IPv6 READY Phase-2

Mobile IPv6

Policy Document

Revision 1.1.0

IPv6 Forum *http://www.ipv6forum.org*
IPv6 Logo Committee *http://www.ipv6ready.org*

Modification Record

Version 1.1.0 July 23, 2007

-added : “Fine-Grain Selectors” as Advanced Function.

-modify: The copyright was updated.

Version 1.0.8 July 24,2006

-Correction of cover.

-Add Acknowledgements.

Version 1.0.7 May 17, 2006

-added : The vendor number of executing test scenario in section 4.

-added : IKEv1 is outside scope of “IPv6 Ready Logo Phase2 for MIPv6”.

Version 1.0.6 Feb 10, 2006

-clarify : [I] 1. Requirements for the “IPv6-Ready”-Logo

-Precondition of Mobile to Mobile function

-clarify : [I] 3. Policy for Basic and Advanced Functions

-IPsec policy.

-Precondition of Mobile to Mobile function.

-added : [I] 4. Test specifications and interoperability test scenario

-Test condition of Self Test.

-Test condition of interoperability test scenario.

Version 1.0.5 Jun 20, 2005

-corrected : [I] 1. Requirements for the “IPv6-Ready” Logo

-Guidelines for Implementation and Priorities in Testing

(http://www.ipv6ready.org/)

-Test Specifications (http://www.ipv6ready.org/)

-corrected : [I] 4. Test specifications and interoperability test scenario

-Interoperability Test Scenario (http://www.ipv6ready.org/)

Version 1.0b4 Mar 25, 2005

-added : Appendix Table.3

-Test specification number: MN-2-1-1-1-004

‘note’: NUT does not set (K) bit in BU which is transmitted to HA

-Test specification number: MN-2-2-1-1-014

'note': NUT does not set (K) bit in BU which is transmitted to HA

Version 1.0b3 Jan 10, 2005

-corrected : [I] 1. Requirements for the "IPv6-Ready" Logo

IPv6 Core

=> IPv6 Core Protocols

-added : [I] 1. Requirements for the "IPv6-Ready" Logo

(1) In order to obtain the logo of Mobile IPv6 CN, equipment must pass both tests of the IPv6 Core Protocols (either Host or Router) and tests of the Mobile IPv6 CN.

-added : [I] 1. Requirements for the "IPv6-Ready" Logo

(2) In order to obtain the logo of Mobile IPv6 HA, equipment must pass both tests of the IPv6 Core Protocols (Router) and tests of the Mobile IPv6 HA.

-added : [I] 1. Requirements for the "IPv6-Ready" Logo

(1) In order to obtain the logo of Mobile IPv6 MN, equipment must pass both tests of the IPv6 Core Protocols (Host) and tests of the Mobile IPv6 .

-corrected : [I] 3. Policy for Basic and Advanced Functions

The view of the satisfaction of functions under Basic Function (Priority A1) and Advanced Function (Priority A2) for individual nodes of Mobile IPv6 equipment.

=> The view of the satisfaction of functions under Basic Function (Priority A1) and Advanced Function (Priority A2) for individual nodes of Mobile IPv6 equipment is as follows.

-corrected : [I] 3. Policy for Basic and Advanced Functions

-CN : Either Host functions or Router functions defined in "Test Specifications for the IPv6 Core Protocols" MUST be supported.

-HA : Router functions defined in "Test Specifications for the IPv6 Core Protocols" MUST be supported.

-MN : Host functions defined in "Test Specifications for the IPv6 Core Protocols" MUST be supported.

Version 1.0b2 Oct 08, 2004

-corrected : [I] table of contents

"3. Policy for Satisfaction of Items under Priority A1 and Priority A2"

=> "3. Policy for Basic and Advanced Functions"

-added : [I] table of contents

"4. Test specifications and interoperability test scenario "

-corrected : term

"optional function"

=>"Advanced Function"

-corrected : term

"optional function"

=>"Basic Function"

-removed : [I] 1. Requirements for the “IPv6-Ready” Logo

"- Router, Host, and/or Special Device (currently being fine-tuned)
satisfy the conditions of the phase 2 specification of the IPv6 Core."

-corrected : [I] 1. Requirements for the “IPv6-Ready” Logo

number of requirements concerning Mobile IPv6 from three to two.
In order to obtain the logo, any tester can be used, but Test Specifications are specified.

-added :[I] 4. Test specifications and Interoperability test scenario

"Interoperability test scenario refer to [IV] *Interoperability Test Scenario* (http://www.tahi.org/mipv6/phase2/)."

