



IPv6 ready logo certification program:
A test-based initiative for IPv6 deployment

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Why a unique world-wide certification Program ?

- Avoiding confusion in the mind of customers with a unique program
- Giving a strong signal to the market of IPv6 availability
- Proving the interoperability degree of various IPv6 products
- Enhancing confidence of users that IPv6 is currently operational

The IPv6 Ready Logo program should contribute to the feeling that IPv6 is available and ready to be used



The IPv6 Ready Logo Program Committee (the v6LC)

- ❑ Launched by the IPv6 Forum under the impulsion of the ETSI and IRISA (Europe), WIDE/TAHI (Japan) and the UNH-IOL (USA)
- ❑ Based mainly on interoperability testing results
- ❑ The ipv6ready-admin
 - Defining procedures and steps for the Logo Program
 - Giving the right to use the IPv6 logos for products
- ❑ The ipv6ready-tech
 - Test specification and test tools providing
 - Technical examination of applications

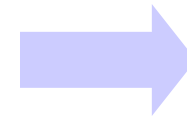


A smooth and gradual approach

□ Different phases :

▪ Phase I "Silver"/ (Bootstrap)

- Launched since September 2003
- Mainly based on existing interoperability events
- IPv6 minimum requirements of mandatory core protocols ("Must")



▪ Phase II "Gold"

- Launched in January 2005
- Product has to successfully satisfy strong requirements ("Must" and "should")
- Core Protocols, IPsec, MIPv6, NeMO, Transition mechanisms, Multicast (MLD)



▪ Phase III following...



Some items of the RFC 2119

1. MUST This word, or the terms "REQUIRED" or "SHALL", mean that the definition is an absolute requirement of the specification.

...

3. SHOULD This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.



Phase I and Phase II: Tests for "Core Protocols"



Phase II: « Core Protocols » [« Must » + « Should »]

76
IPv6
Specification
[RFC2460]
40

127
Neighbor
Discovery
[RFC2461]
28

26
Stateless
Address
Autoconf.
[RFC2462]
26

41
ICMPv6
Specification
[RFC2463]
13

15
Path MTU
Discovery
[RFC1981]
0



Phase I: « Core Protocols » [Mandatory: sub-set of phase 2]



Tests specification and updating

□ Based on public validation

- The ipv6ready-tech identifies IPv6 protocols to be tested in the IPv6 Ready Logo and submits it to the ipv6ready-admin
 - A group (IRISA, UNH-IOL, BII, TTA or TAHI) is in charge of providing test specification for conformance & interoperability testing
 - An internal review is done within the ipv6ready-tech
 - The test specification is published for public review
 - Issues are resolved (either internally or after discussion with the IETF and the IPv6 Forum)
 - The final version of test specifications are published on the IPv6ready Logo web-pages
 - Test specifications may be updated leading to other versions
- Any company can provide test suites based on the test specifications provided by the v6LC



An example of test specification in the IPv6 Ready Logo

Test v6LC1.1.1: Version Field

Purpose: Verify that a node properly processes the Version field of received packets

References:

- [IPv6-SPEC] – Section 3

Resource Requirements:

- Packet generator
- Monitor to capture packets

Discussion: The Version field of IPv6 packets is a 4-bit field. RFC 2460 does not specify the behavior of an IPv6 node upon reception of a packet with a Version field other than the current version

Test Setup: No Common Test Setup is performed. The Common Test Cleanup procedure is performed after each part.

Packet A

| |
|----------------------|
| IPv6 Header |
| Version: [See below] |
| ICMPv6 Echo Request |

Procedure:

1. TN1 transmits Packet A to the NUT, that has an IPv6 header with version field of 4
2. TN1 transmits an Echo Request to the NUT
3. Observe the NUT reaction
4. Repeat Steps 1 and 2 with a version field of 0, 5, 7 and 15.

Observable Results:

Step3: The NUT must not crash or generate invalid packets. In Step 2, the NUT must respond to the second Echo Request from TN1

Possible Problem:

None



Contribution of the IRISA lab

- ❑ Responsible of the operational
 - Internal rules of the v6LC (Logo Committee)
 - Definition of associated steps and procedures
- ❑ Representative for the Europe in the technical committee
 - Definition and validation of test suites
- ❑ Technical Officer for the Europe
 - Examination of Logo requests from the European companies (testing+results analysis)
 - Opinion/feedback to the v6LC



Products that can apply for the IPv6 Ready Logo

IPv6 Core Protocols

- (1) Host
- (2) Router
- (3) Operating Systems
- (4) Protocol Stack
- (5) Special Devices (embedded system, special server, ...) - **Under Discussion**

