tr>
<td>Voltaire sRB-20210G</td>
<td>PASS</td>
</tr>
</tbody>
</table>

### Group 10: IB SRP
- Test #1:
  - Tests succeeded between all SRP devices
  - **PASS**

### Discussion: Test Result

All SRP initiators were able to connect and perform data transfer operations with the SRP targets in a fabric incorporating this device. All SRP tests completed successfully.
## Test Number and Name

<table>
<thead>
<tr>
<th>Group II: TI SDP</th>
<th>Part(s)</th>
<th>Summary Note(s)</th>
<th>Result(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test #1: Netperf Procedure</td>
<td>Test Completed without errors</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>Test #2: FTP Procedure</td>
<td>Not Tested</td>
<td>Not Tested</td>
<td></td>
</tr>
<tr>
<td>Test #3: SCP Procedure</td>
<td>Not Tested</td>
<td>Not Tested</td>
<td></td>
</tr>
</tbody>
</table>

### Discussion: Test #1-3

The automated test scripts were revised since the version published in the 1.17 version of the test plan. Automated test scripts ran the three parts of the SDP procedure between every possible pair of hosts without the hosts connecting to themselves and records the results to a log.

The entirety of these modifications occurred following the completion of the Interoperability Event during the report generation phase. These modifications were spurred in part due to the omission of data logs from test #2 and test #3 that failed to be gathered during the Interoperability Event; however, the ISR 2004 and the sRB-20210G Module were shipped back before the need for a retest arose. As a result, parts 2 and 3 of the procedure were not formally logged/tested. No issue is suspected with either of these two test cases based on input from the testers; however, the lack of substantiating logs as evidence to support these suspicions results in the 'not tested' result noted.

Despite this omission in logs, UNH-IOL sees no reason not to recommend that the DUT be granted a logo based on the successful completion of part 1.

The test log shows that no issues were seen with the Netperf procedure. However, some hosts were noted to run significantly slower than others during the transfers. This is not a failure as per the current test plan, but it should be noted that this could become a topic of focus in future revisions of the Test Plan.
# 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 1.17 (March 3, 2008)

<table>
<thead>
<tr>
<th>Test Number and Name</th>
<th>Part(s)</th>
<th>Summary Note(s)</th>
<th>Result(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 4: IPoIB Datagram Mode</strong></td>
<td>Test #1-3</td>
<td></td>
<td>Not Tested</td>
</tr>
<tr>
<td><strong>Discussion: Test #1-3</strong></td>
<td></td>
<td></td>
<td>Not tested due to time constraints</td>
</tr>
<tr>
<td><strong>Group 12: IB SM Failover and Handover</strong></td>
<td>Test #1-4</td>
<td></td>
<td>Not Tested</td>
</tr>
<tr>
<td><strong>Discussion: Test Results</strong></td>
<td></td>
<td></td>
<td>Not tested due to time constraints</td>
</tr>
<tr>
<td><strong>Group 13: TI MPI – Ohio State Univ.</strong></td>
<td>Test #1-14</td>
<td>Not applicable to DUT</td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Discussion: Test Results</strong></td>
<td></td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Group 14: MPI – Intel</strong></td>
<td>Test #1-21</td>
<td>Not applicable to DUT</td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Discussion: Test Results</strong></td>
<td></td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Group 15: MPI – Hewlett-Packard</strong></td>
<td>Test #1-21</td>
<td>Not applicable to DUT</td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Discussion: Test Results</strong></td>
<td></td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Group 16: TI uDAPL</strong></td>
<td>Test #1-10</td>
<td></td>
<td>Not Tested</td>
</tr>
<tr>
<td><strong>Discussion: Test Results</strong></td>
<td></td>
<td></td>
<td>Not tested due to time constraints</td>
</tr>
<tr>
<td><strong>Group 18: IB FibreChannel Gateway</strong></td>
<td>Test #1-10</td>
<td>Not applicable to DUT</td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Discussion: Test Results</strong></td>
<td></td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Group 19: IB Ethernet Gateway</strong></td>
<td>Test #1-10</td>
<td>Not applicable to DUT</td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Discussion: Test Results</strong></td>
<td></td>
<td></td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
# Test Number and Name
<table>
<thead>
<tr>
<th>Part(s)</th>
<th>Summary Note(s)</th>
<th>Result(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 20: IB Reliable Datagram Sockets</td>
<td>Test #1-10</td>
<td>Not Tested</td>
</tr>
</tbody>
</table>

**Discussion: Test Results**

Not tested due to time constraints

---

<table>
<thead>
<tr>
<th>Test Number and Name</th>
<th>Part(s)</th>
<th>Summary Note(s)</th>
<th>Result(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 21: TI Basic RDMA Interoperability</td>
<td>Test #1-10</td>
<td></td>
<td>Not Tested</td>
</tr>
</tbody>
</table>

**Discussion: Test Results**

Not tested due to time constraints

---

<table>
<thead>
<tr>
<th>Test Number and Name</th>
<th>Part(s)</th>
<th>Summary Note(s)</th>
<th>Result(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 23-24: TI RDMA Operations over Interconnect Components</td>
<td>Test #1-10</td>
<td></td>
<td>Not Tested</td>
</tr>
</tbody>
</table>

**Discussion: Test Results**

Not tested due to time constraints