-removed : [I] Appendix

"Interoperability test scenario number"

-corrected : [I] Appendixes HA and MN

"Notes of selection"

Version 1.0b1 July 12, 2004

- first release

Acknowledgement

IPv6 Forum would like to acknowledge the efforts of the following organizations in the development of this test specification.

- IPv6 Promotion Council
  Certification Working Group
  Mobile IPv6 Sub Working Group

- Commentators:
  IRISA-INRIA

Table of Contents

1. Requirements for the “IPv6-Ready” Logo

- To be given the right to bear the logo indicating Mobile-IPv6-capability, equipment must satisfy each logo program for both the IPv6 Core Protocols and Mobile IPv6.

  (1) In order to obtain the logo of Mobile IPv6 CN, equipment must pass both tests of the IPv6 Core Protocols (either Host or Router) and tests of the Mobile IPv6 CN.
  (2) In order to obtain the logo of Mobile IPv6 HA, equipment must pass both tests of the IPv6 Core Protocols (Router) and tests of the Mobile IPv6 HA.

  (3) In order to obtain the logo of Mobile IPv6 MN, equipment must pass both tests of the IPv6 Core Protocols (Host) and tests of the Mobile IPv6 MN.

- Fulfill the following requirements for Basic Functions specified as having Priority A1* in the *Guidelines for Implementation and Priorities in Testing* (http://www.ipv6ready.org/) concerning Mobile IPv6, taking into account various fields of application and forms of implementation.

  (1) Pass a Conformity inspection in which a Self Test (e.g. Test Suite (http://www.tahi.org/mipv6/phase2/)) is used, and cover all test items to which Priority A1 in the *Test Specifications* (http://www.ipv6ready.org/) applies.

  (2) In an interoperability test scenario with at least two kinds of implementation, perform the minimum of interoperability tests that cover items to which Priority A1 applies, thus checking for interoperability with other Mobile IPv6 equipment.

- In addition to the above implementation and testing of Priority A1 items, specify the attempted implementation of any Advanced Functions

(functions at Priority A2*) so that it is possible to confirm the interoperability of such functions, with the objectives of both accreditation and the implementation of more Advanced Functions (Priority A2 functions include Return Routability, Real Home Link, MPD, and DHAAD).

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*Keywords

Priority A1: The item is specified as having Test Priority 1 (minimum functions that must be checked in interoperability testing of MIPv6 equipment) and Functional Rank A (equivalent to the specifications: "MUST", "SHOULD", "MUST NOT", and "SHOULD NOT" in IETF RFCs) as defined in the "Guidelines for Implementation and Priorities in Testing."

Priority A2: The item is specified as having Test Priority 2 (functions for which interoperability testing may be required according to the target field of application or form of implementation) and Functional Rank A (equivalent to the specifications: "MUST", "SHOULD", "MUST NOT", and "SHOULD NOT" in IETF RFCs) as defined in the "Guidelines for Implementation and Priorities in Testing".

2. References

Refer to the following RFC documents.

[Mobile IPv6]

(1) RFC3775: Mobility Support in IPv6 (http://www.ietf.org/rfc/rfc3775.txt)

(2) RFC3776: Using IPsec to Protect Mobile IPv6 Signaling between Mobile Nodes and Home Agents (http://www.ietf.org/rfc/rfc3776.txt)

(3) RFC4877: Mobile IPv6 Operation with IKEv2 and the revised IPsec Architecture (http://www.ietf.org/rfc/rfc4877.txt)

[IPsec]

(1) RFC2401 Security Architecture for the Internet Protocol
(http://www.ietf.org/rfc/rfc2401.txt)
(2) RFC4301 Security Architecture for the Internet Protocol
(http://www.ietf.org/rfc/rfc4301.txt)

3. Policy for Basic and Advanced Functions

The view of the satisfaction of functions under Basic Function (Priority A1) and Advanced Function (Priority A2) for individual nodes of Mobile IPv6 equipment is as follows.

- CN (Correspondent Node)
  - Either Host functions or Router functions defined in “Test Specifications for the IPv6 Core Protocols” MUST be supported.
  - The Return Routability procedure is a Basic Function (A1).
  - Correspondent registration is a Basic Function (A1).
  - Correspondent De-registration is a Basic Function (A1).

