IPv6 READY Phase-2

Mobile IPv6

Test Specification Profile

- Guidelines for Implementation and Priorities in Testing

Technical Document

version 3.4.0

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

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Major Revision Up

Cover the RFC4877

(Add the “Fine-Grain Selectors” as Priority A2)

Modify the copyright

Version 3.3.3 July 24, 2006

Correction of cover and Acknowledgements.

Version 3.3.2 May 17, 2006

Add IKEv1 is outside scope of "IPv6 Ready Logo Phase2 for MIPv6".

Version 3.3.1 Feb 10, 2006

Add section 2.3.3

Delete a test No about unsolicited MPA in section 5.2.2.

Version 3.3 Jun 20, 2005

Version 3.2 Jun 6, 2005

Version 3.1 Mar 28, 2005

Version 3.0 Jul 7, 2004

Initial version

Acknowledgement

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

- Commentators:
  IRISA-INRIA

Table of Contents

1.Overview

This document gives guidelines for implementing the functions specified in the IETF RFC (See 2.2) on the functions of Mobile IPv6.

This document is provided

- as a guide to implementation that ensures interoperability between the Home Agent (HA), Mobile Node (MN) and Correspondent Node (CN),
- to give a classification of individual Mobile IPv6 functions according to their importance in terms of interoperability.

The Mobile IPv6 Test Profile consists of two volumes, [1] *Test Specification Profile - Guidelines for Implementation and Priorities in Testing* - (this document) and [2] Self *Test Specifications*.

The contents of this document include specifications of the interfaces between Mobile IPv6 nodes (i.e. HA, MN, and CN), guidelines for the implementation of Mobile IPv6 nodes, and priorities for the testing of each node function according to the function's importance to interoperability.

This document is in complete accord with the IETF's RFC (See 2.2) specifications for Mobile IPv6 but includes some extra information for clarification and thus more strongly ensures interoperability.

2. Scope of the Mobile IPv6 Self Test and the test function it provides

2.1 Reference Network Architecture

Figure 2-1 shows the network architecture covered by Mobile IPv6 Self Test.

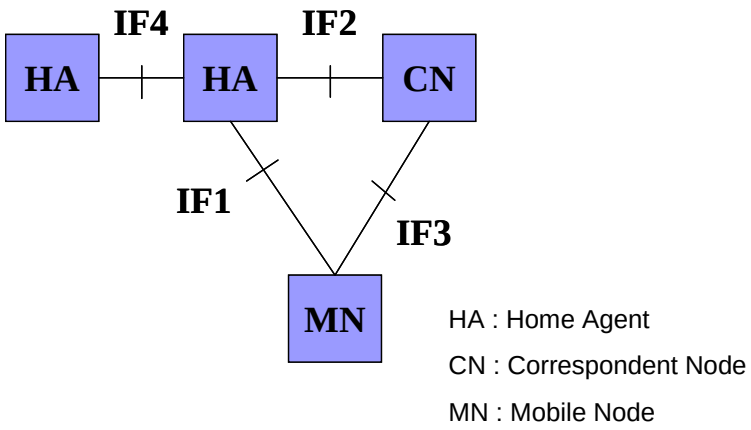


Figure 2-1 Reference Network Architecture

Mobile IPv6 Self Test only covers Mobile IPv6 specifications. Testing of generic IPv6 functions is beyond the scope of this test; however; some of the generic IPv6 functions are necessary to Mobile IPv6 functions and are thus supported in this test.

2.2 Related standards

This document covers the functions specified in the following IETF RFC documents.

(1) RFC 3775(http://www.ietf.org/rfc/rfc3775.txt)

(2) RFC 3776(http://www.ietf.org/rfc/rfc3776.txt)

(3) RFC 4877(http://www.ietf.org/rfc/rfc4877.txt)

2.3 Classification of functions

This section describes ways to classify the Mobile IPv6 functions needed for interoperability and provided as test functions in the Mobile IPv6 Self Test.

2.3.1 Viewpoints of the classification

The classification of Mobile IPv6 functions is from the following viewpoints.

(A) IETF specification

(B) Functional Rank

(C) Test Priority

(A) IETF specification

IETF specification refers to the classification of each of the Mobile IPv6 functions from the viewpoint of importance for implementation as indicated by usage of the keywords below in the IETF RFC.

The keywords “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” are defined in RFC 2119.

(B) Functional Rank

Functional Rank refers to classification of functions according to their importance to interoperability.

This classification is also based on descriptions in the IETF RFC; that is, functions with descriptions “MUST”, “SHOULD”, “MUST NOT”, and “SHOULD NOT” are basically classified as Rank-A, and functions with “MAY” are classified as either Rank B or Rank C, according to their importance to interoperability.

Table 2-1 shows the definition of Functional Rank.

Table 2-1 Definitions of Functional Rank

	Definitions of Functional Rank
Rank-A	These functions are essential to interoperability and should basically be implemented.
Rank-B	Implementation of these functions is optional, but they are important to interoperability.
Rank-C	Implementation of these functions is optional; they are not required for interoperability.

Moreover, about the Mobile IPv6 function described on RFC except Keyword of above MUST, SHOULD, and MAY, it is regarded as "do" (the role of a certain function is played), and distributed to Rank A, Rank B, or Rank C in consideration of the importance to interoperability from the above-mentioned table 2-1.

Furthermore, although not clearly written on RFC, what began to bundle the Mobile IPv6 function considered on implementation of HA etc. as a supplementary matter is positioned as "add", and Functional Rank is assigned from the above-mentioned table 2-1.

Refer to the table of section 5.2 for the details of each classified function.

(C) Test Priority

Test Priority is the classification from the viewpoint of the importance of testing.

Testing of the functions classified as Priority 1 is included in the minimum test package, for the testing of functions which are essential to interoperability.

Testing of the functions classified as Priority 2 may not be needed; this depends on the application to be used. The testing of Priority 2 (Optional Test) items is selectively incorporated in the test package according to the functions to be supported by the HA/MN/CN.

The functions assigned Rank A above are basically classified as Priority 1, however; some of the Rank A functions, i.e. those which are not always implemented, should be classified as Priority 2. All functions with Rank B and Rank C are classified as Priority 2.

Moreover, using the view of Functional Rank and Test Priority, the object which collected Rank A and Priority 1 is set to "A1."

The object which collected Rank A and Priority 2 similarly is set to "A2."

Since Rank B is Priority 2, it is classified as "B."

Similarly, since Rank C is Priority 2, it is classified as "C."

As a result, Functional Rank A was classified into Priority A1 and Priority A2.

Furthermore, about MN, two or more Priorities may exist according to the kind of opposite node (CN, HA).

Refer to the table of section 5.2 for the details of each classified function.

The reason is also described when two or more Priorities exist in the table.

The Mobile IPv6 Self Test supports functions with Priority 1 and some of those with Priority 2.

Table 2-2 gives the definitions of Test Priority.

Table 2-2 Definitions of Test Priority

	Definitions of Test Priority
Priority1 (Required Test)	Testing of the functions classified as Priority 1 is included in the minimum test package, for the testing of functions that are essential to interoperability.
Priority2 (Optional Test)	Testing of the functions classified as Priority 2 may not be needed; this depends on the application to be used. The testing of Priority 2 (Optional Test) items is selectively incorporated in the test package according to the functions to be supported by the HA/MN/CN.

2.3.2 Relationships among the classifications of functions and test items

Table 2-3 shows relationships among the classifications of functions and test items and coverage by the Mobile IPv6 Self Test.

Table 2-3 Classifications of and coverage by the Mobile IPv6 Self Test

<table>
<tr><th>(A) IETF</th><th>(B) Functional Rank</th><th>(C) Test Priority</th></tr>
<tr><td>MUST
MUST NOT</td><td rowspan="2">Rank-A</td><td>Priority 1
(Required Test)</td></tr>
<tr><td>SHOULD
SHOULD NOT</td><td>Priority 2
(Optional Test)</td></tr>
<tr><td rowspan="2">MAY</td><td>Rank-B</td><td>Priority 2
(Optional Test)</td></tr>
<tr><td>Rank-C</td><td>Priority 2
(Optional Test)</td></tr>
</table>

supported except a few functions

partly supported

As reference, the classification of Priority A1 and Priority A2 is described for every node about a typical Mobile IPv6 function to the following table 2-4.

Table 2-4 Mobile IPv6 functions of Priority A1 and Priority A2 for every node

Node	Function	
	Priority A1	Priority A2
CN	- Return Routability - Correspondent registration - Correspondent De-registration	
HA	- Home registration - IPv6 encapsulation and decapsulation - IPsec ESP(BU and BA)	- IPsec for HoTI/HoT - Real Home Link - IKE* - MPD - DHAAD - Fine-Grain Selectors etc.
MN	- Home registration - IPv6 encapsulation and decapsulation - IPsec ESP(BU and BA) - Movement detection, care-of address formation, and visiting of foreign links	- Return Routability - Real Home Link - IKE* - MPD - DHAAD - Mobile to Mobile - Fine-Grain Selectors etc.

* IKEv1 is out of scope of requirements for “IPv6 Ready Logo Phase2 for MIPv6”. However, the IKEv1 specification for MIPv6 is released as an experimental use.

2.3.3 IPsec Policy

IPsec SA can be maintained specifically for an individual protocol number (e.g. MH, ICMPv6) or for common (e.g. Any). But, different IPsec SA policy can not ensure the interoperability for applications approved to IPv6 Ready Logo. Therefore, IPsec SA must be divided by BU/BA(MH), MPD(ICMPv6) and HoTI/HoT(MH).

IPsec SA can be maintained for specifying the individual message type (Fine-Grain Selectors) by corresponding to RFC4877 (e.g BU, BA, MPS, MPA, HoTI, HoT). But IPsec policy for specifying the message type is Priority A2. Therefore, at least IPsec SA must be able to specify the individual protocol number.

3. Sequences

This section describes the reference Mobile IPv6 sequences used in the Mobile IPv6 Self Test. Mobile IPv6 Self Test sends sequences of test packets to the target and expects to receive corresponding acknowledgement packets from the target. Details of the test sequences utilized in each test are given in the Test Specification documents.

The reference Mobile IPv6 sequences are shown from Figure 3-1 to Figure 3-11.

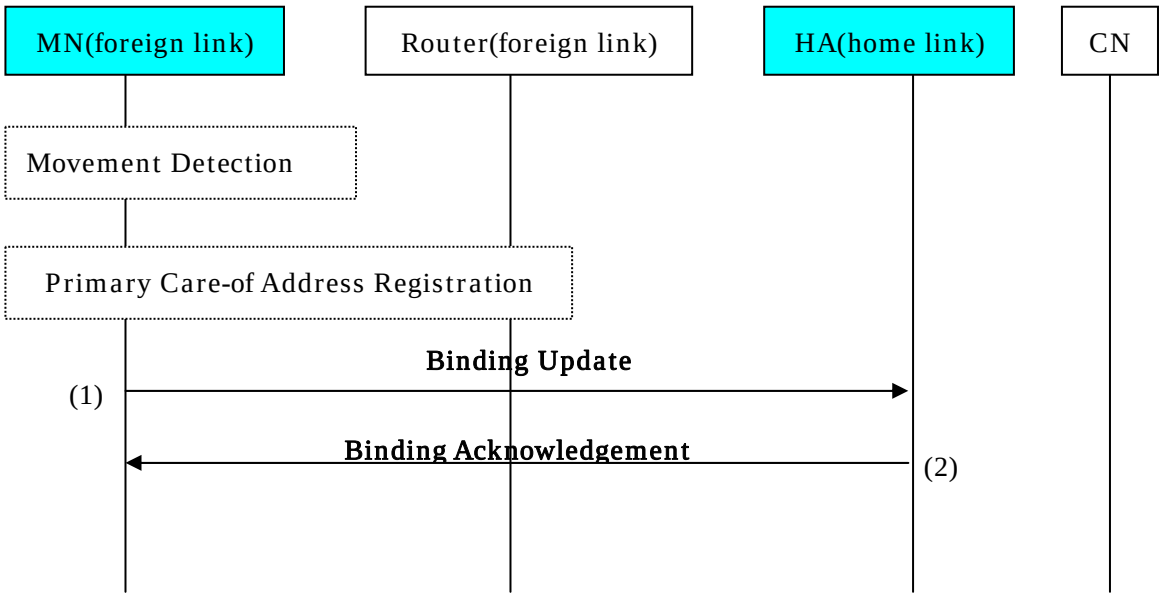


Figure 3-1 Primary Care-of Address Registration

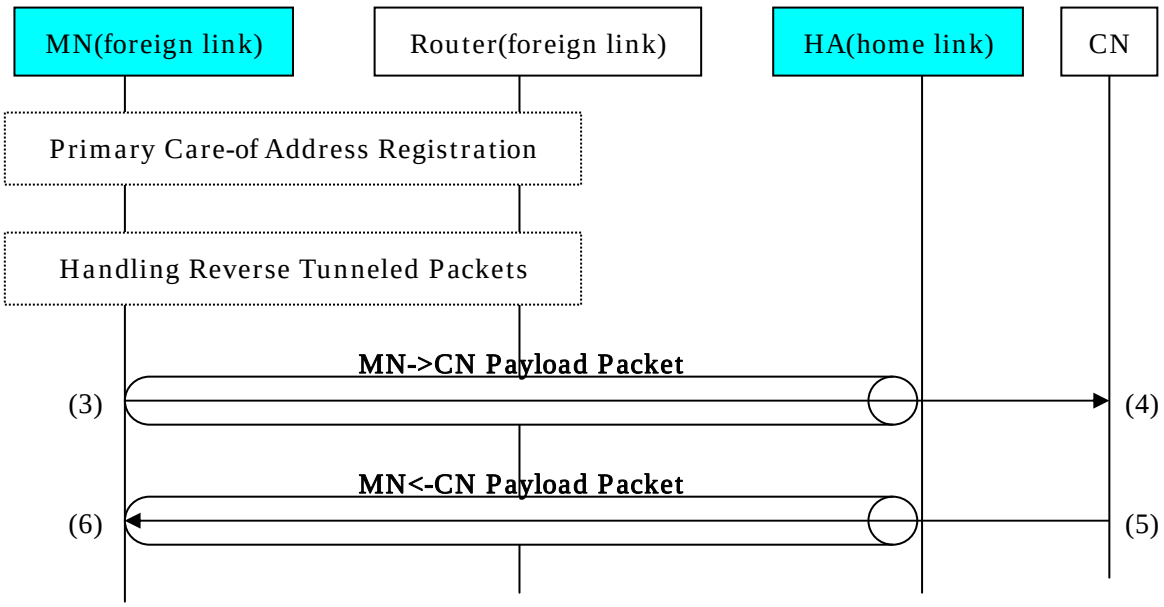


Figure 3-2 Handling Reverse Tunneled Packets

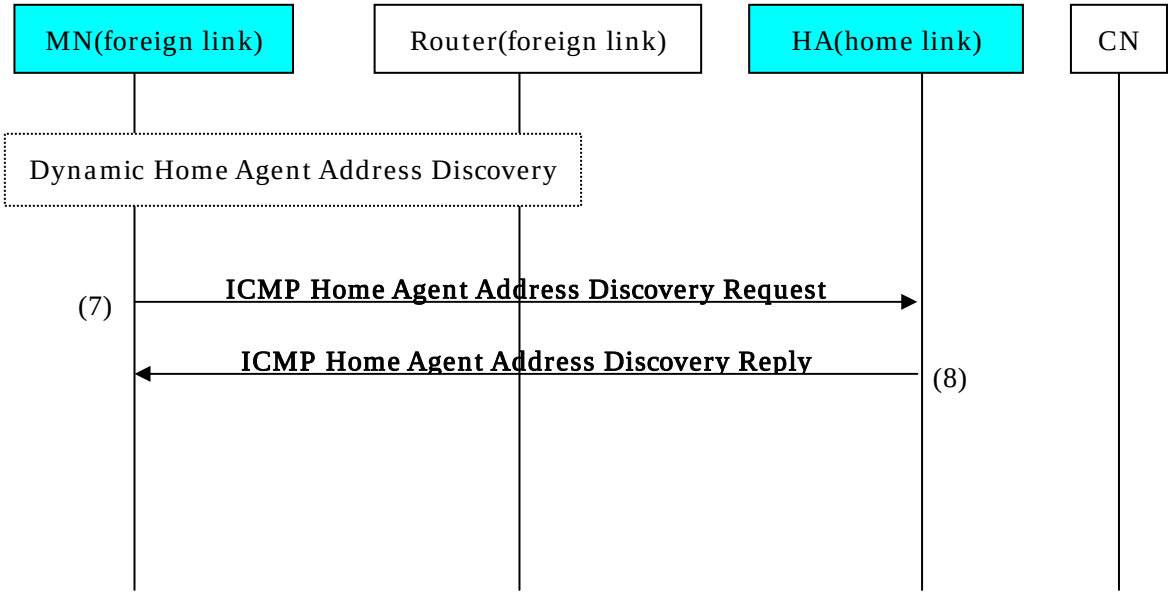


Figure 3-3 Dynamic Home Agent Address Discovery

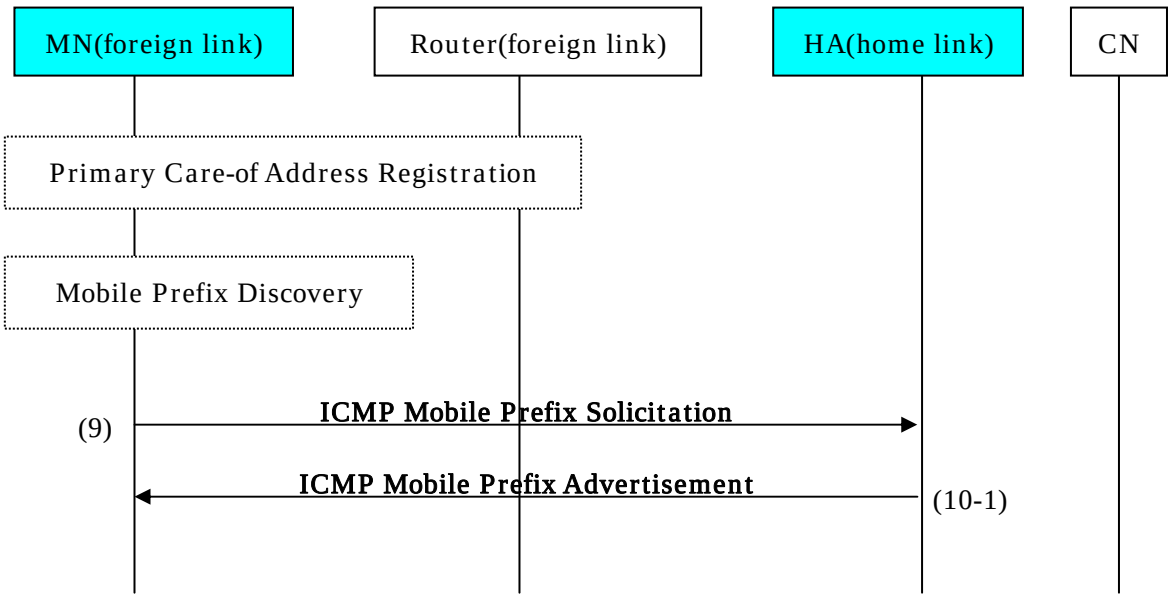


Figure 3-4-1 Mobile Prefix Discovery

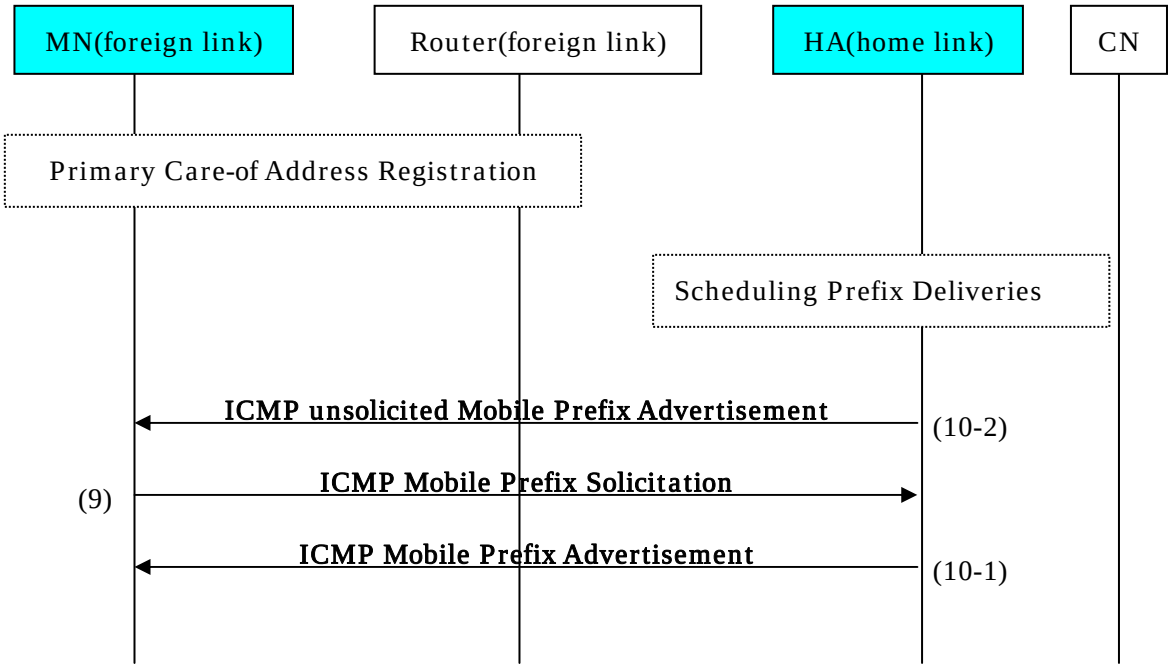


Figure 3-4-2 Mobile Prefix Discovery (unsolicited Mobile Prefix Advertisement)

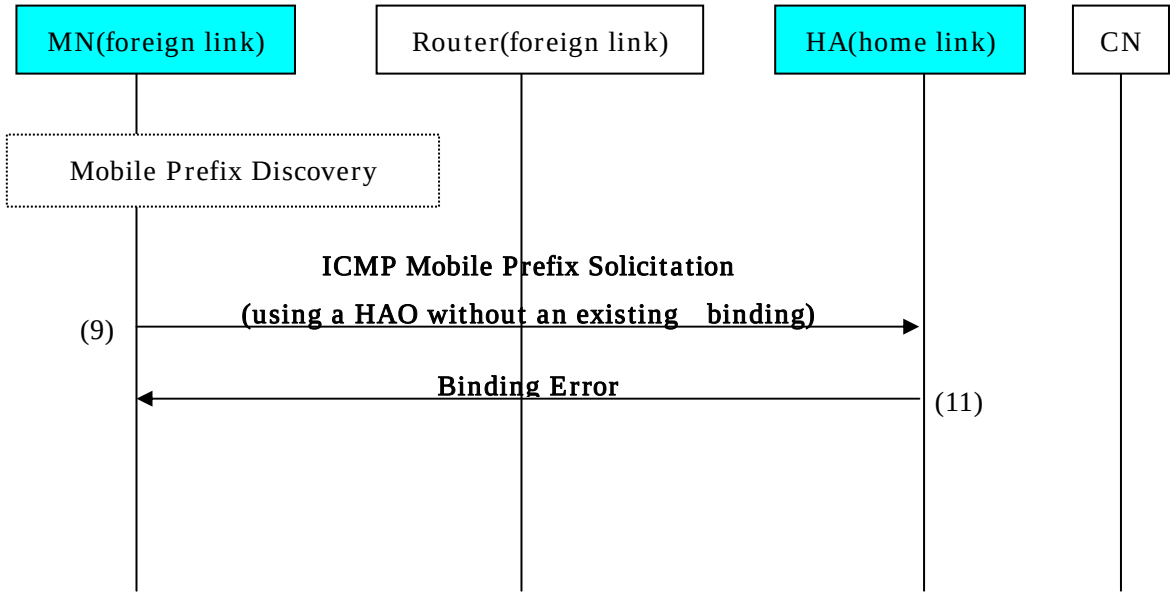


Figure 3-5 Sending Binding Error message

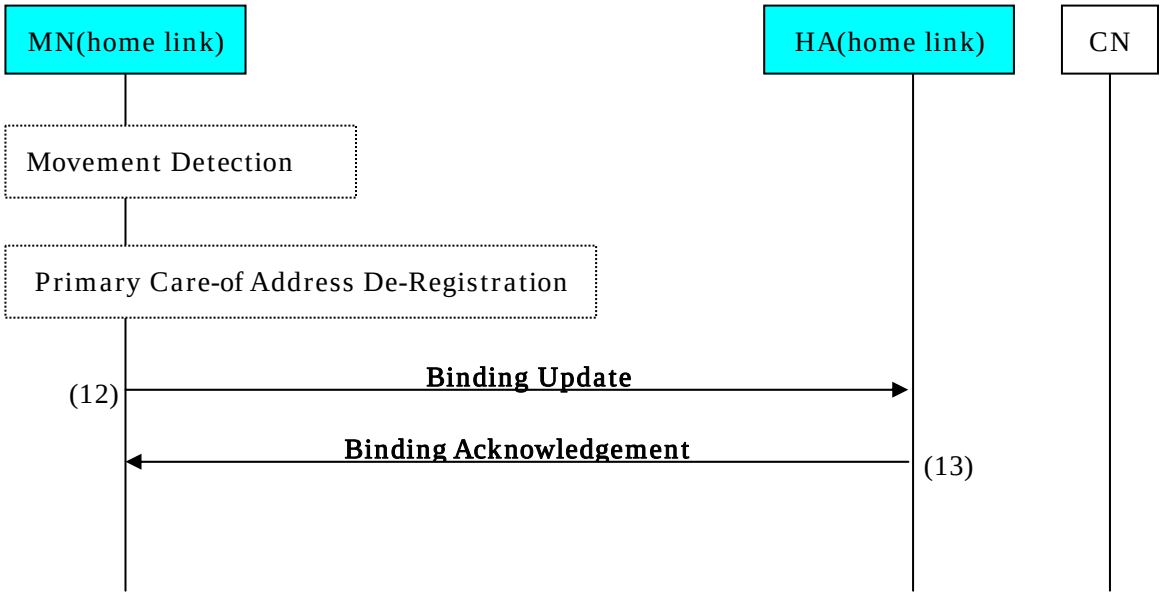


Figure 3-6 Returning Home (Primary Care-of Address De-Registration)

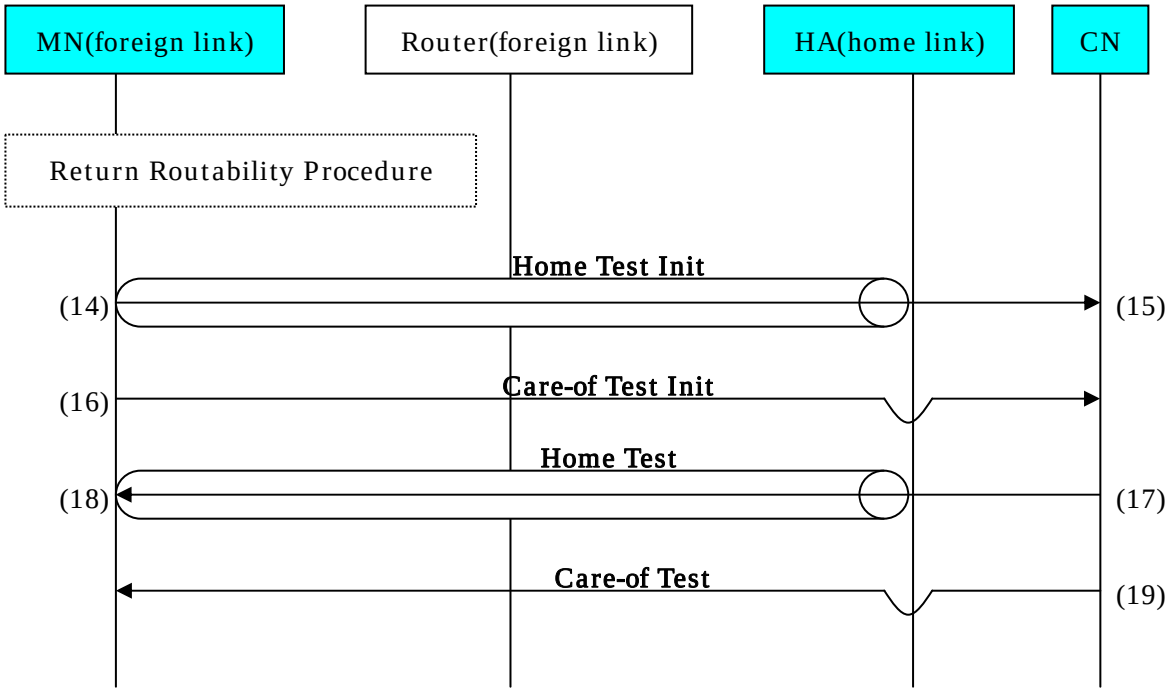


Figure 3-7-1 Return Routability Procedure

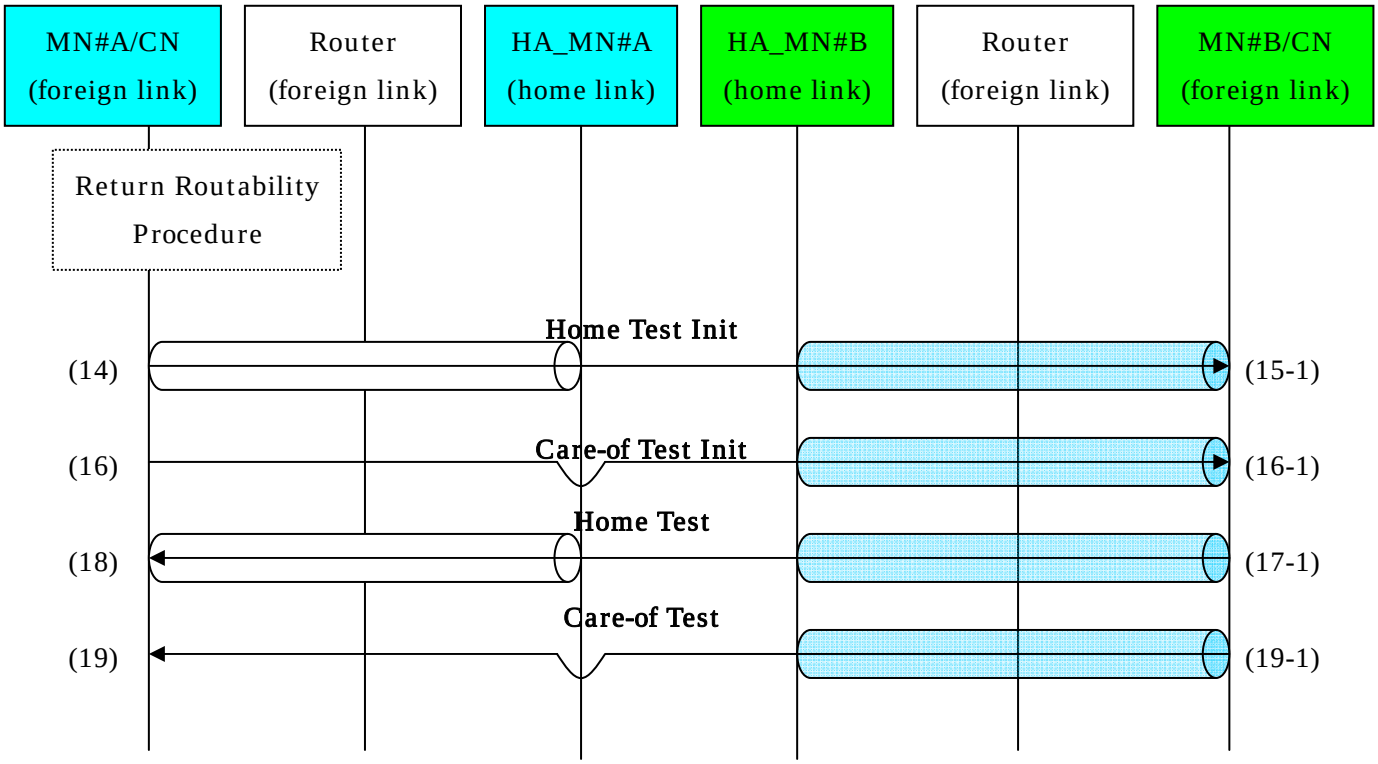


Figure 3-7-2 Return Routability Procedure (Mobile to Mobile)

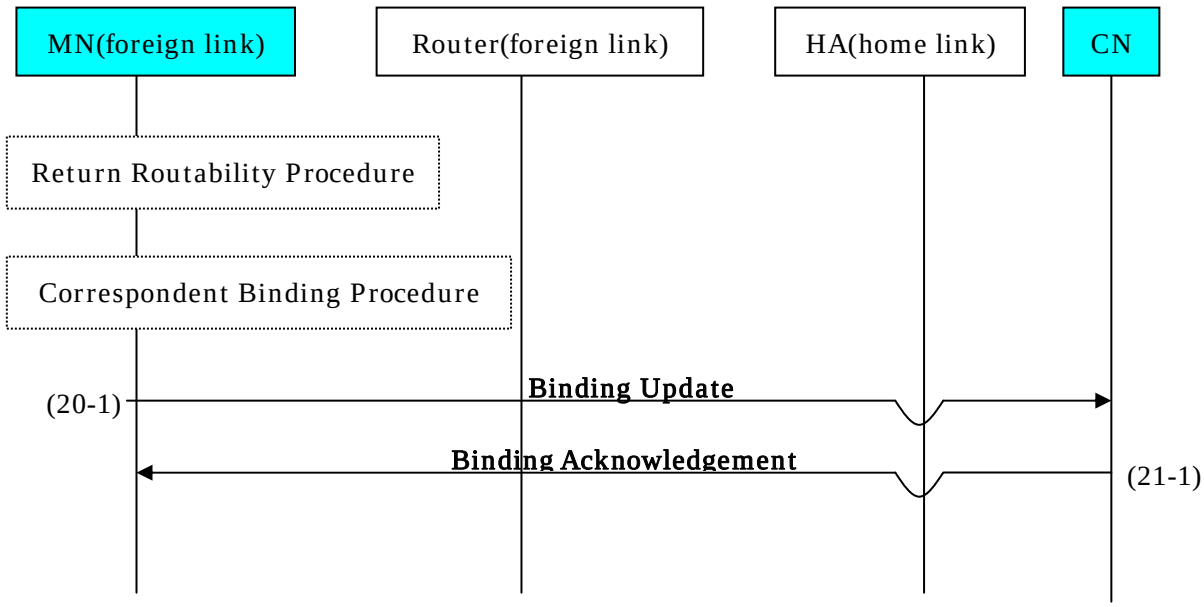


Figure 3-8-1 Correspondent Binding Procedure

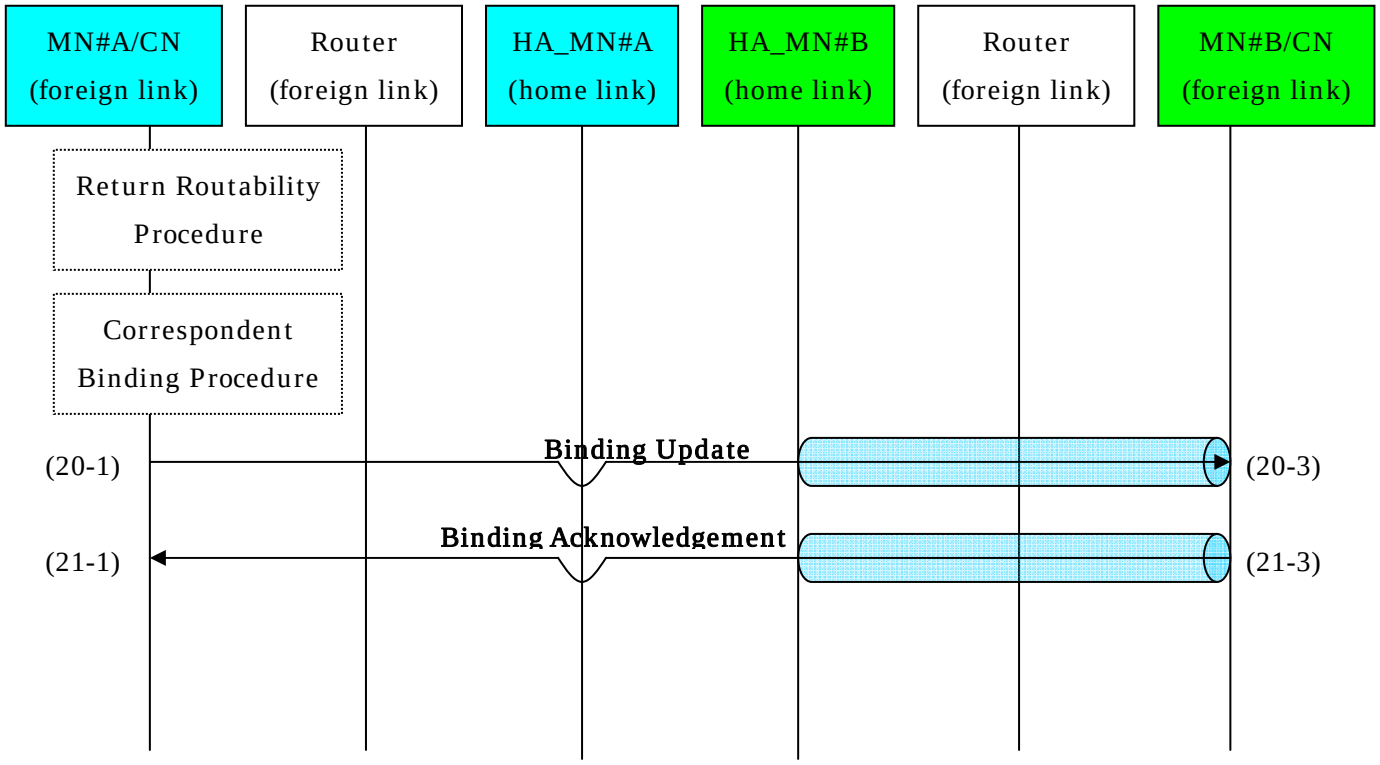


Figure 3-8-2 Correspondent Binding Procedure (Mobile to Mobile)

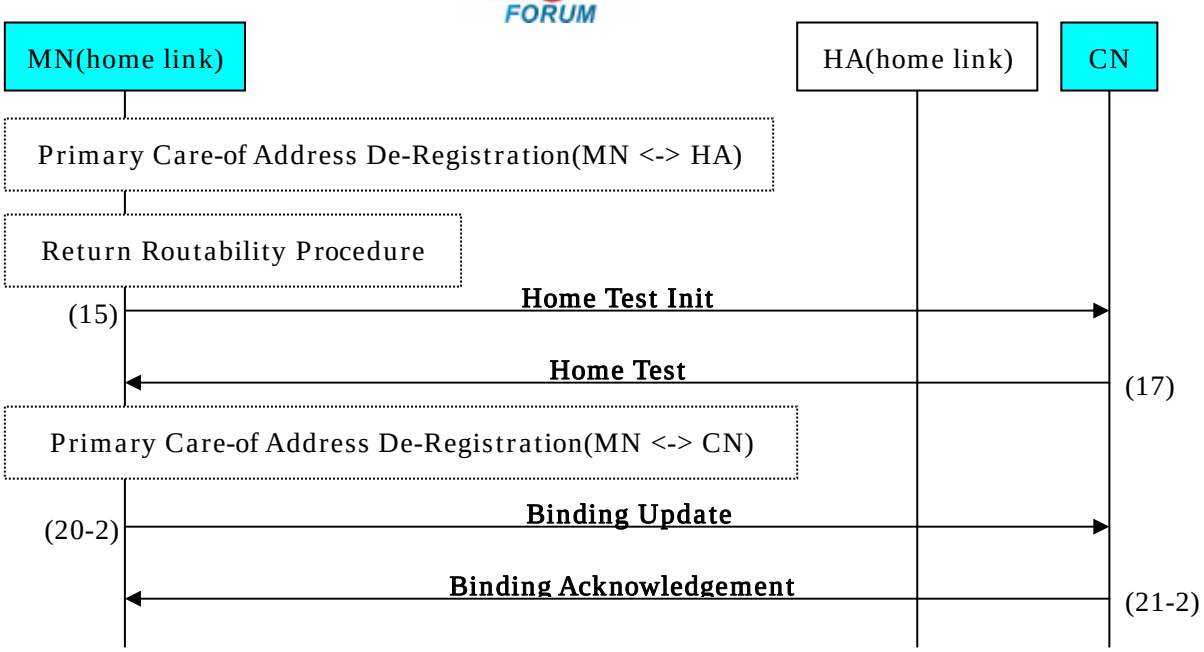


Figure 3-8-3 Correspondent Binding Procedure (Returning Home)

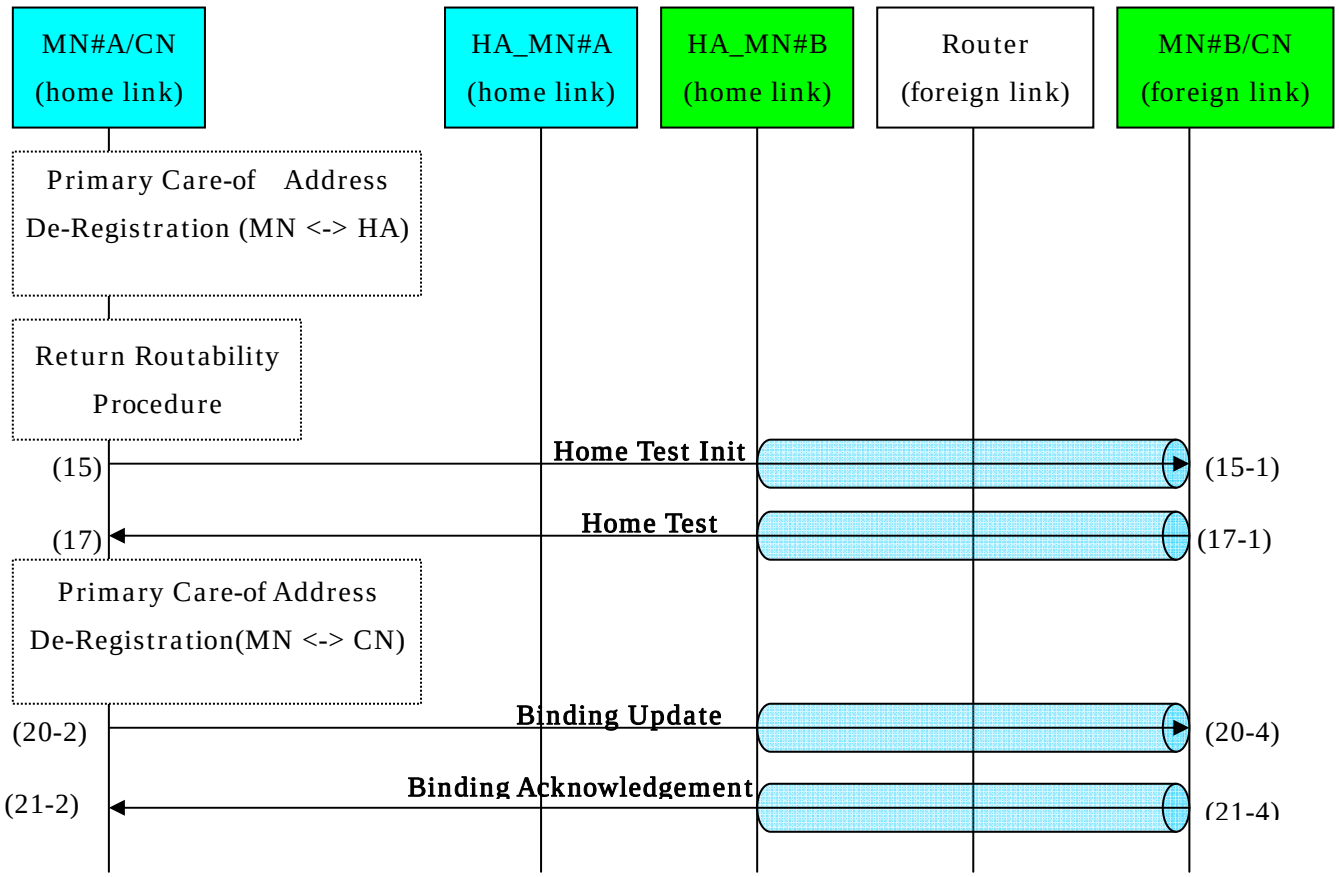


Figure 3-8-4 Correspondent Binding Procedure (Returning Home) (Mobile to Mobile)

This sequence is the same whether MN#B has finished a return routability procedure or not.

