# OpenFabrics Alliance
## Interoperability Working Group (OFA-IWG)
### January 2010 Logo Validation Event Report

Jim Ryan
Intel Corporation
1501 South Mopac Suite 400
Austin, TX 78746

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Report Revision 1.0
OFED Version 1.5

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

*Intel-NE NE0200101E3CX0104 Single Port CX4 RNIC*

The test suite used for the tests described in this report is *OFA-IWG Interoperability Test Plan Release 1.30* (September 8, 2009 DRAFT). It is available at the OFA website :

iol.unh.edu/ofatestplan

Log files are available here:

ftp.iol.unh.edu/pub/ofa

The OFILG gratefully acknowledges the **iWARP Consortium** for developing and contributing the testing software used for test 11.5 iWARP Connectivity.

## Results Overview - Mandatory Tests

| Test Procedure | IWG Test Status | Result/Notes |
|---|---|---|
| 11.5 iWARP Connectivity | Mandatory | **PASS with Comments** |
| 12.12 Open MPI - homogeneous | Mandatory | **PASS with Comments** |
| 12.13 MVAPICH2 - homogeneous | Mandatory | **PASS with Comments** |

Testing Completed 2010-Feb-4

Jeff Laird
laird@iol.unh.edu

Review Completed 2010-Feb-4
Mikkel Hagen

mhagen@iol.unh.edu

# Results Overview - All Tests

Note: **Failing a beta test does not necessarily indicate a failure of the device under test.** There are several reasons that a device might fail a beta test that are beyond the control of the device manufacturer. Such reasons include unresolved problems with the OFED software, with other vendors' devices, or with the test plan procedures.

| Test Procedure | IWG Test Status | Result/Notes |
|---|---|---|
| 11.1 Ethernet Link Initialization | Beta | **Warning** |
| 11.2 Ethernet Fabric Initialization | Beta | **Not Available** |
| 11.3 Ethernet Fabric Reconvergence | Beta | **Not Available** |
| 11.4 Ethernet Fabric Failover | Beta | **Not Available** |
| 11.5 iWARP Connectivity | Mandatory | **PASS with Comments** |
| 12.1 TI iSER | Beta | **Not Available** |
| 12.2 TI NFS over RDMA | Beta | **Not Tested** |
| 12.3 TI RDS | Beta | **FAIL** |
| 12.4 TI SDP | N/A | **Not Applicable** |
| 12.5 TI uDAPL | Beta | **FAIL** |
| 12.6-7 TI Basic RDMA Interop | Beta | **Not Tested** |
| 12.8-9 TI RDMA Operations | Beta | **Not Tested** |
| 12.10 TI MPI - HP | Beta | **Not Tested** |
| 12.11 TI MPI - Intel | Beta | **Not Tested** |
| 12.12 TI MPI - Open MPI - homogeneous | Mandatory | **PASS with Comments** |
| 12.12 TI MPI - Open MPI - heterogeneous | Beta | **FAIL** |
| 12.13 TI MPI - MVAPICH2 - homogeneous | Mandatory | **PASS with Comments** |
| 12.13 TI MPI - MVAPICH2 - heterogeneous | Beta | **FAIL** |

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

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## Report Revision History

1.0 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 Information

| DUT #1 Details | | | |
|---|---|---|---|
| Manufacturer | Intel (NetEffect) | Firmware Version | 3.16 |
| Model | NE0200101E3CX0104 | Hardware Version | E59737-001 RV01 |
| Driver | iw_nes version 1.5.0.0 | Located in Hosts | Polydeuces (8 cores), Prometheus (8 cores), Rhea (4 cores), Skoll (4 cores), Telesto (4 cores) |
| **Additional Comments/Notes** | | | |
| | | | |

# Test Setup:

| Chelsio S310E-CXA RNIC | — | Fujitsu XG2000C Switch | — | Intel NE020 RNIC |
|---|---|---|---|---|

# Device Test Summary Results:

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 11.1 Ethernet Link Initialization | | error message | **Warning** |
| Details | | | |

rping successfully transmits data across the RDMA channel. However, an error message appears.
Executing rping from Chelsio as client to Intel as server displays "cq completion failed status 5" on the Intel/server side.
Executing rping from Intel as client to Chelsio as server displays "cq completion failed status 5" on the Intel/client side.

