

# **InfiniBand Trade Association Integrators' List Policy**

The InfiniBand Trade Association (“IBTA”) publishes an Integrators’ List (“IL”) following each Plugfest sponsored by the IBTA. IBTA published the first IL after the June 2003 Plugfest. The IL includes a list of devices and cables (“Devices”) submitted by Members that were tested at the Plugfest and which such Members state comply with the conditions in this policy. A Member who has signed an IBTA Logo Agreement and has a Device listed on the IL may publish information stating its Device has complied with the terms and conditions in this policy.

By participating in a Plugfest or submitting a Device to the IL, IBTA member companies (“Members”) agree to the terms and conditions of this Integrators’ List Policy.

Pursuant to the terms of the Plugfest Non-Disclosure Agreement, all Plugfest Device test results are the individual property of Plugfest participants who own such Devices, and will not be disclosed in any form by the IBTA. The Plugfest Non-Disclosure Agreement contains additional terms and conditions governing disclosure of test results by Plugfest participants.

**DISCLAIMER** - THE IL IS PROVIDED "AS IS" AND WITHOUT ANY WARRANTY OF ANY KIND, INCLUDING, WITHOUT LIMITATION, ANY EXPRESS OR IMPLIED WARRANTY OF NON-INFRINGEMENT, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR COMPLIANCE WITH THIS INTEGRATORS’ LIST POLICY. IN NO EVENT SHALL IBTA OR ANY MEMBER OF IBTA BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, EXEMPLARY, PUNITIVE, OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

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## A. General Conditions

### 1) Testing

To be included on the Integrators' List, a Device under Test (DUT) must pass the requisite tests administered at Plugfest in accordance with Section B. ([Tests and Testing Criteria](#)) below. In addition, a compliant product shall not reference compliance or compatibility criteria outside those defined and published by the IBTA as a condition of interoperating with another product. For example, an HCA or switch shall not adjust its behavior based on the source or identity of cable. Instead, its behavior shall be determined solely by the technical characteristics and performance observed in situ.

### 2) Device Information

Each Device listing in the IL will include at least the following identification and specification information, which will describe the Device as tested at Plugfest ("Device Information"):

- a. Devices: If the DUT is a device, such as an xCA, switch, integrated system, or router:
  1. Product Name
  2. Product Description
  3. Model number
  4. IB Node type, either:
    - a. Host Channel Adapter (HCA) or Target Channel Adapter (TCA)
    - b. Switch or Integrated System
    - c. Router
  5. Hardware version
  6. Software version
  7. Additional Capabilities, if applicable (e.g., SM/SA, IPoIB, Atomic, etc.)
- b. Cables: If the DUT is a cable:
  1. Product Name
  2. Part Number
  3. Width (4x, 12x, etc)
  4. Attachment (DA, PCB)
  5. Speed (SDR, DDR, QDR, etc)
  6. Length (meters)
  7. Signal conductor size, AWG
  8. Cable Type
    - a. Equalized
    - b. Passive or Active
    - c. Copper or Fiber
  9. Connector Type (CX4, QSFP, CXP, etc)
    - a. Connector Manufacturer
    - b. Paddle Card Manufacturer
    - c. Bulk Wire Manufacturer
    - d. Wire Part Number

3) Documentation

Each Device listing in the IL will have a link to a document that clearly describes the testing, and actual tests, performed for such Device.

4) Availability

The IL will be made available to the general public.

5) Disclaimer of Liability by IBTA - Assumption of Risk by Member

EACH MEMBER AGREES THAT IBTA IS NOT LIABLE FOR CLAIMS ARISING FROM OR RELATING TO MEMBER'S PARTICIPATION IN A PLUGFEST OR FROM A MEMBER'S SUBMISSION OF A DEVICE TO THE IL, INCLUDING BUT NOT LIMITED TO ANY FAILURE OF A DEVICE TO MEET TESTING CRITERIA. MEMBER ACKNOWLEDGES AND AGREES THAT IT WILL NOT ASSERT OR PURSUE, AND IBTA IS NOT LIABLE FOR, ANY CLAIMS, LOSS, LIABILITY OR DAMAGE (INCLUDING COURT COSTS AND ATTORNEYS' FEES) ARISING FROM OR RELATING TO MEMBER'S PARTICIPATION IN PLUGFEST OR SUBMISSION OF A DEVICE TO THE IL. EACH MEMBER IS SOLELY RESPONSIBLE FOR DETERMINING THE APPROPRIATENESS OF PARTICIPATING IN PLUGFEST AND SUBMISSION TO THE IL AND ASSUMES ALL RISKS ASSOCIATED IN CONNECTION THEREWITH, INCLUDING BUT NOT LIMITED TO, THE RISKS AND COSTS OF PROGRAM ERRORS, COMPLIANCE WITH APPLICABLE LAWS, DAMAGE TO OR LOSS OF DATA, PROGRAMS OR EQUIPMENT, UNAVAILABILITY OR INTERRUPTION OF OPERATIONS, OR INTELLECTUAL PROPERTY CLAIMS.