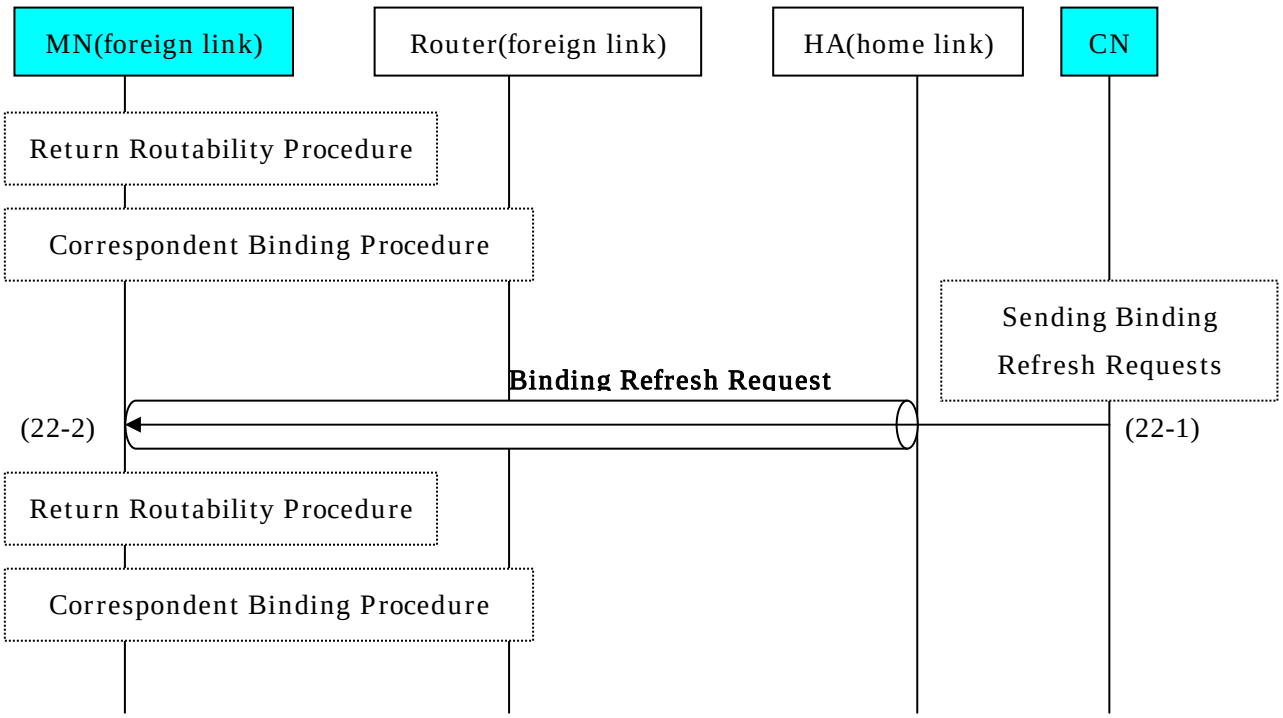


Figure 3-9-1 Sending Binding Refresh Requests

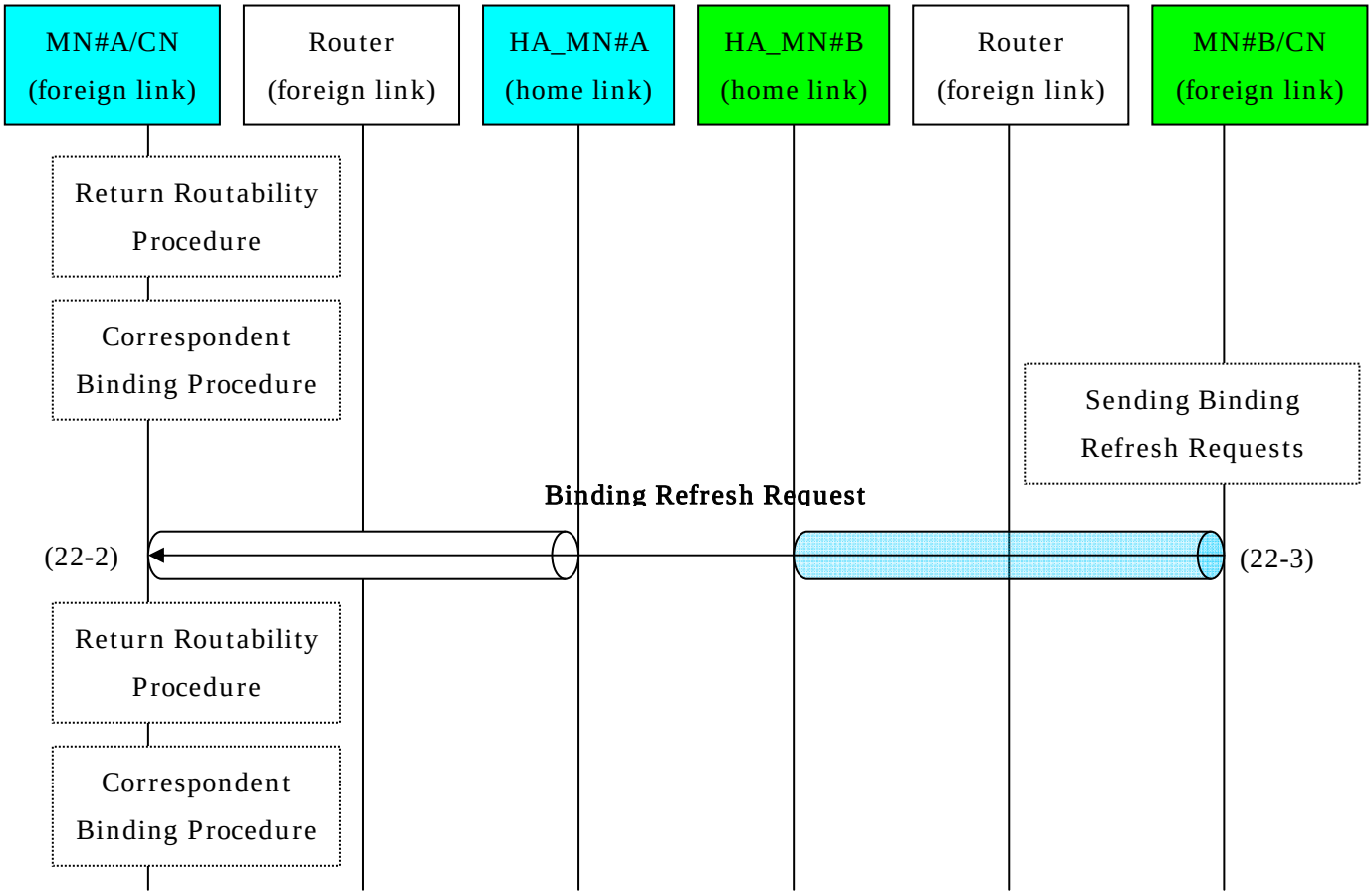


Figure 3-9-2 Sending Binding Refresh Requests (Mobile to Mobile)

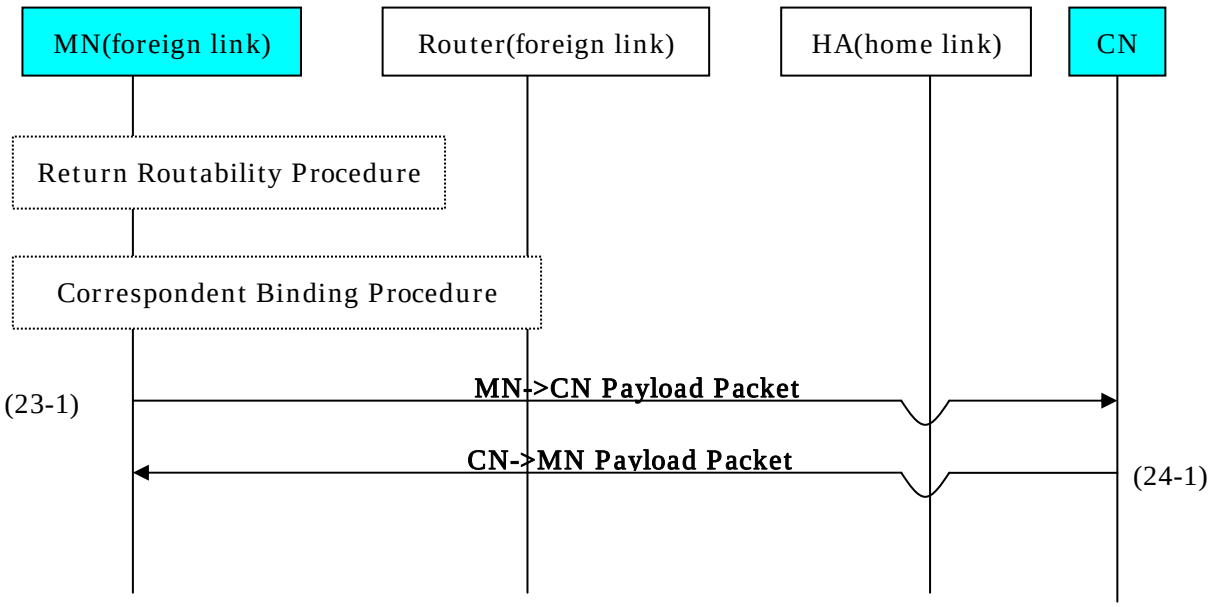


Figure 3-10-1 Route Optimization

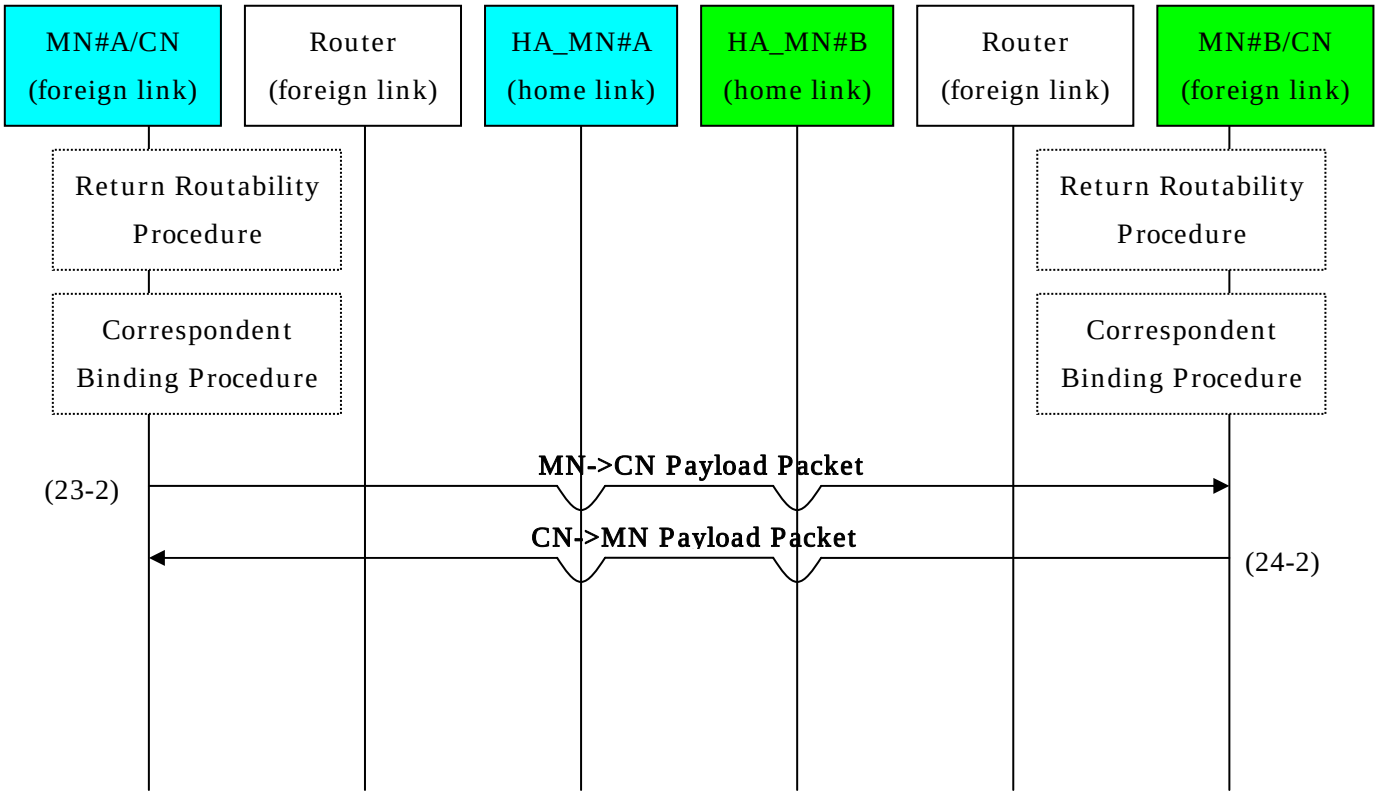


Figure 3-10-2 Route Optimization (Mobile to Mobile)

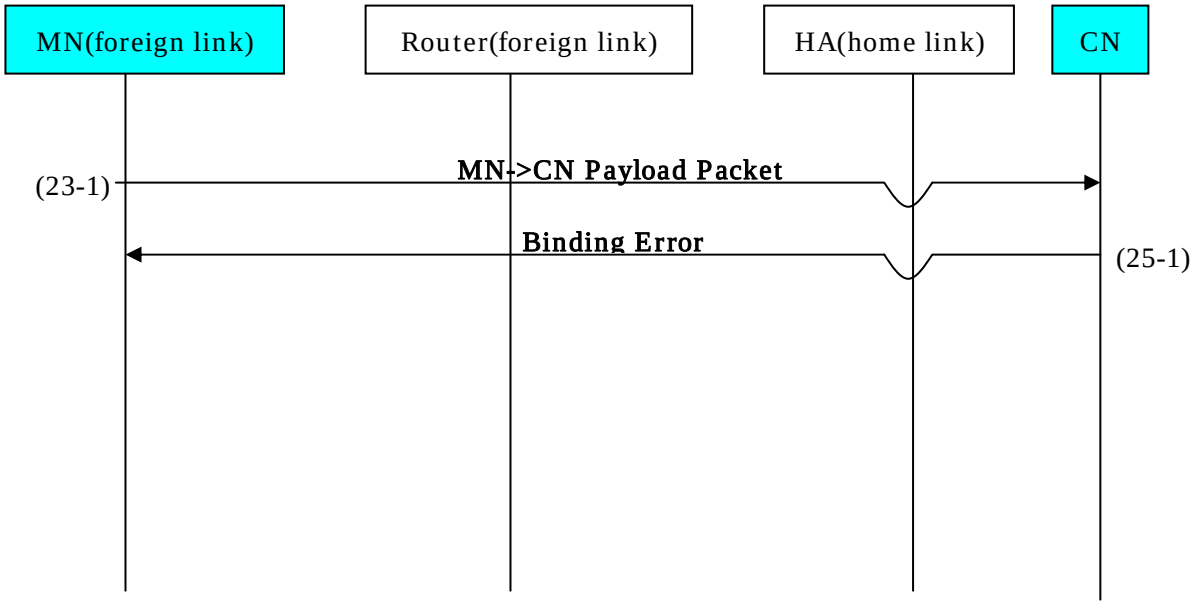


Figure 3-11-1 Sending Binding Error message

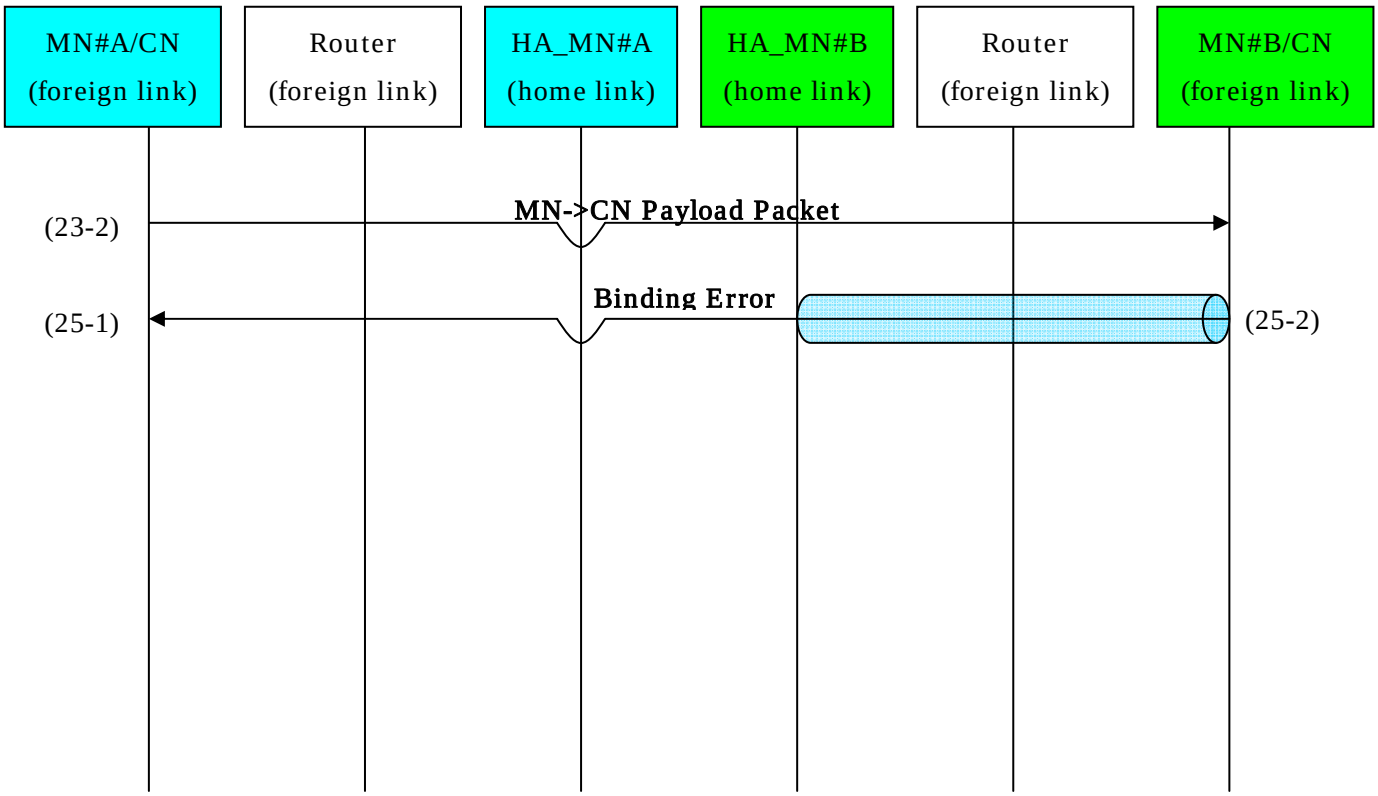


Figure 3-11-2 Sending Binding Error message (Mobile to Mobile)

4.Packet formats

This section describes the reference Mobile IPv6 packet formats which are utilized in the test sequences shown in section 3. Mobile IPv6 Self Test sends packets in these formats to the target and expects to receive the corresponding acknowledgement packets in these formats from the target. Details of the packet formats are given in the Test Specification documents.

(1)Binding Update message format(ESP)(MN -> HA)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=60	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit)			
Destination Address(Home Agent Address 128bit)			
Next Header=50	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address of Mobile Node(128bit)			
Security Parameters Index(SPI 32bit)			
Sequence #(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Payload Proto=59	Header Len=3	MH Type=5	Reserved
Checksum		Sequence #	
A H L K	Reserved	Lifetime	
Type=1	Option Length=0	Type=3	Length=16
Alternate Care-of Address of Mobile Node(128bit)			
Padding(0-255Byte)		Pad Len	Next Header=135
Authentication Data(variable Len)			

(2)Binding Acknowledgement message format(ESP)(HA -> MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=43	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Source Address of an invoking Binding Update 128bit)			
Next Header=50	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence #(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Payload Proto=59	Header Len	MH Type=6	Reserved
Checksum		Status	K Reserved
Sequence #(=BU)		Lifetime	
Type=1	Option Len=2	Option Data=0	Option Data=0
Padding(0-255Byte)		Pad Len	Next Header=135
Authentication Data(variable Len)			

(3)Payload packet format(Sending Packet to CN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit)			
Destination Address(Home Agent Address 128bit)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=17	Hop Limit
Source Address(Home Address of Mobile Node 128bit)			
Destination Address(Correspondent Node Address 128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			

(4)Payload packet format(Receiving Packet from MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=17	Hop Limit
Source Address(Home Address of Mobile Node 128bit)			
Destination Address(Correspondent Node Address 128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			

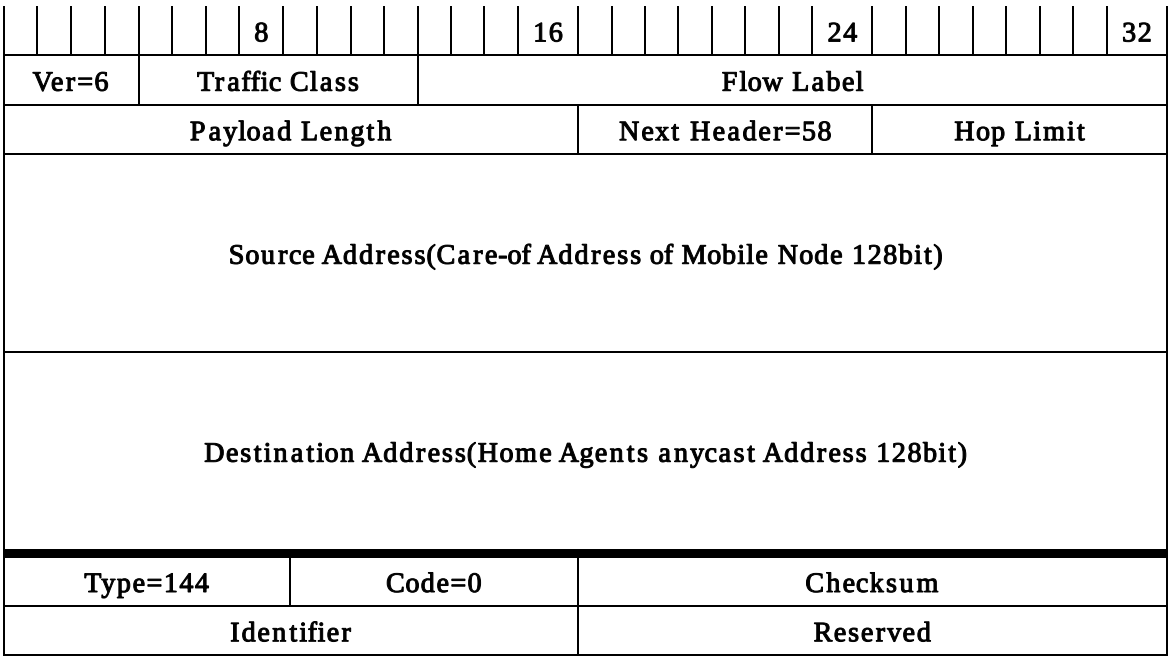
(5)Payload packet format(Sending Packet to MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=17	Hop Limit
Source Address(Correspondent Node Address 128bit)			
Destination Address(Home Address of Mobile Node 128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			

(6)Payload packet format(Receiving Packet from CN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Care-of Address of Mobile Node 128bit)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=17	Hop Limit
Source Address(Correspondent Node Address 128bit)			
Destination Address(Home Address of Mobile Node 128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			

(7)ICMP Home Agent Address Discovery request message format(MN -> HA)



8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=58	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit)			
Destination Address(Home Agents anycast Address 128bit)			
Type=144	Code=0	Checksum	
Identifier		Reserved	

(8)ICMP Home Agent Address Discovery reply message format(HA -> MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=58	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Care-of Address of Mobile Node 128bit)			
Type=145	Code=0	Checksum	
Identifier(=HAAD request)		Reserved	
Home Agent Addresses(variable Len)			

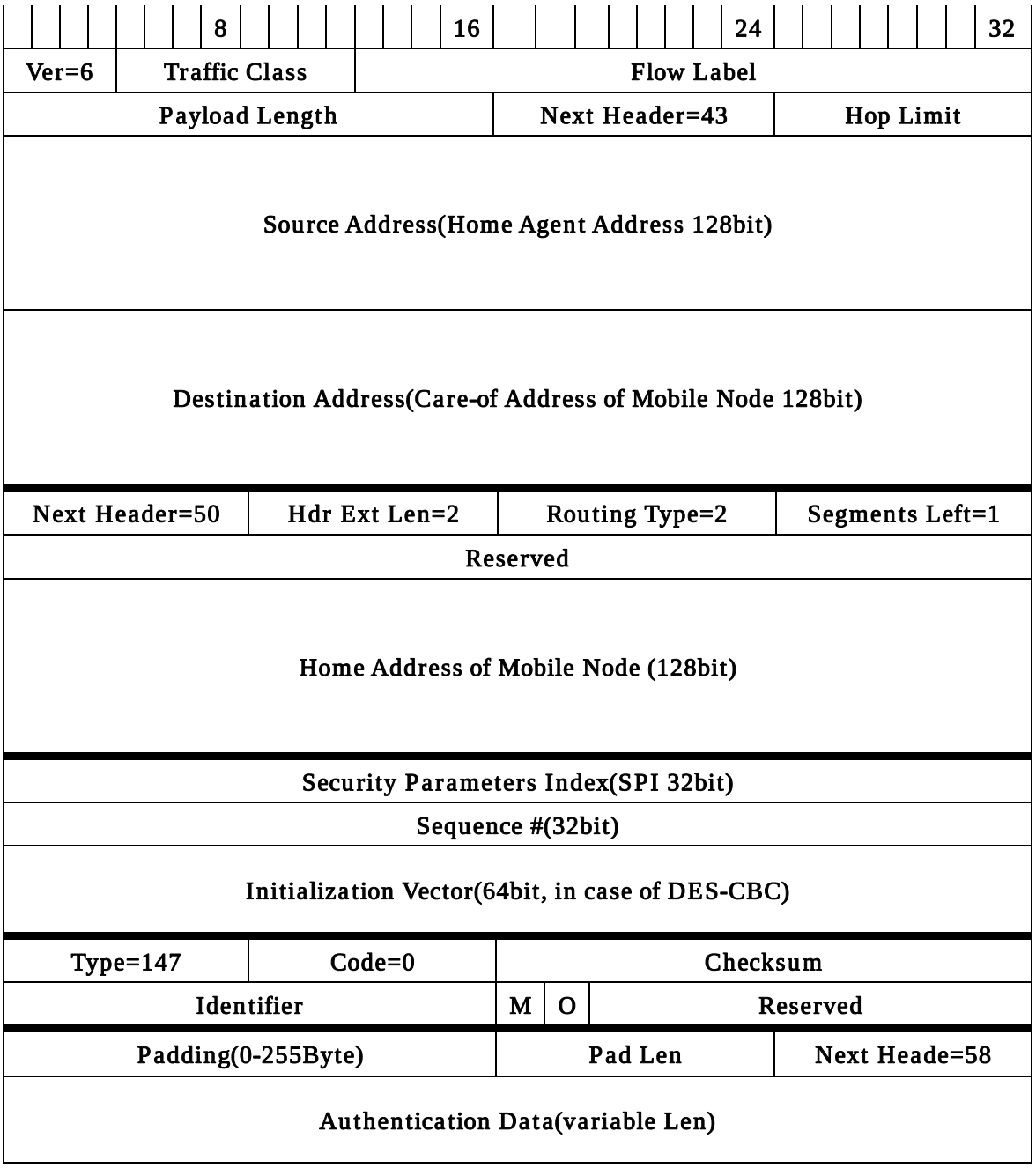
(9)ICMP Mobile Prefix Solicitation message format(ESP)(MN -> HA)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=60	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit)			
Destination Address(Home Agent Address 128bit)			
Next Header=50	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address of Mobile Node (128bit)			
Security Parameters Index(SPI 32bit)			
Sequence #(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Type=146	Code=0	Checksum	
Identifier		Reserved	
Padding(0-255Byte)		Pad Len	Next Header=58
Authentication Data(variable Len)			

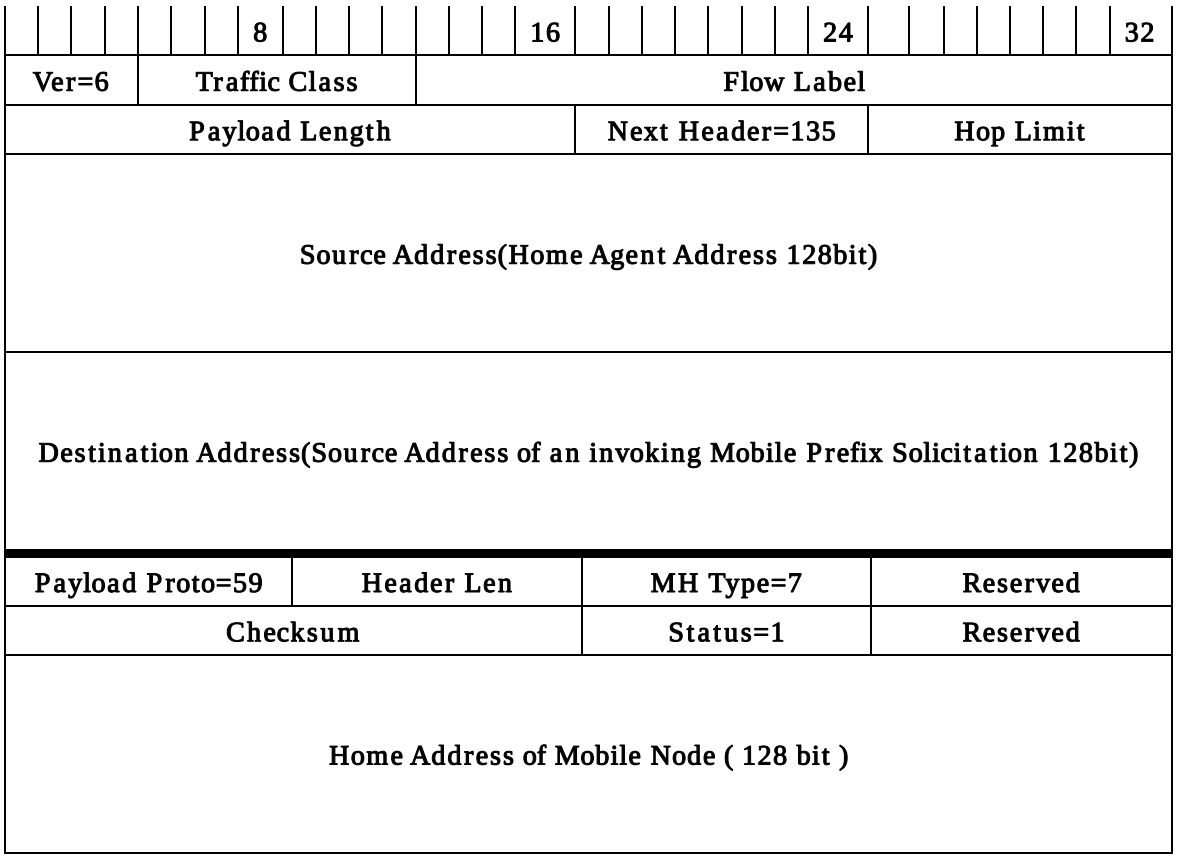
(10-1)ICMP Mobile Prefix Advertisement message format(ESP)(HA->MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=43	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Source Address of an invoking Mobile Prefix Solicitation 128bit)			
Next Header=50	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node (128bit)			
Security Parameters Index(SPI 32bit)			
Sequence #(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Type=147	Code=0	Checksum	
Identifier(=MPS)		M O	Reserved
Padding(0-255Byte)		Pad Len	Next Heade=58
Authentication Data(variable Len)			

(10-2)ICMP unsolicited Mobile Prefix Advertisement message format(ESP)(HA->MN)

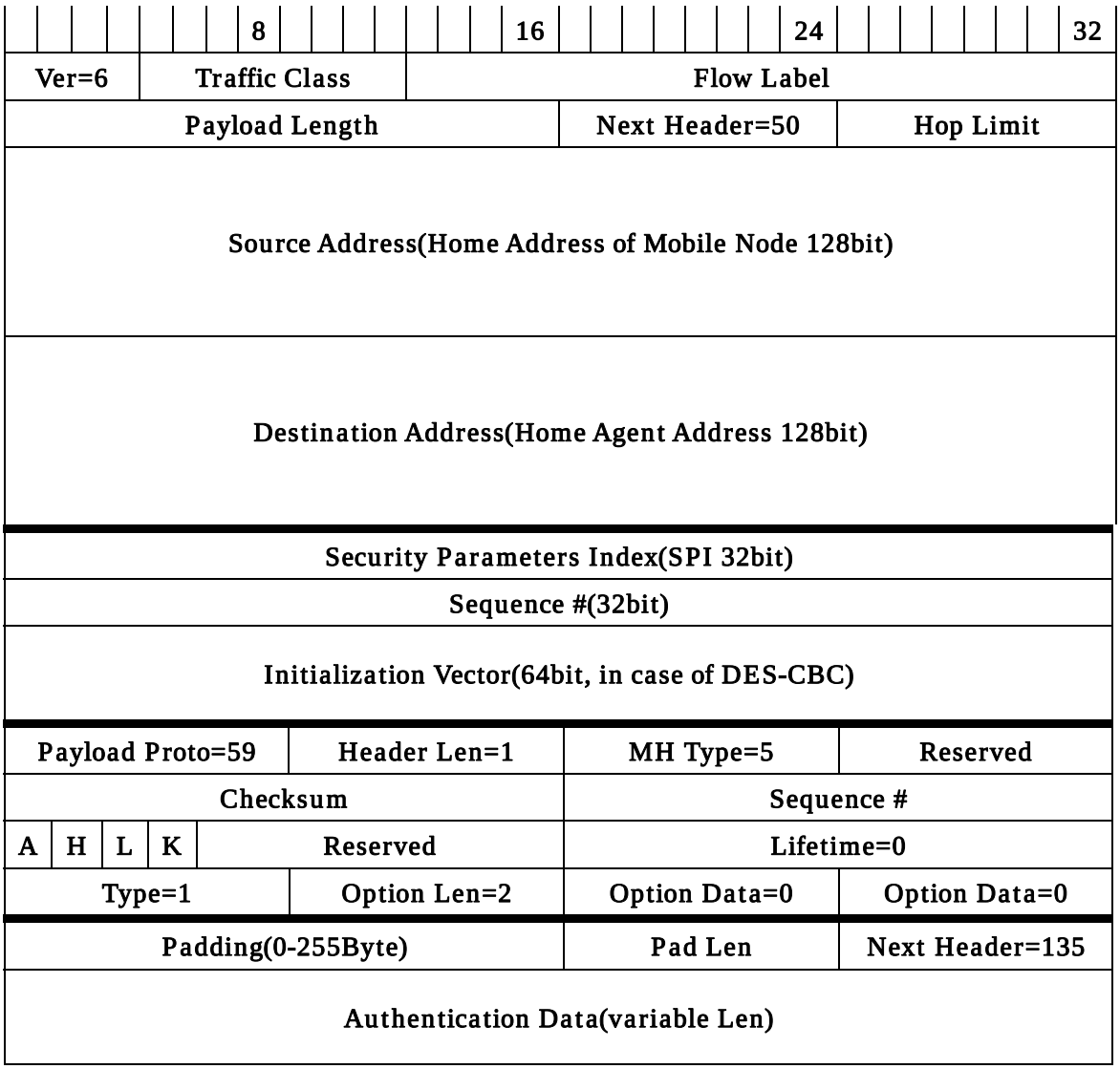


(11)Binding Error message (HA -> MN)



8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Source Address of an invoking Mobile Prefix Solicitation 128bit)			
Payload Proto=59	Header Len	MH Type=7	Reserved
Checksum		Status=1	Reserved
Home Address of Mobile Node (128 bit)			

(12)Binding Update message format(ESP)(MN -> HA)



8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Home Address of Mobile Node 128bit)			
Destination Address(Home Agent Address 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence #(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Payload Proto=59	Header Len=1	MH Type=5	Reserved
Checksum		Sequence #	
A H L K	Reserved	Lifetime=0	
Type=1	Option Len=2	Option Data=0	Option Data=0
Padding(0-255Byte)		Pad Len	Next Header=135
Authentication Data(variable Len)			

(13)Binding Acknowledgement message format(ESP)(HA -> MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Home Address of Mobile Node 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence #(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Payload Proto=59	Header Len=1	MH Type=6	Reserved
Checksum		Status	K Reserved
Sequence #(=BU)		Lifetime=0	
Type=1	Option Len=2	Option Data=0	Option Data=0
Padding(0-255Byte)		Pad Len	Next Header=135
Authentication Data(variable Len)			

(14)Home Test Init message format(ESP)(Sending HoTI)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit) [Care-of Address of Mobile Node#A]			
Destination Address(Home Agent Address 128bit) [Home Agent Address of Mobile Node#A]			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node 128bit) [Home Address of Mobile Node#A]			
Destination Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Payload Proto=59	Header Len=1	MH Type=1	Reserved
Checksum		Reserved	
Home Init Cookie(64bit)			
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

(15)Home Test Init message format(Receiving HoTI)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node 128bit) [Home Address of Mobile Node#A]			
Destination Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Payload Proto=59	Header Len=1	MH Type=1	Reserved
Checksum		Reserved	
Home Init Cookie(64bit)			

(15-1)Home Test Init message format(ESP)(Receiving HoTI(MN#A->MN#B))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Home Agent Address of Mobile Node#B 128bit)			
Destination Address(Care-of Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#A 128bit)			
Destination Address(Home Address of Mobile Node#B 128bit)			
Payload Proto=59	Header Len=1	MH Type=1	Reserved
Checksum		Reserved	
Home Init Cookie(64bit)			
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

(16)Care-of Test Init message format(MN->CN)

						8							16							24							32						
Ver=6				Traffic Class								Flow Label																				
Payload Length																Next Header=135								Hop Limit							
Source Address(Care-of Address of Mobile Node 128bit) [Care-of Address of Mobile Node#A]																															
Destination Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]																															
Payload Proto=59								Header Len=1								MH Type=2								Reserved							
Checksum																Reserved															
Care-of Init Cookie(64bit)																															