IPsec

- (1) End-Node
- (2) Security Gateway

MIPv6

- (1) Correspondent Node
- (2) Home Agent
- (3) Mobile Node

NEMO

- (1) Home Agent
- (2) Mobile Router



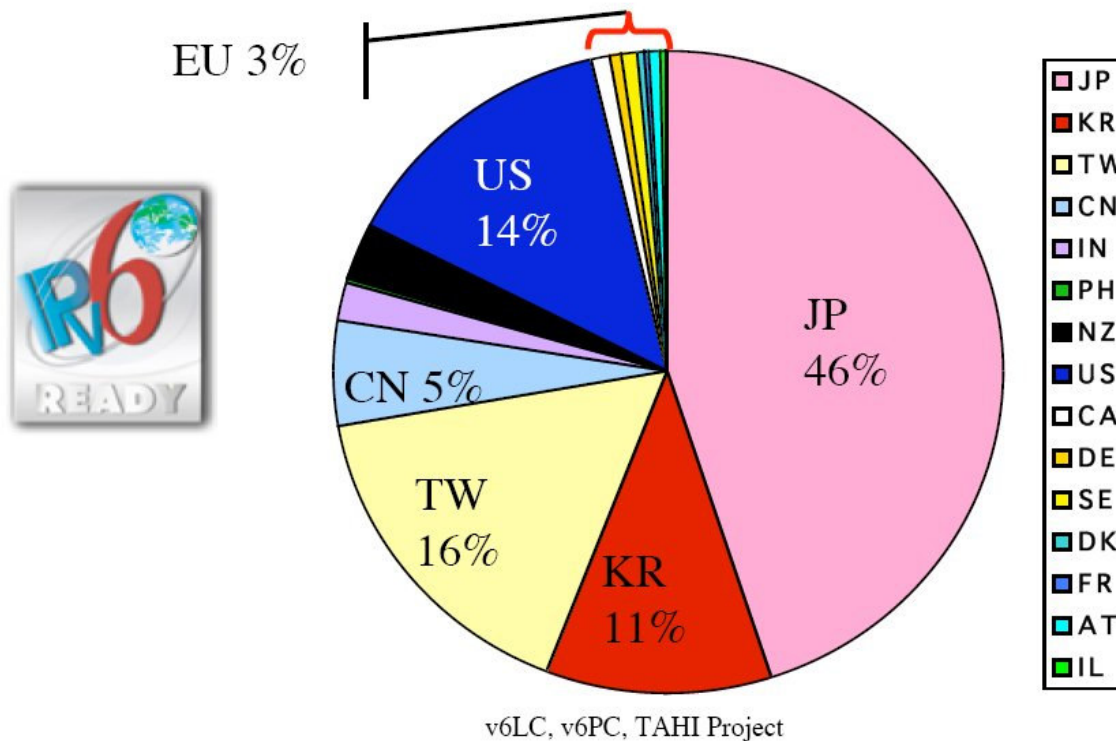
Procedures for testing and steps for the Logo

- ❑ Based on self declaration mode
 - The applicant executes conformance and interoperability test suites based on the test specifications provided by the v6LC
 - Self-testing
 - Interoperability events : IPv6 Plugtest (ETSI/Plugtest Service), Moonv6 (UNH-IOL) and TAHI IPv6 interoperability (TAHI project)
 - The applicant fills an Application Form and sends it to the IPv6 Logo Committee with test results (log)
 - The technical group for the region (the local Logo officer) examines the application
 - IRISA->Europe; UNH-IOL->America; TAHI, BII and TTA->Asia
 - If 100% PASS, the Logo officer requests the ipv6ready-admin for Logo attribution to the applicant



Current status

Phase-1 Logo statistics by Country
(as of Mar. 20th 2007)