6) Expenses

Each Member bears its own expenses for participation in a Plugfest and shall be responsible for any fees charged by IBTA or its authorized vendors.

## B. Tests and Testing Criteria

### 1) Approved List of Tests

The Compliance and Interoperability Working Group (“CIWG”) will publish an approved list of IL tests and corresponding pass/fail criteria for each Plugfest, which shall include any available tests for device additional capabilities (“Test List”). The Test List and all final approved test implementations for a particular Plugfest should be made available to Members a minimum of 45 days prior to the Plugfest.

### 2) Registration

Members must register Devices for testing at the Plugfest by submitting Device Information and such other required Device registration information; only the Device corresponding to the Device Information registered in advance will be tested at Plugfest.

### 3) Device Compliance Testing

To be listed on the IL, each device tested at the Plugfest must comply with the compliance and interoperability criteria set forth below.

- a. Compliance: A device must pass all of the device compliance tests included on the Test List. Members must complete any pre-compliance testing prior to Plugfest. Final compliance testing will be conducted during Plugfest as determined by CIWG.
- c. Interoperability: A device must participate in all of the interoperability procedures defined by the CIWG. A failure during interoperability testing shall not prevent the device from being listed on the Integrators’ List but the results must be published or the device will not be allowed on the list.
- d. Testing for Additional Capabilities: Members may elect to have a device tested for optional capabilities, including InfiniBand™ capabilities. To include an additional capability for a device listed in the IL, the device must successfully complete the tests specifically identified for such additional capability on the Test List. Failure to pass certain additional capability tests (e.g., Atomic) will not prevent the device from being listed in the IL.

### 4) Cable Compliance Testing

To be listed on the IL, each cable tested at the Plugfest must comply with the compliance, interoperability and reference cable criteria set forth below.

- a. Functionally Identical: Cables can be added to the IL List under the Reference Program and the Rebranding Program if they are functionally identical and meet the criteria of the programs listed below. Examples of “functional” changes that require separate testing of a cable include, but are not limited to changes to the cable connector, paddleboard, equalization systems or wire gauge. The bulk wire must be the same size wire gauge and have the exact same electrical performance and be from the same manufacturer. Examples of “non-functional” changes include, but are not limited to changes in labeling, color, or informative EEPROM

contents (see the table below for the EEPROM contents that can be changed). The CIWG Arbitration Committee will have final say as to whether or not a change is “functional.”

Upper 00h	148-163		Vendor name
Upper 00h	165-167		Vendor OUI
Upper 00h	168-183		Vendor part number
Upper 00h	184-185		Vendor revision
Upper 00h	191	7:0	Check sum
Upper 00h	196-211		Vendor serial number
Upper 00h	212-217		Date code
Upper 00h	218-219		Lot code
Upper 00h	223	7:0	Check sum
Upper 00h	224-255		Vendor specific information

- b. Compliance: Cables must pass all of the mandatory Physical Layer tests which are included on the test list for the upcoming Plugfest. The test list and the test specifications will be distributed by the CIWG prior to each Plugfest and these documents will identify informative tests and those tests which contain fields that are informative versus mandatory. Cables must comply with all of the mechanical specifications related to that cable type. The CIWG reserves the right to randomly test all cables for compliance to the mechanical spec.
- c. Interoperability: Cables must participate in the Interoperability procedures included on the Test List during the Plugfest. If a cable is included on the IL List, the Interoperability results must be published.

5) System Interoperability Testing

- a. All devices used to test System Interoperability must be compliant with the IBTA 1.2.1 or higher auto negotiation protocol. In addition, the software and firmware used by these devices must be publicly available to the end user.
- d. The guidelines for System Interoperability testing will be updated for each Plugfest and published in the CIWG Documents repository.

6) Notice of Test Results

Members with Devices that were tested at the Plugfest will be notified within 60 days of the conclusion of the event. Notice of test results will include all supporting materials such as traces and log files. For all Devices that have failed to meet the testing criteria set forth above, Members whose test results might be affected by the interoperability results or any subsequent resolution of an Appeal (as set forth in Section 6, below) will also receive notice of such test results.