(16-1)Care-of Test Init message format(ESP)(Receiving CoTI(MN#A->MN#B))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Home Agent Address of Mobile Node#B 128bit)			
Destination Address(Care-of Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Care-of Address of Mobile Node#A 128bit)			
Destination Address(Home Address of Mobile Node#B 128bit)			
Payload Proto=59	Header Len=1	MH Type=2	Reserved
Checksum		Reserved	
Care-of Init Cookie(64bit)			
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

(17)Home Test message format(Sending HoT)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Destination Address(Home Address of Mobile Node 128bit) [Home Address of Mobile Node#A]			
Payload Proto=59	Header Len=2	MH Type=3	Reserved
Checksum		Home Nonce Index	
Home Init Cookie(64bit)			
Home Keygen Nonce(64bit)			

(17-1)Home Test message format(ESP)(Sending HoT(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Home Address of Mobile Node#A 128bit)			
Payload Proto=59	Header Len=2	MH Type=3	Reserved
Checksum		Home Nonce Index	
Home Init Cookie(64bit)			
Home Keygen Nonce(64bit)			
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

(18)Home Test message format(ESP)(Receiving HoT)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Home Agent Address 128bit) [Home Agent Address of Mobile Node#A]			
Destination Address(Care-of Address of Mobile Node 128bit) [Care-of Address of Mobile Node#A]			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Destination Address(Home Address of Mobile Node 128bit) [Home Address of Mobile Node#A]			
Payload Proto=59	Header Len=2	MH Type=3	Reserved
Checksum		Home Nonce Index	
Home Init Cookie(64bit)			
Home Keygen Nonce(64bit)			
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

(19)Care-of Test message format(CN->MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Destination Address(Care-of Address of Mobile Node 128bit) [Care-of Address of Mobile Node#A]			
Payload Proto=59	Header Len=2	MH Type=4	Reserved
Checksum		Care-of Nonce Index	
Care-of Init Cookie(64bit)			
Care-of Keygen Nonce(64bit)			

(19-1)Care-of Test message format(ESP)(Sending CoT(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Care-of Address of Mobile Node#A 128bit)			
Payload Proto=59	Header Len=2	MH Type=4	Reserved
Checksum		Care-of Nonce Index	
Care-of Init Cookie(64bit)			
Care-of Keygen Nonce(64bit)			
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

(20-1)Binding Update message format(MN->CN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=60	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit) [Care-of Address of Mobile Node#A]			
Destination Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Next Header=135	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address of Mobile Node (128bit) [Home Address of Mobile Node#A]			
Payload Proto=59	Header Len=1	MH Type=5	Reserved
Checksum		Sequence #	
A=1 H L K Reserved		Lifetime	
Type=4	Length=4	Home Nonce Index	
Care-of Nonce Index		Type=5	Length
Authenticator(variable Len)			

(21-1)Binding Acknowledgement message format(CN -> MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=43	Hop Limit
Source Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Destination Address(Source Address of an invoking Binding Upadate 128bit)			
Next Header=135	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node (128bit) [Home Address of Mobile Node#A]			
Payload Proto=59	Header Len	MH Type=6	Reserved
Checksum		Status	K Reserved
Sequence #(=BU)		Lifetime	
Type=1	Option Len=0	Type=5	Length
Authenticator(variable Len)			

(20-2)Binding Update message format(MN->CN)

<table>
<tr><td colspan="8">8</td><td colspan="8">16</td><td colspan="8">24</td><td colspan="8">32</td></tr>
<tr><td colspan="4">Ver=6</td><td colspan="8">Traffic Class</td><td colspan="20">Flow Label</td></tr>
<tr><td colspan="16">Payload Length</td><td colspan="8">Next Header=135</td><td colspan="8">Hop Limit</td></tr>
<tr><td colspan="32">Source Address(Home Address of Mobile Node 128bit)
[Home Address of Mobile Node#A]</td></tr>
<tr><td colspan="32">Destination Address(Correspondent Node Address 128bit)
[Home Address of Mobile Node#B]</td></tr>
<tr><td colspan="8">Payload Proto=59</td><td colspan="8">Header Len=1</td><td colspan="8">MH Type=5</td><td colspan="8">Reserved</td></tr>
<tr><td colspan="16">Checksum</td><td colspan="16">Sequence #</td></tr>
<tr><td>A=1</td><td>H</td><td>L</td><td>K</td><td colspan="12">Reserved</td><td colspan="16">Lifetime=0</td></tr>
<tr><td colspan="8">Type=4</td><td colspan="8">Length=4</td><td colspan="16">Home Nonce Index</td></tr>
<tr><td colspan="16">Care-of Nonce Index</td><td colspan="8">Type=5</td><td colspan="8">Length</td></tr>
<tr><td colspan="32">Authenticator(variable Len)</td></tr>
</table>

(21-2)Binding Acknowledgement message format(CN->MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Destination Address(Source Address of an invoking Binding Upadate 128bit)			

Payload Proto=59	Header Len	MH Type=6	Reserved	
Checksum		Status	K	Reserved
Sequence #(=BU)		Lifetime=0		
Type=1	Option Len=0	Type=5	Length	
Authenticator(variable Len)				

(20-3)Binding Update message format(ESP)(Receiving BU(MN#A->MN#B))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Home Agent Address of Mobile Node#B 128bit)			
Destination Address(Care-of Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=60	Hop Limit
Source Address(Care-of Address of Mobile Node#A 128bit)			
Destination Address(Home Address of Mobile Node#B 128bit)			
Next Header=135	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address of Mobile Node#A (128bit)			
Payload Proto=59	Header Len=1	MH Type=5	Reserved

Checksum					Sequence #	
A=1	H	L	K	Reserved	Lifetime	
Type=4			Length=4		Home Nonce Index	
Care-of Nonce Index					Type=5	Length
Authenticator(variable Len)						
Padding(0-255Byte)					Pad Len	Next Header=41
Authentication Data(variable Len)						

(21-3)Binding Acknowledgement message format(ESP)(Sending BA(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=43	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Source Address of an invoking Binding Upadate 128bit)			
Next Header=135	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node#A (128bit)			
Payload Proto=59	Header Len	MH Type=6	Reserved

Checksum		Status	K	Reserved
Sequence #(=BU)		Lifetime		
Type=1	Option Len=0	Type=5	Length	
Authenticator(variable Len)				
Padding(0-255Byte)		Pad Len	Next Header=41	
Authentication Data(variable Len)				

(20-4)Binding Update message format(ESP)(Receiving BU(MN#A->MN#B))

							8							16							24											32

Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Home Agent Address of Mobile Node#B 128bit)			
Destination Address(Care-of Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#A 128bit)			
Destination Address(Home Address of Mobile Node#B 128bit)			

Payload Proto=59	Header Len=1	MH Type=5	Reserved
Checksum		Sequence #	
A=1 / H / L / K / Reserved		Lifetime=0	
Type=4	Length=4	Home Nonce Index	
Care-of Nonce Index		Type=5	Length

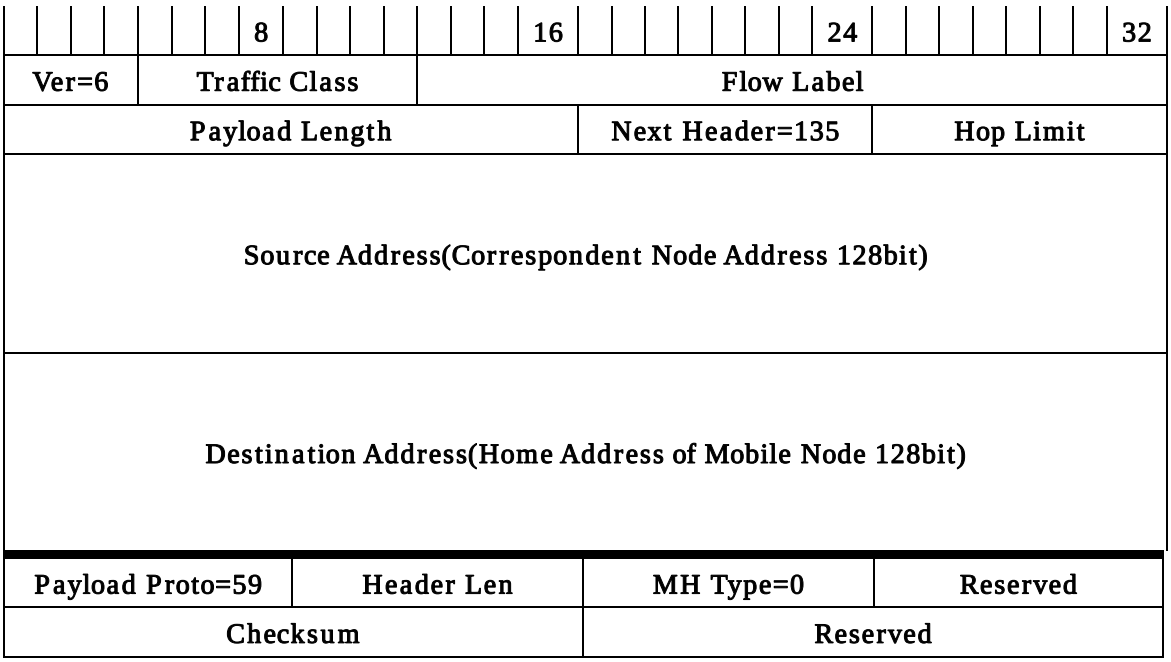
Authenticator(variable Len)		
Padding(0-255Byte)	Pad Len	Next Header=41
Authentication Data(variable Len)		

(21-4)Binding Acknowledgement message format(ESP)(Sending BA(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Source Address of an invoking Binding Upadate 128bit)			
Payload Proto=59	Header Len	MH Type=6	Reserved
Checksum		Status	K Reserved
Sequence #(=BU)		Lifetime=0	
Type=1	Option Len=0	Type=5	Length

Authenticator(variable Len)		
Padding(0-255Byte)	Pad Len	Next Header=41
Authentication Data(variable Len)		

(22-1)Binding Refresh Request message format(Sending BRR)



8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Correspondent Node Address 128bit)			
Destination Address(Home Address of Mobile Node 128bit)			
Payload Proto=59	Header Len	MH Type=0	Reserved
Checksum		Reserved	

(22-2)Binding Refresh Request message format(ESP)(Receiving BRR)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Home Agent Address of Mobile Node 128bit) [Home Agent Address of Mobile Node#A]			
Destination Address(Care-of Address of Mobile Node 128bit) [Care-of Address of Mobile Node#A]			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Destination Address(Home Address of Mobile Node 128bit) [Home Address of Mobile Node#A]			
Payload Proto=59	Header Len	MH Type=0	Reserved
Checksum		Reserved	
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

(22-3)Binding Refresh Request message format(ESP)(Sending BRR(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Home Address of Mobile Node#A 128bit)			
Payload Proto=59	Header Len	MH Type=0	Reserved
Checksum		Reserved	
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

(23-1)Payload packet format(MN->CN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=60	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit)			
Destination Address(Correspondent Node Address 128bit)			
Next Header=17	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address of Mobile Node (128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			

(23-2)Payload packet format(MN#A->MN#B)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=60	Hop Limit
Source Address(Care-of Address of Mobile Node#A 128bit)			
Destination Address(Care of Address of Mobile Node#B 128bit)			
Next Header=43	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address of Mobile Node#A (128bit)			
Next Header=17	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node#B (128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			

(24-1)Payload packet format(CN->MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=43	Hop Limit
Source Address(Correspondent Node Address 128bit)			
Destination Address(Care-of Address of Mobile Node 128bit)			
Next Header=17	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node (128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			

(24-2)Payload packet format(MN#B->MN#A)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=43	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Care of Address of Mobile Node#A 128bit)			
Next Header=60	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node#A (128bit)			
Next Header=17	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address of Mobile Node#B (128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			

(25-1)Binding Error message (CN->MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Destination Address(Source Address of an invoking packet with Home Address option 128bit)			
Payload Proto=59	Header Len	MH Type=7	Reserved
Checksum		Status=1	Reserved
Home Address of Mobile Node (128 bit) [Home Address of Mobile Node#A]			

(25-2)Binding Error message(ESP)(Sending BE(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Source Address of an invoking packet with Home Address option 128bit)			
Payload Proto=59	Header Len	MH Type=7	Reserved
Checksum		Status=1	Reserved
Home Address of Mobile Node#A (128 bit)			
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

Appendix

(1*)Binding Update message format(MN -> HA)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=60	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit)			
Destination Address(Home Agent Address 128bit)			

Next Header=135	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address(128bit)			

Payload Proto=59	Header Len=1	MH Type=5	Reserved
Checksum		Sequence #	
A H L K	Reserved	Lifetime	
Type=1	Option Len=2	Option Data=0	Option Data=0

(2*)Binding Acknowledgement message format(HA -> MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=43	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Source Address of an invoking Binding Update 128bit)			
Next Header=135	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node(128bit)			
Payload Proto=59	Header Len	MH Type=6	Reserved
Checksum		Status	K Reserved
Sequence #(=BU)		Lifetime	
Type=1	Option Len=2	Option Data=0	Option Data=0

(3*)Payload packet format(ESP)(Sending Packet to CN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit)			
Destination Address(Home Agent Address 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=17	Hop Limit
Source Address(Home Address of Mobile Node 128bit)			
Destination Address(Correspondent Node Address 128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

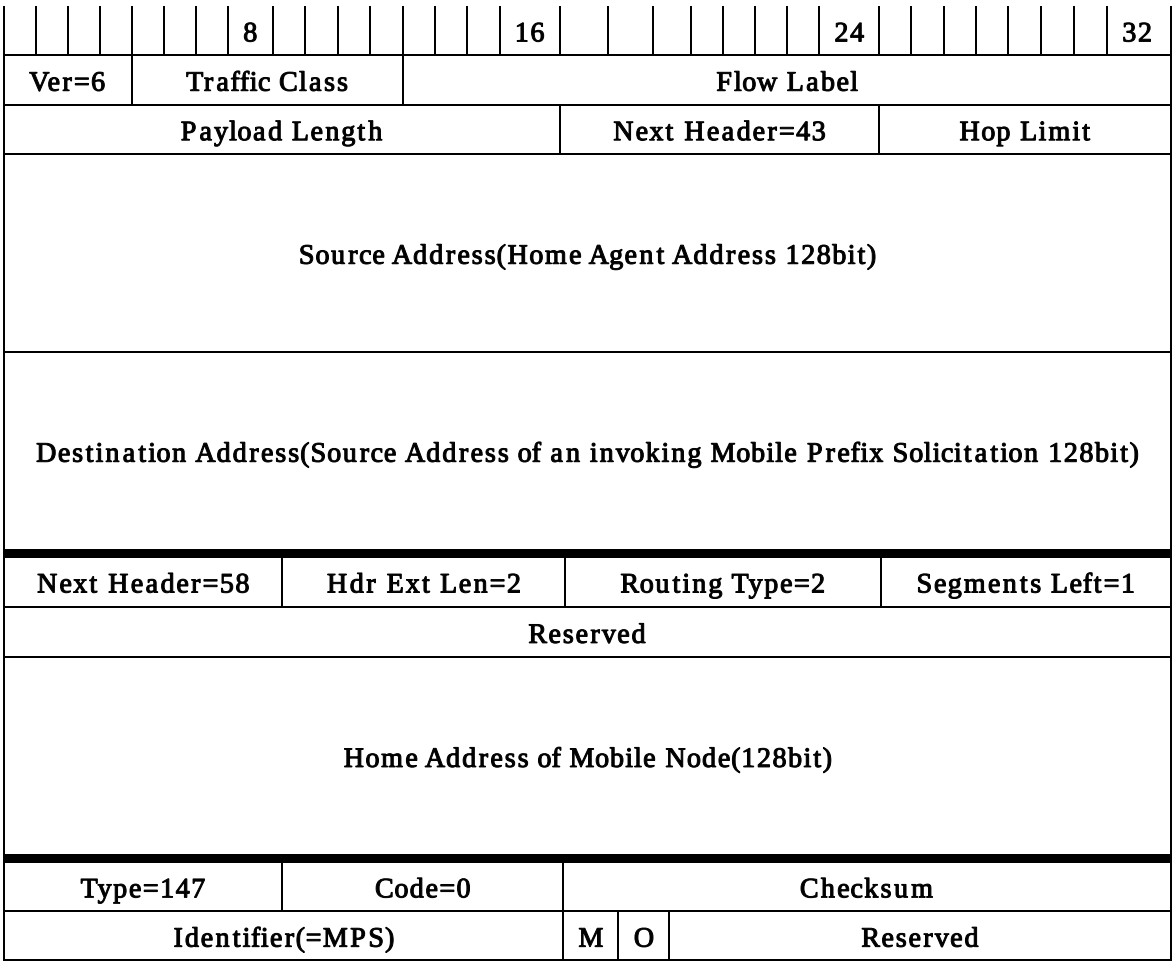
(6*)Payload packet format(ESP)(Receiving Packet from CN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=50	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Care-of Address of Mobile Node 128bit)			
Security Parameters Index(SPI 32bit)			
Sequence Number(32bit)			
Initialization Vector(64bit, in case of DES-CBC)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=17	Hop Limit
Source Address(Correspondent Node Address 128bit)			
Destination Address(Home Address of Mobile Node128bit)			
Source Port		Destination Port	
Length		Checksum	
Data(variable Len)			
Padding(0-255Byte)		Pad Len	Next Header=41
Authentication Data(variable Len)			

(9*)ICMP Mobile Prefix Solicitation message format(MN -> HA)

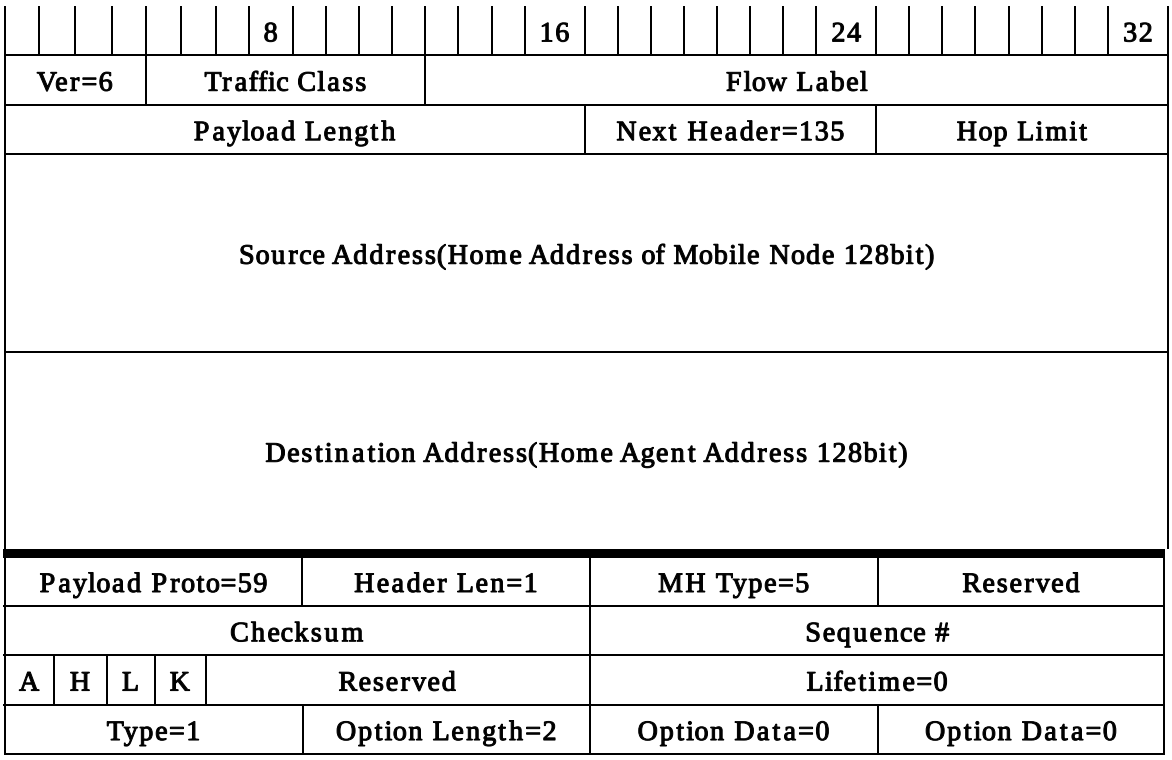
8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=60	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit)			
Destination Address(Home Agent Address 128bit)			
Next Header=58	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address of Mobile Node(128bit)			
Type=146	Code=0	Checksum	
Identifier		Reserved	

(10-1*) ICMP Mobile Prefix Advertisement message format(HA->MN)



8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=43	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Source Address of an invoking Mobile Prefix Solicitation 128bit)			
Next Header=58	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node(128bit)			
Type=147	Code=0	Checksum	
Identifier(=MPS)		M O	Reserved

(12*) Binding Update message Format(MN -> HA)



8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node 128bit)			
Destination Address(Home Agent Address 128bit)			
Payload Proto=59	Header Len=1	MH Type=5	Reserved
Checksum		Sequence #	
A H L K	Reserved	Lifetime=0	
Type=1	Option Length=2	Option Data=0	Option Data=0

(13*) Binding Acknowledgement message format(HA -> MN)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Agent Address 128bit)			
Destination Address(Home Address of Mobile Node 128bit)			

Payload Proto=59	Header Len=1	MH Type=6	Reserved
Checksum		Status	K Reserved
Sequence #=BU		Lifetime=0	
Type=1	Option Len=2	Option Data=0	Option Data=0

(14*)Home Test Init message format(Sending HoTI)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Care-of Address of Mobile Node 128bit) [Care-of Address of Mobile Node#A]			
Destination Address(Home Agent Address 128bit) [Home Agent Address of Mobile Node#A]			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node 128bit) [Home Address of Mobile Node#A]			
Destination Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Payload Proto=59	Header Len=1	MH Type=1	Reserved
Checksum		Reserved	
Home Init Cookie(64bit)			

(15-1*)Home Test Init message format(Receiving HoTI(MN#A->MN#B))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Home Agent Address of Mobile Node#B 128bit)			
Destination Address(Care-of Address of Mobile Node#B 128bit)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#A 128bit)			
Destination Address(Home Address of Mobile Node#B 128bit)			
Payload Proto=59	Header Len=1	MH Type=1	Reserved
Checksum		Reserved	
Home Init Cookie(64bit)			

(16-1*)Care-of Test Init message format(Receiving CoTI(MN#A->MN#B))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Home Agent Address of Mobile Node#B 128bit)			
Destination Address(Care-of Address of Mobile Node#B 128bit)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Care-of Address of Mobile Node#A 128bit)			
Destination Address(Home Address of Mobile Node#B 128bit)			
Payload Proto=59	Header Len=1	MH Type=2	Reserved
Checksum		Reserved	
Care-of Init Cookie(64bit)			

(17-1*)Home Test message format(Sending HoT(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Home Address of Mobile Node#A 128bit)			
Payload Proto=59	Header Len=2	MH Type=3	Reserved
Checksum		Home Nonce Index	
Home Init Cookie(64bit)			
Home Keygen Nonce(64bit)			

(18*)Home Test message format(Receiving HoT)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Home Agent Address 128bit) [Home Agent Address of Mobile Node#A]			
Destination Address(Care-of Address 128bit) [Care-of Address of Mobile Node#A]			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Destination Address(Home Address 128bit) [Home Address of Mobile Node#A]			
Payload Proto=59	Header Len=2	MH Type=3	Reserved
Checksum		Home Nonce Index	
Home Init Cookie(64bit)			
Home Keygen Nonce(64bit)			

(19-1*)Care-of Test message format(Sending CoT(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			

Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Care-of Address of Mobile Node#A 128bit)			

Payload Proto=59	Header Len=2	MH Type=4	Reserved
Checksum		Care-of Nonce Index	
Care-of Init Cookie(64bit)			
Care-of Keygen Nonce(64bit)			

(20-3*)Binding Update message format(Receiving BU(MN#A->MN#B))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Home Agent Address of Mobile Node#B 128bit)			
Destination Address(Care-of Address of Mobile Node#B 128bit)			

Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=60	Hop Limit
Source Address(Care-of Address of Mobile Node#A 128bit)			
Destination Address(Home Address of Mobile Node#B 128bit)			

Next Header=135	Header Ext Len	Type=1	Option Len=2
Option Data=0	Option Data=0	Option Type=201	Option Length=16
Home Address of Mobile Node#A (128bit)			

Payload Proto=59		Header Len=1		MH Type=5	Reserved
Checksum				Sequence #	
A=1	H	L	K	Reserved	Lifetime
Type=4		Length=4		Home Nonce Index	
Care-of Nonce Index				Type=5	Length
Authenticator(variable Len)					

(21-3*)Binding Acknowledgement message format(Sending BA(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=43	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Source Address of an invoking Binding Upadate 128bit)			
Next Header=135	Hdr Ext Len=2	Routing Type=2	Segments Left=1
Reserved			
Home Address of Mobile Node#A (128bit)			
Payload Proto=59	Header Len	MH Type=6	Reserved
Checksum		Status	K Reserved
Sequence #(=BU)		Lifetime	
Type=1	Option Len=0	Type=5	Length
Authenticator(variable Len)			

(20-4*)Binding Update message format(Receiving BU(MN#A->MN#B))

							8							16							24							32
Ver=6				Traffic Class							Flow Label																
Payload Length															Next Header=41								Hop Limit				
Source Address(Home Agent Address of Mobile Node#B 128bit)																											
Destination Address(Care-of Address of Mobile Node#B 128bit)																											

Ver=6				Traffic Class							Flow Label																
Payload Length															Next Header=135								Hop Limit				
Source Address(Home Address of Mobile Node#A 128bit)																											
Destination Address(Home Address of Mobile Node#B 128bit)																											

Payload Proto=59								Header Len=1								MH Type=5								Reserved			
Checksum																Sequence #											
A=1		H		L		K		Reserved								Lifetime=0											
Type=4								Length=4								Home Nonce Index											
Care-of Nonce Index																Type=5								Length			
Authenticator(variable Len)																											

(21-4*)Binding Acknowledgement message format(Sending BA(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Source Address of an invoking Binding Upadate 128bit)			

Payload Proto=59	Header Len	MH Type=6	Reserved	
Checksum		Status	K	Reserved
Sequence #(=BU)		Lifetime=0		
Type=1	Option Len=0	Type=5	Length	
Authenticator(variable Len)				

Padding(0-255Byte)	Pad Len	Next Header=41
Authentication Data(variable Len)		

(22-2*)Binding Refresh Request message format(Receiving BRR)

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Home Agent Address of Mobile Node 128bit) [Home Agent Address of Mobile Node #A]			
Destination Address(Care-of Address of Mobile Node 128bit) [Care-of Address of Mobile Node#A]			
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Correspondent Node Address 128bit) [Home Address of Mobile Node#B]			
Destination Address(Home Address of Mobile Node 128bit) [Home Address of Mobile Node#A]			
Payload Proto=59	Header Len	MH Type=0	Reserved
Checksum		Reserved	

(25-2*)Binding Error message(Sending BE(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			

Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Source Address of an invoking packet with Home Address option 128bit)			

Payload Proto=59	Header Len	MH Type=7	Reserved
Checksum		Status=1	Reserved
Home Address of Mobile Node#A (128 bit)			

(22-3*)Binding Refresh Request message format(Sending BRR(MN#B->MN#A))

8	16	24	32
Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=41	Hop Limit
Source Address(Care-of Address of Mobile Node#B 128bit)			
Destination Address(Home Agent Address of Mobile Node#B 128bit)			

Ver=6	Traffic Class	Flow Label	
Payload Length		Next Header=135	Hop Limit
Source Address(Home Address of Mobile Node#B 128bit)			
Destination Address(Home Address of Mobile Node#A 128bit)			

Payload Proto=59	Header Len	MH Type=0	Reserved
Checksum		Reserved	

5. Functional classification and test priority for individual Mobile IPv6 nodes

Acknowledgement

The following descriptions (section 5) include the copyright documents ([1] [2]). We thank authors of RFCs for permitting quotations.

[1]:RFC3775 “Mobility Support in IPv6” , June 2004

Author:

David B. Johnson , Rice University

Charles E. Perkins , Nokia Research Center

Jari Arkko , Ericsson

[2]:RFC3776 “Using IPsec to Protect Mobile IPv6 Signaling Between Mobile Nodes and Home Agents” , June 2004

Author:

Jari Arkko , Ericsson

Vijay Devarapalli , Nokia Research Center

Francis Dupont , ENST Bretagne

5.1 Mobile IPv6 functions

This section describes the Mobile IPv6 functions and the functional classifications for each type of Mobile IPv6 nodes on the basis of the classifications given in section 2.3. Section numbers in table 5-1 are those in Mobile IPv6 RFCs referred to in section 2.2.

Table 5-1 the Mobile IPv6 functions and its classifications for each Mobile IPv6 node

No.	Type of nodes	Functional Specification	RFC Status	Functional Rank
1	Correspondent Node	The node **MUST** be able to validate a Home Address option using an existing Binding Cache entry, as described in Section 9.3.1.	MUST	A
2		The node **MUST** be able to insert a type 2 routing header into packets to be sent to a mobile node, as described in Section 9.3.2.	MUST	A
3		Unless the correspondent node is also acting as a mobile node, it **MUST** ignore type 2 routing headers and drop all packets that it has received with such headers.	MUST	A
4		The node **SHOULD** be able to interpret ICMP messages as described in Section 9.3.4.	SHOULD	A
5		The node **MUST** be able to send Binding Error messages as described in Section 9.3.3.	MUST	A
6		The node **MUST** be able to process Mobility Headers as described in Section 9.2.	MUST	A
7		The node **MUST** be able to participate in a return routability procedure (Section 9.4).	MUST	A
8		The node **MUST** be able to process Binding Update messages (Section 9.5).	MUST	A
9		The node **MUST** be able to return a Binding Acknowledgement (Section9.5.4).	MUST	A
10		The node **MUST** be able to maintain a Binding Cache of the bindings received in accepted Binding Updates, as described in Section 9.1and Section 9.6.	MUST	A
11		The node **MUST** allow route optimization to be administratively enabled or disabled. The default **SHOULD** be enabled.	MUST/SHOULD	A

12	Home Agents	Every home agent **MUST** be able to maintain an entry in its Binding Cache for each mobile node for which it is serving as the home agent (Section 10.1 and Section 10.3.1).	MUST	A
13	Home Agents	Every home agent **MUST** be able to intercept packets (using proxy Neighbor Discovery [12]) addressed to a mobile node for which it is currently serving as the home agent, on that mobile node's home link, while the mobile node is away from home (Section 10.4.1).	MUST	A
14		Every home agent **MUST** be able to encapsulate [15] such intercepted packets in order to tunnel them to the primary care-of address for the mobile node indicated in its binding in the home agent's Binding Cache (Section 10.4.2).	MUST	A
15		Every home agent **MUST** support decapsulating [15] reverse tunneled packets sent to it from a mobile node's home address. Every home agent **MUST** also check that the source address in the tunneled packets corresponds to the currently registered location of the mobile node (Section 10.4.5).	MUST/MUST	A
16		The node **MUST** be able to process Mobility Headers as described in Section 10.2.	MUST	A
17		Every home agent **MUST** be able to return a Binding Acknowledgement in response to a Binding Update (Section 10.3.1).	MUST	A
18		Every home agent **MUST** maintain a separate Home Agents List for each link on which it is serving as a home agent, as described in Section 10.1 and Section 10.5.1.	MUST	A
19		Every home agent **MUST** be able to accept packets addressed to the Mobile IPv6 Home-Agents anycast address [16] for the subnet on which it is serving as a home agent, and **MUST** be able to participate in dynamic home agent address discovery (Section 10.5).	MUST/MUST	A
20		Every home agent **SHOULD** support a configuration mechanism to allow a system administrator to manually set the value to be sent by this home agent in the Home Agent Preference field of the Home Agent Information Option in Router Advertisements that it sends (Section 7.4).	SHOULD	A

21		Every home agent **SHOULD** support sending ICMP Mobile Prefix Advertisements (Section 6.8), and **SHOULD** respond to Mobile Prefix Solicitations (Section 6.7). If supported, this behavior **MUST** be configurable, so that home agents can be configured to avoid sending such Prefix Advertisements according to the needs of the network administration in the home domain.	SHOULD /SHOULD /MUST	A
22	Home Agents	Every home agent **MUST** support IPsec ESP for protection of packets belonging to the return routability procedure (Section 10.4.6).	MUST	A
23		Every home agent **SHOULD** support the multicast group membership control protocols as described in Section 10.4.3. If this support is provided, the home agent **MUST** be capable of using it to determine which multicast data packets to forward via the tunnel to the mobile node.	SHOULD/MUST	A
24		Home agents **MAY** support stateful address autoconfiguration for mobile nodes as described in Section 10.4.4.	MAY	B
25	Mobile Nodes	The node **MUST** maintain a Binding Update List (Section 11.1).	MUST	A
26		The node **MUST** support sending packets containing a Home Address option (Section 11.3.1), and follow the required IPsec interaction (Section 11.3.2).	MUST	A
27		The node **MUST** be able to perform IPv6 encapsulation and decapsulation [15].	MUST	A
28		The node **MUST** be able to process type 2 routing header as defined in Section 6.4 and Section 11.3.3.	MUST	A
29		The node **MUST** support receiving a Binding Error message (Section 11.3.6).	MUST	A
30		The node **MUST** support receiving ICMP errors (Section 11.3.5).	MUST	A
31		The node **MUST** support movement detection, care-of address formation, and returning home (Section 11.5).	MUST	A
32		The node **MUST** be able to process Mobility Headers as described in Section 11.2.	MUST	A
33		The node **MUST** support the return routability procedure (Section11.6).	MUST	A
34		The node **MUST** be able to send Binding Updates, as specified in Section 11.7.1 and Section 11.7.2.	MUST	A
35		The node **MUST** be able to receive and process Binding Acknowledgements, as specified in Section 11.7.3.	MUST	A

36	Mobile Nodes	The node **MUST** support receiving a Binding Refresh Request (Section6.1.2), by responding with a Binding Update.	MUST	A
37		The node **MUST** support receiving Mobile Prefix Advertisements (Section 11.4.3) and reconfiguring its home address based on the prefix information contained therein.	MUST	A
38		The node **SHOULD** support use of the dynamic home agent address discovery mechanism, as described in Section 11.4.1.	SHOULD	A
39		The node **MUST** allow route optimization to be administratively enabled or disabled. The default **SHOULD** be enabled.	MUST/SHOULD	A
40		The node **MAY** support the multicast address listener part of a multicast group membership protocol as described in Section 11.3.4. If this support is provided, the mobile node **MUST** be able to receive tunneled multicast packets from the home agent.	MAY/MUST	B
41		The node **MAY** support stateful address autoconfiguration mechanisms such as DHCPv6 [29] on the interface represented by the tunnel to the home agent.	MAY	B

5.2 Operations

5.2.1 CN

This section describes the operation in Mobile IPv6 and the functional classifications for CN on the basis of the classifications given in section 2.3.

Notes

- "RFC section" gives the corresponding section number in the Mobile IPv6 RFC referred to in section 2.2.
- "RFC section title" gives the section heading in the Mobile IPv6 RFC referred to in section 2.2.
- In the column "Test Priority," "A1" indicates Rank A and Priority 1, "A2" indicates Rank-A and Priority 2, and "B" indicates Rank-B and Priority 2.
- In the column of "Test PROFILE," "x" indicates that the function is supported.
- "Reason for Classification" gives the reason for the function's classification. A reason is given when Test Priority is "A2," "B," or "C."

