



Interpretations and Clarifications

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standard must be sent to interpretations@lxistandard.org using the form “*Request for Interpretation of an LXI Standard Document*”. This document plus a list of interpretations to this standard are found on the LXI Consortium’s Web site: <http://www.lxistandard.org>

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Comments for Revision. Comments for revision of LXI Consortium Standards are welcome from any interested party, regardless of membership affiliation with LXI Consortium. Suggestions for changes in documents should be in the form of a proposed change of text, together with appropriate supporting comments. Comments on standards should be addressed to:

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Revision history

<i>Revision</i>	<i>Description</i>
Jan 17, 2011	Initial draft. Added clarification of Rule 8.7
October 2012	Additions made on Rule 8.6, Rule 1.4.6, Rules 21.3.1 and 23..3.2, added observation in 8.7 referencing IPv6
4 th July 2013	Clarifications made on Rule 10.3, 7.1.2, and 2.5.4.2 with relevance to additional Rules 2.5.2. to 2.5.2.3
21st November 2013	Rule 4.3 typographical error noted on page 58, reference Bit 3 “it” instead of “if”

1 Interpretations and Clarifications

1.1 Overview

After writing and approving a specification by members of the LXI Consortium, there are cases where it is necessary to clarify wording that may be misunderstood or that misrepresented the intent of a Rule, Recommendation, etc. Rather than making such changes to a specification and re-introducing it for approval, this document will contain all such changes until a future revision of that specification makes it reasonable to introduce those changes for broad approval.

This document can contain interpretations and clarifications for any of the LXI documents, including the LXI Device Specification, LXI Extended Functions, Operating Procedures, etc.

1.2 Clarification: Rule 8.7– Duplicate IP Address Detection

Add the following correction to the Observation under Rule 8.7:

Observation – Duplicate IP Address Detected

The intension and spirit of Rule 8.7 is to prevent mis-configured LXI devices from interfering with other devices on a network. An LXI device will **always** check to see if an IP address it has been assigned is in use before using it. This is true for DHCP assigned addresses, Link-Local addresses or static IP addresses. This is also true for whichever method is used to change the IP configuration: front panel, Web page, Power on or pressing the LAN Configuration Initialization mechanism.

What the device does when it has detected a duplicate address can be one of the following options but whichever method you use the device must not use the duplicate IP address:

1. When the duplicate address has been detected, the device should show an assigned IP address of 0.0.0.0, in the case of IPv4, and show a LAN fault on the LXI LAN Status Indicator.
2. When the duplicate address has been detected, the device can fall back to the currently valid IP address and not show a fault on the LXI LAN Status Indicator.
3. When the duplicate address has been detected the device can fall back to an Auto-IP address (169.254.x.x) and show a fault on the LXI LAN Status Indicator.
4. For issues related to IPv6 Duplicate IP detection refer to LXI IPv6 Extended Function Section 21.6

1.3 Clarification: Rule 8.6 – IP Address Configuration Techniques

Question:

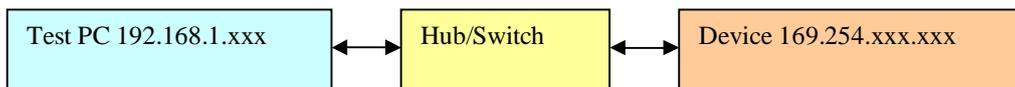
A question has been raised about Link Local Addressing (Auto-IP): In particular, shall an LXI Device be required to conform to section 2.6.2 of RFC 3927?

Reply:

The intent of the specification is that Link Local Addressing be implemented in its entirety as specified by RFC 3927 – which is the RFC governing Link Local Addressing. Confusion has developed because there was no test created to cover section 2.6.2 of RFC 3927. In hindsight, this was an omission.

There has been spot testing done after it was pointed out that there might be some problems. With the advent of Windows 7 (and Vista), there have been more failures noticed in spot testing of communication between the PC and the LXI Device. The most obvious failure symptom is that the device is discoverable by mDNS but access is denied for direct communication.

This is the failure setup:



The Consortium is of the opinion that a test for this should be created and incorporated into the LXI Conformance Test Suite. This testing will start after the upcoming plugfest in Boston (October 8-10, 2012). Dual NIC devices are exempt from this test.

For instruments already certified, the Consortium is of the opinion that the vendor should check this failure condition when a software update to the device in question is done as part of ongoing improvements.

Technical Justification based on an already certified instrument does not require a special software update to correct this potential problem. The Conformance Committee will accept a failure on this test based on Technical Justification. The Consortium recommends that vendors take the opportunity to correct this problem when doing software updates, this will not require re-certification.

1.4 Clarification: Rule 1.4.6 Web Indication of Functional Declaration

Question:

What is an acceptable entry in the web page for the version number?

Reply:

Any of the following formats are considered as acceptable entries

- Version: LXI Core 2011
- Version: 1.4 LXI Core 2011.
- Version: 1.4, LXI Core 2011, LXI Clock Synchronization, LXI Timestamped Data, LXI Event Messaging, LXI IPv6, LXI HiSLIP Extended Function,...

 - The web page in this example should only list the Extended Functions supported by the device.

1.5 IPv6 Extended Function. Rule 21.3.1 Display Link-Local Address, Rule 21.3.2 Display a minimum of one other Preferred Address

Question:

What happens if an LXI device has a display but the vendor believes it is not capable of displaying an IPv6 address.

