5.2 Operations

5.2.1 CN

This section describes the operation in Mobile IPv6 and functional classifications of the function on CN from the viewpoint of the classifications given in section 2.3.

Notes

- “I-D section” gives the corresponding section number in the Mobile IPv6 Internet Draft referred to in section 2.2.
- “I-D section title” gives the section heading in the Mobile IPv6 Internet Draft 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 “Function Category,” “1” is Normal and “2” is Abnormal.
- In the column “Version 2.0,” “x” indicates that the function is to be 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.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	A1	1	X	CN-3-5-5	
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	1	X	CN-1-3	
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	1	X	CN-1-3	
5				o The care-of address for the mobile node indicated by the home address field in this Binding Cache entry.	(do)	A	A1	1	X	CN-1-3	
6				o A lifetime value, indicating the remaining lifetime for this Binding Cache entry.	(do)	A	A1	1	X	CN-5-2-1,2,3,4,5,6,7	
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	1	X	CN-5-2-1,2,3,4,5,6,7	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
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	1			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	1	X	CN-5-1-1,2,3	
10				Sequence Number values **MUST** be compared modulo 2**16 as explained in Section 9.5.1.	MUST	A	A1	1	X	CN-5-1-1,2,3	
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	1			In the case that No.12 function is implemented, this function is mandotory.

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
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	1	X	CN-3-3-17 CN-3-4-3 CN-5-2-8 CN-6-2-1,2,3	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	2	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	1	X	CN-2-4-1	
3					MUST	A	A1	2	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	1	X	CN-2-1-5 CN-2-2-5 CN-2-3-5	
5					MUST	A	A1	2	X	CN-2-1-5 CN-2-2-5 CN-2-3-5	
6					SHOULD	A	A1	2	X	CN-2-1-5 CN-2-2-5 CN-2-3-5	
7					SHOULD	A	A1	2	X	CN-2-1-5 CN-2-2-5 CN-2-3-5	
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	1	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	MUST	A	A1	2	X	CN-2-1-3 CN-2-2-3 CN-2-3-3	
10					SHOULD	A	A1	2	X	CN-2-1-3 CN-2-2-3 CN-2-3-3	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
11				used.) The Pointer field in the ICMP message **SHOULD** point at the Header Len field.	SHOULD	A	A1	2	X	CN-2-1-3 CN-2-2-3 CN-2-3-3	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	2	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	2	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	1	X	CN-6-2-2,3	
4					MUST	A	A1	1	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	1	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	2	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	2	X	CN-6-2-1,2,3	
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	1	X	CN-6-4-1,2	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
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	A1	1			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	1	X	CN-6-4-2	IPsec between MN and CN
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	1	X	CN-6-4-2	IPsec between MN and CN

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
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	1	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, the mobile node **MUST NOT** do this in the following cases: - When sending an IPv6 Neighbor Discovery [12] packet. - Where otherwise noted in Section 6.1.	SHOULD	A	A1	1	X	CN-1-3	
14					MUST NOT	A	A1	1	X	CN-1-1 CN-1-2 CN-3-2-3,4	
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	1	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	1	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	2	X	CN-1-1 CN-2-4-1 CN-6-2-1,2,3 (more)	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
18				If the Source Address field does not contain a unicast address, the Binding Error message **MUST NOT** be sent.	MUST NOT	A	A1	2	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	2	X	CN-1-1 CN-2-4-1 CN-6-2-1,2,3 (more)	
20				Binding Error messages **SHOULD** be subject to rate limiting in the same manner as is done for ICMPv6 messages [14].	SHOULD	A	A2	2			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	2	X	CN-6-1	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	1	X	CN-2-1-2	
2					MUST	A	A1	1	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	1	X	CN-1-1 CN-4-11	
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	1	X	CN-2-2-2	
5					MUST	A	A1	2	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	1	X	CN-1-1 CN-4-11	
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	1	X	CN-1-1	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
8	9.4.4	Sending Care-of Test Messages		The correspondent node 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	1	X	CN-1-1	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	1	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	1	X	CN-5-1-1,2	
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	1	X	CN-5-1-3	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	1	X	CN-5-1-1,2	
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	1	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	
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	1	X	CN-4-6-1,2,3 CN-4-7-1,2,3 CN-4-12-1,2,3	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
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	1	X	CN-2-3-11	
8					MUST	A	A1	1	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	B	B	1	X	CN-3-1-1,2 CN-3-3-10,11,12,13,14	Usage of Alternate Care-of Address in the Binding Update to CN
10					MUST	A	A2	1	X	CN-3-1-1,2	In the case that No.11 function is implemented, this function is mandotory.
11				The Binding Authorization Data mobility option **MUST** be the last option and **MUST NOT** have trailing padding.	MUST	A	A1	1	X	CN-2-3-1-2	
12					MUST NOT	A	A1	1	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	1	X	CN-5-3-4,5,6	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
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	2	X	CN-5-1-2,3	
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	2	X	CN-5-3-2,3	
16					MUST NOT	A	A1	2	X	CN-5-3-2,3	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
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	2	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	
18				For 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, they **MUST** be silently discarded.	MUST	A	A1	2	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	1	X	CN-5-1-1,2	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	1	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	
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 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	1	X	CN-3-3-1,2,3,4,5,6,7,8,9,10,11,12,13,14 CN-4-2-2,3 CN-4-4-2,3	
22					MUST	A	A1	1	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.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	A2 A1	1	X	(Alternate Care-of Address option is present) CN-3-1,2 CN-3-3-11,12,13,14 (Otherwise) CN-1-1,2,3 CN-3-2-1,2 CN-3-3-1,2,3,4,5,6,7,8,9,10 CN-3-4-1,2	Usage of Alternate Care-of Address in the Binding Update to CN : A2