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	6.1	Mobility Header	Mobility Header messages	Mobility Header messages **MUST NOT** be sent with a type 2 routing header, except as described in Section 9.5.4 for Binding Acknowledgement. Mobility Header messages also **MUST NOT** be used with a Home Address destination option, except as described in Section 11.7.1 and Section 11.7.2 for Binding Update. Binding Update List or Binding Cache information (when present) for the destination **MUST NOT** be used in sending Mobility Header messages. That is, Mobility Header messages bypass both the Binding Cache check described in Section 9.3.2 and the Binding Update List check described in Section 11.3.1 which are normally performed for all packets. This applies even to messages sent to or from a correspondent node which is itself a mobile node.	MUST NOT	A	A1	X	CN-1-1 CN-3-2-3 CN-6-2-1 CN-2-4-1	
2					MUST NOT	A	A1	X	CN-1-1 CN-1-2 CN-3-2-3 CN-6-2-1 CN-2-4-1	
3					MUST NOT	A	A1	X	CN-3-2-3 CN-3-3-3 CN-3-4-3	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	9.1	Conceptual Data Structures	Information which Correspondent Node holds	A separate Binding Cache **SHOULD** be maintained by each IPv6 node for each of its unicast routable addresses.	SHOULD	A	A2			The case with single address is sufficient in actual operation.
2				The Binding Cache **MAY** be implemented in any manner consistent with the external behavior described in this document, for example by being combined with the node's Destination Cache as maintained by Neighbor Discovery [12].	MAY	C	-			This function is implementaion-dependent. It does not effect on interoperability.
3				When sending a packet, the Binding Cache is searched before the Neighbor Discovery conceptual Destination Cache [12].	(do)	A	A1	X	CN-1-3	Correspondent Registration
4			fields which each Binding Cache entry conceptually contains	o The home address of the mobile node for which this is the Binding Cache entry.	(do)	A	A1	X	CN-1-3	Correspondent Registration
5				o The care-of address for the mobile node indicated by the home address field in this Binding Cache entry.	(do)	A	A1	X	CN-1-3	Correspondent Registration

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
6				o A lifetime value, indicating the remaining lifetime for this Binding Cache entry.	(do)	A	A1	X	CN-5-2-1,2,3,4,5,6,7	Correspondent Registration
7				The lifetime value is initialized from the lifetime field in the Binding Update that created or last modified this Binding Cache entry.	(do)	A	A1	X	CN-5-2-1,2,3,4,5,6,7	Correspondent Registration
8				o A flag indicating whether or not this Binding Cache entry is a home registration entry (applicable only on nodes which support home agent functionality).	(do)	A	A2			This function is tested as HA test.
9				o The maximum value of the Sequence Number field received in previous Binding Updates for this home address.	(do)	A	A1	X	CN-5-1-1-1,2,3,4 CN-5-1-2-1,2,3,4 CN-5-1-3-1,2,3	Correspondent Registration
10				Sequence Number values **MUST** be compared modulo 2**16 as explained in Section 9.5.1.	MUST	A	A1	X	CN-5-1-1-1,2,3,4 CN-5-1-2-1,2,3,4 CN-5-1-3-1,2,3	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
11				o Usage information for this Binding Cache entry.This is needed to implement the cache replacement policy in use in the Binding Cache.Recent use of a cache entry also serves as an indication that a Binding Refresh Request should be sent when the lifetime of this entry nears expiration.	(do)	C	-			local chace replacement policy
12				Binding Cache entries not marked as home registrations **MAY** be replaced at any time by any reasonable local cache replacement policy but **SHOULD NOT** be unnecessarily deleted.	MAY	C	-			local chace replacement policy
13					SHOULD NOT	A	A2			In the case that No.12 function is implemented, this function is mandotory.
14				The contents of a node's Binding Cache **MUST NOT** be changed in response to a Home Address option in a received packet.	MUST NOT	A	A1	X	CN-3-3-3 CN-3-4-3 CN-5-2-8 CN-6-2-1,2,3	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	9.2	Processing Mobility Headers	Mobility Header processing MUST observe the following rules:	The checksum must be verified as per Section 6.1. Otherwise, the node **MUST** silently discard the message.	MUST	A	A1	X	CN-2-1-6 CN-2-2-6 CN-2-3-6	
2				The MH Type field **MUST** have a known value (Section 6.1.1). Otherwise, the node **MUST** discard the message and issue a Binding Error message as described in Section 9.3.3, with Status field set to 2 (unrecognized MH Type value).	MUST	A	A1	X	CN-2-4-1	
3					MUST	A	A1	X	CN-2-4-1	
4				The Payload Proto field **MUST** be IPPROTO_NONE (59 decimal). Otherwise, the node **MUST** discard the message and **SHOULD** send ICMP Parameter Problem [14], Code 0, to the Source Address of the packet as specified in RFC 2463 [14]. Thus no Binding Cache information is used in sending the ICMP message. The Pointer field in the ICMP message **SHOULD** point at the Payload Proto field.	MUST	A	A1	X	CN-2-1-5 CN-2-2-5 CN-2-3-5	
5					MUST	A	A1	X	CN-2-1-5 CN-2-2-5 CN-2-3-5	
6					SHOULD	A	A1	X	CN-2-1-5 CN-2-2-5 CN-2-3-5	
7					SHOULD	A	A1	X	CN-2-1-5 CN-2-2-5 CN-2-3-5	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
8				o The Header Len field in the Mobility Header **MUST NOT** be less than the length specified for this particular type of message in Section 6.1.	MUST NOT	A	A1	X	CN-2-1-3 CN-2-2-3 CN-2-3-3	
9				Otherwise, the node **MUST** discard the message and **SHOULD** send ICMP Parameter Problem, Code 0, directly to the Source Address of the packet as specified in RFC 2463 [14]. (The Binding Cache information is again not used.) The Pointer field in the ICMP message **SHOULD** point at the Header Len field.	MUST	A	A1	X	CN-2-1-3 CN-2-2-3 CN-2-3-3	
10					SHOULD	A	A1	X	CN-2-1-3 CN-2-2-3 CN-2-3-3	
11					SHOULD	A	A1	X	CN-2-1-3 CN-2-2-3 CN-2-3-3	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	9.3.1	Receiving Packets with Home Address Option		Packets containing a Home Address option **MUST** be dropped if the given home address is not a unicast routable address.	MUST	A	A1	X	CN-6-3-2,3	
2				Packets containing a Home Address option **MUST** be dropped if there is no corresponding Binding Cache entry.	MUST	A	A1	X	CN-6-2-1	
3				A corresponding Binding Cache entry **MUST** have the same home address as appears in the Home Address destination option, and the currently registered care-of address **MUST** be equal to the source address of the packet.	MUST	A	A1	X	CN-6-2-2,3	
4					MUST	A	A1	X	CN-6-2-2,3	
5				These tests **MUST NOT** be done for packets that contain a Home Address option and a Binding Update.	MUST NOT	A	A1	X	CN-1-2,3	
6				If the packet is dropped due the above tests, the correspondent node **MUST** send the Binding Error message as described in Section 9.3.3.	MUST	A	A1	X	CN-6-2-1,2,3	
7				The Status field in this message should be set to 1 (unknown binding for Home Address destination option).	(do)	A	A1	X	CN-6-2-1,2,3	Correspondent Registration

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
8				The correspondent node **MUST** process the option in a manner consistent with exchanging the Home Address field from the Home Address option into the IPv6 header and replacing the original value of the Source Address field there.	MUST	A	A1	X	CN-6-4-1,2	
9				After all IPv6 options have been processed, it **MUST** be possible for upper layers to process the packet without the knowledge that it came originally from a care-of address or that a Home Address option was used.	MUST	A	A2			IPv6 core function which is not modified to achieve Mobile IPv6 function
10				The use of IPsec Authentication Header (AH) for the Home Address option is not required, except that if the IPv6 header of a packet is covered by AH, then that authentication **MUST** also cover the Home Address option; this coverage is achieved automatically by the definition of the Option Type code for the Home Address option, since it indicates that the data within the option cannot change en route to the packet's final destination, and thus the option is included in the authentication computation.	MUST	A	A2	X	CN-6-4-2	IPsec between MN and CN

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
11				When attempting to verify AH authentication data in a packet that contains a Home Address option, the receiving node **MUST** calculate the AH authentication data as if the following were true: The Home Address option contains the care-of address, and the source IPv6 address field of the IPv6 header contains the home address. (This conforms with the calculation specified in Section 11.3.2.)	MUST	A	A2	X	CN-6-4-2	IPsec between MN and CN
12	9.3.2	Sending Packets to a Mobile Node		Before sending any packet, the sending node **SHOULD** examine its Binding Cache for an entry for the destination address to which the packet is being sent.	SHOULD	A	A1	X	CN-1-3	
13				If the sending node has a Binding Cache entry for this address, the sending node **SHOULD** use a type 2 routing header to route the packet to this mobile node (the destination node) by way of its care-of address. However,	SHOULD	A	A1	X	CN-1-3	
14				the sending node **MUST NOT** do this in the following cases: - When sending an IPv6 Neighbor Discovery [12] packet. - Where otherwise noted in Section 6.1.	MUST NOT	A	A1	X	CN-1-1 CN-1-2 CN-3-2-3,4	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
15				When calculating authentication data in a packet that contains a type 2 routing header, the correspondent node **MUST** calculate the AH authentication data as if the following were true: The routing header contains the care-of address, the destination IPv6 address field of the IPv6 header contains the home address, and the Segments Left field is zero.	MUST	A	A2	X	CN-6-4-2	IPsec between MN and CN
16				The IPsec Security Policy Database lookup **MUST** based on the mobile node's home address.	MUST	A	A2	X	CN-6-4-2	IPsec between MN and CN
17	9.3.3	Sending Binding Error Messages		A Binding Error message is sent directly to the address that appeared in the IPv6 Source Address field of the offending packet.	(do)	A	A1	X	CN-1-1 CN-2-4-1 CN-6-2-1,2,3 (more)	Correspondent Registration
18				If the Source Address field does not contain a unicast address, the Binding Error message **MUST NOT** be sent.	MUST NOT	A	A1	X	CN-2-4-1 CN-6-3-1,3	
19				The Home Address field in the Binding Error message **MUST** be copied from the Home Address field in the Home Address destination option of the offending packet, or set to the unspecified address if no such option appeared in the packet.	MUST	A	A1	X	CN-1-1 CN-2-4-1 CN-6-2-1,2,3 (more)	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
20				Binding Error messages **SHOULD** be subject to rate limiting in the same manner as is done for ICMPv6 messages [14].	SHOULD	A	A2			rate limiting of retransmission
21	9.3.4	Receiving ICMP Error Messages		If the correspondent node receives persistent ICMP Destination Unreachable messages after sending packets to a mobile node based on an entry in its Binding Cache, the correspondent node **SHOULD** delete this Binding Cache entry.	SHOULD	A	A1	X	CN-6-1	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	9.4.1	Return Routability Procedure Receiving Home Test Init Messages	Upon receiving a Home Test Init message, the correspondent node verifies the following:	The packet **MUST NOT** include a Home Address destination option. Any packet carrying a Home Test Init message which fails to satisfy all of these tests **MUST** be silently ignored.	MUST NOT	A	A1	X	CN-2-1-2	
2					MUST	A	A1	X	CN-2-1-2	
3				Otherwise, in preparation for sending the corresponding Home Test Message, the correspondent node checks that it has the necessary material to engage in a return routability procedure, as specified in Section 5.2.	(do)	A	A1	X	CN-1-1 CN-4-11	Return Routability
4	9.4.2	Receiving Care-of Test Init Messages	Upon receiving a Care-of Test Init message, the correspondent node verifies the following:	o The packet **MUST NOT** include a Home Address destination option. Any packet carrying a Care-of Test Init message which fails to satisfy all of these tests **MUST** be silently ignored.	MUST NOT	A	A1	X	CN-2-2-2	
5					MUST	A	A1	X	CN-2-2-2	
6				Otherwise, in preparation for sending the corresponding Care-of Test Message, the correspondent node checks that it has the necessary material to engage in a return routability procedure in the manner described in Section 9.4.1.	(do)	A	A1	X	CN-1-1 CN-4-11	Return Routability

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
7	9.4.3	Sending Home Test Messages		The correspondent node creates a home keygen token and uses the current nonce index as the Home Nonce Index. It then creates a Home Test message (Section 6.1.5) and sends it to the mobile node at the latter's home address.	(do)	A	A1	X	CN-1-1	Return Routability
8	9.4.4	Sending Care-of Test Messages		The correspondent keygen token creates a care-of nonce and uses the current nonce index as the Care-of Nonce Index. It then creates a Care-of Test message (Section 6.1.6) and sends it to the mobile node at the latter's care-of address.	(do)	A	A1	X	CN-1-1	Return Routability

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	9.5.1	Receiving Binding Updates	Before accepting a Binding Update, the receiving node **MUST** validate the Binding Update according to the following tests:	The packet **MUST** contain a unicast routable home address, either in the Home Address option or in the Source Address, if the Home Address option is not present.	MUST	A	A1	X	CN-2-6-1 CN-2-6-2 CN-2-6-4	
2				The Sequence Number field in the Binding Update is greater than the Sequence Number received in the previous valid Binding Update for this home address, if any.	MUST	A	A1	X	CN-5-1-1-1,2,3,4 CN-5-1-2-1,2,3,4	
3				If the receiving node has no Binding Cache entry for the indicated home address, it **MUST** accept any Sequence Number value in a received Binding Update from this mobile node.	MUST	A	A1	X	CN-5-1-3-1,2,3	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
4			The Sequence Number field in the Binding Update is greater than the Sequence Number received in the valid previous Binding Update for this home address, if any.	This Sequence Number comparison **MUST** be performed modulo 2**16, i.e., the number is a free running counter represented modulo 65536. A Sequence Number in a received Binding Update is considered less than or equal to the last received number if its value lies in the range of the last received number and the preceding 32768 values, inclusive. For example, if the last received sequence number was 15, then messages with sequence numbers 0 through 15, as well as 32783 through 65535, would be considered less than or equal.	MUST	A	A1	X	CN-5-1-1-1,2,3,4 CN-5-1-2-1,2,3,4	
5			When the Home Registration (H) bit is not set, the following are also required:	A Nonce Indices mobility option **MUST** be present, and the Home and Care-of Nonce Index values in this option MUST be recent enough to be recognized by the correspondent node. (Care-of Nonce Index values are not inspected for requests to delete a binding.)	MUST	A	A1	X	CN-2-3-10-1,2 CN-4-2-1,2,3 CN-4-3-1,2,3 CN-4-4-1,2,3 CN-4-5-1,2,3 CN-4-6-1,2,3 CN-4-7-1 CN-4-8-1,2,3 CN-4-9-1,2,3 CN-4-12-1,2,3	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
6				The correspondent node **MUST** re-generate the home keygen token and the care-of keygen token from the information contained in the packet. It then generates the binding management key Kbm and uses it to verify the authenticator field in the Binding Update as specified in Section 6.1.7.	MUST	A	A1	X	CN-4-6-1,2,3 CN-4-7-1,2,3 CN-4-12-1,2,3	
7				The Binding Authorization Data mobility option **MUST** be present, and its contents **MUST** satisfy rules presented in Section 5.2.6.	MUST	A	A1	X	CN-2-3-11	
8					MUST	A	A1	X	CN-2-3-11 CN-4-6-1,2,3 CN-4-7-1	
9				Note that a care-of address different from the Source Address **MAY** have been specified by including an Alternate Care-of Address mobility option in the Binding Update. When such a message is received and the return routability procedure is used as an authorization method, the correspondent node **MUST** verify the authenticator by using the address within the Alternate Care-of Address in the calculations	MAY	-	-			function of MN
10					MUST	A	A2	X	CN-3-1-1,2	In the case that No.11 function is implemented, this function is mandotory.

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
11				The Binding Authorization Data mobility option **MUST** be the last option and **MUST NOT** have trailing padding.	MUST	A	A1	X	CN-2-3-1-2	
12					MUST NOT	A	A1	X	CN-2-3-11	
13			If the Home Registration (H) bit is set	the Nonce Indices mobility option **MUST NOT** be present.	MUST NOT	A	A1	X	CN-5-3-4,5,6	
14			If the mobile node sends a sequence number which is not greater than the sequence number from the last valid Binding Update for this home address	the receiving node **MUST** send back a Binding Acknowledgement with status code 135, and the last accepted sequence number in the Sequence Number field of the Binding Acknowledgement.	MUST	A	A1	X	CN-5-1-2-1,2,3,4	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
15			If a binding already exists for the given home address and the home registration flag has a different value than the Home Registration (H) bit in the Binding Update	If a binding already exists for the given home address and the home registration flag has a different value than the Home Registration (H) bit in the Binding Update, then the receiving node **MUST** send back a Binding Acknowledgement with status code 139 (registration type change disallowed). The home registration flag stored in the Binding Cache entry **MUST NOT** be changed.	MUST	A	A1	X	CN-5-3-2,3	
16					MUST NOT	A	A1	X	CN-5-3-2,3	
17			If the receiving node no longer recognizes the Home Nonce Index value, Care-of Nonce Index value, or both values from the Binding Update,	the receiving node **MUST** send back a Binding Acknowledgement with status code 136, 137, or 138, respectively.	MUST	A	A1	X	CN-4-2-1,2,3 CN-4-3-3 CN-4-4-1,2,3 CN-4-5-3 CN-4-8-1,2,3 CN-4-9-1,2,3	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
18				Packets carrying Binding Updates that fail to satisfy all of these tests for any reason other than insufficiency of the Sequence Number, registration type change, or expired nonce index values, **MUST** be silently discarded.	MUST	A	A1	X	CN-2-3-1-2 CN-2-3-6,10,11 CN-2-6-1,2,3,4,5 CN-4-6-1,2,3 CN-4-7-1	
19			If the Binding Update is valid according to the tests above Binding Update is processed further as follows	The Sequence Number value received from a mobile node in a Binding Update is stored by the receiving node in its Binding Cache entry for the given home address.	(do)	A	A1	X	CN-5-1-1-1,2,3,4 CN-5-1-2-1,2,3,4	Correspondent Registration

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
20				If the Lifetime specified in the Binding Update is nonzero and the specified care-of address is not equal to the home address for the binding, then this is a request to cache a binding for the home address. If the Home Registration (H) bit is set in the Binding Update, the Binding Update is processed according to the procedure specified in Section 10.3.1; otherwise, it is processed according to the procedure specified in Section 9.5.2.	(do)	A	A1	X	CN-1-1,2,3 CN-3-1-1,2 CN-3-2-1,2,3,4 CN-3-4-1,2 CN-5-3-1	Correspondent Registration
21				If the Lifetime specified in the Binding Update is zero or the specified care-of address matches the home address for the binding, then this is a request to delete the cached binding for the home address. In this case, the Binding Update **MUST** include a valid home nonce index, and the care-of nonce	MUST	A	A1	X	CN-3-3-1-1,2,3,4,5,6 CN-3-3-2-1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 CN-4-2-2,3 CN-4-4-2,3	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
22				index **MUST** be ignored by the correspondent node. The generation of the binding management key depends then exclusively on the home keygen token (Section 5.2.5). If the Home Registration (H) bit is set in the Binding Update, the Binding Update is processed according to the procedure specified in Section 10.3.2; otherwise, it is processed according to the procedure specified in Section 9.5.3.	MUST	A	A1	X	CN-4-3-2,3 CN-4-5-2,3 CN-4-8-2,3 CN-4-9-2,3	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
23				The specified care-of address **MUST** be determined as follows: o If the Alternate Care-of Address option is present, the care-of address is the address in that option. o Otherwise, the care-of address is the Source Address field in the packet's IPv6 header.	MUST	A	A1 A1	X	(Alternate Care-of Address option is present) CN-3-1-1,2 CN-3-3-1-3,4,5,6 CN-3-3-2-5,6,7,8,13,14,15,16 (Otherwise) CN-1-1,2,3 CN-3-2-1,2 CN-3-3-1-1,2,3 CN-3-3-2-1,2,3,4,9,10,11,12 CN-3-4-1,2	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
24				The home address for the binding **MUST** be determined as follows: o If the Home Address destination option is present, the home address is the address in that option. o Otherwise, the home address is the Source Address field in the packet's IPv6 header.	MUST	A	A1	X	(Home Address destination option is present) CN-1-1,2,3 CN-3-1-1,2 CN-3-2-1,2 CN-3-3-1-1,2,3,4,5,6 CN-3-3-2-3,4,7,8,11,12,15,16 CN-3-4-1,2 (Otherwise) CN-3-3-2-1,2,5,6,9,10,13,14	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
25	9.5.2	Requests to Cache a Binding	the processing of a valid Binding Update that requests a node to cache a binding, for which the Home Registration (H) bit is not set in the Binding Update.	the receiving node **SHOULD** create a new entry in its Binding Cache for this home address, or update its existing Binding Cache entry for this home address, if such an entry already exists.	SHOULD	A	A1	X	CN-1-1,2,3 CN-3-2-1,2 CN-3-4-1,2	
26				The lifetime for the Binding Cache entry is initialized from the Lifetime field specified in the Binding Update, although this lifetime **MAY** be reduced by the node caching the binding	MAY	C	C	X	CN-5-2-1,3,4,7	This function is optional
27				the lifetime for the Binding Cache entry **MUST NOT** be greater than the Lifetime value specified in the Binding Update.	MUST NOT	A	A1	X	CN-5-2-1,2,3,4,5,6,7	
28				Any Binding Cache entry **MUST** be deleted after the expiration of its lifetime.	MUST	A	A1	X	CN-5-2-1,2,3,4,5,6,7	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
29				The correspondent node **MAY** refuse to accept a new Binding Cache entry if it does not have sufficient resources. A new entry MAY also be refused if the correspondent node believes its resources are utilized more efficiently in some other purpose, such as serving another mobile node with higher amount of traffic. In both cases the correspondent node **SHOULD** return a Binding Acknowledgement with status value 130.	MAY	B	B			This function is optional
30					SHOULD	A	A2			In the case that No.29 function is implemented, this function is mandotory.
31	9.5.3	Requests to Delete a Binding	the processing of a valid Binding Update that requests a node to delete a binding, when the Home Registration (H) bit is not set in the Binding Update.	Any existing binding for the given home address **MUST** be deleted. A Binding Cache entry for the home address **MUST NOT** be created in response to receiving the Binding Update.	MUST	A	A1	X	CN-3-3-1-1,2,3,4,5,6 CN-3-3-2-1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16	
32					MUST NOT	A	A1	X	CN-3-3-3 CN-3-4-3 CN-5-2-8	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
33				If the Binding Cache entry was created by use of return routability nonces, the correspondent node **MUST** ensure that the same nonces are not used again with the particular home and care-of address. If both nonces are still valid, the correspondent node has to remember the particular combination of nonce indexes, addresses, and sequence number as illegal until at least one of the nonces has become too old.	MUST	A	A1	X	CN-5-4-1	
34	9.5.4	Sending Binding Acknowledgements	A Binding Acknowledgement may be sent to indicate receipt of a Binding Update as follows:	o If the Binding Update was discarded as described in Section 9.2 or Section 9.5.1, a Binding Acknowledgement **MUST NOT** be sent.	MUST NOT	A	A1	X	CN-2-3-1-2 CN-2-3-6,10,11 CN-2-6-1,2,3,4,5 CN-4-6-1,2,3 CN-4-7-1	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
35				o If the Acknowledge (A) bit set is set in the Binding Update, a Binding Acknowledgement **MUST** be sent.	MUST	A	A1	X	CN-1-2 CN-3-1,2 CN-3-2-1,2,3,4 CN-3-3-1-1,2,3,4,5,6 CN-3-3-2-1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 CN-3-3-3 CN-3-4-1,2,3 CN-4-2-1,2,3 CN-4-3-1,2,3 CN-4-4-1,2,3 CN-4-5-1,2,3 CN-4-8-1,2,3 CN-4-9-1,2,3 CN-4-12-1,2,3	
36				(if (A) bit is not set) o If the node rejects the Binding Update due to an expired nonce index, sequence number being out of window (Section 9.5.1), or insufficiency of resources (Section 9.5.2), a Binding	MUST	A	A1	X	CN-2-5-2,3,4,5	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
37				Acknowledgement **MUST** be sent. If the node accepts the Binding Update, the Binding Acknowledgement **SHOULD NOT** be sent.	SHOULD NOT	A	A1	X	CN-2-5-1	
38				If the node accepts the Binding Update and creates or updates an entry for this binding, the Status field in the Binding Acknowledgement **MUST** be set to a value less than 128. Otherwise, the Status field **MUST** be set to a value greater than or equal to 128. Values for the Status field are described in Section 6.1.8 and in the IANA registry of assigned numbers [19].	MUST	A	A1	X	CN-1-2 CN-3-1-1,2 CN-3-2-1,2 CN-3-3-1-1,2,3,4,5,6 CN-3-3-2-1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 CN-3-4-1,2 CN-4-3-2,3 CN-4-5-2,3 CN-4-12-1,2,3 CN-5-1-1-1,2,3,4 CN-5-1-3-1,2,3 CN-5-2-1,2,3,4,5,6,7	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
39					MUST	A	A1	X	BA(135) CN-5-1-2- 1,2,3,4 BA(136) CN-4-2-1,2,3 CN-4-4-1,2,3 CN-4-8-2,3 CN-4-9-2,3 BA(137) CN-4-3-1 CN-4-5-1 BA(138) CN-4-8-1 CN-4-9-1	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
40				If the Status field in the Binding Acknowledgement contains the value 136 (expired home nonce index), 137 (expired care-of nonce index), or 138 (expired nonces) then the message **MUST NOT** include the Binding Authorization Data mobility option. Otherwise, the Binding Authorization Data mobility option MUST be included, and **MUST** meet the specific authentication requirements for Binding Acknowledgements as defined in Section 5.2.	MUST NOT	A	A1	X	BA(136) CN-4-2-1,2,3 CN-4-4-1,2,3 CN-4-8-2,3 CN-4-9-2,3 BA(137) CN-4-3-1 CN-4-5-1 BA(138) CN-4-8-1 CN-4-9-1	
41					MUST	A	A1	X	BA(0) CN-1-2 CN-4-3-2,3 CN-4-5-2,3 CN-4-12-1,2,3 BA(135) CN-5-1-2-1,2,3,4	
42				If the Source Address field of the IPv6 header that carried the Binding Update does not contain a unicast address, the Binding Acknowledgement **MUST**	MUST NOT	A	A1	X	CN-2-6-1,4	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
43				**NOT** be sent and the Binding Update packet **MUST** be silently discarded. Otherwise, the acknowledgement **MUST** be sent to the Source Address. Unlike the treatment of regular packets, this addressing procedure does not use information from the Binding Cache.	MUST	A	A1	X	CN-2-6-1,4	
44					MUST	A	A1	X	CN-3-3-3 CN-3-4-3	
45				However, a routing header is needed in some cases. If the Source Address is the home address of the mobile node, i.e., the Binding Update did not contain a Home Address destination option, then the Binding Acknowledgement **MUST** be sent to that address and the routing header **MUST NOT** be used. Otherwise, the Binding Acknowledgement **MUST** be sent using a type 2 routing header which contains the mobile node's home address.	MUST	A	A1	X	CN-3-3-2-1,2,5,6,9,10,13,14 CN-3-3-3	
46					MUST NOT	A	A1	X	CN-3-3-2-1,2,5,6,9,10,13,14 CN-3-3-3	
47					MUST	A	A1	X	CN-1-2 CN-3-1-1,2 CN-3-2-1,2 CN-3-3-1-1,2,3,4,5,6 CN-3-4-1,2	

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
48	9.5.5	Sending Binding Refresh Requests		If the sender knows that the Binding Cache entry is still in active use, it **MAY** send a Binding Refresh Request message to the mobile node in an attempt to avoid this overhead and latency due to deleting and recreating the Binding Cache entry. This message is always sent to the home address of the mobile node.	MAY	B	B	X	CN-3-2-3,4	This function is optional
49				The correspondent node **MAY** retransmit Binding Refresh Request messages as long as the rate limitation is applied. The correspondent node **MUST** stop retransmitting when it receives a Binding Update.	MAY	B	B	X	CN-3-2-4	This function is optional
50					MUST	A	A2	X	CN-3-2-4	In the case that No.49 function is implemented, this function is mandotory.

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	9.6	Cache Replacement Policy		Conceptually, a node maintains a separate timer for each entry in its Binding Cache. When creating or updating a Binding Cache entry in response to a received and accepted Binding Update, the node sets the timer for this entry to the specified Lifetime period. Any entry in a node's Binding Cache **MUST** be deleted after the expiration of the Lifetime specified in the Binding Update from which the entry was created or last updated.	MUST	A	A1	X	CN-5-2-1,2,3,4,5,6,7	
2				Each node's Binding Cache will, by necessity, have a finite size. A node **MAY** use any reasonable local policy for managing the space within its Binding Cache.	MAY	C	-			local cache replacement policy
3				A node **MAY** choose to drop any entry already in its Binding Cache in order to make space for a new entry. For example, a "least-recently used" (LRU) strategy for cache entry replacement among entries should work well, unless the size of the Binding Cache is substantially insufficient. When entries are deleted, the correspondent node **MUST** follow the rules in Section 5.2.8 in order to guard the return routability procedure against replay attacks.	MAY	C	-			local cache replacement policy

Functional classification and test priority for CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
4				Section 5.2.8 The return routability procedure also protects the participants against replayed Binding Updates through the use of the sequence number and a MAC. Care must be taken when removing bindings at the correspondent node, however. Correspondent nodes must retain bindings and the associated sequence number information at least as long as the nonces used in the authorization of the binding are still valid. Alternatively, if memory is very constrained, the correspondent node MAY invalidate the nonces that were used for the binding being deleted (or some larger group of nonces that they belong to). This may, however, impact the ability to acce Binding Updates from mobile nodes tha have recently received keygen tokens. This alternative is therefore recommend only as a last measure.	MUST	A	A2			In the case that No.3 function is implemented, this function is mandotory.

5.2 Operations

5.2.2 HA

This section describes the operation in Mobile IPv6 and the functional classifications for HA on the basis of the classifications given in section 2.3.

Notes

- "RFC section" gives the corresponding section number in the Mobile IPv6 RFC referred to in section 2.2.
- "RFC section title" gives the section heading in the Mobile IPv6 RFC referred to in section 2.2.
- In the column "Test Priority," "A1" indicates Rank A and Priority 1, "A2" indicates Rank-A and Priority 2, and "B" indicates Rank-B and Priority 2.
- In the column "Test PROFILE", "x" indicates that the function is supported.
- "Reason for Classification" gives the reason for the function's classification. A reason is given when Test Priority is "A2," "B," or "C."
- IKEv1 and IKEv2 are out of scope of requirements for "IPv6 Ready Logo Phase2 for MIPv6". However, the IKEv1 specification for MIPv6 is released as an experimental use.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	6.1	Mobility Header		Mobility Header messages **MUST NOT** be sent with a type 2 routing header, except as described in Section 9.5.4 for Binding Acknowledgement. Mobility Header messages also **MUST NOT** be used with a Home Address destination option, except as described in Section 11.7.1 and Section 11.7.2 for Binding Update. Binding Update List or Binding Cache information (when present) for the destination **MUST NOT** be used in sending Mobility Header messages. That is, Mobility Header messages bypass both the Binding Cache check described in Section 9.3.2 and the Binding Update List check described in Section 11.3.1 which are normally performed for all packets. This applies even to messages sent to or from a correspondent node which is itself a mobile node.	MUST NOT	A	A1	X	HA_1_1_5	
2					MUST NOT	A	A1	-		
3					MUST NOT	A	A1	X	HA_1_1_5	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	10.1	Conceptual Data Structures		Each home agent **MUST** maintain a Binding Cache and Home Agents List.	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
2						A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
3	10.1			The rules for maintaining a Binding Cache are the same for home agents and correspondent nodes and have already been described in Section 9.1. Section 9.1 o The home address of the mobile node for which this is the Binding Cache entry. This field is used as the key for searching the Binding Cache for the destination address of a packet being sent. o The care-of address for the mobile node indicated by the home address field in this Binding Cache entry. o A lifetime value, indicating the remaining lifetime for this Binding Cache entry. The lifetime value is initialized from the Lifetime field in the Binding Update that created or last modified this Binding Cache entry. o A flag indicating whether or not this Binding Cache entry is a home registration entry (applicable only on nodes which support home agent functionality). o The maximum value of the Sequence Number field received in previous Binding Updates for this home address. The Sequence Number field is 16 bits long. Sequence Number values MUST be compared modulo 2** 16 as explained in Section 9.5.1.	(do)	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14 HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5 HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	Home Registration

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
4	10.1			A router is known to be acting as a home agent, if it sends a Router Advertisement in which the Home Agent (H) bit is set. When the lifetime for a list entry (defined below) expires, that entry is removed from the Home Agents List.	(do)	A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	virtual home network
5	10.1			The Home Agents List **MAY** be implemented in any manner consistent with the external behavior described in this document.	MAY	C	C			This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
6	10.1			Each home agent maintains a separate Home Agents List for each link on which it is serving as a home agent.	(do)	A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
7	10.1		A new entry is created or an existing entry is updated in response to receipt of a valid Router Advertisement in which the Home Agent (H) bit is set. Each Home Agents List entry conceptually contains the following fields:	○ The link-local IP address of a home agent on the link. This address is learned through the Source Address of the Router Advertisements [12] received from the router.	(do)	A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
8	10.1			One or more global IP addresses for this home agent. Global addresses are learned through Prefix Information options with the Router Address (R) bit set and received in Router Advertisements from this link-local address. Global addresses for the router in a Home Agents List entry **MUST** be deleted once the prefix associated with that address is no longer valid [12].	MUST	A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
9	10.1			The remaining lifetime of this Home Agents List entry. If a Home Agent Information Option is present in a Router Advertisement received from a home agent, the lifetime of the Home Agents List entry representing that home agent is initialized from the Home Agent Lifetime field in the option (if present); otherwise, the lifetime is initialized from the Router Lifetime field in the received Router Advertisement. If Home Agents List entry lifetime reaches zero, the entry **MUST** be deleted from the Home Agents List.	MUST	A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
10	10.1			The preference for this home agent; higher values indicate a more preferable home agent. The preference value is taken from the Home Agent Preference field in the received Router Advertisement, if the Router Advertisement contains a Home Agent Information Option and is otherwise set to the default value of 0. A home agent uses this preference in ordering the Home Agents List when it sends an ICMP Home Agent Address Discovery message.	(do)	A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	10.2	Processing Mobility Headers		All IPv6 home agents **MUST** observe the rules described in Section 9.2 when processing Mobility Headers.	MUST	A	A1	X	HA_1_1_1 HA_1_1_2 HA_1_1_3 HA_1_1_4 HA_1_1_5 HA_1_1_6 HA_1_1_7 HA_1_1_8 HA_1_1_9 HA_1_1_10	
2	9.2	Processing Mobility Headers	Mobility Header processing MUST observe the following rules:	The checksum must be verified as per Section 6.1. Otherwise, the node **MUST** silently discard the message.	MUST	A	A1	X	HA_1_1_3 HA_1_1_8	
3				The MH Type field **MUST** have a known value (Section 6.1.1). Otherwise, the node **MUST** discard the message and issue a Binding Error message as described in Section 9.3.3, with Status field set to 2 (unrecognized MH Type value).	MUST	A	A1	X	HA_1_1_1 HA_1_1_5	
4					MUST	A	A1	X	HA_1_1_1 HA_1_1_5	
5				The Payload Proto field **MUST** be IPPROTO_NONE (59 decimal). Otherwise, the node **MUST** discard the message and **SHOULD** send ICMP Parameter Problem [14], Code 0, to the Source Address of the packet.	MUST	A	A1	X	HA_1_1_2 HA_1_1_6 HA_1_1_9	
6					MUST	A	A1	X	HA_1_1_2 HA_1_1_6 HA_1_1_9	

7					SHOULD	A	A1	X	HA_1_1_2 HA_1_1_6 HA_1_1_9	
8				o The Header Len field in the Mobility Header **MUST NOT** be less than the length specified for this particular type of message in Section 6.1.	MUST NOT	A	A1	X	HA_1_1_4 HA_1_1_7 HA_1_1_10	
9				Otherwise, the node **MUST** discard the message and **SHOULD** send ICMP Parameter Problem [14], Code 0, to the Source Address of the packet.	MUST	A	A1	X	HA_1_1_4 HA_1_1_7 HA_1_1_10	
10					SHOULD	A	A1	X	HA_1_1_4 HA_1_1_7 HA_1_1_10	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	10.3.1	Primary Care-of Address Registration		When a node receives a Binding Update, it **MUST** validate it and determine the type of Binding Update according to the steps described in Section 9.5.1. Section 9.5.1 o The packet MUST contain a unicast routable home address, either in the Home Address option or in the Source Address, if the Home Address option is not present. o The Sequence Number field in the Binding Update is greater than the Sequence Number received in the previous valid Binding Update for this home address, if any. If the receiving node has no Binding Cache entry for the indicated home address, it MUST accept any Sequence Number value in a received Binding Update from this mobile node. This Sequence Number comparison MUST be performed modulo 2**16, i.e., the number is a free running counter represented modulo 65536. A Sequence Number in a received Binding Update is considered less than or equal to the last received number if its value lies in the range of the last received number and the preceding 32768 values, inclusive.	MUST	A	A1	X	HA_2_1_3,HA_2_1_7,HA_2_2_7, HA_2_2_8,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_4_1,HA_4_4_2,HA_4_4_3, HA_4_4_4,HA_4_4_5,HA_4_4_6, HA_4_4_7,HA_4_4_8,HA_4_4_9, HA_4_4_13,HA_4_4_14,HA_4_4_15, HA_5_1_4,HA_5_1_6,HA_6_1_2, HA_6_1_4,HA_6_3_2,HA_6_3_4, HA_6_3_6,HA_6_3_8,HA_2_2_13, HA_2_2_14,HA_2_1_14,HA_2_1_15	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
2				Furthermore, it **MUST** authenticate the Binding Update as described in Section 5.1.	MUST	A	A1	X	HA_2_2_3 HA_2_2_6	
3				o Else, if the home address for the binding (the Home Address field in the packet's Home Address option) is not an on-link IPv6 address with respect to the home agent's current Prefix List, then the home agent **MUST** reject the Binding Update and **SHOULD** return a Binding Acknowledgement to the mobile node, in which the Status field is set to 132 (not home subnet).	MUST	A	A1	X	HA_2_2_1 HA_2_2_2	
4					SHOULD	A	A1	X	HA_2_2_1 HA_2_2_2	
5				o Else, if the home agent chooses to reject the Binding Update for any other reason (e.g., insufficient resources to serve another mobile node as a home agent), then the home agent **SHOULD** return a Binding Acknowledgement to the mobile node, in which the Status field is set to an appropriate value to indicate the reason for the rejection.	SHOULD	A	A1			

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
6				o A Home Address destination option **MUST** be present in the message. It **MUST** be validated as described in Section 9.3.1 with the following additional rule.	MUST	A	A1	X	HA_3_1_4 HA_3_1_9 HA_3_1_5 HA_3_1_10	This function is tested as MN test

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
7				The Binding Cache entry existence test **MUST NOT** be done for IPsec packets when the Home Address option contains an address for which the receiving node could act as a home agent. Section 9.3.1 Packets containing a Home Address option MUST be dropped if the given home address is not a unicast routable address.	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	This function is tested as MN test

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
8					MUST NOT	A	A1	X	HA_2_2_9 HA_2_2_10 HA_2_2_11 HA_2_2_12	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
9				If home agent accepts the Binding Update, it **MUST** then create a new entry in its Binding Cache for this mobile node or update its existing Binding Cache entry, if such an entry already exists. The Home Address field as received in the Home Address option provides the home address of the mobile node.	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
10				The home agent **MUST** mark this Binding Cache entry as a home registration to indicate that the node is serving as a home agent for this binding. Binding Cache entries marked as a home registration **MUST** be excluded from the normal cache replacement policy used for the Binding Cache (Section 9.6) and **MUST NOT** be removed from the Binding Cache until the expiration of the Lifetime period. Section 9.6 Each node's Binding Cache will, by necessity, have a finite size. A node MAY use any reasonable local policy for managing the space within its Binding Cache, except that any entry marked as a home registration (Section 10.3.1) MUST NOT be deleted from the cache until the expiration of its lifetime period. When such home registration entries are deleted, the home agent MUST also cease intercepting packets on the mobile node's home link addressed to the mobile node (Section 10.4.1), just as if the mobile node had de-registered its primary care-of address (see Section 10.3.2). When attempting to add a new home	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
11				registration entry in response to a Binding Update with the Home Registr	MUST	A	A2	X	HA_2_1_4 HA_2_1_8	Cache Replacement Policy
12					MUST NOT	A	A2	X	HA_2_1_4 HA_2_1_8	Cache Replacement Policy
13				Unless this home agent already has a binding for the given home address, the home agent **MUST** perform Duplicate Address Detection [13] on the mobile node's home link before returning the Binding Acknowledgement. This ensures that no other node on the home link was using the mobile node's home address when the Binding Update arrived. If	MUST	A	A2	X	HA_2_3_1 HA_2_3_2 HA_2_3_3	virtual home network
14					MUST	A	A2	X	HA_2_4_1 HA_2_4_2 HA_2_4_3 HA_2_4_4 HA_2_4_5 HA_2_4_6	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
15				this Duplicate Address Detection fails for the given home address or an associated link local address, then the home agent **MUST** reject the complete Binding Update and **MUST** return a Binding Acknowledgement to the mobile node, in which the Status field is set to 134 (Duplicate Address Detection failed). When the home agent sends a successful Binding Acknowledgement to the mobile node, the home agent assures to the mobile node that its address(es) will be kept unique by the home agent for as long as the lifetime was granted for the binding.	MUST	A	A2	X	HA_2_4_1 HA_2_4_2 HA_2_4_3 HA_2_4_4 HA_2_4_5 HA_2_4_6	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
16			The specific addresses which are to be tested before accepting the Binding Update, and later to be defended by performing Duplicate Address Detection,	o L=0: Defend only the given address. Do not derive a link-local address.	(do)	A	A2	X	HA_2_3_1 HA_2_4_1 HA_2_4_4 HA_4_1_1 HA_4_2_1 HA_4_2_2 HA_4_2_3 HA_4_2_13 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_13	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
17			depend on the settings of the Single Address Only (S) and Link-Local Address Compatibility (L) bits, as follows:	o L=1: Defend both the given non link-local unicast (home) address and the derived link-local. The link-local address is derived by replacing the subnet prefix in the mobile node's home address with the link-local prefix.	(do)	A	A2	X	HA_2_3_2 HA_2_4_2 HA_2_4_3 HA_2_4_5 HA_2_4_6 HA_4_1_2 HA_4_2_4 HA_4_2_5 HA_4_2_6 HA_4_2_7 HA_4_2_8 HA_4_2_9 HA_4_2_14 HA_4_2_15 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_14 HA_4_4_15	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
18			The lifetime of the Binding Cache entry depends on a number of factors:	o The lifetime for the Binding Cache entry **MUST NOT** be greater than the Lifetime value specified in the Binding Update.	MUST NOT	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
19				o The lifetime for the Binding Cache entry **MUST NOT** be greater than the remaining valid lifetime for the subnet prefix in the mobile node's home address specified with the Binding Update. The remaining valid lifetime for this prefix is determined by the home agent based on its own Prefix List entry [12]. The remaining preferred lifetime **SHOULD NOT** have any impact on the lifetime for the binding cache entry. The home agent **MUST** remove a binding when the valid lifetime of the prefix associated with it expires.	MUST NOT	A	A1	X	HA_2_1_9	
20					SHOULD NOT	A	A1	X	HA_2_1_9	This function is implementaion -dependent. It does not effect on interoperabilit y.
21					MUST	A	A1	X	HA_2_1_9	This function is implementaion -dependent. It does not effect on interoperabilit y.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
22				o The home agent **MAY** further decrease the specified lifetime for the binding, for example based on a local policy. The resulting lifetime is stored by the home agent in the Binding Cache entry, and this Binding Cache entry **MUST** be deleted by the home agent after the expiration of this lifetime.	MAY	C	C	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
23					MUST	A	A1	X	HA_2_1_4 HA_2_1_8	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
24			Regardless of the setting of the Acknowledge (A) bit in the Binding Update, the home agent **MUST** return a Binding Acknowledgement to the mobile node, constructed as follows:	o The Status field **MUST** be set to a value indicating success. The value 1 (accepted but prefix discovery necessary) **MUST** be used if the subnet prefix of the specified home address is deprecated, or becomes deprecated during the lifetime of the binding, or becomes invalid at the end of the lifetime. The value 0 **MUST** be used otherwise. For the purposes of comparing the binding and prefix lifetimes, the prefix lifetimes are first converted into units of four seconds by ignoring the two least significant bits.	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
25					MUST	A	A1			internal behavior router renumbering implementation matter

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
26					MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
27				o The Key Management Mobility Capability (K) bit is set if the following conditions are all fulfilled, and cleared otherwise: *1 The Key Management Mobility Capability (K) bit was set in the Binding Update. *2 The IPsec security associations between the mobile node and the home agent have been established dynamically. *3 The home agent has the capability to update its endpoint in the used key management protocol to the new care-of address every time it moves.	(do)	A	A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_1_10, HA_2_1_11,HA_2_1_12,HA_2_1_13, HA_2_3_1,HA_2_3_2, HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	IKE

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
28				Depending on the final value of the bit in the Binding Acknowledgement, the home agent **SHOULD** perform the following actions: K = 0 Discard key management connections, if any, to the old care-of address. If the mobile node did not have a binding before sending this Binding Update, discard the connections to the home address. K = 1 Move the peer endpoint of the key management protocol connection, if any, to the new care-of address. For an IKE phase 1 connection, this means that any IKE packets sent to the peer are sent to this address, and packets from this address with the original ISAKMP cookies are accepted.	SHOULD	A	A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_1_10, HA_2_1_11,HA_2_1_12,HA_2_1_13, HA_2_3_1,HA_2_3_2, HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	IKE

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
29				oThe Sequence Number field **MUST** be copied from the Sequence Number given in the Binding Update.	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
30				o The Lifetime field **MUST** be set to the remaining lifetime for the binding as set by the home agent in its home registration Binding Cache entry for the mobile node, as described above.	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
31				o If the home agent stores the Binding Cache entry in nonvolatile storage, then the Binding Refresh Advice mobility option **MUST** be omitted. Otherwise, the home agent **MAY** include this option to suggest that the mobile node refreshes its binding bofore the actual lifetime of the binding ends. If the Binding Refresh Advice mobility option is present, the Refresh Interval field in the option **MUST** be set to a value less than the Lifetime value being returned in the Binding Acknowledgement. This indicates that the mobile node **SHOULD** attempt to refresh its home registration at the indicated shorter interval.	MUST	A	A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
32					MAY	B	B	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	This function is implementaion -dependent. It does not effect on interoperabilit y.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
33					MUST	A	A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	This function is implementaion -dependent. It does not effect on interoperabilit y.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
34					SHOULD	A	A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	This function is implementaion -dependent. It does not effect on interoperabilit y.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
35				The home agent **MUST** still retain the registration for the Lifetime period, even if the mobile node does not refresh its registration within the Refresh period.	MUST	A	A2	X	HA_2_1_4 HA_2_1_8	Binding Refresh Advice mobility option