## C. Pass By Reference Program

### 1) Cable Reference Program

Each Member may select specific Active Fiber cables to be tested at the Plugfest and may designate such cables as “Reference Cables”. Reference cables must be qualified in pairs to establish a minimum and maximum length which have been tested. This will establish the *Reference Pair Range* (RPR). All Active Fiber cables that have a conductor length that falls within the Reference Pair Range (RPR length inclusive) (1 to 100 meters or 100 to 300 meters) and are functionally identical to the Reference Cables (with the exception of the physical cable length and the cable length registers [142 to 146] in the I2C management interface) will also qualify to be listed on the IL. The Member will provide a specification sheet for each cable corresponding to a Reference Cable to document conformance with these conditions. A cable that qualifies by reference cannot replace the results of a cable which has been physically tested at the Plugfest. This program does not apply to copper cables. In consideration of vendors who do not add reference cables, reference cables may be added to the end of the IL and not inline.

### 2) Device Reference Program - HCAs

#### a. Tier 1 Required tests:

- i. This testing tier applies to new devices that have never been tested before, devices that have had changes to their firmware or hardware, or cases where the spec or test procedure has changed since prior testing.
- ii. Volume 1 Compliance tests, Volume 2 Physical Layer tests and Interoperability tests. Both ports would need to be tested for Physical Layer compliance.

#### b. Tier 2 Required tests:

- i. This testing tier applies to a one port HCA that was identical to another two port HCA which had previously passed Tier 1 device compliance testing.
- ii. Volume 1 test would be waived but Physical Layer & Interoperability tests must be performed.

#### c. Tier 3 Required tests:

- i. This testing tier applies to an HCA which had previously passed Tier 1 or Tier 2 compliance testing and had no changes to firmware or hardware revisions since the previous compliance testing.
- ii. Interoperability testing only

### 3) Device Reference Program - Switches

#### d. Tier 1 Required tests:

- i. This testing tier applies to new devices that have never been tested before, devices that have had changes to their firmware or hardware, or cases where the spec or test procedure has changed since prior testing.
- ii. Volume 1 Compliance tests, Volume 2 Physical Layer tests and Interoperability tests.

#### e. Tier 2 Required tests:

- i. This testing tier applies to a switch that contains the same switch IC as a device that has previously passed Tier 1 device compliance testing, but is sold as a unique switch platform.
- ii. Volume 1 test would be waived and passed by reference but Physical Layer & Interoperability tests must be performed.

#### f. Tier 3 Required tests:

- i. This testing tier applies to a switch that had previously passed Tier 1 or Tier 2 compliance testing and had no changes to firmware or hardware revisions since the previous compliance testing.
- ii. Interoperability testing only

## **D. Cable Rebranding**

This program allows Vendor B to add rebranded cables to the IL List which have been tested and certified by Vendor A. Cables must have been supplied by Vendor A for certification and testing at an IBTA Plugfest or during On-Demand testing and must meet all of the current IL Policy guidelines. Rebranded cables must be functionally identical to the certified cables provided by Vendor A. This does not give Vendor B the right to manufacture the cables designed by Vendor A and rebrand them under this program. Vendor B must provide specifications to satisfy the Plugfest Engineers that the cables are functionally identical to the cables provided by Vendor A which have been tested during the Plugfest. The rebranded cables can be added within 30 days of Vendor A receiving their Plugfest results provided that Vendor B has provided the necessary proof that the cables are functionally identical. Both vendors must be members of the IBTA. The fee structure will be determined in advance for each Plugfest and will be published separately.



## E. Arbitration Process

### 1) CIWG Arbitration Committee

The CIWG Arbitration Committee has final, binding authority to resolve any appeals relating either to (1) general test accuracy or (2) the application of the testing criteria set forth above, including any failure of a device to meet such criteria. The Arbitration Committee is chaired by the CIWG Co-chairs and consists of members from CIWG subgroups, test implementers, and/or IBTA working groups such as the EWG. Final decisions are made by the CIWG Co-chairs based on the findings from the Arbitration Committee. Send requests to: [ciwg\\_arbitration@infinibandta.org](mailto:ciwg_arbitration@infinibandta.org)

### 2) Appeal Period

A Member intending to appeal an adverse test result must notify CIWG in writing of its intent to do so within 14 days after receiving its test results (“Appeal Period”). Any notice of Appeal received by the Arbitration Committee after the Arbitration Period is recorded as non-critical and may be reviewed and/or resolved by the Arbitration Committee at the Arbitration Committee’s sole discretion.