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	1	X	(Home Address destination option is present) CN-1-1,2,3 CN-3-3-1,2,3,4,7,8 CN-3-4-1,2 CN-3-2-1,2 CN-3-1-1,2 (Otherwise) CN-3-1-3-5,6,9,10,11,12,13,14	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		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	1	X	CN-1-1,2,3 CN-3-2-1,2 CN-3-3-1,2,3,4,5,6,7,8,9,10,11,12,13,14 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	1	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	2	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	1	X	CN-5-2-1,2,3,4,5,6,7	
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	MAY	B	B	2			This function is optional

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
30				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.	SHOULD	A	A2	2			In the case that No.30 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	1	X	CN-3-3-1,2,3,4,5,6,7,8,9,10,11,12,13,14	
32					MUST NOT	A	A1	1	X	CN-3-3-17 CN-3-4-3 CN-5-2-8	
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	1	X	CN-5-4-1	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
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	2	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	
35				o If the Acknowledge (A) bit set is set in the Binding Update, a Binding Acknowledgement **MUST** be sent.	MUST	A	A1	1	X	CN-1-2 CN-3-1,2 CN-3-2-1,2,3,4 CN-3-3-1,2,3,4,5,6,7,8,9,10,11,12,13,14,17 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	MUST	A	A1	2	X	CN-2-5-2	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
37				(Section 9.5.1), or insufficiency of resources (Section 9.5.2), a Binding Acknowledgement **MUST** be sent. If the node accepts the Binding Update, the Binding Acknowledgement **SHOULD NOT** be sent.	SHOULD NOT	A	A1	2	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	1	X	CN-1-2 CN-3-1-1,2 CN-3-2-1,2 CN-3-3-1,2,3,4,5,6,7,8,9,10,11,12,13,14 CN-5-1-1,3 CN-5-2-1,2,3,4,5,6,7,8 CN-4-3-2,3 CN-4-5-2,3 CN-4-12-1,2,3	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
39					MUST	A	A1	2	X	BA(135) CN-5-1-2 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	
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	2	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	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
41					MUST	A	A1	1	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	
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 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 NOT	A	A1	2	X	CN-2-6-1,4	
43					MUST	A	A1	2	X	CN-2-6-1,4	
44					MUST	A	A1	1	X	CN-3-3-17 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	MUST	A	A1	1	X	CN-3-3-5,6,9,10,11,12,13,14	
46					MUST NOT	A	A1	1	X	CN-3-3-5,6,9,10,11,12,13,14	

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional	TEST Priority	Functional	Ver2.0		Reason of TEST Priority
									Supported	Test No.	
47				a type 2 routing header which contains the mobile node's home address.	MUST	A	A1	1	X	CN-1-2 CN-3-1-1,2 CN-3-2-1,2 CN-3-3-1,2,3,4,7,8	
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.	MAY	B	B	1	X	CN-3-2-3,4	This function is optional
49				The correspondent node **MAY** retransmit Binding Refresh Request messages provided that rate limitation is applied. The correspondent node **MUST** stop retransmitting when it receives a Binding Update.	MAY	B	B	1	X	CN-3-2-4	This function is optional
50					MUST	A	A2	1	X	CN-3-2-4	In the case that No.50 function is implemented, this function is mandotory.

Functional classification and test priority for CN

No.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional Rank	TEST Priority	Functional Category	Ver2.0		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	1	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 is likely to 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.	I-D Section	I-D Section title	Item	Functional Specification	I-D Status	Functional Rank	TEST Priority	Functional Category	Ver2.0		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 acc Binding Updates from mobile nodes tha have recently received keygen tokens. This alternative is therefore recommen only as a last measure.	MUST	A	A2	1			In the case that No.3 function is implemented, this function is mandotory.