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
36				The rules for selecting the Destination IP address (and possibly routing header construction) for the Binding Acknowledgement to the mobile node are the same as in Section 9.5.4. Section 9.5.4 If the Source Address field of the IPv6 header that carried the Binding Update does not contain a unicast address, the Binding Acknowledgement MUST NOT be sent, and the Binding Update packet MUST be silently discarded. Otherwise, the acknowledgement MUST be sent to the Source Address. Unlike the treatment of regular packets, this addressing procedure does not use information from the Binding Cache. However, a routing header is needed in some cases. If the Source Address is the home address of the mobile node, i.e., the Binding Update did not contain a Home Address destination option, then the Binding Acknowledgement MUST be sent to that address, and the routing header MUST NOT be used. Otherwise, the Binding Acknowledgement MUST be sent using a type 2 routing header which contains the mobile node's home address.	(do)	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	Home Registration

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
37				In addition, the home agent **MUST** follow the procedure defined in Section 10.4.1 to intercept packets on the mobile node's home link addressed to the mobile node, while the home agent is serving as the home agent for this mobile node. Section 10.4.1 While a node is serving as the home agent for mobile node it MUST attempt to intercept packets on the mobile node's home link that are addressed to the mobile node. In order to do this, when a node begins serving as the home agent it MUST multicast onto the home link a Neighbor Advertisement message[12] on behalf of the mobile node. For the home address specified in the Binding Update, the home agent sends a Neighbor Advertisement message [12] to the all-nodes multicast address on the home link, to advertise the home agent's own link-layer address for this IP address on behalf of the mobile node. If the Link-Layer Address Compatibility (L) flag has been specified in the Binding Update, the home agent MUST do the same for the link-local address of the mobile node.	MUST	A	A1	X	HA_4_1_1 HA_4_1_2 HA_4_2_1 HA_4_2_2 HA_4_2_3 HA_4_2_4 HA_4_2_5 HA_4_2_6 HA_4_2_7 HA_4_2_8 HA_4_2_9 HA_4_2_13 HA_4_2_14 HA_4_2_15 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15 HA_5_1_1 HA_5_1_3 HA_5_1_4 HA_5_1_5 HA_5_1_6 HA_5_1_7 HA_6_3_3 HA_6_3_4 HA_6_3_7 HA_6_3_8	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
38				The home agent **MUST** also be prepared to accept reverse tunneled packets from the new care-of address of the mobile node, as described in Section 10.4.5. Section 10.4.5 The tunneled traffic arrives to the home agent's address using IPv6 encapsulation [15]. When a home agent decapsulates a tunneled packet from the mobile node, the home agent MUST verify that the Source Address in the tunnel IP header is the mobile node's primary care-of address. Otherwise, any node in the Internet could send traffic through the home agent and escape ingress filtering limitations.	MUST	A	A1	X	HA_6_1_1 HA_6_1_2 HA_6_1_3 HA_6_1_4 HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
39				Finally, the home agent **MUST** also propagate new home network prefixes, as described in Section 10.6. Section 10.6.2 The valid or preferred lifetime or the state of the flags changes for the prefix of the mobile node's registered home address. The mobile node requests the information with a Mobile Prefix Solicitation (see Section 11.4.2). A new prefix is added to the aggregate list.	MUST	A	A2	X	HA_8_1_1 HA_8_1_2	MPA
40	10.3.2	Primary Care-of Address De-Registration	To begin processing the Binding Update, the home agent MUST perform the following test:	o If the receiving node has no entry marked as a home registration in its Binding Cache for this mobile node, then this node **MUST** reject the Binding Update and **SHOULD** return a Binding Acknowledgement to the mobile node, in which the Status field is set to 133 (not home agent for this mobile node).	MUST	A	A1/A2	X	HA_3_2_1 HA_3_2_2 HA_3_2_3 HA_3_2_4 HA_3_2_5 HA_3_2_6 HA_3_2_7 HA_3_2_8 HA_3_2_9 HA_3_2_10 HA_3_2_11 HA_3_2_12	A1:De-Registration from foreign link A2:De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
41					SHOULD	A	A1/A2	X	HA_3_2_1 HA_3_2_2 HA_3_2_3 HA_3_2_4 HA_3_2_5 HA_3_2_6 HA_3_2_7 HA_3_2_8 HA_3_2_9 HA_3_2_10 HA_3_2_11 HA_3_2_12	A1:De-Registration from foreign link A2:De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
42				If the home agent does not reject the Binding Update as described above, then it **MUST** delete any existing entry in its Binding Cache for this mobile node.	MUST	A	A1/A2	X	HA_3_1_1 HA_3_1_2 HA_3_1_3 HA_3_1_4 HA_3_1_5 HA_3_1_6 HA_3_1_7 HA_3_1_8 HA_3_1_9 HA_3_1_10 HA_3_1_11 HA_3_1_12 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	A1:De-Registration from foreign link A2:De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
43			Then, the home agent **MUST** return a Binding Acknowledgement to the mobile node, constructed as follows:	o The Status field **MUST** be set to a value 0, indicating success.	MUST	A	A1/A2	X	HA_3_1_1 HA_3_1_2 HA_3_1_3 HA_3_1_4 HA_3_1_5 HA_3_1_6 HA_3_1_7 HA_3_1_8 HA_3_1_9 HA_3_1_10 HA_3_1_11 HA_3_1_12 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	A1:De-Registration from foreign link A2:De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
44				o The Key Management Mobility Capability (K) bit is set or cleared and actions based on its value are performed as described in the previous section. The mobile node's home address is used as its new care-of address for the purposes of moving the key management connection to a new endpoint.	(do)	A	A2	X	HA_3_1_1 HA_3_1_2 HA_3_1_3 HA_3_1_4 HA_3_1_5 HA_3_1_6 HA_3_1_7 HA_3_1_8 HA_3_1_9 HA_3_1_10 HA_3_1_11 HA_3_1_12 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	IKE

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
45				o The Sequence Number field **MUST** be copied from the Sequence Number given in the Binding Update.	MUST	A	A1/A2	X	HA_3_1_1 HA_3_1_2 HA_3_1_3 HA_3_1_4 HA_3_1_5 HA_3_1_6 HA_3_1_7 HA_3_1_8 HA_3_1_9 HA_3_1_10 HA_3_1_11 HA_3_1_12 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	A1:De-Registration from foreign link A2:De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
46				o The Lifetime field **MUST** be set to zero.	MUST	A	A1/A2	X	HA_3_1_1 HA_3_1_2 HA_3_1_3 HA_3_1_4 HA_3_1_5 HA_3_1_6 HA_3_1_7 HA_3_1_8 HA_3_1_9 HA_3_1_10 HA_3_1_11 HA_3_1_12 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	A1:De-Registration from foreign link A2:De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
47				o The Binding Refresh Advice mobility option **MUST** be omitted.	MUST	A	A1/A2	X	HA_3_1_1 HA_3_1_2 HA_3_1_3 HA_3_1_4 HA_3_1_5 HA_3_1_6 HA_3_1_7 HA_3_1_8 HA_3_1_9 HA_3_1_10 HA_3_1_11 HA_3_1_12 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	A1:De-Registration from foreign link A2:De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
48				In addition, the home agent **MUST** stop intercepting packets on the mobile node's home link that are addressed to the mobile node (Section 10.4.1).	MUST	A	A1/A2	X	HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	A1:De-Registration from foreign link A2:De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
49				The rules for selecting the Destination IP address (and, if required, routing header construction) for the Binding Acknowledgement to the mobile node are the same as in the previous section.	(do)	A	A1/A2	X	HA_3_1_1 HA_3_1_2 HA_3_1_3 HA_3_1_4 HA_3_1_5 HA_3_1_6 HA_3_1_7 HA_3_1_8 HA_3_1_9 HA_3_1_10 HA_3_1_11 HA_3_1_12 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	A1:De-Registration from foreign link A2:De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
50				When the Status field in the Binding Acknowledgement is greater than or equal to 128 and the Source Address of the Binding Update is on the home link, the home agent **MUST** send it to the mobile node's link layer address (retrieved either from the Binding Update or through Neighbor Solicitation).	MUST	A	A2	X	HA_3_3_1 HA_3_3_2 HA_3_3_3 HA_3_3_4	De-Registration from home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	10.4.1.	Intercepting Packets for a Mobile Node	intercepting packets on the mobile node's home link	While a node is serving as the home agent for mobile node it **MUST** attempt to intercept packets on the mobile node's home link that are addressed to the mobile node.	MUST	A	A1	X	HA_4_1_1 HA_4_1_2 HA_4_2_1 HA_4_2_2 HA_4_2_3 HA_4_2_4 HA_4_2_5 HA_4_2_6 HA_4_2_7 HA_4_2_8 HA_4_2_9 HA_4_2_13 HA_4_2_14 HA_4_2_15 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
2			sending Neighbor Advertisement messsage	In order to do this, when a node begins serving as the home agent it **MUST** multicast onto the home link a Neighbor Advertisement message[12] on behalf of the mobile node. For the home address specified in the Binding Update, the home agent sends a Neighbor Advertisement message [12] to the all-nodes multicast address on the home link to advertise the home agent's own link-layer address for this IP address on behalf of the mobile node.	MUST	A	A2	X	HA_4_1_1 HA_4_1_2	virtual home network
3				If the Link-Layer Address Compatibility (L) flag has been specified in the Binding Update, the home agent **MUST** do the same for the link-local address of the mobile node.	MUST	A	A2	X	HA_4_11 HA_4_1_2	virtual home network
4			Neighbor Advertisement message	All fields in each Neighbor Advertisement message **SHOULD** be set in the same way they would be set by the mobile node if it was sending this Neighbor Advertisement [12] while at home.	SHOULD	A	A2	X	HA_4_11 HA_4_1_2	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
5				The Target Address in the Neighbor Advertisement **MUST** be set to the specific IP address for the mobile node.	MUST	A	A2	X	HA_4_11 HA_4_1_2	virtual home network
6				The Advertisement **MUST** include a Target Link-layer Address option specifying the home agent's link-layer address.	MUST	A	A2	X	HA_4_11 HA_4_1_2	virtual home network
7				The Router (R) bit in the Advertisement **MUST** be set to zero.	MUST	A	A2	X	HA_4_11 HA_4_1_2	virtual home network
8				The Solicited Flag (S) in the Advertisement **MUST NOT** be set, since it was not solicited by any Neighbor Solicitation.	MUST NOT	A	A2	X	HA_4_11 HA_4_1_2	virtual home network
9				The Override Flag (O) in the Advertisement **MUST** be set, indicating that the Advertisement **SHOULD** override any existing Neighbor Cache entry at any node receiving it.	MUST	A	A2	X	HA_4_11 HA_4_1_2	virtual home network
10					SHOULD	A	A2	X	HA_4_11 HA_4_1_2	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
11				The Source Address in the IPv6 header **MUST** be set to the home agent's IP address on the interface used to send the advertisement.	MUST	A	A2	X	HA_4_11 HA_4_1_2	virtual home network
12			retransmitting Neighbor Advetisement message	Since multicasting on the local link (such as Ethernet) is typically not guaranteed to be reliable, the home agent **MAY** retransmit this Neighbor Advertisement message up to MAX_NEIGHBOR_ADVERTISEMENT (see [12]) times to increase its reliability.	MAY	C	-			This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
13			acting as a proxy for a mobile node	In order to intercept packets in this way, the home agent **MUST** act as a proxy for this mobile node and reply to any received Neighbor Solicitations for it.	MUST	A	A2	X	HA_4_2_1 HA_4_2_2 HA_4_2_3 HA_4_2_4 HA_4_2_5 HA_4_2_6 HA_4_2_7 HA_4_2_8 HA_4_2_9 HA_4_2_13 HA_4_2_14 HA_4_2_15 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
14				When a home agent receives a Neighbor Solicitation, it **MUST** check if the Target Address specified in the message matches the address of any mobile node for which it has a Binding Cache entry marked as a home registration.	MUST	A	A2	X	HA_4_2_10 HA_4_2_11 HA_4_2_12 HA_4_2_16 HA_4_3_1 HA_4_3_2 HA_4_3_3 HA_4_3_4 HA_4_3_5 HA_4_3_6 HA_4_3_7 HA_4_3_8 HA_4_3_9 HA_4_3_10 HA_4_3_11 HA_4_3_12 HA_4_3_13 HA_4_3_14 HA_4_3_15 HA_4_3_16	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
15			replying to the Neighbor Solicitation	If such an entry exists in the home agent's Binding Cache, the home agent **MUST** reply to the Neighbor Solicitation with a Neighbor Advertisement giving the home agent's own link-layer address as the link-layer address for the specified Target Address. In addition, the Router (R) bit in the Advertisement **MUST** be set to zero.	MUST	A	A2	X	HA_4_2_1 HA_4_2_2 HA_4_2_3 HA_4_2_4 HA_4_2_5 HA_4_2_6 HA_4_2_7 HA_4_2_8 HA_4_2_9 HA_4_2_13 HA_4_2_14 HA_4_2_15 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
16					MUST	A	A2	X	HA_4_2_1 HA_4_2_2 HA_4_2_3 HA_4_2_4 HA_4_2_5 HA_4_2_6 HA_4_2_7 HA_4_2_8 HA_4_2_9 HA_4_2_13 HA_4_2_14 HA_4_2_15 HA_4_4_1 HA_4_4_2 HA_4_4_3 HA_4_4_4 HA_4_4_5 HA_4_4_6 HA_4_4_7 HA_4_4_8 HA_4_4_9 HA_4_4_13 HA_4_4_14 HA_4_4_15	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
17	10.4.2	Processing Intercepted Packets	sending packets to a Mobile Node	For any packet sent to a mobile node from the mobile node's home agent (in which the home agent is the original sender of the packet), the home agent is operating as a correspondent node of the mobile node for this packet and the procedures described in Section 9.3.2 apply. Section 9.3.2 Before sending any packet, the sending node SHOULD examine its Binding Cache for an entry for the destination address to which the packet is being sent. If the sending node has a Binding Cache entry for this address, the sending node SHOULD use a type 2 routing header to route the packet to this mobile node (the destination node) by way of its care-of address.	(do)	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5,	IPv6 encapsulation and decapsulation

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
18				The home agent then uses a routing header to route the packet to the mobile node by way of the primary care-of address in the home agent's Binding Cache.	(do)	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5,	IPv6 encapsulation and decapsulation
19			forwarding packets to a Mobile Node	In order to forward each intercepted packet to the mobile node, the home agent **MUST** tunnel the packet to the mobile node using IPv6 encapsulation [15].	MUST	A	A1	X	HA_5_1_1 HA_5_1_3 HA_5_1_4 HA_5_1_5 HA_5_1_6 HA_5_1_7 HA_6_3_3 HA_6_3_4 HA_6_3_7 HA_6_3_8	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
20	10.4.2			When a home agent encapsulates an intercepted packet for forwarding to the mobile node, the home agent sets the Source Address in the new tunnel IP header to the home agent's own IP address and sets the Destination Address in the tunnel IP header to the mobile node's primary care-of address.	(do)	A	A1	X	HA_5_1_1 HA_5_1_3 HA_5_1_4 HA_5_1_5 HA_5_1_6 HA_5_1_7 HA_6_3_3 HA_6_3_4 HA_6_3_7 HA_6_3_8	IPv6 encapsulation and decapsulation
21	9.3.4			By the definition of IPv6 encapsulation [15], the home agent **MUST** relay certain ICMP error messages back to the original sender of the packet, which in this case is the correspondent node.	MUST	A	A1	X	HA_5_1_3 HA_5_1_7	
22	10.4.2		Processing packets to the mobile node's link-local address	However, packets addressed to the mobile node's link-local address **MUST NOT** be tunneled to the mobile node.	MUST NOT	A	A2	X	HA_5_1_2	virtual home network
23				Instead, these packet **MUST** be discarded and the home agent **SHOULD** return an ICMP Destination Unreachable, Code 3, message to the packet's Source Address (unless this Source Address is a multicast address).	MUST	A	A2	X	HA_5_1_2	virtual home network
24					SHOULD	A	A2	X	HA_5_1_2	virtual home network

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
25			Processing packets to the mobile node's site-local address	Packets addressed to the mobile node's site-local address **SHOULD NOT** be tunneled to the mobile node by default.	SHOULD NOT	A	A2			site-local address
26			Processing packets to the mobile node's multicast address	Multicast packets addressed to a multicast address with link-local scope [3], to which the mobile node is subscribed, **MUST NOT** be tunneled to the mobile node. These packets **SHOULD** be silently discarded (after delivering to other local multicast recipients).	MUST NOT	A	A2			Multicast
27					SHOULD	A	A2			Multicast
28				Multicast packets addressed to a multicast address with scope larger than link-local, but smaller than global (e.g., site-local and organization-local [3], to which the mobile node is subscribed, **SHOULD NOT** be tunneled to the mobile node.	SHOULD NOT	A	A2			site-local address
29				Multicast packets addressed with a global scope, to which the mobile node has successfully subscribed, **MUST** be tunneled to the mobile node.	MUST	A	A2			Multicast

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
30				Before tunneling a packet to the mobile node, the home agent **MUST** perform any IPsec processing as indicated by the security policy data base.	MUST	A	A2	X	HA_6_3_3 HA_6_3_4 HA_6_3_7 HA_6_3_8	Return Routability
31	10.4.3	Multicast Membership Control	not supporting Multicast Membership Control	This section is a prerequisite for the multicast data packet forwarding described in the previous section. If this support is not provided, multicast group membership control messages are silently ignored.	(do)	A	A2			Multicast
32			receiving tunneled multicast group membership control information	In order to forward multicast data packets from the home network to all the proper mobile nodes, the home agent **SHOULD** be capable of receiving tunneled multicast group membership control information from the mobile node in order to determine which groups the mobile node has subscribed to.	SHOULD	A	A2			Multicast

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
33			periodically transmit MLD Query messages	To obtain the mobile node's current multicast group membership the home agent must periodically transmit MLD Query messages through the tunnel to the mobile node.	(do)	A	A2			Multicast
34				These MLD periodic transmissions will ensure the home agent has an accurate record of the groups in which the mobile node is interested despite packet losses of the mobile node's MLD group membership messages.	(do)	A	A2			Multicast
35			processing MLD packets	The MLD packets between the mobile node and the home agent are encapsulated within the same tunnel header used for other packet flows between the mobile node and home agent.	(do)	A	A2			Multicast

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
36				To avoid ambiguity on the home agent, due to mobile nodes which may choose identical link-local source addresses for their MLD function, it is necessary for the home agent to identify which mobile node was actually the issuer of a particular MLD message. This may be accomplished by noting which tunnel such an MLD arrived by, which IPsec SA was used, or by other distinguishing means.	(do)	A	A2			Multicast
37	10.4.4	Stateful Address Autoconfiguration	stateful address autoconfiguration mechanisms	This section describes how home agents support the use of stateful address autoconfiguration mechanisms such as DHCPv6 [29] from the mobile nodes. If this support is not provided, then the M and O bits must remain cleared on the Mobile Prefix Advertisement Messages.	(do)	B	B			stateful address autoconfigration

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
38				Mobile nodes desiring to locate a DHCPv6 service may reverse tunnel standard DHCPv6 packets to the home agent. Since these link-scope packets can not be forwarded onto the home network, it is necessary for the home agent to either implement a DHCPv6 relay agent or a DHCPv6 server function itself.	(do)	B	B			stateful address autoconfigration
39				DHCPv6 messages sent to the mobile node with a link-local destination must be tunneled within the same tunnel header used for other packet flows.	(do)	B	B			stateful address autoconfigration
40	10.4.5	Handling Reverse Tunneled Packets	Home agents **MUST** support reverse tunneling as follows:	The tunneled traffic arrives to the home agent's address using IPv6 encapsulation [15].	MUST	A	A1	X	HA_6_1_1 HA_6_1_2 HA_6_1_3 HA_6_1_4 HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
41				Depending on the security policies used by the home agent, reverse tunneled packets **MAY** be discarded unless accompanied by a valid ESP header.	MAY	B	B	X	HA_6_3_9 HA_6_3_10	IPsec Protection of the payload packets tunneled between MN and HA
42				When a home agent decapsulates a tunneled packet from the mobile node, the home agent **MUST** verify that the Source Address in the tunnel IP header is the mobile node's primary care-of address. Otherwise, any node in the Internet could send traffic through the home agent and escape ingress filtering limitations.	MUST	A	A1	X	HA_6_2_1 HA_6_2_2	
43	additional			Reverse tunneled packets are discarded if there is no Binding Cache entry.	(add)	A	A1	X	HA_6_2_1 HA_6_2_2	Home Registration
44	10.4.6	Protecting Return Routability Packets	supporting tunnel mode IPsec ESP	Therefore, the home agent **MUST** support tunnel mode IPsec ESP for the protection of packets belonging to the return routability procedure.	MUST	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	Return Routability

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
45				Support for a non-null encryption transform and authentication algorithm **MUST** be available.	MUST	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	Return Routability
46				The home agent **MUST** set the new care-of address as the destination address of these packets, as if the outer header destination address in the security association had changed [21].	MUST	A	A2	X	HA_6_3_2 HA_6_3_4 HA_6_3_6 HA_6_3_8	Return Routability
47				When IPsec is used to protect return routability signaling or payload packets, this protection **MUST** only be applied to the return routability packets entering the IPv6 encapsulated tunnel interface between the mobile node and the home agent.	MUST	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	Return Routability

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	10.5.1	Receiving Router Advertisement Messages	On receipt of a valid Router Advertisement, as defined in the processing algorithm specified for Neighbor Discovery [12], the home agent	o If the Home Agent (H) bit in the Router Advertisement is not set, delete the sending node's entry in the current Home Agents List (if one exists). Skip all the following steps.	(do)	A	A2	X	HA_7_4_1	Dynamic Home Agent Address Discovery

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
2			performs the following steps, in addition to any steps already required of it by Neighbor Discovery:	o Otherwise, extract the Source Address from the IP header of the Router Advertisement. This is the link-local IP address on this link of the home agent sending this Advertisement [12].	(do)	A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	Dynamic Home Agent Address Discovery
3				o Determine the preference for this home agent. If the Router Advertisement contains a Home Agent Information Option, then the preference is taken from the Home Agent Preference field in the option; otherwise, the default preference of 0 **MUST** be used.	MUST	A	A2	X	HA_7_2_9	Dynamic Home Agent Address Discovery

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
4				o Determine the lifetime for this home agent. If the Router Advertisement contains a Home Agent Information Option, then the lifetime is taken from the Home Agent Lifetime field in the option; otherwise, the lifetime specified by the Router Lifetime field in the Router Advertisement **SHOULD** be used.	SHOULD	A	A2	X	HA_7_3_2 HA_7_2_11	Dynamic Home Agent Address Discovery
5				o If the link-local address of the home agent sending this Advertisement is already present in this home agent's Home Agents List and the received home agent lifetime value is zero, immediately delete this entry in the Home Agents List.	(do)	A	A2	X	HA_7_3_1 HA_7_3_2	Dynamic Home Agent Address Discovery
6				o Otherwise, if the link-local address of the home agent sending this Advertisement is already present in the receiving home agent's Home Agents List, reset its lifetime and preference to the values determined above.	(do)	A	A2	X	HA_7_2_12 HA_7_2_13	Dynamic Home Agent Address Discovery

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
7				o If the link-local address of the home agent sending this Advertisement is not already present in the Home Agents List maintained by the receiving home agent, and the lifetime for the sending home agent is non-zero, create a new entry in the list, and initialize its lifetime and preference to the values determined above.	(do)	A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	Dynamic Home Agent Address Discovery

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
8				o If the Home Agents List entry for the link-local address of the home agent sending this Advertisement was not deleted as described above, determine any global address(es) of the home agent based on each Prefix Information option received in this Advertisement in which the Router Address (R) bit is set (Section 7.2). Add all such global addresses to the list of global addresses in this Home Agents List entry.	(do)	A	A2	X	HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	Dynamic Home Agent Address Discovery
9				A home agent **SHOULD** maintain an entry in its Home Agents List for each valid home agent address until that entry's lifetime expires, after which time the entry **MUST** be deleted.	SHOULD	A	A2	X	HA_7_2_10 HA_7_2_11 HA_7_2_13	Dynamic Home Agent Address Discovery
10					MUST	A	A2	X	HA_7_2_10 HA_7_2_11 HA_7_2_13	Dynamic Home Agent Address Discovery

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
11				A home agent receiving a Home Agent Address Discovery Request message that serves this subnet **SHOULD** return an ICMP Home Agent Address Discovery Reply message to the mobile node with the Source Address of the Reply packet set to one of the global unicast addresses of the home agent.	SHOULD	A	A2	X	HA_7_1_1 HA_7_1_2 HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1 HA_7_1_3 HA_7_1_4	Dynamic Home Agent Address Discovery

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
12			The Home Agent Addresses field in the Reply message is constructed as follows:	o The Home Agent Addresses field **SHOULD** contain all global IP addresses for each home agent currently listed in this home agent's own Home Agents List (Section 10.1).	SHOULD	A	A2	X	HA_7_1_1 HA_7_1_2 HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	Dynamic Home Agent Address Discovery

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
13				o The IP addresses in the Home Agent Addresses field **SHOULD** be listed in order of decreasing preference values, based either on the respective advertised preference from a Home Agent Information option or on the default preference of 0 if no preference is advertised (or on the configured home agent preference for this home agent itself).	SHOULD	A	A2	X	HA_7_1_1 HA_7_1_2 HA_7_2_1 HA_7_2_2 HA_7_2_3 HA_7_2_4 HA_7_2_5 HA_7_2_6 HA_7_2_7 HA_7_2_8 HA_7_2_9 HA_7_2_10 HA_7_2_11 HA_7_2_12 HA_7_2_13 HA_7_2_14 HA_7_2_15 HA_7_3_1 HA_7_3_2 HA_7_4_1 HA_7_4_2 HA_7_5_1	Dynamic Home Agent Address Discovery

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
14				o Among home agents with equal preference, their IP addresses in the Home Agent Addresses field **SHOULD** be listed in an order randomized with respect to other home agents with equal preference every time a Home Agent Address Discovery Reply message is returned by this home agent.	SHOULD	A	A2	X	HA_7_2_14	Dynamic Home Agent Address Discovery
15				o If more than one global IP address is associated with a home agent, these addresses **SHOULD** be listed in a randomized order.	SHOULD	A	A2	X	HA_7_2_15	Dynamic Home Agent Address Discovery
16				o The home agent **SHOULD** reduce the number of home agent IP addresses so that the packet fits within the minimum IPv6 MTU [11]. The home agent addresses selected for inclusion in the packet **SHOULD** be those from the complete list with the highest preference. This limitation avoids the danger of the Reply message packet being fragmented (or rejected by an intermediate router with an ICMP Packet Too Big message [14]).	SHOULD	A	A2	X	HA_7_5_1	Dynamic Home Agent Address Discovery

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	10.6.1.	List of Home Network Prefixes	monitoring prefixes and passing them on to MNs	To support this, the home agent monitors prefixes advertised by itself and other home agents on the home link.	(do)	A	A2			MPS/MPA internal behavior
2	10.6.2	Scheduling Prefix Deliveries	A home agent serving a mobile node will schedule the delivery of new prefix information to that mobile node when any of the following conditions occur: **MUST:**	The state of the flags changes for the prefix of the mobile node's registered home address.	MUST	A	A2			MPS/MPA virtual home link This function is implementaiondependent. It does not effect on interoperability.
3				The valid or preferred lifetime is reconfigured or changes for any reason other than advancing real time.	MUST	A	A2			MPS/MPA virtual home link This function is implementaiondependent. It does not effect on interoperability.
4				The mobile node requests the information with a Mobile Prefix Solicitation (see Section 11.4.2).	MUST	A	A2	X	HA_8_1_1 HA_8_1_2 HA_8_1_7 HA_8_1_8 HA_8_1_15 HA_8_1_16	MPS/MPA
5	additional			When a home agent receives a Mobile Prefix Solicitation without a Home Address destination option, the home agent discards the message	(add)	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
6	additional			When a home agent receives a Mobile Prefix Solicitation form a mobile node before a home registration, the home agent sends a Binding Error message to the mobile node.	(add)	A	A2	X	HA_8_1_3 HA_8_1_4	MPS/MPA
7	additional			When a home agent receives a Mobile Prefix Solicitation form a mobile node on home link, the home agent discards the message.	(add)	A	A2			MPS/MPA virtual home link This function is implementaiondependent. It does not effect on interoperability.
8			A home agent serving a mobile node will schedule the delivery of new prefix information to that mobile node when any of the following conditions occur: **SHOULD:**	A new prefix is added to the home subnet interface(s) of the home agent.	SHOULD	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
9			A home agent serving a mobile node will schedule the delivery of new prefix information to that mobile node when any of the following conditions occur: **MAY:**	The valid or preferred lifetime or the state of the flags changes for a prefix which is not used in any Binding Cache entry for this mobile node.	MAY	B	B			MPS/MPA implementation matter
10			algorithm to determine when to send prefix information	If a mobile node sends a solicitation, answer right away.	(do)	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA
11				If no Mobile Prefix Advertisement has been sent to the mobile node in the last MaxMobPfxAdvInterval seconds (see Section 13), then ensure that a transmission is scheduled. The actual transmission time is randomized as described below.	(do)	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
12				If a prefix matching the mobile node's home registration is added on the home subnet interface or if its information changes in any way that does not deprecate the mobile node's address, ensure that a transmission is scheduled. The actual transmission time is randomized as described below.	(do)	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.
13				If a home registration expires, cancel any scheduled advertisements to the mobile node.	(do)	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.
14			scheduling the transmission of a Mobile Prefix Advertisement	If the home agent has already scheduled the transmission of a Mobile Prefix Advertisement to the mobile node, then the home agent will replace the advertisement with a new one to be sent at the scheduled time.	(do)	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
15				Otherwise, the home agent computes a fresh value for RAND_ADV_DELAY which offsets from the current time for the scheduled transmission. First calculate the maximum delay for the scheduled Advertisement: MaxScheduleDelay = min (MaxMobPfxAdvInterval, Preferred Lifetime), where MaxMobPfxAdvInterval is as defined in Section 12. Then computethe final delay for the advertisement: RAND_ADV_DELAY = MinMobPfxAdvInterval + (rand() % abs(MaxScheduleDelay - MinMobPfxAdvInterval)) Here rand() returns a random integer value in the range of 0 to the maximum possible integer value.	(do)	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.
16				In addition, a home agent **MAY** further reduce the rate of packet transmission by further delaying individual advertisements, when necessary to avoid overwhelming local network resources.	MAY	C	-			This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
17				The home agent **SHOULD** periodically continue to retransmit an unsolicited Advertisement to the mobile node, until it is acknowledged by the receipt of a Mobile Prefix Solicitation from the mobile node.	SHOULD	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.
18				The home agent **MUST** wait PREFIX_ADV_TIMEOUT (see Section 12) before the first retransmission and double the retransmission wait time for every succeeding retransmission until a maximum number of PREFIX_ADV_RETRIES attempts (see Section 12) has been tried.	MUST	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.
19				If the mobile node's bindings expire before the matching Binding Update has been received, then the home agent **MUST NOT** attempt any more retransmissions, even if not all PREFIX_ADV_RETRIES have been retransmitted.	MUST NOT	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
20				In the meantime, if the mobile node sends another Binding Update without returning home, then the home agent **SHOULD** begin transmitting the unsolicited Advertisement again.	SHOULD	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.
21				If some condition, as described above, occurs on the home link and causes another Prefix Advertisement to be sent to the mobile node, before the mobile node acknowledges a previous transmission, the home agent **SHOULD** combine any Prefix Information options in the unacknowledged Mobile Prefix Advertisement into a new Advertisement. The home agent then discards the old Advertisement.	SHOULD	A	A2			MPS/MPA This function is implementaiondependent. It does not effect on interoperability.
22	10.6.3	Sending Advertisements	When sending a Mobile Prefix Advertisement to the mobile node, the home agent **MUST** construct the packet as follows:	The Source Address in the packet's IPv6 header **MUST** be set to the home agent's IP address to which the mobile node addressed its current home registration or its default global home agent address if no binding exists.	MUST	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
23				If the advertisement was solicited, it **MUST** be destined to the source address of the solicitation. If it was triggered by prefix changes or renumbering, the advertisement's destination will be the mobile node's home address in the binding which triggered the rule.	MUST	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA
24				A type 2 routing header **MUST** be included with the mobile node's home address.	MUST	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA
25				IPsec headers **MUST** be supported and SHOULD be used.	MUST	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA
26				The home agent **MUST** send the packet as it would any other unicast IPv6 packet that it originates.	MUST	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
27				Set the Managed Address Configuration (M) flag if the corresponding flag has been set in any of the Router Advertisements from which the prefix information has been learned (including the ones sent by this home agent).	MUST	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA
28				Set the Other Stateful Configuration (O) flag if the corresponding flag has been set in any of the Router Advertisements from which the prefix information has been learned (including the ones sent by this home agent).	MUST	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA
29	10.6.4	Lifetimes for Changed Prefixes		As described in Section 10.3.1, the lifetime returned by the home agent in a Binding Acknowledgement **MUST** not be greater than the remaining valid lifetime for the subnet prefix in the mobile node's home address.	MUST	A	A2	X	HA_8_1_7 HA_8_1_8	MPS/MPA

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	4.1	Mandatory Support	The following requirements apply to both home agents and mobile nodes:	Manual configuration of IPsec security associations **MUST** be supported.The configuration of the keys is expected to take placeout-of-band, for instance at the time the mobile node is configured to use its home agent.	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
2				Automatic key management with IKE [4] **MAY** be supported. Only IKEv1 is discussed in this document. Other automatic key management mechanisms exist and will appear beyond IKEv1, but this document does not address the issues related to them.	MAY	B	B			IKEv1

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
3				ESP encapsulation of Binding Updates and Acknowledgements between the mobile node and home agent **MUST** be supported and **MUST** be used.	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
4					MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
5				ESP encapsulation of the Home Test Init and Home Test messages tunneled between the mobile node and home agent **MUST** be supported and **SHOULD** be used.	MUST	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	Return Routability
6					SHOULD	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	Return Routability
7				ESP encapsulation of the ICMPv6 messages related to prefix discovery **MUST** be supported and **SHOULD** be used.	MUST	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA
8					SHOULD	A	A2	X	HA_8_1_1 HA_8_1_2	MPS/MPA

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
9				ESP encapsulation of the payload packets tunneled between the mobile node and home agent **MAY** be supported and used.	MAY	B	B			IPsec Protection of the payload packets tunneled between MN and HA
10				If multicast group membership control protocols or stateful address autoconfiguration protocols are supported, payload data protection **MUST** be supported for those protocols.	MUST	A	A2			

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
11	4.2	Policy Requirements	The following requirements apply to both home agents and mobile nodes:	As required in the base specification [7], when a packet destined to the receiving node is matched against IPsec security policy or selectors of a security association, an address appearing in a Home Address destination option is considered as the source address of the packet.	(do)	A	A1/A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	BU : A1 MPS : A2

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
12				Similarly, a home address within a Type 2 Routing header destined to the receiving node is considered as the destination address of the packet, when a packet is matched against IPsec security policy or selectors of a security association.	(do)	A	A1/A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	BA : A1 MPA : A2

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
13				Similar implementation considers apply to the Routing header processing as was described above for the Home Address destination option.	(do)	A	A1/A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	BA : A1 MPA : A2

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
14				When IPsec is used to protect return routability signaling or payload packets, this protection **MUST** only be applied to the return routability packets entering the IPv6 encapsulated tunnel interface between the mobile node and the home agent. This can be achieved, for instance, by defining the security policy database entries specifically for the tunnel interface. That is, the policy entries are not generally applied on all traffic on the physical interface(s) of the nodes, but rather only on traffic that enters this tunnel.	MUST	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	Return Routability IPsec Protection of the payload packets tunneled between MN and HA

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
15				The authentication of mobile nodes **MAY** be based either on machine or user credentials. Note that multi-user operating systems typically allow all users of a node to use any of the IP addresses assigned to the node. This limits the capability of the home agent to restrict the use of a home address to a particular user in such environment. Where user credentials are applied in a multi-user environment, the configuration should authorize all users of the node to control all home addresses assigned to the node.	MAY	B	B			
16				When the mobile node returns home and de-registers with the Home Agent, the tunnel between the home agent and the mobile node's care-of address is torn down. The security policy entries, which were used for protecting tunneled traffic between the mobile node and the home agent **MUST** be made inactive (for instance, by removing them and installing them back later through an API). The corresponding security associations could be kept as they are or deleted depending on how they were created. If the security associations were created dynamically using IKE, they	MUST	A	A2			Real home link
17					MUST	A	A2			Real home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
18				are automatically deleted when they expire. If the security associations were created through manual configuration, they **MUST** be retained and used later when the mobile node moves aways from home again. The security associations protecting Binding Updates and Acknowledgements, and prefix discovery **SHOULD NOT** be deleted as they do not depend on care-of addresses and can be used again.	SHOULD NOT	A	A2			Real home link

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
19			The following rules apply to home agents:	The home agent **MUST** use the Type 2 Routing header in Binding Acknowledgements and Mobile Prefix Advertisements sent to the mobile node, again due to the need to have the home address visible when the policy checks are made.	MUST	A	A1/A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	BA : A1 MPA : A2

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
20				It is necessary to avoid the possibility that a mobile node could use its security association to send a Binding Update on behalf of another mobile node using the same home agent. In order to do this, the security policy database entries **MUST** unequivocally identify a single security association for any given home address and home agent when manual keying is used. When dynamic keying is used, the security policy database entries **MUST** unequivocally identify the IKE phase 1 credentials which can be used to authorize the creation of security associations for a particular home address. How these mappings are maintained is outside the scope of this specification, but they may be maintained, for instance, as a locally administered table in the home agent. If the phase 1 identity is a FQDN, secure forms of DNS may also be used.	MUST	A	A1	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	
21					MUST	A	A2		HA_2_1_10,HA_2_1_11, HA_2_1_12,HA_2_1_13	IKEv1

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
22	4.3	IPsec Protocol Processing	The following requirements apply to both home agents and mobile nodes:	When securing Binding Updates, Binding Acknowledgements, and prefix discovery, both the mobile nodes and the home agents **MUST** support and **SHOULD** use the Encapsulating Security Payload (ESP) [3] header in transport mode and **MUST** use a non-null payload authentication algorithm to provide data origin authentication, connectionless integrity and optional anti-replay protection.	MUST	A	A1/A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	BU/BA : A1 MPS/MPA : A2

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
23					SHOULD	A	A1/A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	BU/BA : A1 MPS/MPA : A2

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
24					MUST	A	A1/A2	X	HA_1_1_5,HA_1_1_6,HA_1_1_7, HA_2_1_1,HA_2_1_2,HA_2_1_3, HA_2_1_4,HA_2_1_5,HA_2_1_6, HA_2_1_7,HA_2_1_8,HA_2_3_1, HA_2_3_2,HA_2_5_1,HA_2_5_2, HA_2_5_3,HA_2_5_4,HA_2_5_5, HA_2_5_6,HA_2_5_7,HA_2_5_8, HA_2_6_1,HA_2_6_2,HA_2_6_3, HA_2_6_4,HA_2_6_5,HA_2_6_6, HA_2_6_7,HA_2_6_8,HA_2_6_9, HA_2_6_10,HA_2_6_11,HA_2_6_12, HA_2_7_1,HA_2_7_2,HA_2_7_3, HA_2_7_4,HA_2_7_5,HA_2_7_6, HA_2_7_7,HA_2_7_8,HA_2_8_1, HA_2_8_2,HA_2_8_3,HA_2_8_4, HA_2_8_5,HA_2_8_6,HA_2_8_7, HA_2_8_8,HA_2_8_9,HA_2_8_10, HA_2_8_11,HA_2_8_12,HA_3_1_1, HA_3_1_2,HA_3_1_3,HA_3_1_4, HA_3_1_5,HA_3_1_6,HA_3_1_7, HA_3_1_8,HA_3_1_9,HA_3_1_10, HA_3_1_11,HA_3_1_12,HA_3_3_1, HA_3_3_2,HA_3_3_3,HA_3_3_4, HA_4_1_1,HA_4_1_2,HA_4_2_1, HA_4_2_2,HA_4_2_3,HA_4_2_4, HA_4_2_5,HA_4_2_6,HA_4_2_7, HA_4_2_8,HA_4_2_9,HA_4_2_10, HA_4_2_11,HA_4_2_12,HA_4_2_13, HA_4_2_14,HA_4_2_15,HA_4_2_16, HA_4_3_1,HA_4_3_2,HA_4_3_3, HA_4_3_4,HA_4_3_5,HA_4_3_6, HA_4_3_7,HA_4_3_8,HA_4_3_9, HA_4_3_10,HA_4_3_11,HA_4_3_12, HA_4_3_13,HA_4_3_14,HA_4_3_15, HA_4_3_16,HA_4_4_1,HA_4_4_2, HA_4_4_3,HA_4_4_4,HA_4_4_5, HA_4_4_6,HA_4_4_7,HA_4_4_8, HA_4_4_9,HA_4_4_13,HA_4_4_14, HA_4_4_15,HA_5_1_1,HA_5_1_2, HA_5_1_3,HA_5_1_4,HA_5_1_5, HA_5_1_6,HA_5_1_7,HA_6_1_1, HA_6_1_2,HA_6_1_3,HA_6_1_4, HA_6_2_1,HA_6_2_2,HA_6_3_1, HA_6_3_2,HA_6_3_3,HA_6_3_4, HA_6_3_5,HA_6_3_6,HA_6_3_7, HA_6_3_8,HA_6_3_9,HA_6_3_10, HA_8_1_1,HA_8_1_2	BU/BA : A1 MPS/MPA : A2