### 3) Appeal Claims

To support an Appeal, a Member must submit traces, log files and, if applicable, waveforms.

### 4) Time

The Arbitration Committee will attempt to resolve appeals within thirty (30) days after the vendor receives their results. It is the Member’s responsibility to present its case in detail and in time to permit a decision within thirty (30) days.

### 5) Effect of Arbitration

If the Arbitration Committee finds that there was a defect in the application of test criteria to a particular Device, there will be a revaluation of the test results and possible listing on the IL, if appropriate. If a defect is found in the general test accuracy, the particular test may be nullified. The IL may then be adjusted, if appropriate.

### 6) Appeal Fee

If a Member chooses to contest a test result and is not successful in the contest, IBTA will charge a minimum \$1,000 Appeal Fee. If any more than 10 hours is spent by IBTA, CIWG or the Arbitration Committee, the Member will be billed at a rate of \$100 per hour in excess of ten hours, in addition to the minimum \$1,000. IBTA reserves the right to change the billing rate at any time.

## F. On-Demand Program

This program allows a vendor to test products between IBTA Plugfests and allows those products to be added to the IL List. It also allows a vendor to test devices prior to the Plugfest and then test again during the next Plugfest.

### 1) Technical Requirements

The DUT must pass all applicable tests mandated by the current IL Policy. The specific tests will be posted on the [CIWG Documents](#) folder. Plugfests provide considerable benefit to the community by providing an opportunity to meet with other engineers to exchange ideas and create new test procedures. In order to protect the integrity of the Plugfest, on-demand testing will not be allowed within 2 months of the projected date of the next Plugfest. On-Demand testing after a Plugfest will be scheduled based on the availability of equipment and engineering resources. Compiling Plugfest results and producing the updated IL List will always take priority over on-demand testing. Testing will be based on the IBTA Specification that is approved as of the date of testing.

### 2) IL List Considerations

DUTs which successfully pass all mandatory testing will be added to the current IL List and will remain on the IL List for a maximum of one year. The DUT will be removed under two conditions: 1) when all of the other comparable devices are removed that were certified at the previous Plugfest. 2) A new CIWG test specification or IBTA Specification is released and therefore all comparable devices must be tested at the next available Plugfest. The CIWG Chairs retain the right to change this decision based on the state of the specifications.

### 3) Financial Requirements

A separate document will be maintained indicating the current fees associated with testing cables and devices. This list is subject to change and therefore not included in this document. Cable testing requires significant setup and calibration time and therefore there will be a base setup fee in addition to a per cable fee. The list will be posted to the CIWG Documents folder.

### 4) On-Demand tests typically are as follows:

#### a) Cables

- i) Active Time Domain Testing for active cables
- ii) FDR cables VNA testing
- iii) Mellanox Eye Opening and TDR Testing
- iv) Memory Map Testing
- v) Cable Interoperability Testing (FDR and QDR)

#### b) Devices

- i) Link Layer Testing
- ii) Management Layer Testing
- iii) Network Layer Testing
- iv) Physical Layer Testing
- v) Subnet Management Testing

## **G. Firmware and Software Policies**

### 1) Firmware Policy

- a. Definition of Plugfest Firmware: The firmware, or a child of this firmware with the same base functionality, which was used to qualify a device for the specific IBTA Integrators' List.
- b. The Plugfest Firmware must be the default publicly available firmware on the vendor's website and must be the default firmware that is shipped with the product. The Plugfest Firmware must be made available within six months of the IBTA event used to qualify the device for inclusion on the IBTA Integrators' List. If the Plugfest Firmware is not made available within six months, the device will be removed from the Integrators' List.

### 2) Software Policy

- a. Definition of Plugfest Software: Prior to each Plugfest, the CIWG will decide on the Operating System (OS) to be used in the Plugfest and the version of the OpenFabrics Software (OFED) that will be used to test the devices. Generally the OS will be RHEL (or a clone such as CentOS or Scientific Linux) and the OFED version will be the latest GA version available on the Open Fabrics website.
- b. If a vendor specific version of OFED is used to qualify a new product for inclusion on the Integrators list because the drivers are not currently available in OFED, then the drivers must be committed to OFED within six months of the event which was used to qualify the device for inclusion on the IBTA Integrators' List. If the updated Plugfest Software is not made available within six months, the device will be removed from the Integrators' List.