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 11.2 Ethernet Fabric Initialization | | No switches to test | **Not Available** |
| Details | | | |
| | | | |

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 11.3 Ethernet Fabric Reconvergence | | No switches to test | **Not Available** |
| Details | | | |
| | | | |

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 11.4 Ethernet Fabric Failover | | No switches to test | **Not Available** |
| Details | | | |
| | | | |

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 11.5 iWARP Connectivity | Groups 1-7 | unsupported features | **PASS with Comments** |
| Details | | | |

Comments from the separate iWARP Connectivity report pertaining to several subtests within the iWARP Connectivity test:
1. The OFED software stack does not support SendINV and SendSEINV.
2. CX-4 and 10G optics do not support speed negotiation.
3. The OFED software stack does not support the ability to configure Markers or CRC at runtime.

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 12.1 TI iSER | | No iSER target | **Not Available** |
| Details | | | |

There were no iSER targets in the test cluster.

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 12.2 TI NFS over RDMA | | Insufficient time | **Not Tested** |
| Details | | | |
| | | | |

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| **12.3 TI RDS** | rds-ping | no output | **FAIL** |
| | rds-stress | no output | **FAIL** |
| **Details** | | | |

For this test the Chelsio parameter file
> `/sys/module/iw_cxgb3/parameters/peer2peer`

contained "1" and the Intel parameter file
> `/sys/module/iw_nes/parameters/send_first`

contained "0" on all hosts.

rds-ping: Homogeneous and heterogeneous both produce no output but end after the appropriate amount of time (3 seconds for a ping count of 3). This is true whether send_first is 0 or 1.

rds-stress : Homogeneous and heterogeneous behave as if passing, but output values are all zero.

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| **12.4 TI SDP** | | no SDP support | **Not Applicable** |
| **Details** | | | |

Current licensing restrictions prevent SDP support in iWARP RNIC solutions.

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| **12.5 TI uDAPL** | | Hangs | **FAIL** |
| **Details** | | | |

For this test the Chelsio parameter file
> `/sys/module/iw_cxgb3/parameters/peer2peer`

contained "1" and the Intel parameter file
> `/sys/module/iw_nes/parameters/send_first`

contained "0" on all hosts.

Homogeneous passes.
Heterogeneous Chelsio (as client) to Intel (as server) hangs on test 3.2.
Heterogeneous Intel (as client) to Chelsio (as server) hangs on test 1.1.

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| **12.6-7 TI Basic RDMA Interop** | bw, lat | | **Not Tested** |
| **Details** | | | |
| | | | |

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| **12.8-9 TI RDMA Operations** | | | **Not Tested** |
| **Details** | | | |
| | | | |

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| **12.10 TI MPI - HP** | | Insufficient time | **Not Tested** |
| **Details** | | | |
| | | | |

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 12.11 TI MPI - Intel | | Insufficient time | **Not Tested** |
| **Details** | | | |
| | | | |

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 12.12 TI MPI - Open MPI - homogeneous | | Needs a special parameter. | **PASS with Comments** |
| **Details** | | | |

MPI tests use all five hosts/RNICs and all 28 cores on those five hosts.

When executed normally this test bogged to a standstill during the Gather subtest. Adding the parameter "-mca mpi_leave_pinned 0" caused the test to succeed.

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 12.12 TI MPI - Open MPI - heterogeneous | | Hangs at start. | **FAIL** |
| **Details** | | | |

The test hangs with no output.

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 12.13 TI MPI - MVAPICH2 - homogeneous | | special parameters required | **PASS with Comments** |
| **Details** | | | |

The IMB-MPI1 test required setting the following command-line parameters.
```
MV2_VBUF_TOTAL_SIZE=9216
MV2_DEFAULT_MAX_CQ_SIZE=32766
```

| Test Number and Name | Parts | Summary | Result |
|---|---|---|---|
| 12.13 TI MPI - MVAPICH2 - heterogeneous | | Unable to execute. | **FAIL** |
| **Details** | | | |

Homogeneous Intel requires both of the following command-line parameters for the IMB-MPI1 test to start.
```
MV2_VBUF_TOTAL_SIZE=9216
MV2_DEFAULT_MAX_CQ_SIZE=32766
```
Homogeneous Chelsio will run the IMB-MPI1 test with no parameters and with the former (VBUF) parameter, but setting the latter (CQ_SIZE) parameter causes Chelsio to not start. (This is the case not only with value 32,766 ($2^{15}$ - 2) but also with values 16,382 ($2^{14}$ - 2), 65,534 ($2^{16}$ - 2), 131,070 ($2^{17}$ - 2), and 262,142 ($2^{18}$ - 2).
Therefore, for heterogeneous execution there is a question of whether or not to use the command-line parameters. As expected, all four possible combinations fail. When the CQ_SIZE parameter is present the failure is on the Chelsio host, and when it is not present the failure is on the Intel host.