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
25				Tunnel mode IPsec ESP **MUST** be supported and **SHOULD** be used for the protection of packets belonging to the return routability procedure. A non-null encryption transform and a non-null authentication algorithm **MUST** be applied.	MUST	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	HoTI,HoT
26					SHOULD	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	HoTI,HoT
27					MUST	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	HoTI,HoT

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
28			The following rules apply to home agents:	When IPsec is used to protect return routability signaling or payload packets, IPsec security associations are needed to provide this protection. When the care-of address for the mobile node changes as a result of an accepted Binding Update, special treatment is needed for the next packets sent using these security associations. The home agent **MUST** set the new care-of address as the destination address of these packets, as if the outer header destination address in the security association had changed. Similarly, the home agent starts to expect the new source address in the tunnel packets received from the mobile node.	MUST	A	A2	X	HA_6_3_1 HA_6_3_2 HA_6_3_3 HA_6_3_4 HA_6_3_5 HA_6_3_6 HA_6_3_7 HA_6_3_8	HoTI/HoT IPsec for the protection of payload packets

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
29				Such address changes can be implemented, for instance, through an API from the Mobile IPv6 implementation to the IPsec implementation. It should be noted that the use of such an API and the address changes **MUST** only be done based on the Binding Updates received by the home agent and protected by the use of IPsec. Address modifications based on other sources, such as Binding Updates to the correspondent nodes protected by return routability, or open access to an API from any application may result in security vulnerabilities.	MUST	A	A2			This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
30	4.4	Dynamic Keying	The following requirements apply to both home agents and mobile nodes:	If anti-replay protection is required, dynamic keying **MUST** be used. IPsec can provide anti-replay protection only if dynamic keying is used (which may not always be the case). IPsec also does not guarantee correct ordering of packets, only that they have not been replayed. Because of this, sequence numbers within the Mobile IPv6 messages are used to ensure correct ordering. However, if the 16 bit Mobile IPv6 sequence number space is cycled through, or the home agent reboots and loses its state regarding the sequence numbers, replay and reordering attacks become possible. The use of dynamic keying, IPsec anti-replay protection, and the Mobile IPv6 sequence numbers can together prevent such attacks.	MUST	A	A2			IKE

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
31				If IKE version 1 is used with preshared secrets in main mode, it determines the shared secret to use from the IP address of the peer. With Mobile IPv6, however, this may be a care-of address and does not indicate which mobile node attempts to contact the home agent. Therefore, if preshared secret authentication is used in IKEv1 between the mobile node and the home agent then aggressive mode **MUST** be used. Note also that care needs to be taken with phase 1 identity selection. Where the ID_IPV6_ADDR Identity Payloads is used, unambiguous mapping of identities to keys is not possible. (The next version of IKE may not have these limitations.)	MUST	A	A2	X	HA_2_1_10,HA_2_1_11, HA_2_1_12,HA_2_1_13	IKEv1
32			The following rules apply to home agents:	If the home agent has used IKE version 1 to establish security associations with the mobile node, it should follow the procedures discussed in Section 10.3.1 and 10.3.2 of the base specification [7] to determine whether the IKE endpoints can be moved or if IKE phase 1 has to be re-established.	(do)	A	A2	X	HA_2_1_10,HA_2_1_11, HA_2_1_12,HA_2_1_13	IKEv1

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	3	Packet Formats		The mobile node and the home agent **MUST** support the packet formats as defined in Section 3 of RFC 3776.	MUST	A	A1			(generalization)
2				The support for the above tunneled packet format is optional on the mobile node and the home agent.	(do)	B	B			all traffic in tunnel mode
3	4.1	General Requirements		RFC 3775 states that manual configuration of IPsec security associations **MUST** be supported, and automated key management **MAY** be supported.	MUST	A	A1			(generalization)
4					MAY	B	B			IKEv2
5				ESP encapsulation for Binding Updates and Binding Acknowledgements **MUST** be supported and used.	MUST	A	A1/A2	X	HA_2_1_1,HA_2_1_5, HA_2_2_3,HA_2_2_6, HA_3_1_1,HA_3_1_11, HA_3_1_2,HA_3_1_4	fine-grain selectors (BU/BA)
6				ESP encapsulation in tunnel mode for the Home Test Init (HoTi) and Home Test (HoT) messages tunneled between the mobile node and the home agent **MUST** be supported and **SHOULD** be used.	MUST/ SHOULD	A	A2	X	HA_6_3_2,HA_6_3_6, HA_6_3_4,HA_6_3_8, HA_6_3_9,HA_6_3_10	fine-grain selectors (HoTI/HoT)
7				ESP encapsulation of the ICMPv6 messages related to mobile prefix discovery **MUST** be supported and **SHOULD** be used.	MUST/ SHOULD	A	A2	X	HA_8_1_1,HA_8_1_2	fine-grain selectors (MPS/MPA)
8				ESP encapsulation of the payload packets tunneled between the mobile node and the home agent **MAY** be supported and used.	MAY	B	B			ESP encapsulation of the payload packets

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
9				If multicast group membership control protocols or stateful address autoconfiguration protocols are supported, payload data protection **MUST** be supported for those protocols.	MUST	A	A2			multicast group membership control protocols
10				The home agent and the mobile node **MAY** support authentication using EAP in IKEv2 as described in Section	MAY	B	B			IKEv2
11				The home agent and the mobile node **MAY** support remote configuration of the home address as described in Section 9. When the home agent receives a configuration payload with a CFG_REQUEST for INTERNAL_IP6_ADDRESS, it must reply with a valid home address for the mobile node. The home agent can pick a home address from a local database or from a DHCPv6 server on the home link.	MAY	B	B			IKEv2
12	4.2	Policy Requirements		The home agent **MUST** be able to prevent a mobile node from using its security association to send a Binding Update on behalf of another mobile node.	MUST	A	A1			(Setting of IPsec configuration)
13				With manual IPsec configuration, the home agent **MUST** be able to verify that a security association was created for a particular home address.	MUST	A	A1			(Setting of IPsec configuration)

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
14				With dynamic keying, the home agent **MUST** be able to verify that the identity presented in the IKE_AUTH exchange is allowed to create security associations for a particular home address.	MUST	A	A2			IKEv2
15				As required in the base specification [2], when a packet destined to the receiving node is matched against IPsec security policy or selectors of a security association, an address appearing in a Home Address destination option is considered as the source address of the packet.	(do)	A	A1	X	HA_2_1_1,HA_2_1_5, HA_2_2_3,HA_2_2_6, HA_3_1_1,HA_3_1_11, HA_3_1_2	
16				Similar implementation considerations apply to the Routing header processing as was described above for the Home Address destination option.	(do)	A	A1	X	HA_2_1_1,HA_2_1_5, HA_2_2_3,HA_2_2_6, HA_3_1_1,HA_3_1_11, HA_3_1_2	
17				The security policy entries, which were used for protecting tunneled traffic between the mobile node and the home agent, **SHOULD** be made inactive (for instance, by removing them and installing them back later through an API).	SHOULD	A	A2			Real home link
18				If the security associations were created dynamically using IKE, they are automatically deleted when they expire.	(do)	B	B			IKEv2

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
19				If the security associations were created through manual configuration, they **MUST** be retained and used later when the mobile node moves away from home again.	MUST	A	A2			tunnel traffic IPsec manual configuration (Scenario Test)
20				The security associations protecting Binding Updates, Binding Acknowledgements and Mobile Prefix Discovery messages SHOULD NOT be deleted as they do not depend on care-of addresses and can be used again.	SHOULD NOT	A	A1/A2			A1:BU/BA A2:MPS/MPA (Scenario Test)
21				The mobile node **MUST** use the Home Address destination option in Binding Updates and Mobile Prefix Solicitations when transport mode IPsec protection is used, so that the home address is visible when the IPsec policy checks are made.	MUST	A	A1/A2	X	HA_2_1_1,HA_2_1_5, HA_3_1_1,HA_3_1_11, HA_3_1_2,HA_3_1_4, HA_8_1_1,HA_8_1_2	A1:BU/BA A2:MPS/MPA
22				The home agent **MUST** use the Type 2 Routing header in Binding Acknowledgements and Mobile Prefix Advertisements sent to the mobile node when transport mode IPsec protection is used, again due to the need to have the home address visible when the policy checks are made.	MUST	A	A1/A2	X	HA_2_1_1,HA_2_1_5, HA_3_1_1,HA_3_1_11, HA_3_1_2,HA_3_1_4, HA_8_1_1,HA_8_1_2	A1:BU/BA A2:MPS/MPA
23	4.3	IPsec Protocol Processing Requirement		The home agent and mobile node **SHOULD** support Mobility Header message type as an IPsec selector.	SHOULD	A	A2	X	HA_2_1_1,HA_2_1_5	fine-grain selectors

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
24				The home agent and mobile node **SHOULD** support ICMPv6 message type as an IPsec selector.	SHOULD	A	A2	X	HA_8_1_1,HA_8_1_2	fine-grain selectors
25				The home agent **MUST** be able to distinguish between HoTi messages sent to itself (when it is acting as a Correspondent Node) and those sent to Correspondent Nodes (when it is acting as a home agent) based on the destination address of the packet.	MUST	A	A2			HoTI/HoT
26				When securing Binding Updates, Binding Acknowledgements, and Mobile Prefix Discovery messages, both the mobile node and the home agent **MUST** support the use of the Encapsulating Security Payload (ESP) [6] header in transport mode and **MUST** use a non-null payload authentication algorithm to provide data origin authentication, connectionless integrity, and optional anti-replay protection.	MUST	A	A1/A2	X	HA_2_1_1,HA_2_1_5, HA_3_1_1,HA_3_1_11, HA_3_1_2,HA_3_1_4, HA_8_1_1,HA_8_1_2	A1:BU/BA A2:MPS/MPA
27					MUST	A	A1/A2	X	HA_2_1_1,HA_2_1_5, HA_3_1_1,HA_3_1_11, HA_3_1_2,HA_3_1_4, HA_8_1_1,HA_8_1_2	A1:BU/BA A2:MPS/MPA
28				Tunnel mode IPsec ESP **MUST** be supported and **SHOULD** be used for the protection of packets belonging to the return routability procedure. A non-null encryption transform and a non-null authentication algorithm **MUST** be applied	MUST	A	A2	X	HA_6_3_2,HA_6_3_6, HA_6_3_4,HA_6_3_8, HA_6_3_9,HA_6_3_10	HoTI/HoT
29					SHOULD	A	A2	X	HA_6_3_2,HA_6_3_6, HA_6_3_4,HA_6_3_8, HA_6_3_9,HA_6_3_10	HoTI/HoT

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
30				**MUST** be applied.	MUST	A	A2	X	HA_6_3_2,HA_6_3_6, HA_6_3_4,HA_6_3_8, HA_6_3_9,HA_6_3_10	HoTI/HoT
31				In order to prevent this, Mobile IPv6 implementations **MUST** use the Alternate Care-of Address mobility option in Binding Updates sent by mobile nodes while away from home.The exception to this is when the mobile node returns home and sends a Binding Update to the home agent in order to de-register.	MUST	A	A1	X	HA_2_1_1,HA_2_1_5, HA_3_1_1,HA_3_1_11	
32				The exception to this is when the mobile node returns home and sends a Binding Update to the home agent in order to de-register.	(do)	A	A1	X	HA_3_1_2,HA_3_1_4, HA_8_1_1,HA_8_1_2	Real home link for HA
33				When IPsec is used to protect return routability signaling or payload packets, the mobile node **MUST** set the source address it uses for the outgoing tunnel packets to the current primary care- of address.	MUST	A	A2	X	HA_6_3_2,HA_6_3_6, HA_6_3_9,HA_6_3_10	RR

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
34				The home agent **MUST** set the new care-of address as the destination address of these packets, as if the outer header destination address in the security association had changed. Similarly, the home agent starts to expect the new source address in the tunnel packets received from the mobile node.	MUST	A	A2	X	HA_6_3_2,HA_6_3_6, HA_6_3_4,HA_6_3_8	RR
35				It should be noted that the use of such an API and the address changes **MUST** only be done based on the Binding Updates received by the home agent and protected by the use of IPsec.	MUST	A	A1	-		depend on implementation
36	4.4	Dynamic Keying Requirements		The mobile node **MUST** use its care-of address as source address in protocol exchanges, when using dynamic keying.	MUST	A	A2			dynamic keying
37				The mobile node and the home agent **MUST** create security associations based on the home address, so that the security associations survive change in care-of address. When using IKEv2 as the key exchange protocol, the home address should be carried as the initiator IP address in the TSi payload during the CREATE_CHILD_SA exchange [4].	MUST	A	A2			dynamic keying

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
38				If the mobile node has used IKEv2 to establish security associations with its home agent, it should follow the procedures discussed in Section 11.7.1 and 11.7.3 of the base specification [2] to determine whether the IKE endpoints can be moved or if the SAs, including the IKEv2 SA, have to be re-established.	(do)	B	B			IKEv2
39				If the home agent has used IKEv2 to establish security associations with the mobile node, it should follow the procedures discussed in Section 10.3.1 and 10.3.2 of the base specification [2] to determine whether the IKE endpoints can be moved or if the SAs, including the IKEv2 SA, have to be re-established.	(do)	B	B			IKEv2
40	5	Selector Granularity Considerations		The IPsec implementations on the mobile node and the home agent support fine grain selectors, including the Mobility Header message type. This is the case assumed in the IPsec SPD and SAD examples in this document.	(do)	A	A2			fine-grain selectors (generalization)

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
41				The IPsec implementations only support selectors at a protocol level. In such implementations, the IPsec implementation can only identify mobility header traffic and cannot identify the individual mobility header messages. In this case, the protection of Return Routability Messages uses a setup similar to the regular payload packets to the correspondent node with the protocol selector set to Mobility Header messages. All tunneled Mobility Header messages will be protected.	(do)	A	A1			Basic (generalization)

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
42				The third case is where the protocol selector is not available in the IPsec implementation. In this case all traffic sent by the mobile node reverse tunneled through the home agent is protected using ESP in tunnel mode. This case is also applicable when the mobile node, due to privacy considerations, tunnels all traffic to the home agent. This includes Mobile IPv6 signaling messages exchanged between the mobile node and the home agent and all traffic exchanged between the mobile node and the correspondent node. This case uses IPsec tunnel mode SA with the protocol selector set to 'any'.	(do)	B	B			out of scope in IPv6 Ready Logo program for MIPv6.
43				If there is just one IPsec SA providing protection for all traffic, then the SA **MUST** fulfill the requirements for protecting protection. If the third case is being used for privacy considerations, then there can also be separate tunnel mode SPD entries for protecting the Return Routability messages with a higher priority in the SPD so that the SPD entry with the higher priority gets applied first.	MUST	A	A2			out of scope in IPv6 Ready Logo program for MIPv6.

Functional classification and test priority for HA

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
44				The receipt of a Binding Update from the new care-of address updates the tunnel endpoint of the IPsec SA as described in Section 4.3. Since the Binding Update that updates the tunnel endpoint is received through the same tunnel interface that needs to be updated, special care should be taken on the home agent to ensure that the Binding Update is not dropped.	(do)	B	B			out of scope in IPv6 Ready Logo program for MIPv6.

5.2 Operations

5.2.3 MN

This section describes the operation in Mobile IPv6 and the functional classifications for MN on the basis of the classifications given in section 2.3.

Notes

- "RFC section" gives the corresponding section number in the Mobile IPv6 RFC referred to in section 2.2.
- "RFC section title" gives the section heading in the Mobile IPv6 RFC referred to in section 2.2.
- In the column "Test Priority," "A1" indicates Rank A and Priority 1, "A2" indicates Rank-A and Priority 2, and "B" indicates Rank-B and Priority 2.
- In the column "Test PROFILE", "x" indicates that the function is supported.
- "Reason for Classification" gives the reason for the function's classification. A reason is given when Test Priority is "A2," "B," or "C."
- IKEv1 and IKEv2 are out of scope of requirements for "IPv6 Ready Logo Phase2 for MIPv6". However, the IKEv1 specification for MIPv6 is released as an experimental use.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	6.1	Mobility Header		Mobility Header messages **MUST NOT** be sent with a type 2 routing header, except as described in Section 9.5.4 for Binding Acknowledgement. Mobility Header messages also **MUST NOT** be used with a Home Address destination option, except as described in Section 11.7.1 and Section 11.7.2 for Binding Update. Binding Update List or Binding Cache information (when present) for the destination **MUST NOT** be used in sending Mobility Header messages. That is, Mobility Header messages bypass both the Binding Cache check described in Section 9.3.2 and the Binding Update List check described in Section 11.3.1 which are normally performed for all packets. This applies even to messages sent to or from a correspondent node which is itself a mobile node.	MUST NOT	A	A1	X	MN-2-1-1-2-002 MN-2-1-1-2-003 MN-4-1-1-3-001	Return Routability Mobile to Mobile
2					MUST NOT	A	A1	X	MN-2-1-1-3-001 MN-2-1-2-3-001 MN-3-1-1-3-001 MN-3-1-2-3-001 MN-3-1-3-3-001 MN-4-1-1-3-001 MN-4-1-2-3-001	Return Routability Mobile to Mobile
3					MUST NOT	A	A1	X	MN-2-1-1-3-001 MN-2-1-2-3-001	Return Routability Mobile to Mobile

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
1	11.1	Conceptual Data Structures	Information which Mobile Node holds	Each mobile node **MUST** maintain a Binding Update List.	MUST	A	->	A1	A2	HA : X CN : X	HA : MN-2-1-1-1-001 CN : MN-3-1-1-2-001	CN:Correspondent Registration
2			Binding Update List	The IP address of the node to which a Binding Update was sent.	(do)	A	->	A1	A2	HA : X CN : X	HA : MN-2-1-1-1-001 CN : MN-3-1-1-2-001	HA:Home Registration CN:Correspondent Registration
3				The home address for which that Binding Update was sent.	(do)	A	->	A1	A2	HA : X CN : X	HA : MN-2-1-1-1-001 CN : MN-3-1-1-2-001	HA:Home Registration CN:Correspondent Registration
4				The care-of address sent in that Binding Update. This value is necessary for the mobile node to determine if it has sent a Binding Update while giving its new care-of address to this destination after changing its care-of address.	(do)	A	->	A1	A2	HA : X CN : X	HA : MN-2-1-1-1-001 CN : MN-3-1-1-2-001	HA:Home Registration CN:Correspondent Registration
5				The initial value of the Lifetime field sent in that Binding Update.	(do)	A	->	A1	A2	HA : X CN : X	HA : MN-2-1-1-1-001 CN : MN-3-1-1-2-001	HA:Home Registration CN:Correspondent Registration
6				The remaining lifetime of that binding. This lifetime is initialized from the Lifetime value sent in the Binding Update and is decremented until it reaches zero, at which time this entry **MUST** be deleted from the Binding	MUST	A	->	A1	A2	HA:X	HA:MN-2-1-2-1-004	CN:Correspondent Registration

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
				~~MUST~~ be deleted from the Binding Update List.						CN:X	MN-4-1-1-2-005	
7				The maximum value of the Sequence Number field sent in previous Binding Updates to this destination. The Sequence Number field is 16 bits long and all comparisons between Sequence Number values **MUST** be performed modulo 2**16 (see Section 9.5.1).	MUST	A	->	A1	A2	HA : X CN : X	HA : MN-2-1-2-1-001 CN : MN-3-1-2-2-004 MN-2-1-2-1-004	CN:Correspondent Registration
8				The time at which a Binding Update was last sent to this destination, as needed to implement the rate limiting restriction for sending Binding Updates.	(do)	A	->	A1	A2	HA : X CN : X	HA: MN-2-1-1-1-013 CN: MN-3-1-1-2-006 MN-2-1-2-1-006	HA:Home Registration CN:Correspondent Registration
9				The state of any retransmissions needed for this Binding Update. This state includes the time remaining until the next retransmission attempt for the Binding Update and the current state of the exponential back-off mechanism for retransmissions.	(do)	A	->	A1	A2	HA : X CN : X	MN-2-1-1-1-013 CN: MN-3-1-1-2-006 MN-2-1-2-1-006 MN-2-1-1-2-010	HA:Home Registration CN:Correspondent Registration

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
10				A flag specifying whether or not future Binding Updates should be sent to this destination. The mobile node sets this flag in the Binding Update List entry when it receives an ICMP Parameter Problem, Code 1, error message in response to a return routability message or Binding Update sent to that destination, as described in Section 11.3.5.	(do)	A	->	A1	A2	HA : X CN : X	HA: MN-6-2-2-1-001 CN: MN-4-2-2-2-002 MN-4-2-2-2-005 MN-4-2-2-2-007	HA:Home Registration CN:Correspondent Registration
11			Binding Update List for CN	The time at which a Home Test Init or Care-of Test Init message was last sent to this destination, as needed to implement the rate limiting restriction for the return routability procedure.	(do)	A	A2			X	MN-2-1-1-2-010 MN-2-1-2-2-010	Return Routability
12				The state of any retransmissions needed for this return routability procedure. This state includes the time remaining until the next retransmission attempt and the current state of the exponential back-off mechanism for retransmissions.	(do)	A	A2			X	MN-2-1-1-2-010 MN-2-1-2-2-010	Return Routability
13				Cookie values used in the Home Test Init and Care-of Test Init messages.	(do)	A	A2			X	MN-3-1-1-2-001	Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
14				Home and care-of keygen tokens received from the correspondent node.	(do)	A	A2			X	MN-3-1-1-2-001	Return Routability
15				Home and care-of nonce indices received from the correspondent node.	(do)	A	A2			X	MN-3-1-1-2-001	Return Routability
16				The time at which each of the tokens and nonces were received from the correspondent node, as needed to implement reuse while moving.	(do)	A	A2					Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
1	11.2	Processing Mobility Headers	Processing Mobility Headers	All IPv6 mobile nodes **MUST** observe the rules described in Section 9.2 when processing Mobility Headers.	MUST	A	A1			X	MN-6-2-1-1-004 MN-4-2-1-2-007 MN-4-2-1-2-013 MN-6-2-1-1-003 MN-4-2-1-2-010 MN-4-2-1-2-015 MN-6-2-1-1-001 MN-4-2-1-2-005 MN-4-2-1-2-011 MN-6-2-1-1-002 MN-4-2-1-2-006 MN-4-2-1-2-012	
2	9.2	Processing Mobility Headers	Mobility Header processing MUST observe the following rules:	The checksum must be verified as per Section 6.1. Otherwise, the node **MUST** silently discard the message.	MUST	A	A1			X	MN-6-2-1-1-004 MN-4-2-1-2-007 MN-4-2-1-2-013	
3				The MH Type field **MUST** have a known value (Section 6.1.1). Otherwise, the node **MUST** discard the message and issue a Binding Error message as described in Section 9.3.3, with Status field set to 2 (unrecognized MH Type value).	MUST	A	A1			X	MN-2-2-1-1-001 MN-2-1-3-2-001 MN-2-1-4-2-001 MN-3-2-1-2-001	
4					MUST	A	A1			X	MN-6-2-1-1-003 MN-4-2-1-2-010 MN-4-2-1-2-015	
5				The Payload Proto field **MUST** be IPPROTO_NONE (59 decimal). Otherwise, the node **MUST** discard the message and **SHOULD** send ICMP	MUST	A	A1			X	MN-2-2-1-1-001 MN-2-1-3-2-001 MN-2-1-4-2-001 MN-3-2-1-2-001	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
6				Parameter Problem, Code 0, directly to the Source Address of the packet as specified in RFC 2463 [14]. Thus no Binding Cache information is used in sending the ICMP message. The Pointer field in the ICMP message **SHOULD** point at the Payload Proto field.	MUST	A	A1			X	MN-6-2-1-1-001 MN-4-2-1-2-005 MN-4-2-1-2-011	
7					SHOULD	A	A1			X	MN-6-2-1-1-001 MN-4-2-1-2-005	
8					SHOULD	A	A1			X	MN-6-2-1-1-001 MN-4-2-1-2-005	
9				o The Header Len field in the Mobility Header **MUST NOT** be less than the length specified for this particular type of message in Section 6.1.	MUST NOT	A	A1			X	MN-2-2-1-1-001 MN-2-1-3-2-001 MN-2-1-4-2-001 MN-3-2-1-2-001	
10				Otherwise, the node **MUST** discard the message and **SHOULD** send ICMP Parameter Problem, Code 0, directly to the Source Address of the packet as specified in RFC 2463 [14]. (The Binding Cache information is again not used.) The Pointer field in the ICMP message **SHOULD** point at the Header Len field.	MUST	A	A1			X	MN-6-2-1-1-002 MN-4-2-1-2-006 MN-4-2-1-2-012	
11					SHOULD	A	A1			X	MN-6-2-1-1-002 MN-4-2-1-2-006 MN-4-2-1-2-012	
12					SHOULD	A	A1			X	MN-6-2-1-1-002 MN-4-2-1-2-006 MN-4-2-1-2-012	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
1	11.3.1	Sending Packets While Away from Home	While a mobile node is away from home, it continues to use its home address, as well as also using one or more care-of addresses. When sending a packet while away from home, a mobile node MAY choose among these in selecting the address that it will use as the source of the packet, as follows:	Protocols layered over IP will generally treat the mobile node's home address as its IP address for most packets. For packets sent that are part of transport-level connections established while the mobile node was at home, the mobile node **MUST** use its home address.	MUST	A	A2					Function that uses upper or lower layer information
2				Likewise, for packets sent that are part of transport-level connections that the mobile node may still be using after moving to a new location, the mobile node **SHOULD** use its home address in this way. If a binding exists, the mobile node **SHOULD** send the packets directly to the	SHOULD	A	A2					Function that uses upper or lower layer information
3					SHOULD	A	A2			X	MN-4-1-1-2-002	Route Optimization

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
4				correspondent node. Otherwise, if a binding does not exist, the mobile node **MUST** use reverse tunneling	MUST	A	A1			X	MN-4-1-1-2-001 MN-4-1-1-2-005	
5				The mobile node **MAY** choose to directly use one of its care-of addresses as the source of the packet, thus not requiring the use of a Home Address option in the packet. This is particularly useful for short-term communication that may easily be retried if it fails. Using the mobile node's care-of address as the source for such queries will generally have a lower overhead than using the mobile node's home address, since no extra options need be used in either the query or its reply, Such packets can be routed normally, directly between their source and destination without relying on Mobile IPv6. If application running on the mobile node has no particular knowledge that the communication being sent fits within this general type of communication, however, the mobile node should not use its care-of address as the source of the packet in this way.	MAY	A	A2					Function that uses upper or lower layer information

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
6				o While not at its home link, the mobile node **MUST NOT** use the home address destination option when communicating with link-local or site-local peers, if the scope of the home address is larger than the scope of the peer's address.	MUST NOT	A	A1/ A2			X	MN-4-1-2-2-006	Link-local : A1 Site-local : A2
7				Similarly, the mobile node **MUST NOT** use the Home Address destination option for IPv6 Neighbor Discovery [12] packets.	MUST NOT	A	A1			X	MN-4-1-1-2-006	
8			Message transmission in home link	For packets sent by a mobile node while it is at home, no special Mobile IPv6 processing is required. Likewise, if the mobile node uses any address other than one of its home addresses as the source of a packet sent while away from home, no special Mobile IPv6 processing is required. In either case, the packet is simply addressed and transmitted in the same way as any normal IPv6 packet.	(do)	A	A2			X	MN-4-1-1-2-004 MN-4-1-1-2-006 MN-4-1-2-2-007 MN-4-1-2-2-006	A2:Returning Home

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
9			Route Optimization	This manner of delivering packets does not require going through the home network, and typically will enable faster and more reliable transmission. The mobile node needs to ensure that a Binding Cache entry exists for its home address so that the correspondent node can process the packet (Section 9.3.1 specifies the rules for Home Address Destination Option Processing at a correspondent node). The mobile node **SHOULD** examine its Binding Update List for an entry which fulfills the following conditions:	SHOULD	A	A2			X	MN-4-1-1-2-002 MN-2-1-1-2-006 MN-4-1-1-3-001	Route Optimization

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
10				* The Source Address field of the packet being sent is equal to the home address in the entry. * The Destination Address field of the packet being sent is equal to the address of the correspondent node in the entry. * One of the current care-of addresses of the mobile node appears as the care-of address in the entry. * The entry indicates that a binding has been successfully created. * The remaining lifetime of the binding is greater than zero. When these conditions are met, the mobile node knows that the correspondent node has a suitable Binding Cache entry.	-	A	A2			X	MN-4-1-1-2-002 MN-4-1-1-3-001	Route Optimization
11				A mobile node **SHOULD** arrange to supply the home address in a Home Address option, and **MUST** set the IPv6 header's Source Address field to the care-of address which the	SHOULD	A	A2			X	MN-4-1-1-3-001	Route Optimization

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
12				to the care-of address which the mobile node has registered to be used with this correspondent node.	MUST	A	A2			X	MN-4-1-1-3-001	Route Optimization
13				Construct the packet using the mobile node's home address as the packet's Source Address, in the same way as if the mobile node were at home. This includes the calculation of upper layer checksums using the home address as the value of the source.	(do)	A	A2			X	MN-4-1-1-2-002	Route Optimization
14				Insert a Home Address option into the packet with the Home Address field copied from the original value of the SourceAddress field in the packet.	(do)	A	A2			X	MN-4-1-1-2-002	Route Optimization
15				Change the Source Address field in the packet's IPv6 headerto one of the mobile node's care-of addresses. This will typically be the mobile node's current primary care-of address, but **MUST** be an address assigned to the interface on the link being used.	MUST	A	A2			X	MN-4-1-1-2-002	Route Optimization
16			reverse tunneling	The packet is sent to the home agent using IPv6 encapsulation [15].	(do)	A	A1			X	MN-2-1-1-2-001 MN-4-1-1-2-001	IPv6 encapsulation and decapsulation

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
17				The Source Address in the tunnel packet is the primary care-of address as registered with the home agent.	(do)	A	A1			X	MN-2-1-1-2-001 MN-4-1-1-2-001	IPv6 encapsulation and decapsulation
18				The Destination Address in the tunnel packet is the home agent's address.	(do)	A	A1			X	MN-2-1-1-2-001 MN-4-1-1-2-001	IPv6 encapsulation and decapsulation
19	11.3.2	Interaction with Outbound IPsec Processing		Any specific implementation **MAY** use algorithms and data structures other than those suggested here, but its processing **MUST** be consistent with the effect of the operation described here and with the relevant IPsec specifications.	MAY	C	-					concrete operation is not specified
20					MUST	A	A2					In the case that No.17 function is implemented, this function is mandotory.
21				o The packet is created by higher layer protocols and applications (e.g., by TCP) as if the mobile node were at home and Mobile IPv6 were not being used.	(do)	C	-					Function that uses upper or lower layer information

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
22				Determine the outgoing interface for the packet. (Note that the selection between reverse tunneling and route optimization may imply different interfaces, particularly if tunnels are considered interfaces as well.)	(do)	C	-					This function is implementaion-dependent. It does not effect on interoperability.
23				o As part of outbound packet processing in IP, the packet is compared against the IPsec security policy database to determine what processing is required for the packet [4].	(do)	B	B			X	MN-2-1-1-1-001 MN-2-1-1-2-001	BU/HoTI
24				o If IPsec processing is required, the packet is either mapped to an existing Security Association (or SA bundle), or a new SA (or SA bundle) is created for the packet, according to the procedures defined for IPsec.	(do)	B	B			X	MN-2-1-1-1-001 MN-2-1-1-2-001	BU/HoTI
25				o Since the mobile node is away from home, the mobile is either using reverse tunneling or route optimization to reach the correspondent node.	(do)	A	A1/ A2			X	Reverse tunnleing: MN-4-1-1-2-001 Route optimization: MN-4-1-1-2-002	Reverse tunnel : A1 Route Optimization :A2

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
26			If route optimization is in use	If route optimization is in use, the mobile node inserts a Home Address destination option into the packet, replacing the Source Address in the packet's IP header with the care-of address used with this correspondent node, as described in Section 11.3.1. The Destination Options header in which the Home Address destination option is inserted **MUST** appear in the packet after the routing header, if present, and before the IPsec (AH [5] or ESP [6]) header, so that the Home Address destination option is processed by the destination node before the IPsec header is processed.	MUST	A	A2			X	MN-4-1-1-2-007	IPsec between MN and CN
27			RFC 2402 treatment of destination options is extended as follows. The AH authentication data **MUST** be calculated as if the following were true:	* the IPv6 source address in the IPv6 header contains the mobile node's home address,	MUST	A	A2			X	MN-4-1-1-2-007	IPsec between MN and CN
28				* the Home Address field of the Home Address destination option (Section 6.3) contains the new care-of address.	MUST	A	A2			X	MN-4-1-1-2-007	IPsec between MN and CN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
29				o This allows, but does not require, the receiver of the packet containing a Home Address destination option to exchange the two fields of the incoming packet to reach the above situation, simplifying processing for all subsequent packet headers. However, such an exchange is not required, as long as the result of the authentication calculation remains the same.	(do)	B	B					IPsec between MN and CN
30			For the default case of using IKE [9] as the automated key management protocol, such problems can be avoided by the following requirements when communicating with its home agent:	o When the mobile node is away from home, it **MUST** use its care-of address as the Source Address of all packets it sends as part of the key management protocol (without use of Mobile IPv6 for these packets, as suggested in Section 11.3.1).	MUST	A	A2			X	MN-1-2-1-1-001 MN-1-2-2-1-001 MN-1-2-3-1-001	IKE
31				o In addition, for all security associations bound to the mobile node's home address established by IKE, the mobile node **MUST** include an ISAKMP Identification Payload [8] in the IKE phase 2 exchange, giving the mobile node's home address as the initiator of the Security Association [7].	MUST	A	A2			X	MN-1-2-1-1-001 MN-1-2-1-1-002 MN-1-2-1-1-004 MN-1-2-2-1-001 MN-1-2-2-1-002 MN-1-2-3-1-001 MN-1-2-3-1-002	IKE

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
32				The Key Management Mobility Capability (K) bit in Binding Updates and Acknowledgements can be used to avoid the need to rerun IKE upon movements.	(do)	A	A2			X	MN-1-2-1-1-014 MN-1-2-2-1-006 MN-1-2-2-1-014 MN-1-2-3-1-006 MN-1-2-3-1-014	IKE
33	11.3.3	Receiving Packets While Away from Home	Effectiveness check of Tunnel packet transmitted from Home Agent(IPsec)	Packets sent by a correspondent node that has a Binding Cache entry for the mobile node that contains the mobile node's current care-of address, will be sent by the correspondent node using a type 2 routing header. The packet will be addressed to the mobile node's care-of address, with the final hop in the routing header directing the packet to the mobile node's home address; the processing of this last hop of the routing header is entirely internal to the mobile node, since the care-of address and home address are both addresses within the mobile node.	(do)	A	A2			X	MN-3-4-1-2-001 MN-3-4-1-2-006 MN-4-1-1-3-001	Route Optimization

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
34				For packets received by the first method, the mobile node **MUST** check that the IPv6 source address of the tunneled packet is the IP address of its home agent.	MUST	A	A1			X	MN-4-1-1-2-001	
35				The mobile node **MUST** also process the received packet in the manner defined for IPv6 encapsulation [15], which will result in the encapsulated (inner) packet being processed normally by upper-layer protocols within the mobile node as if it had been addressed (only) to the mobile node's home address.	MUST	A	A1			X	MN-4-1-1-2-001	
36			Effectiveness check of Direct Delivery packet	A node receiving a packet addressed to itself (i.e., one of the node's addresses is in the IPv6 destination field) follows the next header chain of headers and processes them. When it encounters a type 2 routing header during this processing, it performs the following checks. If any of these checks fail, the node **MUST** silently discard the packet.	MUST	A	A2			X	MN-4-1-2-2-003 MN-4-1-2-2-004 MN-4-1-2-2-005 MN-4-1-2-2-011	Route Optimization
37				The length field in the routing header is exactly 2.	(do)	A	A2			X	MN-4-1-2-2-003 MN-3-4-1-2-001 MN-3-4-1-2-006 MN-4-1-2-2-004	Route Optimization

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
38				The segments left field in the routing header is either 0 or 1 on the wire. (But implementations may process the routing header so that the value may become 0 after the routing header has been processed, but before the rest of the packet is processed.)	(do)	A	A2			X	MN-4-1-2-2-003	Route Optimization
39				The Home Address field in the routing header is one of the node's home addresses, if the segments left field was 1. Thus, in particular the address field is required to be a unicast routable address.	(do)	A	A2			X	MN-4-1-2-2-011 MN-4-1-2-2-003 MN-2-1-1-2-028 MN-3-4-1-2-001 MN-3-4-1-2-006	Route Optimization
40	11.3.4	Routing Multicast Packets	Joining to multicast group	One method, in which a mobile node **MAY** join the group, is via a (local) multicast router on the foreign link being visited.	MAY	B	B					Multicast
41				The mobile node **MUST** use its care-of address	MUST	A2	A2					In the case that No.37 function is implemented, this function is mandotory.
42				The mobile node **MUST NOT** use the Home Address destination option when sending MLD packets [17]	MUST NOT	A2	A2					In the case that No.37 function is implemented, this function is mandotory.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
43				Alternatively, a mobile node **MAY** join multicast groups via a bi-directional tunnel to its home agent. The mobile node tunnels its multicast group membership control packets (such as those defined in [17] or in [37]) to its home agent, and the home agent forwards multicast packets down the tunnel to the mobile node.	MAY	B	B					Multicast
44				A mobile node **MUST NOT** tunnel multicast group membership control packets until (1) the mobile node has a binding in place at the home agent, and (2) the latter sends at least one multicast group membership control packet via the tunnel. Once this condition is true, the mobile node **SHOULD** assume it does not change as long as the binding does not expire.	MUST NOT/SHOULD	A	A2					In the case that No.40 functions is implemented, this function is mandotory.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
45			Multicast packet transmission by Direct Delivery	The application is aware of the care-of address and uses it as a source address for multicast traffic, just like it would use a stationary address. The mobile node **MUST NOT** use Home Address destination option in such traffic.	MUST NOT	A	A2					In the case that No.37 function is implemented, this function is mandotory.
46			Multicast packet transmission by way of Home Agent(bidirectional tunneling)	Because multicast routing in general depends upon the Source Address used in the IPv6 header of the multicast packet, a mobile node that tunnels a multicast packet to its home agent **MUST** use its home address as the IPv6 source adddress of the inner multicast packet.	MUST	A	A2					In the case that No.40 functions is implemented, this function is mandotory.
47	11.3.5	Receiving ICMP Error Messages	Receiving ICMP Parameter Problem, Code1	Any node that does not recognize the Mobility header will return an ICMP Parameter Problem, Code 1, message to the sender of the packet. If the mobile node receives such an ICMP error message in response to a return routability procedure or Binding Update, it **SHOULD** record in its Binding Update List that future Binding Updates **SHOULD NOT** be sent to this destination. Such Binding	SHOULD	A	->	A1	A2	X	MN-6-2-2-1-001 MN-4-2-2-2-002 MN-4-2-2-2-005 MN-4-2-2-2-007	This function is implementaion-dependent. It does not effect on interoperability.
48					SHOULD NOT	A	->	A1	A2	X	MN-6-2-2-1-001 MN-4-2-2-2-002 MN-4-2-2-2-005 MN-4-2-2-2-007	This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
49				Update List entries **SHOULD** be removed after a period of time in order to allow for retrying route optimization.	SHOULD	A	->	A1	A2			This function is implementaion-dependent. It does not effect on interoperability.
50				New Binding Update List entries **MUST NOT** be created as a result of receiving ICMP error messages.	MUST NOT	A	A2			X	MN-4-2-2-2-012 MN-4-2-2-2-010	Route Optimization
51			Receiving ICMP Parameter Problem, Code2	Correspondent nodes who have participated in the return routability procedure **MUST** implement the ability to correctly process received packets containing a Home Address destination option. Therefore, correctly implemented correspondent nodes should always be able to recognize Home Address options.	MUST	A	A2					This function is tested as CN test.
52				If a mobile node receives an ICMP Parameter Problem, Code 2, message from some node indicating that it does not support the Home Address option, the mobile node **SHOULD** log the error and then discard the ICMP message.	SHOULD	A	->	A1	A2	X	MN-4-2-2-2-011	CN : Route Optimization

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
53	11.3.6	Receiving Binding Error Messages		When a mobile node receives a packet containing a Binding Error message, it should first check if the mobile node has a Binding Update List entry for the source of the Binding Error message. If the mobile node does not have such an entry, it **MUST** ignore the message. This is necessary to prevent a waste of resources on, e.g., return routability procedure due to spoofed Binding Error messages.	MUST	A	->	A1	A2	X	MN-3-3-1-2-007 MN-3-3-1-2-004 MN-3-3-1-2-001 MN-3-3-1-2-002 MN-4-1-2-3-001	CN : Route Optimization
54			if the message Status field was 1 (unknown binding for Home Address destination option), the mobile node should perform one of the following two actions:	o If the mobile node has recent upper layer progress information, which indicates that communications with the correspondent node are progressing, it **MAY** ignore the message. This can be done in order to limit the damage that spoofed Binding Error messages can cause to ongoing communications.	MAY	C	-					Function that uses upper or lower layer information

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	Supported	Test No.	
55				o If the mobile node has no upper layer progress information, it **MUST** remove the entry and route further communications through the home agent. It **MAY** also optionally start a return routability procedure (see Section 5.2).	MUST	A	->	A1	A2	X	MN-3-3-1-2-004	CN : Route Optimization
56					MAY	B	B			X	MN-3-3-1-2-004	Return Routability
57			If the message Status field was 2 (unrecognized MH Type value), the mobile node should perform one of the following two actions:	o If the mobile node is not expecting an acknowledgement or response from the correspondent node, the mobile node **SHOULD** ignore this message.	SHOULD	A	->	A1	A2	X	MN-3-3-1-2-002	CN : Route Optimization
58				o Otherwise, the mobile node **SHOULD** cease the use of any extensions to this specification. If no extensions had been used, the mobile node should cease the attempt to use route optimization.	SHOULD	A	->	A1	A2	X	MN-3-3-1-2-001 MN-3-3-1-2-009 MN-3-3-1-2-011	CN : Route Optimization

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	11.4.1.	Dynamic Home Agent Address Discovery	For example, some nodes on its home link may have been reconfigured while the mobile node has been away from home, such that the router that was operating as the mobile node's home agent has been replaced by a different router serving this	In this case, the mobile node **MAY** attempt to discover the address of a suitable home agent on its home link. To do so, the mobile node sends an ICMP Home Agent Address Discovery Request message to the Mobile IPv6 Home-Agents anycast address [16] for its home subnet prefix.	MAY	B	B	X	MN-5-1-1-1-001 MN-5-1-1-1-005 MN-5-1-1-1-006	DHAAD
2				The mobile node, upon receiving this Home Agent Address Discovery Reply message, **MAY** then send its home registration Binding Update to any of the unicast IP addresses listed in the Home Agent Addresses field in the Reply.	MAY	B	B	X	MN-5-1-1-1-005 MN-5-1-1-1-006 MN-5-1-2-1-002 MN-5-1-2-1-016 MN-5-1-2-1-021 MN-5-1-2-1-026	DHAAD

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
3				For example, the mobile node **MAY** attempt its home registration to each of these addresses, in turn, until its registration is accepted. The mobile node sends a Binding Update to an address and waits for the matching Binding Acknowledgement, moving on to the next address if there is no response. The mobile node **MUST**, however, wait at least InitialBindackTimeoutFirstReg seconds (see Section 13) before sending a Binding Update to the next home agent.	MAY	B	B	X	MN-5-1-2-1-028 MN-5-1-2-1-029	DHAAD
4					MUST	A	A2	X	MN-5-1-2-1-028 MN-5-1-2-1-029	In the case that No.3 function is implemented, this function is mandotory.
5				In trying each of the returned home agent addresses, the mobile node **SHOULD** try each of them in the order they appear in the Home Agent Addresses field in the received Home Agent Address Discovery Reply message.	SHOULD	A	A2	X	MN-5-1-2-1-026 MN-5-1-2-1-027 MN-5-1-2-1-028 MN-5-1-2-1-029	In the case that No.3 function is implemented, this function is mandotory.
6			Try to other Home Agent when Binding Update procedure fails	If the mobile node has a current registration with some home agent (the Lifetime for that registration has not yet expired), then the mobile node **MUST** attempt any new registration first with that home agent.	MUST	A	A1	X	MN-2-1-2-1-004	

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
7				If that registration attempt fails (e.g., timed out or rejected), the mobile node **SHOULD** then reattempt this registration with another home agent. If the mobile node knows of no other suitable home agent, then it **MAY** attempt the dynamic home agent address discovery mechanism described above.	SHOULD	A	A2	X	MN-5-1-2-1-028	DHAAD
8					MAY	B	B	X	MN-5-1-2-1-028	DHAAD
9			Retransmit a Home Agent Address Discovery Request message	If, after a mobile node transmits a Home Agent Address Discovery Request message to the Home Agents Anycast address, it does not receive a corresponding Home Agent Address Discovery Reply message within INITIAL_DHAAD_TIMEOUT (see Section 12) seconds, the mobile node **MAY** retransmit the same Request message to the same anycast address. This retransmission **MAY** be repeated up to a maximum of DHAAD_RETRIES (see Section 12) attempts. Each retransmission **MUST** be delayed by twice the time interval of the previous retransmission.	MAY	B	B	X	MN-5-1-1-1-006	DHAAD
10					MAY	B	B	X	MN-5-1-1-1-006	DHAAD
11					MUST	A	A2	X	MN-5-1-1-1-006	In the case that No.9 function is implemented, this function is mandotory.