## **H. Accessing the Integrators' List**

### 1) Integrators' List

All current and archived lists will be accessible from the IBTA IL web page ([http://www.infinibandta.org/content/pages.php?pg=integrators\\_list\\_overview](http://www.infinibandta.org/content/pages.php?pg=integrators_list_overview))

### 2) Current IL

This list will include all Devices that have passed the tests conducted at either the most recent Plugfest or the previous Plugfest as long as there have been no material changes to the CIWG Test Plan or to the IBTA Specifications. In the event that the Test Plan has been updated, only those devices tested at the most recent Plugfest will appear on the Current IL

List. The CIWG Arbitration Committee will have final binding authority to determine if the Test Plan has been materially updated. This Policy goes into effect with the start of April 2009 IBTA Plugfest and so the April 2009 IL List will not include any devices or cables listed on previous IL Lists.

Cables with a warning result in some field or the ones with marginal results from the previous Plugfest will not be listed in the Current IL list.

### 3) Archives

This section of the IBTA IL web page will include all past Integrator's Lists. At the conclusion of a Plugfest, the previous IL will be placed with the other archived Integrator's Lists.

## I. IBTA Integrators' List Logo

Only those devices which are listed on the Current IL or are functionally identical to devices listed on the current IL may use the IBTA Integrators Logo provided that they comply with all conditions listed in both the IBTA Integrators Logo License Agreement\* and the IBTA Integrators List Logo Usage Guidelines. Furthermore, the IBTA retains the right to require proof (under NDA) that a device not on the current IL, but sold bearing the IBTA Integrators Logo, is functionally identical to a device on the current IL. 3rd party resellers should maintain a list that traces a device back to its original manufacturer in order to verify that devices sold bearing the logo comply with this policy.

**\*Note:** The Logo License Agreement allows the licensee to sell *their* "Certified Product" bearing the InfiniBand logo. Therefore, devices bearing the logo should be labeled such that the logo program licensee is identifiable. The following two examples address two cases where a company wants to sell a certified product bearing the InfiniBand logo, but built by a separate manufacturer.

**Example 1:** If the manufacturer is the logo licensee, then the cable will be listed on the IBTA Integrators List as the manufacturer's "Certified Product". The resold product should identify the original manufacturer and their part number so that the cable can be traced back to the Integrators List

**Example 2:** If the seller does not want the label to identify the original manufacturer, then the seller should act as the logo licensee and submit the cable to the IBTA for testing or, if the manufacturer has already submitted the cable for testing, have the cable rebranded as their own. This way, the resold cable becomes the "Certified Product" of the seller.

## J. Amendments

IBTA reserves the right to amend or add to this Policy at any time with or without notice.

## K. Revisions

Document Name	Date	By	Description
IL Policy 2011-10-v2.doc	09/07/2011	RSD	Eliminate PBR for copper cables and limit the length applicable for fiber cables.
IL Policy 2012-04-v1.doc	02/06/2012	RSD	Specify the CIWG Co-Chairs email reflector for the Arbitration committee.
IL Policy 2013-04-v1.doc	02/13/2013	LLK	Updated document for PF23
IL Policy 2013-04-v2.doc	02/14/2013	RSD	Reformatted document and added TOC
IL Policy 2013-04-v3.doc IL Policy 2013-04-v4.doc	03/04/2013	RSD	Grammatical and editorial updates in conjunction with the proposed suggested updates to the IL Policy for April 2013
IL Policy 2013-04-v5.doc	03/31/2013	RSD	Add details of Motion 1 regarding Firmware and Software Add Motion 2 regarding updates to the reference program
IL Policy 2013-10-v4.doc	09/02/2013	RSD	Reformatted document and created separate sections for Reference Programs, Rebrand, Arbitration and On-Demand
IL Policy 2013-10-v5.doc	09/04/2013	LLK	Fixed some spelling errors and typos
IL Policy 2014-04-v2.doc	01/23/2014	LLK	Updated document for PF25
IL Policy 2014-10.docx	06/17/2014	LLK	Updated document for PF26
IL Policy 2015-10.docx	08/17/2015	LLK	Updated document for PF28
IL Policy 2016-04.docx	02/08/2016	LLK	Updated document for PF29
IL Policy 2016-10.docx	08/02/2016	LLK	Updated document for PF30
IL Policy 2017-04.docx	02/14/2017	LLK	Updated document for PF31
IL Policy 2017-10.docx	07/06/2017	LLK	Updated document for PF32