- HA (Home Agent)
  - Router functions defined in “Test Specifications for the IPv6 Core Protocols” MUST be supported.
  - Home registration is a Basic Function (A1).
  - IPv6 encapsulation and decapsulation is a Basic Function (A1).
  - IPsec ESP for protection of Binding Update messages and Binding Acknowledge messages is a Basic Function (A1).
  - Real Home Link is an Advanced Function (A2).
  - IPsec SA for HoTI/HoT (*) is maintained so that IPsec functions which are applied to HoTI/HoT are Advanced Functions (A2).
    * With regard to IPsec SA for HoTI/HoT, IPsec SA can be maintained specifically for HoTI/HoT or for common use by HoTI/HoT and Payload packets. But in case of executing “Interoperability test scenario for IPv6 Ready Logo Phase 2 program”, considering the interoperability, IPsec SAs must be divided by BU/BA, MPD and HoTI/HoT. (see Section 2.3.3 in Guidelines for Implementation)
  - MPD (MPS/MPA) is an Advanced Function (A2).
    Maintenance of IPsec SA for MPS/MPA (*) and functionality for the exchange of MPS/MPA in IPsec operations that require this are Advanced Functions .
    * With regard to IPsec SA for MPS/MPA, IPsec SA can be maintained specifically for MPS/MPA or for common use by MPA/MPA and BU/BA.

But in case of executing “Interoperability test scenario for IPv6 Ready Logo Phase 2 program”, considering the interoperability, IPsec SAs must be divided by BU/BA, MPD and HoTI/HoT. (see Section 2.3.3 in Guidelines for Implementation)

- DHAAD is an Advanced Function (A2).
- Fine-Grain Selectors for MH message type and ICMPv6 message type is an Advanced Function(A2)

- MN（Mobile Node）
  - Host functions defined in “Test specification for IPv6 Core Protocols” MUST be supported.
  - Home registration is a Basic Function (A1).
  - IPv6 encapsulation and decapsulation is a Basic Function (A1).
  - Movement detection, care-of address formation, and visiting of foreign links is a Basic Function (A1).
  - IPsec ESP for the protection of Binding Update and Binding Acknowledge messages is a Basic Function (A1).
  - Real Home Link is an Advanced Function (A2).
  - Return Routability is an Advanced Function (A2).

    With regard to IPsec SA for HoTI/HoT, IPsec SA can be maintained specifically for HoTI/HoT or for common use by HoTI/HoT and Payload packets. But in case of executing “Interoperability test scenario for IPv6 Ready Logo Phase 2 program”, considering the interoperability, IPsec SAs must be divided by BU/BA, MPD and HoTI/HoT. (see Section 2.3.3 in Guidelines for Implementation)
  - MPD (MPS/MPA) is an Advanced Function (A2).

    With regard to IPsec SA for MPS/MPA, IPsec SA can be maintained specifically for MPS/MPA or for common use by MPA/MPA and BU/BA. But in case of executing “Interoperability test scenario for IPv6 Ready Logo Phase 2 program”, considering the interoperability, IPsec SAs must be divided by BU/BA, MPD and HoTI/HoT. (see Section 2.3.3 in Guidelines for Implementation)
  - DHAAD is an Advanced Function (A2).
  - Mobile to Mobile is an Advanced Function (A2).

    The precondition of Mobile to Mobile has the interoperability of CN

function. If you apply for Mobile to Mobile function, you need to apply for CN.

- Fine-Grain Selectors for MH message type and ICMPv6 message type is an Advanced Function(A2)

4. Test specifications and interoperability test scenario

Tables 1, 2, and 3 of the Appendix list test numbers to be covered in *Test Specifications* for Mobile IPv6 equipment (i.e., CNs, HAs, and MNs) to check the implementation of Basic and Advanced Functions.
The interoperability test scenario refers to *Interoperability Test Scenario* (http://www.ipv6ready.org/).

For reference, the Test Suite is a single module that may also include Advanced Functions. Advanced Functions for testing are selected by a flag setting during configuration, so the consecutive execution of any combination of tests is possible.

In the Self Test, select and test the same Advanced Function to apply the logo.

In the interoperability test scenario, test the other implementations with same Advanced Function to apply the logo. The Advanced Functions not applied must not work.

Mobile IPv6 equipment (CN, HA, MN (without RR and without Mobile to Mobile)) must execute the “Interoperability test scenario for IPv6 Ready Logo Phase 2 program” with 2 or more different types (different vendors) of equipment to acquire IPv6 Ready Logo Phase 2 program Logo.
MN (with RR and without Mobile to Mobile, with RR and with Mobile to Mobile) must execute the “Interoperability test scenario for IPv6 Ready Logo Phase 2 program” with 4 or more different types (different vendors) of equipment to acquire IPv6 Ready Logo Phase 2 program Logo.
For details, refer to section 2.6 in “Interoperability test scenario for IPv6 Ready Logo Phase 2 program”

IKEv1 for MIPv6 is out of scope of requirements for “IPv6 Ready Logo Phase2”. However, IKEv1 test specification and test scenario are released as an experimental use. If implementation has IKEv1 function, please execute the test.

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