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
12	11.4.2.	Sending Mobile Prefix Solicitations	sends a Mobile Prefix Solicitation	When a mobile node has a home address that is about to become invalid, it **SHOULD** send a Mobile Prefix Solicitation to its home agent in an attempt to acquire fresh routing prefix information. The new information also enables the mobile node to participate in renumbering operations affecting the home network, as described in Section 10.6.	SHOULD	A	A2	X	MN-4-1-1-1-001	MPS
13				The mobile node **MUST** use the Home Address destination option to carry its home address.	MUST	A	A2	X	MN-4-1-1-1-001	MPS
14				The mobile node **MUS**T support and **SHOULD** use IPsec to protect the solicitation.	MUST	A	A2	X	MN-4-1-1-1-001	MPS
15					SHOULD	A	A2	X	MN-4-1-1-1-001	MPS
16				The mobile node **MUST** set the Identifier field in the ICMP header to a random value.	MUST	A	A2	X	MN-4-1-1-1-001	MPS
17				As described in Section 11.7.2, Binding Updates sent by the mobile node to other nodes **MUST** use a lifetime no greater than the remaining lifetime of its home registration of its primary care-of address.	MUST	A	A2	X	MN-2-1-2-1-005 MN-3-1-2-2-001 MN-3-1-1-2-001 MN-3-1-2-2-004	MPS

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
18				The mobile node **SHOULD** further limit the lifetimes that it sends on any Binding Updates to be within the remaining valid lifetime (see Section 10.6.2) for the prefix in its home address.	SHOULD	A	A2	X	MN-2-1-2-1-005 MN-3-1-2-2-001 MN-3-1-1-2-001 MN-4-2-1-1-004	MPS
19			Retransmit a Mobile Prefix Solicitation	When the lifetime for a changed prefix decreases, and the change would cause cached bindings at correspondent nodes in the Binding Update List to be stored past the newly shortened lifetime, the mobile node **MUST** issue a Binding Update to all such correspondent nodes.	MUST	A	A2	X	MN-3-1-2-2-001 MN-2-1-1-2-017 MN-2-1-2-2-017 MN-3-1-2-2-004	MPS
20	11.4.3.	Receiving Mobile Prefix Advertisements	Adjustment at Binding Lifetime for Corespondent Node	The Source Address of the IP packet carrying the Mobile Prefix Advertisement is the same as the home agent address to which the mobile node last sent an accepted home registration Binding Update to register its primary care-of address. Otherwise, if no such registrations	SHOULD	A	A2	X	MN-4-2-1-1-001 MN-4-2-1-1-005 MN-4-2-1-1-004	MPA

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
21				have been made, it **SHOULD** be the mobile node's stored home agent address, if one exists. Otherwise, if the mobile node has not yet discovered its home agent's address, it **MUST NOT** accept Mobile Prefix Advertisements.	MUST NOT	A	A2	X	MN-4-2-1-1-012	MPA
22				The packet **MUST** have a type 2 routing header and **SHOULD** be protected by an IPsec header as described in Section 5.4 and Section 6.8.	MUST	A	A2	X	MN-4-2-1-1-001 MN-4-2-1-1-013 MN-4-2-1-1-015 MN-4-2-1-1-004	MPA
23					SHOULD	A	A2	X	MN-4-2-1-1-001 MN-4-2-1-1-015	MPA
24				If the ICMP Identifier value matches the ICMP Identifier value of the most recently sent Mobile Prefix Solicitation and no other advertisement has yet been received for this value, then the advertisement is considered to be solicited and will be processed further.	(do)	A	A2	X	MN-4-2-1-1-001 MN-4-2-1-1-015 MN-4-2-1-1-004	MPA
25				Otherwise, the advertisement is unsolicited, and **MUST** be discarded. In this case the mobile node **SHOULD** send a Mobile Prefix Solicitation.	MUST/SHOULD	A	A2	X	MN-4-1-1-002 MN-4-2-1-1-014	MPA

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
26				Any received Mobile Prefix Advertisement not meeting these tests **MUST** be silently discarded.	MUST	A	A2	X	MN-4-2-1-1-013 MN-4-2-1-1-012 MN-4-2-1-1-004	MPA
27				For an accepted Mobile Prefix Advertisement, the mobile node **MUST** process Managed Address Configuration (M), Other Stateful Configuration (O), and the Prefix Information Options as if they arrived in a Router Advertisement [12] on the mobile node's home link.(This specification does not, however, describe how to acquire home addresses through stateful protocols.) Such processing may result in the mobile node configuring a new home address, although due to separation between preferred lifetime and valid lifetime, such changes should not affect most communications by the mobile node, in the same way as for nodes that are at home.	MUST	A	A2			stateful address autoconfiguration

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	11.5.1.	Movement Detection	The opportunity of move detection	Generic movement detection uses Neighbor Unreachability Detection to detect when the default router is no longer bi-directionally reachable, in which case the mobile node must discover a new default router (usually on a new link). However, this detection only occurs when the mobile node has packets to send, and in the absence of frequent Router Advertisements or indications from the link-layer, the mobile node might become unaware of an L3 handover that occurred. Therefore, the mobile node should supplement this method with other information whenever it is available to the mobile node (e.g., from lower protocol layers).	(do)	C	-			Function that uses upper or lower layer information

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
2				When the mobile node detects an L3 handover, it performs Duplicate Address Detection [13] on its link-local address, selects a new default router as a consequence of Router Discovery, and then performs Prefix Discovery with that new router to form new care-of address(es) as described in Section 11.5.2. It then registers its new primary care-of address with its home agent as described in Section 11.7.1.	(do)	A	A1	X	MN-2-1-2-1-001	Movement Detection
3				After updating its home registration, the mobile node then updates associated mobility bindings in correspondent nodes that it is performing route optimization with as specified in Section 11.7.2.	(do)	A	A2	X	MN-3-1-2-2-004	Route Optimization

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
4				Due to the temporary packet flow disruption and signaling overhead involved in updating mobility bindings, the mobile node should avoid performing an L3 handover until it is strictly necessary. Specifically, when the mobile node receives a Router Advertisement from a new router that contains a different set of on-link prefixes, if the mobile node detects that the currently selected default router on the old link is still bi-directionally reachable, it should generally continue to use the old router on the old link rather than switch away from it to use a new default router.	(do)	A	A1	X	MN-3-3-1-1-002	Movement detection

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
5				Mobile nodes can use the information in received Router Advertisements to detect L3 handovers. In doing so the mobile node needs to consider the following issues: - There might be multiple routers on the same link, thus hearing a new router does not necessarily constitute an L3 handover.	(do)	A	A1	X	MN-3-3-1-1-002	Movement Detection
6				When there are multiple routers on the same link they might advertise different prefixes. Thus even hearing a new router with a new prefix might not be a reliable indication of an L3 handover.	(do)	A	A1	X	MN-3-3-1-1-002	Movement detection

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
7				The link-local addresses of routers are not globally unique, hence after completing an L3 handover the mobile node might continue to receive Router Advertisements with the same link-local source address. This might be common if routers use the same link-local address on multiple interfaces. This issue can be avoided when routers use the Router Address (R) bit, since that provides a global address of the router.	(do)	A	A1	X	MN-3-3-1-1-005 MN-3-3-1-1-003	Movement Detection

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
8				In addition, the mobile node should consider the following events as indications that an L3 handover may have occurred. Upon receiving such indications, the mobile node needs to perform Router Discovery to discover routers and prefixes on the new link, as described in Section 6.3.7 of RFC 2461 [12]. - If Router Advertisements that the mobile node receives include an Advertisement Interval option, the mobile node may use its Advertisement Interval field as an indication of the frequency with which it should expect to continue to receive future Advertisements from that router. This field specifies the minimum rate (the maximum amount of time between successive Advertisements) that the mobile node should expect. If this amount of time elapses without the mobile node receiving any Advertisement from this router, the mobile node can be sure that at least one Advertisement sent by the router has been lost. The mobile node can then implement its own policy to determine how many lost Advertisements from its current default router constitute an L3 handove	(do)	B	B			This function is implementaion-dependent. It does not effect on interoperability.

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
9				Neighbor Unreachability Detection determines that the default router is no longer reachable.	(do)	B	B	X	MN-3-3-1-1-003	This function is implementaion-dependent. It does not effect on interoperability.
10				With some types of networks, notification that an L2 handover has occurred might be obtained from lower layer protocols or device driver software within the mobile node. While further details around handling L2 indications as movement hints is an item for further study, at the time of writing this specification the following is considered reasonable: An L2 handover indication may or may not imply L2 movement and L2 movement may or may not imply L3 movement; the correlations might be a function of the type of L2 but might also be a function of actual deployment of the wireless topology.	(do)	C	-			Function that uses upper or lower layer information

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
11				Unless it is well-known that an L2 handover indication is likely to imply L3 movement, instead of immediately multicasting a router solicitation it may be better to attempt to verify whether the default router is still bi-directionally reachable. This can be accomplished by sending a unicast Neighbor Solicitation and waiting for a Neighbor Advertisement with the solicited flag set. Note that this is similar to Neighbor Unreachability detection but it does not have the same state machine, such as the STALE state.	(do)	C	-			Function that uses upper or lower layer information
12				If the default router does not respond to the Neighbor Solicitation it makes sense to proceed to multicasting a Router Solicitation.	(do)	B	B			This function is implementaion-dependent. It does not effect on interoperability.
13	11.5.2.	Forming New Care-of Addresses	form a new primary care-of address	After detecting that it has moved a mobile node **SHOULD** generate a new primary care-of address using normal IPv6 mechanisms. This **SHOULD**	SHOULD	A	A1	X	MN-3-2-1-1-001	

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
14				also be done when the current primary care-of address becomes deprecated.	SHOULD	A	A2			This function is implementaion-dependent. The matter on which MN judges the current primary care-of address to be deprecated without movement detection.
15				A mobile node **MAY** form a new primary care-of address at any time, but a mobile node **MUST NOT** send a Binding Update about a new care-of address to its home agent more than MAX_UPDATE_RATE times within a second.	MAY	C	-			This function is implementaion-dependent. It does not effect on interoperability.
16					MUST NOT	A	A2			In the case that No.15 function is implemented, this function is mandotory. This function is implementaion-dependent. The matter into which primary care-of address is changed MAX_UPDATE_RATE
17				In addition, a mobile node **MAY** form new non-primary care-of addresses even when it has not switched to a new default router. A mobile node can have only one primary care-of address	MAY	C	-			This function is implementaion-dependent. It does not effect on interoperability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
18				~~have only one primary care-of address~~ at a time (which is registered with its home agent), but it **MAY** have an additional care-of address for any or all of the prefixes on its current link.	MAY	C	-			~~interoperability.~~
19				Furthermore, since a wireless network interface may actually allow a mobile node to be reachable on more than one link at a time (i.e.,within wireless transmitter range of routers on more than one separate link), a mobile node **MAY** have care-of addresses on more than one link at a time. The use of more than one care-of address at a time is described in Section 11.5.3.	MAY	C	-			Multiple Care-of Address
20				As described in Section 4, in order to form a new care-of address, a mobile node **MAY** use either stateless [13] or stateful (e.g., DHCPv6 [29]) Address Autoconfiguration. If a mobile node needs to use a source address (other than the unspecified address) in packets sent as a part of address	MAY	B	B	X	MN-3-2-1-1-001 Both tests are for stateless address.	Support of stateful address is optional

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
21				autoconfiguration, it **MUST** use an IPv6 link-local address rather than its own IPv6 home address.	MUST	A	A1	X	MN-3-2-1-1-001	
22				RFC 2462 [13] specifies that in normal processing for Duplicate Address Detection, the node **SHOULD** delay sending the initial Neighbor Solicitation message by a random delay between 0 and MAX_RTR_SOLICITATION_DELAY. Since delaying DAD can result in significant delays in configuring a new care-of address when the Mobile Node moves to a new link, the Mobile Node preferably **SHOULD** NOT delay DAD when configuring a new care-of address. The Mobile Node **SHOULD** delay according to the mechanisms specified in RFC 2462 unless the implementation has a behavior that	SHOULD	A	A2			This function is optional
23					SHOULD	A	A2			This function is optional

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
24				desynchronizes the steps that happen before the DAD in the case that multiple nodes experience handover at the same time. Such desynchronizing behaviors might be due to random delays in the L2 protocols or device drivers, or due to the movement detection mechanism that is used.	SHOULD	A	A2			This function is optional
25	11.5.3.	Using Multiple Care-of Addresses	Generation of Two or more care-of address	As described in Section 11.5.2, a mobile node **MAY** use more than one care-of address at a time. Particularly in the case of many wireless networks, a mobile node effectively might be reachable through multiple links at the same time (e.g., with overlapping wireless cells), on which different on-link subnet prefixes may exist.	MAY	C	-			Multiple Care-of Address
26				The mobile node **MUST** ensure that its primary care-of address always has a prefix that is advertised by its current default router.	MUST	A	A1	X	MN-2-1-1-1-001	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
27				After selecting a new primary care-of address, the mobile node **MUST** send a Binding Update containing that care-of address to its home agent.	MUST	A	A1	X	MN-2-1-1-1-001	
28				The Binding Update **MUST** have the Home Registration (H) and Acknowledge (A) bits set its home agent, as described on Section 11.7.1.	MUST	A	A1	X	MN-2-1-1-1-001	
29			Retaining of the previous primary care-of address	To assist with smooth handovers, a mobile node **SHOULD** retain its previous primary care-of address as a (non-primary) care-of address, and **SHOULD** still accept packets at this address, even after registering its new primary care-of address with its home agent. This is reasonable, since the	SHOULD	A	A2			This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
30				mobile node could only receive packets at its previous primary care-of address if it were indeed still connected to that link. If the previous primary care-of address was allocated using stateful Address Autoconfiguration [29], the mobile node may not wish to release the address immediately upon switching to a new primary care-of address.	SHOULD	A	A2			
31				Whenever a mobile node determines that it is no longer reachable through a given link, it **SHOULD** invalidate all care-of addresses associated with address prefixes that it discovered from routers on prefixes advertised by the (possibly new)current default router.	SHOULD	A	A1	X	MN-3-3-1-1-004	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
32	11.5.4.	Returning Home	The opportunity of move detection (returning home)	A mobile node detects that it has returned to its home link through the movement detection algorithm in use (Section 11.5.1), when the mobile node detects that its home subnet prefix is again on-link. The mobile node **SHOULD** then send a Binding Update to its home agent, to instruct its home agent to no longer intercept or tunnel packets for it.	SHOULD	A	A2	X	MN-2-1-3-1-001	Returning Home
33			Transmission of Binding Update at returning home	In this home registration, the mobile node **MUST** set the Acknowledge (A) and Home Registration (H) bits, set the Lifetime field to zero, and set the care-of address for the binding to the mobile node's own home address.	MUST	A	A2	X	MN-2-1-3-1-001	Returning Home
34				The mobile node **MUST** use its home address as the source address in the Binding Update.	MUST	A	A2	X	MN-2-1-3-1-001	Returning Home

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
35				When sending this Binding Update to its home agent, the mobile node must be careful in how it uses Neighbor Solicitation [12] (if needed) to learn the home agent's link-layer address, since the home agent will be currently configured to intercept packets to the mobile node's home address using Duplicate Address Detection (DAD). In particular, the mobile node is unable to use its home address as the Source Address in the Neighbor Solicitation until the home agent stops defending the home address.	(do)	A	A2	X	MN-2-1-3-1-001	Returning Home
36				Neighbor Solicitation by the mobile node for the home agent's address will normally not be necessary, since the mobile node has already learned the home agent's link-layer address from a Source Link-Layer Address option in a Router Advertisement. However, if there are multiple home agents it may	MUST	A	A2	X	MN-2-1-3-1-007	Multiple Homa Agent support is optional. Returning Home

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
37				still be necessary to send a solicitation. In this special case of the mobile node returning home, the mobile node **MUST** multicast the packet, and in addition set the Source Address of this Neighbor Solicitation to the unspecified address (0:0:0:0:0:0:0:0). The target of the Neighbor Solicitation **MUST** be set to the mobile node's home address. The destination IP address **MUST** be set to the Solicited-Node multicast address [3]. The home agent will send a multicast Neighbor Advertisement back to the mobile node with the Solicited flag (S) set to zero. In any case, the mobile node **SHOULD** record the information from the Source Link-Layer Address option or from the advertisement, and set the state of the Neighbor Cache entry for the home agent to REACHABLE.	MUST	A	A2	X	MN-2-1-3-1-007	
38					MUST	A	A2	X	MN-2-1-3-1-007	
39					SHOULD	A	A2	X	MN-2-1-3-1-007	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
40			Transmission of Binding Update at returning home	The mobile node then sends its Binding Update to the home agent's link-layer address, instructing its home agent to no longer serve as a home agent for it. By processing this Binding Update, the home agent will cease defending the mobile node's home address for Duplicate Address Detection and will no longer respond to Neighbor Solicitations for the mobile node's home address. The mobile node is then the only node on the link receiving packets at the mobile node's home address. In addition, when returning home prior to the expiration of a current binding for its home address, and configuring its home address on its network interface on its home link, the mobile node **MUST NOT** perform Duplicate Address Detection on its own home address, in order to avoid confusion or conflict with its home agent's use of the same address. This rule also applies to the derived link-local address of the mobile node, if the Link Local Address Compatibility (L) bit was set when the binding was created. If the mobile node returns home after the bindings for all of its care-of addres	MUST NOT	A	A2	X	MN-2-1-3-1-001	Returning Home
41					SHOULD	A	A2	X	MN-3-4-1-1-002	Returning Home

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
42				After the Mobile Node sends the Binding Update, it **MUST** be prepared to reply to Neighbor Solicitations for its home address. Such replies **MUST** be sent using a unicast Neighbor Advertisement to the sender's link-layer address. It is necessary to reply, since sending the Binding Acknowledgement from the home agent may require performing Neighbor Discovery, and the mobile node may not be able to distinguish Neighbor Solicitations coming from the home agent from other Neighbor Solicitations. Note that a race condition exists where both the mobile node and the home agent respond to the same solicitations sent by other nodes; this will be only temporary,	MUST	A	A2	X	MN-2-2-2-1-027	Returning Home
43					MUST	A	A2	X	MN-2-2-2-1-027	Returning Home
44			Transmission of Neighbor Advertisement after reception of Binding Acknowledgement	After receiving the Binding Acknowledgement for its Binding Update to its home agent, the mobile node **MUST** multicast onto the home link (to the all-nodes multicast address) a Neighbor Advertisement [12], to advertise the mobile node's	MUST	A	A2	X	MN-3-4-1-1-001	Returning Home

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
45				own link-layer address for its own home address. The Target Address in this Neighbor Advertisement MUST be set to the mobile node's home address, and the Advertisement **MUST** include a Target Link-layer Address option specifying the mobile node's link-layer address. The mobile node **MUST** multicast such a Neighbor Advertisement for each of its home addresses, as defined by the current on-link prefixes, including its link-local address and site-local address.	MUST	A	A2	X	MN-3-4-1-1-001	
46					MUST	A	A2	X	MN-3-4-1-1-001	
47				The Solicited Flag (S) in these Advertisements **MUST NOT** be set, since they were not solicited by any Neighbor Solicitation. The Override Flag (O) in these Advertisements **MUST** be set, indicating that the Advertisements **SHOULD** override any existing Neighbor Cache entries at any node receiving them.	MUST NOT	A	A2	X	MN-3-4-1-1-001	Returning Home
48					MUST	A	A2	X	MN-3-4-1-1-001	
49					SHOULD	A	A2	X	MN-3-4-1-1-001	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
50				Since multicasting on the local link (such as Ethernet) is typically not guaranteed to be reliable, the mobile node **MAY** retransmit these Neighbor Advertisements [12] up to MAX_NEIGHBOR_ADVERTISEMENT times to increase their reliability. It is still possible that some nodes on the home link will not receive any of these Neighbor Advertisements, but these nodes will eventually be able to recover through use of Neighbor Unreachability Detection [12].	MAY	C	-			IPv6 core function which is not modified to achieve Mobile IPv6 function

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	11.6.1	Sending Test Init Messages		A mobile node that initiates a return routability procedure **MUST** send (in parallel) a Home Test Init message and a Care-of Test Init messages.	MUST	A	A2	X	MN-2-1-1-2-001 MN-2-1-2-2-001	Return Routability
2				However, if the mobile node has recently received (see Section 5.2.7) one or both home or care-of keygen tokens, and associated nonce indices for the desired addresses, it **MAY** reuse them.	MAY	B	B			Return Routability Procedure between MN and HA
3				A Home Test Init message **MUST** be created as described in Section 6.1.3.	MUST	A	A2	X	MN-2-1-1-2-001	Return Routability
4				A Care-of Test Init message **MUST** be created as described in Section 6.1.4.	MUST	A	A2	X	MN-2-1-2-2-001	Return Routability
5			When sending a Home Test Init or Care-of	o The IP address of the node to which the message was sent.	MUST	A	A2	X	MN-2-1-1-2-001 MN-2-1-2-2-001	Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
6			Test Init message the mobile node **MUST** record in its Binding Update List the following fields from the messages:	o The home address of the mobile node. This value will appear in the Source Address field of the Home Test Init message. When sending the Care-of Test Init message, this address does not appear in the message, but represents the home address for which the binding is desired.	MUST	A	A2	X	MN-2-1-1-2-001 MN-2-1-2-2-001	Return Routability
7				o The time at which each of these messages was sent.	MUST	A	A2	X	MN-2-1-1-2-001 MN-2-1-2-2-001	Return Routability
8				o The cookies used in the messages.	MUST	A	A2	X	MN-2-1-1-2-001 MN-2-1-2-2-001	Return Routability
9				Note that a single Care-of Test Init message may be sufficient even when there are multiple home addresses. In this case the mobile node **MAY** record the same information in multiple Binding Update List entries.	MAY	B	B			Multiple Home Addresses

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
10	11.6.2	Receiving Test Messages	Upon receiving a packet carrying a Home Test message, a mobile node **MUST** validate the packet according to the following tests	o The Source Address of the packet belongs to a correspondent node for which the mobile node has a Binding Update List entry with a state indicating that return routability procedure is in progress. Note that there may be multiple such entries.	MUST	A	A2	X	MN-2-1-3-2-001 MN-2-1-3-2-007 MN-2-1-3-2-015 MN-2-1-3-2-002 MN-2-1-3-2-004 MN-2-1-3-2-011 MN-2-1-3-2-012 MN-2-1-4-2-001	Return Routability
11				o The Binding Update List indicates that no home keygen token has been received yet.	MUST	A	A2	X	MN-2-1-3-2-001 MN-2-1-3-2-007 MN-2-1-3-2-015 MN-2-1-3-2-008 MN-2-1-4-2-001	Return Routability
12				o The Destination Address of the packet has the home address of the mobile node, and the packet has been received in a tunnel from the home agent.	MUST	A	A2	X	MN-2-1-3-2-001 MN-2-1-3-2-007 MN-2-1-3-2-015 MN-2-1-4-2-001	Return Routability
13				o The Home Init Cookie field in the message matches the value stored in the Binding Update List.	MUST	A	A2	X	MN-2-1-3-2-001 MN-2-1-3-2-007 MN-2-1-3-2-015 MN-2-1-3-2-003	Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
14				Any Home Test message not satisfying all of these tests **MUST** be silently ignored. Otherwise, the mobile node **MUST** record the Home Nonce Index and home keygen token in the Binding Update List. If the Binding Update List entry does not have a care-of keygen token, the mobile node **SHOULD** continue waiting for the Care-of Test message.	MUST	A	A2	X	MN-2-1-3-2-003 MN-2-1-3-2-004 MN-2-1-3-2-008 MN-2-1-3-2-011 MN-2-1-3-2-012 MN-2-1-3-2-002	Return Routability
15					MUST	A	A2	X	MN-2-1-3-2-001 MN-2-1-3-2-015	Return Routability
16					SHOULD	A	A2	X	MN-2-1-3-2-007	Return Routability
17			Upon receiving a packet carrying a Care-of Test message, a mobile node **MUST** validate the packet according to the following tests:	o The Source Address of the packet belongs to a correspondent node for which the mobile node has a Binding Update List entry with a state indicating that return routability procedure is in progress. Note that there may be multiple such entries.	MUST	A	A2	X	MN-2-1-4-2-001 MN-2-1-4-2-006 MN-2-1-4-2-014 MN-2-1-4-2-002 MN-2-1-4-2-004 MN-2-1-4-2-010 MN-2-1-4-2-011	Return Routability
18				o The Binding Update List indicates that no care-of keygen token has been received yet.	MUST	A	A2	X	MN-2-1-4-2-001 MN-2-1-4-2-006 MN-2-1-4-2-014 MN-2-1-4-2-007 MN-2-1-4-2-002	Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
19				o The Destination Address of the packet is the current care-of address of the mobile node.	MUST	A	A2	X	MN-2-1-4-2-001 MN-2-1-4-2-006 MN-2-1-4-2-014	Return Routability
20				o The Care-of Init Cookie field in the message matches the value stored in the Binding Update List.	MUST	A	A2	X	MN-2-1-4-2-001 MN-2-1-4-2-006 MN-2-1-4-2-014 MN-2-1-4-2-003	Return Routability
21				Any Care-of Test message not satisfying all of these tests **MUST** be silently ignored. Otherwise, the mobile node **MUST** record the Care-of Nonce Index and care-of keygen token in the Binding Update List. If the Binding Update List entry does not have a home keygen token, the mobile node **SHOULD** continue waiting for the Home Test message.	MUST	A	A2	X	MN-2-1-4-2-003 MN-2-1-4-2-004 MN-2-1-4-2-007 MN-2-1-4-2-010 MN-2-1-4-2-011 MN-2-1-4-2-002	Return Routability
22					MUST	A	A2	X	MN-2-1-4-2-006	Return Routability
23					SHOULD	A	A2	X	MN-2-1-4-2-001 MN-2-1-4-2-014	Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
24				If after receiving either the Home Test or the Care-of Test message and performing the above actions, the Binding Update List entry has both the home and the care-of keygen tokens, the return routability procedure is complete. The mobile node **SHOULD** then proceed with sending a Binding Update as described in Section 11.7.2.	SHOULD	A	A2	X	MN-2-1-3-2-001 MN-2-1-4-2-006 MN-2-1-3-2-007 MN-2-1-3-2-015 MN-2-1-3-2-002	Return Routability
25				Correspondent nodes from the time before this specification was published may not support the Mobility Header protocol. These nodes will respond to Home Test Init and Care-of Test Init messages with an ICMP Parameter Problem code 1. The mobile node **SHOULD** take such messages as an indication that the correspondent node cannot provide route optimization, and revert back to the use of bidirectional tunneling.	SHOULD	A	A2	X	MN-4-2-2-2-002 MN-4-2-2-2-005	Return Routability
26	11.6.3	Protecting Return Routability Packets		The mobile node **MUST** support the protection of Home Test and Home Test Init messages as described in Section 10.4.6.	MUST	A	A2	X	MN-2-1-1-2-001 MN-2-1-3-2-001 MN-2-1-3-2-015	Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	TEST Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
27				When IPsec is used to protect return routability signaling or payload packets, the mobile node **MUST** set the source address it uses for the outgoing tunnel packets to the current primary care-of address. The mobile node starts to use a new primary care-of address immediately after sending a Binding Update to the home agent to register this new address.	MUST	A	A2	X	MN-2-1-1-2-001	Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
1	11.7.1	Sending Binding Updates to the Home Agent	Registration of the primary care-of address	After deciding to change its primary care-of address as described in Sections 11.5.1 and 11.5.2, a mobile node **MUST** register this care-of address with its home agent in order to make this its primary care-of address.	MUST	A	A1			X	MN-2-1-1-1-001 MN-2-1-2-1-001	
2			Updating of the primary care-of address	Also, if the mobile node wants the services of the home agent beyond the current registration period, the mobile node **SHOULD** send a new Binding Update to it well before the expiration of this period, even if it is not changing its primary care-of address.	SHOULD	A	A1			X	MN-2-1-2-1-004	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
3				However, if the home agent returned a Binding Acknowledgement for the current registration with Status field set to 1 (accepted but prefix discovery necessary), the mobile node should not try to register again before it has learned the validity of its home prefixes through mobile prefix discovery. This is typically necessary every time this Status value is received, because information learned earlier may have changed.	(do)	A	A1			X	MN-2-2-1-1-002	Home Registration
4			Generating of the Binding Update packet	o The Home Registration (H) bit **MUST** be set in the Binding Update.	MUST	A	A1			X	MN-2-1-1-1-001 MN-2-1-3-1-001	
5				o The Acknowledge (A) bit **MUST** be set in the Binding Update.	MUST	A	A1			X	MN-2-1-1-1-001 MN-2-1-3-1-001	
6				o The packet **MUST** contain a Home Address destination option, giving the mobile node's home address for the binding.	MUST	A	A1			X	MN-2-1-1-1-001 MN-2-1-3-1-001	

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
7				o The care-of address for the binding **MUST** be used as the Source Address in the packet's IPv6 header, unless an Alternate Care-of Address mobility option is included in the Binding Update.	MUST	A	A1			X	MN-3-1-1-2-001	
8				This option **MUST** be included in all home registrations, as the ESP protocol will not be able to protect care-of addresses in the IPv6 header. (Mobile IPv6 implementations that know they are using IPsec AH to protect a particular message might avoid this option. For brevity the usage of AH is not discussed in this document.)	MUST	A	A1			X	MN-2-1-1-1-001 MN-2-1-2-1-001 MN-2-1-2-1-004	
9				o If the mobile node's link-local address has the same interface identifier as the home address for which it is supplying a new care-of address, then the mobile node **SHOULD** set the Link-Local Address Compatibility (L) bit.	SHOULD	A	A2			X	MN-2-1-1-1-002	this function depends on how to generate Home Address

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
10				o If the home address was generated using RFC 3041 [18], then the link local address is unlikely to have a compatible interface identifier. In this case, the mobile node **MUST** clear the Link-Local Address Compatibility (L) bit.	MUST	A	A2			X	MN-2-1-1-1-002	this function depends on how to generate Home Address
11				o If the IPsec security associations between the mobile node and the home agent have been established dynamically, and the mobile node has the capability to update its endpoint in the used key management protocol to the new care-of address every time it moves, the mobile node **SHOULD** set the Key Management Mobility Capability (K) bit in the Binding Update. Otherwise, the mobile node **MUST** clear the bit.	SHOULD	A	A2				MN-1-2-1-1-014 MN-1-2-2-1-006 MN-1-2-2-1-014 MN-1-2-3-1-006 MN-1-2-3-1-014	IKE
12					MUST	A	A2			X	MN-2-1-1-1-004 MN-1-1-2-1-001 MN-1-2-1-1-014	IKE
13			A setup of a Lifetime field value	The value specified in the Lifetime field **MUST** be non-zero and **SHOULD** be less than or equal to the remaining valid lifetime of the home address and the care-of address specified for the binding.	MUST	A	A1			X	MN-2-1-1-1-006 MN-2-1-1-1-007 MN-2-1-2-1-005	
					SHOULD	A	A1			X	MN-2-1-1-1-006 MN-2-1-1-1-007 MN-2-1-2-1-005	

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
14				Mobile nodes that use dynamic home agent address discovery should be careful with long lifetimes. If the mobile node loses the knowledge of its binding with a specific home agent, registering a new binding with another home agent may be impossible as the previous home agent is still defending the existing binding. Therefore, to ensure that mobile nodes using home agent address discovery do not lose information about their binding, they **SHOULD** de-register before losing this information, or use small lifetimes.	SHOULD	A	A2					This function is implementaion-dependent. It does not effect on interoperability.
15			Retransmission of the Binding Update packet	As described in Section 6.1.8, the mobile node **SHOULD** retransmit this Binding Update to its home agent until it receives a matching Binding Acknowledgement.	SHOULD	A	A2			X	MN-2-1-1-1-013 MN-2-1-2-1-006	retransmission of Binding Update
16				Once reaching a retransmission timeout period of MAX_BINDACK_TIMEOUT, the mobile node **SHOULD** restart the process of delivering the Binding Update, but trying instead the next home agent returned during dynamic home agent address discovery (see Section 11.4.1).	SHOULD	A	A2			X	MN-5-1-2-1-029	retransmission of Binding Update

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
17				If there was only one home agent, the mobile node instead **SHOULD** continue to periodically retransmit the Binding Update at this rate until acknowledged (or until it begins attempting to register a different primary care-of address).	SHOULD	A	A2			X	MN-2-1-1-1-013 MN-2-1-2-1-006	retransmission of Binding Update
18			Security between the Mobile Node and the Home Agent	Each Binding Update **MUST** be authenticated as coming from the right mobile node, as defined in Section 5.1.	MUST	A	A1			X	MN-2-1-1-1-001 MN-2-1-3-1-001	
19			Using the Home Address on Binding Update packet	The mobile node **MUST** use its home address - either in the Home Address destination option or in the Source Address field of the IPv6 header - in Binding Updates sent to the home agent.	MUST	A	A1			X	MN-2-1-1-1-001 MN-2-1-3-1-001	
20			Processing to a Binding Update List entry	When sending a Binding Update to its home agent, the mobile node **MUST** also create or update the corresponding Binding Update List entry, as specified in Section 11.7.2.	MUST	A	A1			X	MN-3-1-2-2-001 MN-3-1-2-2-004	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
21			A setup of a Sequence Number value	If the sending mobile node has no knowledge of the correct Sequence Number value, it may start at any value. If the home agent rejects the value, it sends back a Binding Acknowledgement with a status code 135, and the last accepted sequence number in the Sequence Number field of the Binding Acknowledgement. The mobile node **MUST** store this information and use the next Sequence Number value for the next Binding Update it sends.	MUST	A	A1			X	MN-2-1-2-1-001 MN-2-2-1-1-010 MN-2-2-1-1-016 MN-3-2-1-2-003 MN-3-2-1-2-010	
22			Processing in the case of having two or more Home Address	If the mobile node has additional home addresses, then the mobile node **SHOULD** send an additional packet containing a Binding Update to its home agent to register the care-of address for each such other home address.	SHOULD	A	A2					Multipule Home Addresses
23				If some time elapses during which the mobile node has no binding at the home agent, it might be possible for another node to autoconfigure the mobile node's home address. Therefore, the mobile node **MUST** treat the creation of a new binding with the home agent using an existing home address, the same as creation of a new home address.	MUST	A	A1			X	MN-2-1-1-1-008	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
24				In the unlikely event that the mobile node's home address is autoconfigured as the IPv6 address of another network node on the home network, the home agent will reply to the mobile node's subsequent Binding Update with a Binding Acknowledgement containing a Status of 134 (Duplicate Address Detection failed). In this case, the mobile node **MUST NOT** attempt to re-use the same home address.	MUST NOT	A	A1			X	MN-2-2-1-1-009	
25				It **SHOULD** continue to register the care-of addresses for its other home addresses, if any.	SHOULD	A	A2					Multipule Home Addresses
26				(Mechanisms outlined in Appendix B.5 may in the future allow mobile nodes to acquire new home addresses to replace the one for which Status 134 was received.)	(do)	B	B					stateful address autoconfigration

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
27	11.7.2	Correspondent Registration		After the mobile node has sent a Binding Update to its home agent, registering a new primary care-of address (as described in Section 11.7.1), the mobile node **SHOULD** initiate a correspondent registration for each node that already appears in the mobile node's Binding Update List. The initiated procedures can be used to either update or delete binding information in the correspondent node.	SHOULD	A	A2			X	MN-3-1-2-2-004 MN-2-1-1-2-009 MN-2-1-2-2-009	Return Routability
28				For nodes that do not appear in the mobile node's Binding Update List, the mobile node **MAY** initiate a correspondent registration at any time after sending the Binding Update to its home agent. Considerations regarding when (and if) to initiate the procedure depend on the specific movement and traffic patterns of the mobile node and are outside the scope of this document.	MAY	C	-			X	MN-2-1-1-2-001 MN-2-1-2-2-001 MN-2-1-2-2-019	This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
29				In addition, the mobile node **MAY** initiate the correspondent registration in response to receiving a packet that meets all of the following tests: o The packet was tunneled using IPv6 encapsulation. o The Destination Address in the tunnel (outer) IPv6 header is equal to any of the mobile node's care-of addresses. o The Destination Address in the original (inner) IPv6 header is equal to one of the mobile node's home addresses. o The Source Address in the tunnel (outer) IPv6 header differs from the Source Address in the original (inner) IPv6 header. o The packet does not contain a Home Test, Home Test Init, Care-of Test, or	MAY	B	B			X	MN-2-1-1-2-001 MN-2-1-2-2-001 MN-2-1-1-2-006 MN-2-1-1-2-004 MN-2-1-1-2-019 MN-2-1-3-2-011 MN-2-1-3-2-012 MN-2-1-2-2-004 MN-2-1-1-2-028 MN-2-1-2-2-019 MN-2-1-1-2-003	This function is implementaion-dependent. It does not effect on interoperability.
30				If a mobile node has multiple home addresses, it becomes important to select the right home address to use in the correspondent registration. The used home address **MUST** be the Destination Address of the original (inner) packet.	MUST	A	A2					In the case that No.28 function is implemented, this function is mandotory.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
31				The peer address used in the procedure **MUST** be determined as follows: o If a Home Address destination option is present in the original (inner) packet, the address from this option is used. o Otherwise, the Source Address in the original (inner) IPv6 header of the packet is used.	MUST	A	A2			X	MN-2-1-1-2-001 MN-2-1-1-2-002 MN-2-1-2-2-001	In the case that No.28 function is implemented, this function is mandotory.
32				A mobile node **MAY** also choose to keep its topological location private from certain correspondent nodes, and thus need not initiate the correspondent registration.	MAY	B	B			X	MN-2-1-1-2-016 MN-2-1-1-2-015	This function is implementaion-dependent. It does not effect on interoperability.
33				Upon successfully completing the return routability procedure, and after receiving a successful Binding Acknowledgement from the Home Agent, a Binding Update **MAY** be sent to the correspondent node.	MAY	B	B			X	MN-3-1-1-2-001	This function is implementaion-dependent. It does not effect on interoperability.
34				In any Binding Update sent by a mobile node, the care-of address (either the Source Address in the packet's IPv6 header or the Care-of Address in the Alternate Care-of Address mobility option of the Binding Update) **MUST** be set to one of the care-of addresses currently in use by the mobile node or to the mobile node's home address.	MUST	A	A1			X	MN-3-1-1-2-001 MN-3-1-3-2-001 MN-3-1-1-2-004 MN-3-1-2-2-002	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
35				A mobile node **MAY** set the care-of address differently for sending Binding Updates to different correspondent nodes.	MAY	C	-					Multipule Care of Addresses
36				A mobile node **MAY** also send a Binding Update to such a correspondent node, instructing it to delete any existing binding for the mobile node from its Binding Cache, as described in Section 6.1.7. .	MAY	B	B			X	MN-3-1-3-2-001	This function is implementaion-dependent. It does not effect on interoperability.
37	(6.1.7)	Binding Update message		The deletion of a binding can be indicated by setting the Lifetime field to 0 or by setting the care-of address equal to the home address.	(do)	B	B			X	MN-3-1-3-2-001	This function is implementaion-dependent. It does not effect on