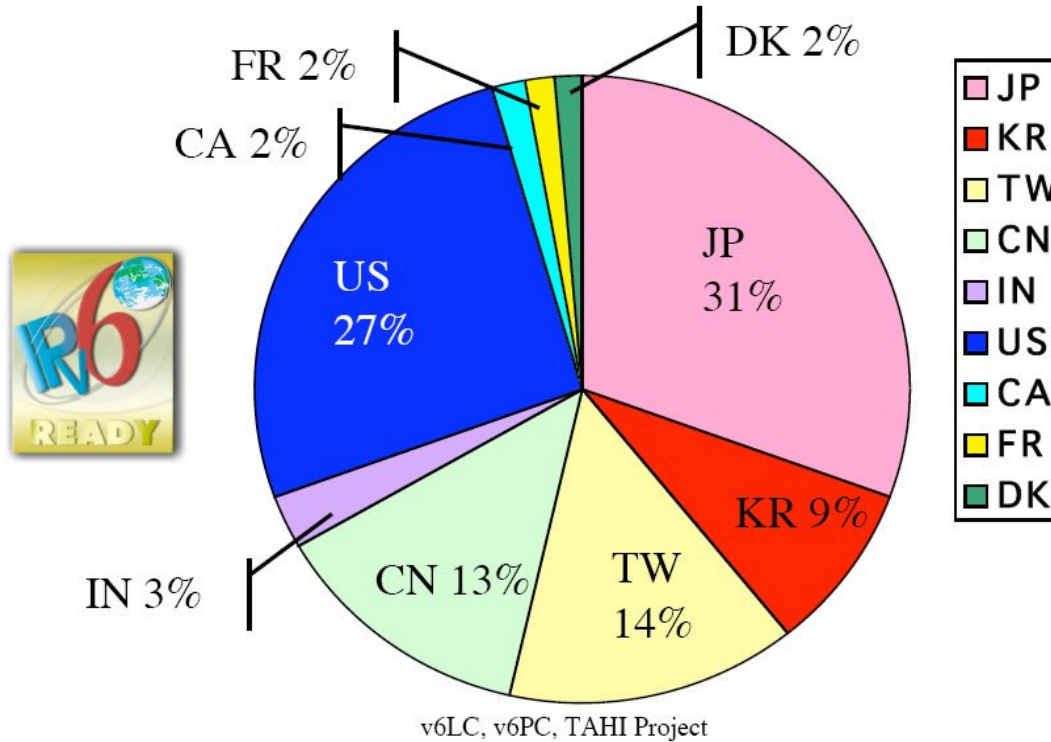


As of Oct. 2007



Current status

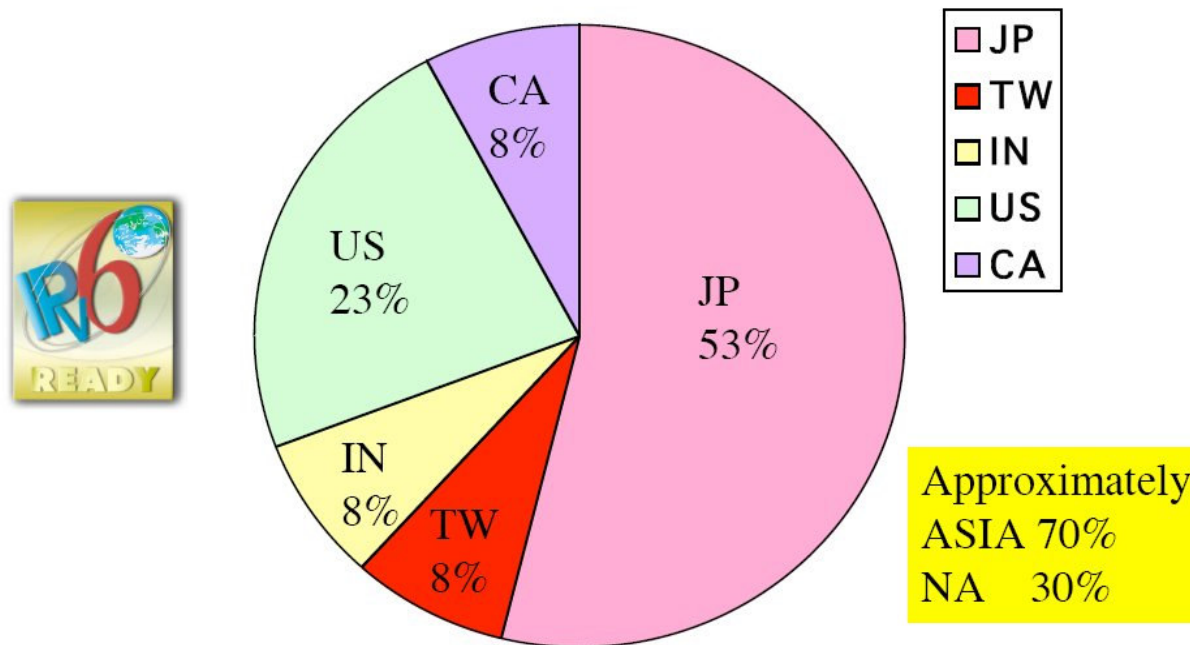
Phase-2 Logo statistics by Country
(Core protocol) (as of Mar. 12th 2007)





Current status

Phase-2 Logo statistics by Country
(IPsec) (as of Mar. 12th 2007)



v6LC, v6PC, TAHI Project



What about TTCN-3 in the IPv6 Ready Logo program?

- ❑ TTCN-3 can help in test specification steps by providing more formal framework :
 - Formal procedures in different steps for testing
 - Distinguishing abstract test suites from execution environments
- ❑ Nevertheless
 - TTCN-3 based tools, environments and executable test suites for IPv6 related protocols are needed to convince the Internet community

➤ The Go4IT project is providing solutions



Thank you
for your attention...

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