Reply:

The LXI Consortium believes it is in the best interest of users to display the address where it is reasonable to do so but has no desire to make the requirement excessively onerous. A Test House will make a judgment in association with the vendor whether it is reasonable for the display to show the required information, and if unreasonable to deem the device does not have a suitable display. The intent is not to force vendors of devices with limited display functionality to display the address if the outcome is not useful to users.

1.6 Clarification Rule 10.3 Support mDNS and 10.4 Support DNS-SD

Question:

The rules provide links to draft standards that no longer exist in this form, how should the rules be interpreted

Reply:

The draft standards have been replaced by RFC6762 Multicast mDNS and RFC6763: DNS-based Service Discovery and are identical to the draft standards indicated in the Rule. The RFC's shall be used in interpreting the rules in place of the links.

1.7 Clarification: Rule 7.1.2 – Proper Operation in Slower Networks

Question:

Rule 7.1.12 requires support of 10baseT networks, an issue which may not be easily managed on new generations of Ethernet interfaces. Will an LXI Device be failed for not supporting 10baseT interfaces under all conditions?

Reply:

The intent was to ensure backward compatibility in the standard so LXI Devices could operate on slower networks. The Consortium is aware that there are issues with some chip sets which are beyond reasonable control of the vendors and has determined that the requirement for supporting 10Base T will be dropped at a future revision. The future text may be of the form:

LXI Devices shall operate properly in Ethernet networks of equal or slower speed than themselves, at least down to 100 Mb/s Ethernet. LXI Devices should operate at 10 Mb/s, too. If they do, this shall be IEEE 802.3 Type 10 BASE-T.

Observation – Ethernet Networks and Backwards Compatibility

Ethernet networks are usually backward compatible such that Ethernet devices with different maximum speeds can interoperate together. LXI Devices must have the capability of operating on a 100 Mbits/sec only network, and should be capable of operating on a 10 Mbits/sec, regardless of their fastest supported speed. Given the waning popularity of 10 Mbits/sec networks and the possibility that newer network interface silicon may not support that speed, 10 Mbits/sec is only a recommendation, not a requirement.

In the intervening time, until a specification revision is completed, an LXI Device will not fail conformance testing solely for failing Rule 7.1.12 if it meets the amendment above. A final rule change may include references to faster (10Gb/s) interfaces. A notification to the Consortium members to this effect was previously posted to the Technical Committee.

1.8 Clarification: Rule 2.4.5.2 LXI Devices Without a Front Panel Manual Data Entry Method

Question:

The rule requires the LCI to be present. It requires the LCI to be “permanently attached”. Can you clarify the reasons for this clause, and what a reasonable interpretation of “permanently attached” might be?

Reply:

The LCI (and LAN status indicators in Rules 2.5.2 to 2.5.2.3) are considered to be important features of the LXI Standard and are a notable extra feature required of LXI Devices which may not be on simple LAN products. The Consortium believes it is important these are always available to a user without having to search for additional devices to provide access to them. In Consortium discussions it has been accepted that a product such as a USB dongle with a tether to the LXI Device inserted in a USB port would be considered permanent, even though a user might at some stage remove the tether, provided the tethered dongle is supplied with the LXI Device. The dongle could include both the status indicator and the LCI button and could for example allow a PC to pass the LXI conformance test thru its use.

1.9 Clarification: Rule 4.3 LXI Event Message Format

Question. On page 58 under text related to Bit 3 there appears to be a typographical error where “it” is used instead of “if”.

Answer. The Section on Bit3 should read as follows:

Bit 3 – Acknowledgement: If set to 1, shall indicate that this packet is an acknowledgement that a prior packet was successfully received. This allows LXI systems to implement UDP-based handshaking protocols (for increased reliability), if desired. Modules are not required to implement this feature; however, those modules shall ignore packets **if** this bit is set.

1.10 Clarification: Rule 7.3 Ethernet Connection Monitoring

Question: With the additional test done for clarification 1.3 and changes made in the LAN Stack for Windows 7, we have found behavior that was not in conformance with our understanding of rule 7.3 – in particular the sentence: “Upon detecting a connection event, the current IP configuration shall be validated (including duplicate IP address detection) and, if necessary, updated.”

We assumed that when the LAN was disconnected and the LAN Status Indicator showed a fault condition, the LAN Stack would start from scratch when the connection event occurred. This turns out not to be the case. There is a permission granted in the DHCP RFC that allows the device to continue using the last valid DHCP Address. Unfortunately, the duration of use is not well defined for this case. If the LAN Status Indicator had remained in the fault condition while the device was still searching for a DHCP server, the tester would have known that IP address acquisition was still in progress and would have waited for the address acquisition to complete.

Reply: From observation of several devices being tested, the behavior of a LAN Stack includes using last valid DHCP address – an ARP request is required to validate the availability of the IP address – until such time as it acquires a new DHCP lease or times out looking for a DHCP server (approximately 2 minutes). If no DHCP server is found, the device shall fall back to a Link Local address.

It is not clear that we could hold off the LAN Status indicator in this case because the LAN Stack thinks everything is just fine for the moment. Therefore, the test procedure is to be changed to specifically allow the above behavior as long as the timeout is no longer than the normal search for a DHCP Server.