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
38	11.7.2	Correspondent Registration	A setup of the Lifetime field value of a Binding Update message	If the care-of address is not set to the mobile node's home address, the Binding Update requests that the correspondent node create or update an entry for the mobile node in the correspondent node's Binding Cache. This is done in order to record a care-of address for use in sending future packets to the mobile node. In this case, the value specified in the Lifetime field sent in the Binding Update **SHOULD** be less than or equal to the remaining lifetime of the home registration and the care-of address specified for the binding.	SHOULD	A	A2			X	MN-3-1-1-2-001	Return Routability
39				The care-of address given in the Binding Update **MAY** differ from the mobile node's primary care-of address.	MAY	C	-					This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
40			Deletion of the Binding Cache entry of the Correspondent Node	If the Binding Update is sent to the correspondent node, requesting the deletion of any existing Binding Cache entry it has for the mobile node, the care-of address is set to the mobile node's home address and the Lifetime field set to zero. In this case, generation of the binding management key depends exclusively on the home keygen token (Section 5.2.5). The care-of nonce index **SHOULD** be set to zero in this case.	SHOULD	A	A2			X	MN-3-1-3-2-001	In the case that No.38 function is implemented, this function is mandotory.
41			A setup of a care-of address	In keeping with the Binding Update creation rules below, the care-of address **MUST** be set to the home address if the mobile node is at home, or to the current care-of address if it is away from home.	MUST	A	A2			X	MN-3-1-3-2-001	In the case that No.38 function is implemented, this function is mandotory.
42				If the mobile node wants to ensure that its new care-of address has been entered into a correspondent node's Binding Cache, the mobile node needs to request an acknowledgement by setting the Acknowledge (A) bit in the Binding Update.	(do)	B	B			X	MN-3-1-1-2-003 MN-3-1-1-2-002 MN-3-1-1-2-006	This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
43			Binding Update creation	o The current care-of address of the mobile node **MUST** be sent either in the Source Address of the IPv6 header, or in the Alternate Care-of Address mobility option.	MUST	A	A2			X	MN-3-1-1-2-001 MN-3-1-2-2-002	Return Routability
44				o The Destination Address of the IPv6 header **MUST** contain the address of the correspondent node.	MUST	A	A2			X	MN-3-1-1-2-001 MN-3-1-2-2-006 MN-3-1-2-2-004 MN-3-1-2-2-001	Return Routability
45				o The Mobility Header is constructed according to rules in Section 6.1.7 and Section 5.2.6, including the Binding Authorization Data (calculated as defined in Section 6.2.7) and possibly the Nonce Indices mobility options.	(do)	A	A2			X	MN-3-1-1-2-001 MN-3-1-2-2-006 MN-3-1-2-2-004 MN-3-1-2-2-001	Return Routability related to 6.1.7 and 5.2.6
46				o The home address of the mobile node **MUST** be added to the packet in a Home Address destination option, unless the Source Address is the home address.	MUST	A	A2			X	MN-3-1-1-2-001	Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
47				Each Binding Update **MUST** have a Sequence Number greater than the Sequence Number value sent in the previous Binding Update to the same destination address (if any).	MUST	A	A2			X	MN-3-1-2-2-004 MN-3-1-2-2-006 MN-3-1-2-2-001	Return Routability
48				The sequence numbers are compared modulo 2**16, as described in Section 9.5.1.	(do)	A	A2			X	MN-3-1-2-2-004 MN-3-1-2-2-006	Return Routability
49				If the sending mobile node has no Binding Update List entry, the Sequence Number **SHOULD** start at a random value.	SHOULD	A	A2					This function is implementaion-dependent. It does not effect on interoperability.
50				The mobile node **MUST NOT** use the same Sequence Number in two different Binding Updates to the same correspondent node, even if the Binding Updates provide different care-of addresses.	MUST NOT	A	A2					Multipule Care of Addresses

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
51	11.7.3	Receiving Binding Acknowledgements	Upon receiving a packet carrying a Binding Acknowledgement, a mobile node MUST validate the packet according to the following tests:	o The packet meets the authentication requirements for Binding Acknowledgements defined in Section 6.1.8 and Section 5. That is, if the Binding Update was sent to the home agent, underlying IPsec protection is used.	(do)	A	A1			X	HA: MN-2-2-1-1-001 MN-2-2-1-1-039 MN-2-2-1-1-038 CN: MN-3-2-1-2-029	IPsec ESP for the protection of Binding Update and Binding Acknowledge messages
52				If the Binding Update was sent to the correspondent node, the Binding Authorization Data mobility option **MUST** be present and have a valid value.	MUST	A	A2			X	MN-3-2-1-2-001 MN-3-2-1-2-029 MN-3-2-1-2-024	IPsec ESP for the protection of Binding Update and Binding Acknowledge messages
53				o The Binding Authorization Data mobility option, if present, **MUST** be the last option and **MUST NOT** have trailing padding.	MUST MUST NOT	A	A2			X	MN-3-2-1-2-001 MN-2-2-1-1-001 MN-2-2-1-1-039 MN-3-2-1-2-029 MN-3-2-1-2-025	Return Routability
54				o The Sequence Number field matches the Sequence Number sent by the mobile node to this destination address in an outstanding Binding Update.	(do)	A	->	A1	A2	X	HA: MN-2-2-1-1-001 MN-2-2-1-1-017 CN: MN-3-2-1-2-001 MN-3-2-1-2-029 MN-3-2-1-2-014	HA:Home Registration CN:return routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
55				Any Binding Acknowledgement not satisfying all of these tests **MUST** be silently ignored.	MUST	A	->	A1	A2	X	HA: MN-2-2-1-1-001 MN-2-2-1-1-017 MN-2-2-1-1-039 MN-2-2-1-1-038 CN: MN-3-2-1-2-014 MN-3-2-1-2-024 MN-3-2-1-2-025	CN:Return Routability
56				When a mobile node receives a packet carrying a valid Binding Acknowledgement, the mobile node **MUST** examine the Status field as follows:	MUST	A	->	A1	A2	X	HA: MN-2-2-1-1-001 MN-2-2-1-1-020 MN-2-2-1-1-003 MN-2-2-1-1-010 CN: MN-3-2-1-2-001 MN-3-2-1-2-017 MN-3-2-1-2-003 MN-3-2-1-2-010	
57			The check of the Status field value of an effective Binding Acknowledgement message	If the Status field indicates that the Binding Update was accepted (the Status field is less than 128), then the mobile node **MUST** update the corresponding entry in its Binding Update List to indicate that the Binding Update has been acknowledged; the mobile node **MUST** then stop retransmitting the Binding Update.	MUST MUST	A A	->	A1	A2	X	HA: MN-2-2-1-1-001 MN-2-2-1-1-002 MN-2-2-1-1-039 MN-2-2-1-1-033 CN: MN-3-2-1-2-001 MN-3-2-1-2-019	CN:Return Routability

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
58			A re-setup of the Lifetime value of a Binding Update List entry	In addition, if the value specified in the Lifetime field in the Binding Acknowledgement is less than the Lifetime value sent in the Binding Update being acknowledged, the mobile node **MUST** subtract the difference between these two Lifetime values from the remaining lifetime for the binding as maintained in the corresponding Binding Update List entry (with a minimum value for the Binding Update List entry lifetime of 0).	MUST	A	->	A1	A2	X	HA:MN-2-2-1-1-020 CN:MN-3-2-1-2-017 MN-3-2-1-2-018	CN:Return Routability
59			Transmission of periodical Binding Update	Mobile nodes **SHOULD** send a new Binding Update well before the expiration of this period in order to extend the lifetime This helps to avoid disruptions in communications which might otherwise be caused by network delays or clock drift.	SHOULD	A	->	A1	A2	X	MN-2-1-2-1-004 MN-3-1-2-2-006 MN-2-2-1-1-020 MN-2-1-2-1-004	CN:Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
60				o Additionally, if the Status field value is 1 (accepted but prefix discovery necessary), the mobile node **SHOULD** send a Mobile Prefix Solicitation message to update its information about the available prefixes.	SHOULD	A	->	A2	A2	X	MN-2-2-1-1-002	MPS
61				If the Status field indicates that the Binding Update was rejected (the Status field is greater than or equal to 128), then the mobile node can take steps to correct the cause of the error and retransmit the Binding Update (with a new Sequence Number value), subject to the rate limiting restriction specified in Section 11.8. If this is not done or it fails, then the mobile node **SHOULD** record in its Binding Update List that future Binding Updates **SHOULD NOT** be sent to this destination.	SHOULD	A	->	A1	A2	X	HA: MN-2-2-1-1-003 MN-2-2-1-1-010 MN-2-2-1-1-002 MN-2-2-1-1-004 MN-2-2-1-1-005 MN-2-2-1-1-006 MN-2-2-1-1-007 MN-2-2-1-1-009 MN-2-2-1-1-035 MN-2-2-2-1-008 CN: MN-3-2-1-2-003 MN-3-2-1-2-010 MN-3-2-1-2-011 MN-3-2-1-2-012 MN-3-2-1-2-013	CN:Return Routability

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
62					SHOULD NOT	A	->	A1	A2	X	HA: MN-2-2-1-1-003 MN-2-2-1-1-010 MN-2-2-2-1-008 CN: MN-3-2-1-2-003 MN-3-2-1-2-010 MN-3-2-1-2-011 MN-3-2-1-2-012 MN-3-2-1-2-013	CN:Return Routability
63			Processing of a Binding Refresh Advice mobility option	The treatment of a Binding Refresh Advice mobility option within the Binding Acknowledgement depends on where the acknowledgement came from. This option **MUST** be ignored if the acknowledgement came from a correspondent node.	MUST	A	A2			X	MN-3-2-1-2-023 MN-3-2-1-2-001 MN-3-2-1-2-029	CN:Return Routability
64				If it came from the home agent, the mobile node uses the Refresh Interval field in the option as a suggestion that it **SHOULD** attempt to refresh its home registration at the indicated shorter interval.	SHOULD	A	A1			X	MN-2-2-1-1-026	

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
65				If the acknowledgement came from the home agent, the mobile node examines the value of the Key Management Mobility Capability (K) bit. If this bit is not set, the mobile node **SHOULD** discard key management protocol connections, if any, to the home agent. The mobile node **MAY** also initiate a new key management connection.	SHOULD MAY	A B	A2 B			X	MN-1-2-1-1-012 MN-1-2-2-1-004 MN-1-2-3-1-004 MN-2-2-1-1-014 MN-3-2-1-2-001 MN-3-2-1-2-029	IKE
66				If this bit is set, the mobile node **SHOULD** move its own endpoint in the key management protocol connections to the home agent, if any. The mobile node's new endpoint should be the new care-of address. For an IKE phase 1 connection, this means that packets sent to this address with the original ISAKMP cookies are accepted.	SHOULD	A	A2			X	MN-1-2-1-1-014 MN-1-2-2-1-006 MN-1-2-2-1-014 MN-1-2-3-1-006 MN-1-2-3-1-014	IKE

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
67	11.7.4	Receiving Binding Refresh Requests		When a mobile node receives a packet containing a Binding Refresh Request message , the mobile node has a Binding Update List entry for the source of the Binding Refresh Request, and the mobile node wants to retain its binding cache entry at the correspondent node, then the mobile node should start a return routability procedure. If the mobile node wants to have its binding cache entry removed it can either ignore the Binding Refresh Request and wait for the binding to time out, or at any time delete its binding from a correspondent node with an explicit binding update with a zero lifetime and the care-of address set to the home address. If the mobile node does not know if it needs the binding cache entry, it can make the decision in an implementation dependent manner, such as based on available resources.	(do)	A	A2			X	MN-3-4-1-2-001 MN-3-4-1-2-006	

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
68				When a mobile node receives a packet containing a Binding Refresh Request message , the mobile node has a Binding Update List entry for the source of the Binding Refresh Request, and the mobile node wants to retain its binding cache entry at the correspondent node, then the mobile node should start a return routability procedure. If the mobile node wants to have its binding cache entry removed, it can either ignore the Binding Refresh Request and wait for the binding to time out, or at any time, it can delete its binding from a correspondent node with an explicit binding update with a zero lifetime and the care-of address set to the home address. If the mobile node does not know if it needs the binding cache entry, it can make the decision in an implementation dependent manner, such as based on available resources.	(do)	A	A2					This function is implementaion-dependent. It does not effect on interoperability.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
69				When a mobile node receives a packet containing a Binding Refresh Request message , the mobile node has a Binding Update List entry for the source of the Binding Refresh Request, and the mobile node wants to retain its binding cache entry at the correspondent node, then the mobile node should start a return routability procedure. If the mobile node wants to have its binding cache entry removed it can either ignore the Binding Refresh Request and wait for the binding to time out, or it can at any time delete its binding from a correspondent node with an explicit binding update with zero lifetime and the care-of address set to the home address. If the mobile node does not know if it needs the binding cache entry, it can make the decision in an implementation dependent manner, such as based on available resources.	(do)	A	A2					

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
70				Note that the mobile node should be careful to not respond to Binding Refresh Requests for addresses not in the Binding Update List to avoid being subjected to a denial of service attack.	(do)	A	A2			X	MN-3-4-1-2-005	Binding Refresh Request
71				If the return routability procedure completes successfully, a Binding Update message **SHOULD** be sent, as described in Section 11.7.2.	SHOULD	A	A2			X	MN-3-4-1-2-001 MN-3-4-1-2-006	Return Routability
72				The Lifetime field in this Binding Update **SHOULD** be set to a new lifetime, extending any current lifetime remaining from a previous Binding Update sent to this node (as indicated in any existing Binding Update List entry for this node),	SHOULD	A	A2			X	MN-3-4-1-2-001 MN-3-4-1-2-006	Return Routability
73				and the lifetime **SHOULD** again be less than or equal to the remaining lifetime of the home registration and the care-of address specified for the binding.	SHOULD	A	A2			X	MN-3-4-1-2-001 MN-3-4-1-2-006	Return Routability

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST Priority			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
74				When sending this Binding Update, the mobile node **MUST** update its Binding Update List in the same way as for any other Binding Update sent by the mobile node.	MUST	A	A2			X	MN-3-4-1-2-001 MN-3-4-1-2-006	Return Routability

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
1	11.8	Retransmissions and Rate Limiting	Decision of initial timer value	When the mobile node sends a Mobile Prefix Solicitation, Home Test Init, Care-of Test Init or Binding Update for which it expects a response, the mobile node has to determine a value for the initial retransmission timer:	(do)	A	->	A1	A2	X	MN-2-1-2-1-006 MN-2-1-1-2-010 MN-2-1-2-2-010	rate limiting of retransmission
2				If the mobile node is sending a Mobile Prefix Solicitation, it **SHOULD** use an initial retransmission interval of INITIAL_SOLICIT_TIMER (see Section 12).	SHOULD	A	A2			X	MN-4-1-1-1-004	rate limiting of retransmission
3				If the mobile node is sending a Binding Update and does not have an existing binding at the home agent, it **SHOULD** use InitialBindackTimeoutFirstReg (see Section 13) as a value for the initial retransmission timer.	SHOULD	A	A2			X	MN-2-1-1-1-013 MN-2-1-1-1-008	rate limiting of retransmission

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
4				Otherwise, the mobile node should use the specified value of INITIAL_BINDACK_TIMEOUT for the initial retransmission timer.	(do)	A	A2			X	MN-2-1-1-2-010 MN-2-1-2-2-010 MN-2-1-2-1-006 MN-2-1-3-2-002 MN-2-1-4-2-002	rate limiting of retransmission
5			Stop Condition of retransmitions	If the mobile node fails to receive a valid matching response within the selected initial retransmission interval, the mobile node **SHOULD** retransmit the message until a response is received.	SHOULD	A	->	A1	A2	X	MN-4-1-1-1-004 MN-2-1-1-2-010 MN-2-1-2-2-010 MN-2-1-1-1-013 MN-2-1-2-1-006 MN-2-1-3-2-003 MN-2-1-3-2-004 MN-2-1-4-2-003 MN-2-1-4-2-004	rate limiting of retransmission

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
6				The retransmissions by the mobile node **MUST** use an exponential back-off process in which the timeout period is doubled upon each retransmission, until either the node receives a response or the timeout period reaches the value MAX_BINDACK_TIMEOUT.	MUST	A	->	A1	A2	X	MN-4-1-1-1-004 MN-2-1-1-2-010 MN-2-1-2-2-010 MN-2-1-1-1-013 MN-2-1-2-1-006	rate limiting of retransmission

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
7				The mobile node **MAY** continue to send these messages at this slower rate indefinitely.	MAY	C	-					rate limiting of retransmission
8				The mobile node **SHOULD** start a separate back-off process for different message types, different home addresses and different care-of addresses.	SHOULD	A	A2					rate limiting of retransmission
9			Rate Limiting	The mobile node **MUST NOT** send Mobility Header messages of a particular type to a particular correspondent node more than MAX_UPDATE_RATE times within a second.	MUST NOT	A	A2					rate limiting of retransmission
10			Change in sequence number	Retransmitted Binding Updates **MUST** use a Sequence Number value greater than that used for the previous transmission of this Binding Update.	MUST	A	->	A1	A2	X	MN-2-1-1-1-013 MN-2-1-2-1-006 MN-3-1-1-2-006	rate limiting of retransmission

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC status	functional rank	TEST			Test PROFILE		Reason of TEST Priority
								HA	CN	supported	Test No.	
11			Change in Home Init Cookie/Care-of Init Cookie	Retransmitted Home Test Init and Care-of Test Init messages **MUST** use new cookie values.	MUST	A	A2			X	MN-2-1-1-2-010 MN-2-1-2-2-010	rate limiting of retransmission

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	4.1	Mandatory Support	The following requirements apply to both home agents and mobile nodes:	Manual configuration of IPsec security associations **MUST** be supported.The configuration of the keys is expected to take placeout-of-band, for instance at the time the mobile node is configured to use its home agent.	MUST	A	A1	X	MN-2-1-1-1-001 MN-2-2-1-1-001	
2				Automatic key management with IKE [4] **MAY** be supported. Only IKEv1 is discussed in this document. Other automatic key management mechanisms exist and will appear beyond IKEv1, but this document does not address the issues related to them.	MAY	B	B			IKE
3				ESP encapsulation of Binding Updates and Acknowledgements between the mobile node and home agent **MUST** be supported and **MUST** be used.	MUST	A	A1	X	MN-2-1-1-1-001 MN-2-2-1-1-001	
4					MUST	A	A1	X	MN-2-1-1-1-001 MN-2-2-1-1-001	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
5				ESP encapsulation of the Home Test Init and Home Test messages tunneled between the mobile node and home agent **MUST** be supported and **SHOULD** be used.	MUST	A	A2	X	MN-2-1-1-2-001 MN-2-1-3-2-001	Return Routability
6					SHOULD	A	A2	X	MN-2-1-1-2-001 MN-2-1-3-2-001	Return Routability
7				ESP encapsulation of the ICMPv6 messages related to prefix discovery **MUST** be supported and **SHOULD** be used.	MUST	A	A2	X	MN-4-1-1-1-001 MN-4-2-1-1-001	MPS/MPA
8					SHOULD	A	A2	X	MN-4-1-1-1-001 MN-4-2-1-1-001	MPS/MPA
9				ESP encapsulation of the payload packets tunneled between the mobile node and home agent **MAY** be supported and used.	MAY	B	B	X	MN-4-1-1-2-001	IPsec protectoin of the payload packets tunneled between the mobile node and home agent
10				If multicast group membership control protocols or stateful address autoconfiguration protocols are supported, payload data protection **MUST** be supported for those	MUST	A	A2			Multicast

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
11	4.2	Policy Requirements	The following requirements apply to both home agents and mobile nodes:	As required in the base specification [7], when a packet destined to the receiving node is matched against IPsec security policy or selectors of a security association, an address appearing in a Home Address destination option is considered as the source address of the packet.	(do)	A	A1/A2	X	MN-2-1-1-1-001 MN-4-1-1-1-001	BU : A1 MPS : A2
12				Similarly, a home address within a Type 2 Routing header destined to the receiving node is considered as the destination address of the packet, when a packet is matched against IPsec security policy or selectors of a security association.	(do)	A	A1/A2	X	MN-2-2-1-1-001 MN-4-2-1-1-001	BA : A1 MPA : A2
13				Similar implementation considers apply to the Routing header processing as was described above for the Home Address destination option.	(do)	A	A1/A2	X	MN-2-2-1-1-001 MN-4-2-1-1-001	BA : A1 MPA : A2

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
14				When IPsec is used to protect return routability signaling or payload packets, this protection **MUST** only be applied to the return routability packets entering the IPv6 encapsulated tunnel interface between the mobile node and the home agent. This can be achieved, for instance, by defining the security policy database entries specifically for the tunnel interface. That is, the policy entries are not generally applied on all traffic on the physical interface(s) of the nodes, but rather only on traffic that enters this tunnel.	MUST	A	A2	X	MN-2-1-1-2-001	Return Routability IPsec Protection of the payload packets tunneled between MN and HA
15				The authentication of mobile nodes **MAY** be based either on machine or user credentials. Note that multi-user operating systems typically allow all users of a node to use any of the IP addresses assigned to the node. This limits the capability of the home agent to restrict the use of a home address to a particular user in such environment. Where user credentials are applied in a multi-user environment, the configuration should authorize all users of the node to control all home addresses assigned to the node.	MAY	B	B			Machine / user credentials

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
16				When the mobile node returns home and de-registers with the Home Agent, the tunnel between the home agent and the mobile node's care-of address is torn down. The security policy entries, which were used for protecting tunneled traffic between the mobile node and the home agent **MUST** be made inactive (for instance, by removing them and installing them back later through an API). The corresponding security associations could be kept as they are or deleted depending on how they were created. If the security associations were created dynamically using IKE, they are automatically deleted when they expire. If the security associations were created through manual configuration, they **MUST** be retained and used later when the mobile node moves aways from home again. The security associations protecting Binding Updates and Acknowledgements, and prefix discovery **SHOULD NOT** be deleted as they do not depend on care-of addresses and can be used again.	MUST	A	A2	X	MN-3-1-3-2-001 MN-1-2-2-1-018 MN-1-2-2-1-010 MN-1-2-2-1-014	Returning Home
17					MUST	A	A2	X	MN-1-1-2-1-001	Returning Home
18					SHOULD NOT	A	A2	X	MN-1-1-2-1-001 MN-1-2-1-1-022 MN-1-2-1-1-024 MN-1-2-1-1-025 MN-1-2-3-1-010 MN-1-2-3-1-014 MN-1-2-3-1-017	Returning Home

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
19			The following rules apply to mobile nodes:	The mobile node **MUST** use the Home Address destination option in Binding Updates and Mobile Prefix Solicitations, sent to the home agent from a care-of address.	MUST	A	A1/A2	X	MN-2-1-1-1-001 MN-4-1-1-1-001	BU : A1 MPS : A2
20	4.3	IPsec Protocol Processing	The following requirements apply to both home agents and mobile nodes:	When securing Binding Updates, Binding Acknowledgements, and prefix discovery, both the mobile nodes and the home agents **MUST** support and **SHOULD** use the Encapsulating Security Payload (ESP) [3] header in transport mode and **MUST** use a non-null payload authentication algorithm to provide data origin authentication, connectionless integrity and optional anti-replay protection.	MUST	A	A1/A2	X	MN-2-1-1-1-001 MN-2-2-1-1-001 MN-4-1-1-1-001 MN-4-2-1-1-001	BU/BA : A1 MPS/MPA : A2
21					SHOULD	A	A1/A2	X	MN-2-1-1-1-001 MN-2-2-1-1-001 MN-4-1-1-1-001 MN-4-2-1-1-001	BU/BA : A1 MPS/MPA : A2
22					MUST	A	A1/A2	X	MN-2-1-1-1-001 MN-2-2-1-1-001 MN-4-1-1-1-001 MN-4-2-1-1-001	BU/BA : A1 MPS/MPA : A2
23				Tunnel mode IPsec ESP **MUST** be supported and **SHOULD** be used for the protection of packets belonging to the return routability procedure. A non-null encryption transform and a	MUST	A	A2	X	MN-2-1-1-2-001 MN-2-1-3-2-001	HoTI/HoT

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
24				non-null authentication algorithm **MUST** be applied.	SHOULD	A	A2	X	MN-2-1-1-2-001 MN-2-1-3-2-001	HoTI/HoT
25					MUST	A	A2	X	MN-2-1-1-2-001 MN-2-1-3-2-001	HoTI/HoT
26			The following rules apply to mobile nodes:	When ESP is used to protect Binding Updates, there is no protection for the care-of address which appears in the IPv6 header outside the area protected by ESP. It is important for the home agent to verify that the care-of address has not been tampered with. As a result, the attacker would have redirected the mobile node's traffic to another address. In order to prevent this, Mobile IPv6 implementations **MUST** use the Alternate Care-of Address mobility option in Binding Updates sent by mobile nodes while away from home. The exception to this is when the mobile node returns home and sends a Binding Update to the home agent in order to de-register. In this case no Alternate Care-of Address option is needed, as described	MUST	A	A1	X	MN-2-1-1-1-001	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
27				When IPsec is used to protect return routability signaling or payload packets, the mobile node **MUST** set the source address it uses for the outgoing tunnel packets to the current primary care-of address. The mobile node starts to use a new primary care-of address immediately after sending a Binding Update to the home agent to register this new address. Similarly, it starts to use the new address as the required destination address of tunneled packets received from the home agent.	MUST	A	A2	X	MN-2-1-1-2-001 MN-4-1-1-2-001	HoTI/HoT IPsec for the protection of payload packets

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
28	4.4	Dynamic Keying	The following requirements apply to both home agents and mobile nodes:	If anti-replay protection is required, dynamic keying **MUST** be used. IPsec can provide anti-replay protection only if dynamic keying is used (which may not always be the case). IPsec also does not guarantee correct ordering of packets, only that they have not been replayed. Because of this, sequence numbers within the Mobile IPv6 messages are used to ensure correct ordering. However, if the 16 bit Mobile IPv6 sequence number space is cycled through, or the home agent reboots and loses its state regarding the sequence numbers, replay and reordering attacks become possible. The use of dynamic keying, IPsec anti-replay protection, and the Mobile IPv6 sequence numbers can together prevent such attacks.	MUST	A	A2	X	MN-1-2-1-1-001	IKE

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
29				If IKE version 1 is used with preshared secrets in main mode, it determines the shared secret to use from the IP address of the peer. With Mobile IPv6, however, this may be a care-of address and does not indicate which mobile node attempts to contact the home agent. Therefore, if preshared secret authentication is used in IKEv1 between the mobile node and the home agent then aggressive mode **MUST** be used. Note also that care needs to be taken with phase 1 identity selection. Where the ID_IPV6_ADDR Identity Payloads is used, unambiguous mapping of identities to keys is not possible. (The next version of IKE may not have these limitations.)	MUST	A	A2	X	MN-1-2-1-1-001	IKE
30			The following rules apply to mobile nodes:	In addition to the rules above, if dynamic keying is used, the key management protocol **MUST** use the care-of address as the source address in the protocol exchanges with the mobile node's home agent.	MUST	A	A2	X	MN-1-2-1-1-001	IKE

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
31				However, the IPsec security associations with the mobile node's home agent use home addresses. That is, the IPsec security associations **MUST** be requested from the key management protocol using the home address of the mobile node as the client identity.	MUST	A	A2	X	MN-1-2-1-1-001	IKE

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
32				The security associations for protecting Binding Updates and Acknowledgements are requested for the Mobility header protocol in transport mode and for specific IP addresses as endpoints. No other selectors are used. Similarly, the security associations for protecting prefix discovery are requested for the ICMPv6 protocol and the specific IP addresses, again without other selectors. Security associations for payload and return routability protection are requested for a specific tunnel interface and either the payload protocol or the Mobility header protocol, in tunnel mode. In this case one requested endpoint is an IP address and the other one is a wildcard, and there are no other selectors.	(do)	A/B	A1/A2/B	X	MN-2-1-1-1-001 MN-2-2-1-1-001 MN-4-1-1-1-001 MN-4-2-1-1-001 MN-2-1-1-2-001 MN-2-1-3-2-001 MN-4-1-1-2-001	BU/BA : A1 MPS/MPA, HoTI/HoT : A2 IPsec Protection of the payload packets tunneled between MN and HA : B

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
33				If the mobile node has used IKE version 1 to establish security associations with its home agent, it should follow the procedures discussed in Section 11.7.1 and 11.7.3 of the base specification [7] to determine whether the IKE endpoints can be moved or if IKE phase 1 has to be re-established.	(do)	A	A2	X	MN-1-2-1-1-012 MN-1-2-1-1-014	IKE

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
1	3	Packet Formats		The mobile node and the home agent **MUST** support the packet formats as defined in Section 3 of RFC 3776.	MUST	A	A1			(generalization)
				The support for the above tunneled packet format is optional on the mobile node and the home agent.	(do)	B	B			all traffic in tunnel mode
1	4.1	General Requirements		RFC 3775 states that manual configuration of IPsec security associations **MUST** be supported, and automated key management **MAY** be supported.	MUST	A	A1			(generalization)
2					MAY	B	B			IKEv2
3				ESP encapsulation for Binding Updates and Binding Acknowledgements **MUST** be supported and used.	MUST	A	A1/A2	X	MN-2-1-1-1-001, MN-2-2-1-1-001, MN-2-1-3-1-001, MN-2-2-2-1-001	fine-grain selectors (BU/BA)
4				ESP encapsulation in tunnel mode for the Home Test Init (HoTi) and Home Test (HoT) messages tunneled between the mobile node and the home agent **MUST** be supported and **SHOULD** be used.	MUST/ SHOULD	A	A2	X	MN-3-1-1-2-001 MN-3-2-1-2-001	fine-grain selectors (HoTI/HoT)
5				ESP encapsulation of the ICMPv6 messages related to mobile prefix discovery **MUST** be supported and **SHOULD** be used.	MUST/ SHOULD	A	A2	X	MN-4-1-1-1-002, MN-4-2-1-1-001	fine-grain selectors (MPS/MPA)

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
6				ESP encapsulation of the payload packets tunneled between the mobile node and the home agent **MAY** be supported and used.	MAY	B	B			ESP encapsulation of the payload packets
7				If multicast group membership control protocols or stateful address autoconfiguration protocols are supported, payload data protection **MUST** be supported for those protocols.	MUST	A	A2			multicast group membership control protocols
8				The home agent and the mobile node **MAY** support authentication using EAP in IKEv2 as described in Section 8.	MAY	B	B			IKEv2
9				The home agent and the mobile node **MAY** support remote configuration of the home address as described in Section 9. When the home agent receives a configuration payload with a CFG_REQUEST for INTERNAL_IP6_ADDRESS, it must reply with a valid home address for the mobile node. The home agent can pick a home address from a local database or from a DHCPv6 server on the home link.	MAY	B	B			IKEv2

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
10	4.2	Policy Requirements		The home agent **MUST** be able to prevent a mobile node from using its security association to send a Binding Update on behalf of another mobile node.	MUST	A	A1			(Setting of IPsec configuration)
11				With manual IPsec configuration, the home agent **MUST** be able to verify that a security association was created for a particular home address.	MUST	A	A1			(Setting of IPsec configuration)
12				With dynamic keying, the home agent **MUST** be able to verify that the identity presented in the IKE_AUTH exchange is allowed to create security associations for a particular home address.	MUST	A	A2			IKEv2
13				As required in the base specification [2], when a packet destined to the receiving node is matched against IPsec security policy or selectors of a security association, an address appearing in a Home Address destination option is considered as the source address of the packet.	(do)	A	A1	X	MN-2-1-1-1-001, MN-2-1-3-1-001	

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
14				Similar implementation considerations apply to the Routing header processing as was described above for the Home Address destination option.	(do)	A	A1	X	MN-2-2-1-1-001, MN-2-2-2-1-001	
15				The security policy entries, which were used for protecting tunneled traffic between the mobile node and the home agent, **SHOULD** be made inactive (for instance, by removing them and installing them back later through an API).	SHOULD	A	A2			Real home link
16				If the security associations were created dynamically using IKE, they are automatically deleted when they expire.	(do)	B	B			IKEv2
17				If the security associations were created through manual configuration, they **MUST** be retained and used later when the mobile node moves away from home again.	MUST	A	A2	X	MN-1-1-2-1-001	tunnel traffic IPsec manual configuration (Scenario Test)

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
18				The security associations protecting Binding Updates, Binding Acknowledgements and Mobile Prefix Discovery messages SHOULD NOT be deleted as they do not depend on care-of addresses and can be used again.	SHOULD NOT	A	A1/A2	X	MN-1-1-2-1-001	A1:BU/BA A2:MPS/MPA (Scenario Test)
19				The mobile node **MUST** use the Home Address destination option in Binding Updates and Mobile Prefix Solicitations when transport mode IPsec protection is used, so that the home address is visible when the IPsec policy checks are made.	MUST	A	A1/A2	X	MN-2-1-1-1-001, MN-2-1-3-1-001、 MN-4-1-1-1-002	A1:BU/BA A2:MPS/MPA
20				The home agent **MUST** use the Type 2 Routing header in Binding Acknowledgements and Mobile Prefix Advertisements sent to the mobile node when transport mode IPsec protection is used, again due to the need to have the home address visible when the policy checks are made.	MUST	A	A1/A2	X	MN-2-2-1-1-001, MN-2-2-2-1-001, MN-4-2-1-1-001	A1:BU/BA A2:MPS/MPA
21	4.3	IPsec Protocol Processing Requirements		The home agent and mobile node **SHOULD** support Mobility Header message type as an IPsec selector.	SHOULD	A	A2	X	MN-2-1-1-1-001, MN-2-1-3-1-001、 MN-2-2-1-1-001, MN-2-2-2-1-001, MN-3-1-1-2-001	fine-grain selectors

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
22				The home agent and mobile node **SHOULD** support ICMPv6 message type as an IPsec selector.	SHOULD	A	A2	X	MN-4-1-1-1-002, MN-4-2-1-1-001	fine-grain selectors
23				The home agent **MUST** be able to distinguish between HoTi messages sent to itself (when it is acting as a Correspondent Node) and those sent to Correspondent Nodes (when it is acting as a home agent) based on the destination address of the packet.	MUST	A	A2			HoTI/HoT
24				When securing Binding Updates, Binding Acknowledgements, and Mobile Prefix Discovery messages, both the mobile node and the home agent **MUST** support the use of the Encapsulating Security Payload (ESP) [6] header in transport mode and **MUST** use a non-null payload authentication algorithm to provide data origin authentication, connectionless integrity, and optional anti-replay protection.	MUST	A	A1/A2	X	MN-2-1-1-1-001, MN-2-2-1-1-001, MN-4-1-1-1-002, MN-4-2-1-1-001	A1:BU/BA A2:MPS/MPA
25					MUST	A	A1/A2	X	MN-2-1-1-1-001, MN-2-2-1-1-001, MN-4-1-1-1-002, MN-4-2-1-1-001	A1:BU/BA A2:MPS/MPA
26				Tunnel mode IPsec ESP **MUST** be supported and **SHOULD** be used for the protection of packets belonging to	MUST	A	A2	X	MN-3-1-1-2-001 MN-3-2-1-2-001	HoTI/HoT

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No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
27				the return routability procedure. A non-null encryption transform and a non-null authentication algorithm **MUST** be applied.	SHOULD	A	A2	X	MN-3-1-1-2-001 MN-3-2-1-2-001	HoTI/HoT
28					MUST	A	A2	X	MN-3-1-1-2-001 MN-3-2-1-2-001	HoTI/HoT
29				In order to prevent this, Mobile IPv6 implementations **MUST** use the Alternate Care-of Address mobility option in Binding Updates sent by mobile nodes while away from home.The exception to this is when the mobile node returns home and sends a Binding Update to the home agent in order to de-register.	MUST	A	A1	X	MN-2-1-1-1-001, MN-2-1-2-1-001	
				The exception to this is when the mobile node returns home and sends a Binding Update to the home agent in order to de-register.	(do)	A	A1	X	MN-2-1-3-1-001	Real home link for HA
30				When IPsec is used to protect return routability signaling or payload packets, the mobile node **MUST** set the source address it uses for the outgoing tunnel packets to the current primary care- of address.	MUST	A	A2	X	MN-3-1-1-2-001, MN-3-1-2-2-004	RR

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
31				The home agent **MUST** set the new care-of address as the destination address of these packets, as if the outer header destination address in the security association had changed. Similarly, the home agent starts to expect the new source address in the tunnel packets received from the mobile node.	MUST	A	A2	X	MN-3-1-2-2-004	RR
32				It should be noted that the use of such an API and the address changes **MUST** only be done based on the Binding Updates received by the home agent and protected by the use of IPsec.	MUST	A	A1			depend on implementation
33	4.4	Dynamic Keying Requirements		The mobile node **MUST** use its care-of address as source address in protocol exchanges, when using dynamic keying.	MUST	A	A2			dynamic keying

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
34				The mobile node and the home agent **MUST** create security associations based on the home address, so that the security associations survive change in care-of address. When using IKEv2 as the key exchange protocol, the home address should be carried as the initiator IP address in the TSi payload during the CREATE_CHILD_SA exchange [4].	MUST	A	A2			dynamic keying
35				If the mobile node has used IKEv2 to establish security associations with its home agent, it should follow the procedures discussed in Section 11.7.1 and 11.7.3 of the base specification [2] to determine whether the IKE endpoints can be moved or if the SAs, including the IKEv2 SA, have to be re-established.	(do)	B	B			IKEv2
36				If the home agent has used IKEv2 to establish security associations with the mobile node, it should follow the procedures discussed in Section 10.3.1 and 10.3.2 of the base specification [2] to determine whether the IKE endpoints can be moved or if the SAs, including the IKEv2 SA, have to be re-established.	(do)	B	B			IKEv2

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
37	5	Selector Granularity Considerations		The IPsec implementations on the mobile node and the home agent support fine grain selectors, including the Mobility Header message type. This is the case assumed in the IPsec SPD and SAD examples in this document.	(do)	A	A2			fine-grain selectors (generalization)
38				The IPsec implementations only support selectors at a protocol level. In such implementations, the IPsec implementation can only identify mobility header traffic and cannot identify the individual mobility header messages. In this case, the protection of Return Routability Messages uses a setup similar to the regular payload packets to the correspondent node with the protocol selector set to Mobility Header messages. All tunneled Mobility Header messages will be protected.	(do)	A	A1			Basic (generalization)

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
39				The third case is where the protocol selector is not available in the IPsec implementation. In this case all traffic sent by the mobile node reverse tunneled through the home agent is protected using ESP in tunnel mode. This case is also applicable when the mobile node, due to privacy considerations, tunnels all traffic to the home agent. This includes Mobile IPv6 signaling messages exchanged between the mobile node and the home agent and all traffic exchanged between the mobile node and the correspondent node. This case uses IPsec tunnel mode SA with the protocol selector set to 'any'.	(do)	B	B			out of scope in IPv6 Ready Logo program for MIPv6.

Functional classification and test priority for MN

No.	RFC Section	RFC Section title	Item	Functional Specification	RFC Status	Functional Rank	Test Priority	Test PROFILE		Reason of TEST Priority
								Supported	Test No.	
40				If there is just one IPsec SA providing protection for all traffic, then the SA **MUST** fulfill the requirements for protecting protection. If the third case is being used for privacy considerations, then there can also be separate tunnel mode SPD entries for protecting the Return Routability messages with a higher priority in the SPD so that the SPD entry with the higher priority gets applied first.	MUST	A	A2			out of scope in IPv6 Ready Logo program for MIPv6.
41				The receipt of a Binding Update from the new care-of address updates the tunnel endpoint of the IPsec SA as described in Section 4.3. Since the Binding Update that updates the tunnel endpoint is received through the same tunnel interface that needs to be updated, special care should be taken on the home agent to ensure that the Binding Update is not dropped.	(do)	B	B			out of scope in IPv6 Ready Logo program for MIPv6.

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