IPv6 Ready Phase-2
Mobile IPv6

Self Test Specification
for Correspondent Node

Technical Document
Revision 3.2.0

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Commentators:
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Introduction

The IPv6 forum plays a major role to bring together industrial actors, to develop and deploy the new generation of IP protocols. Contrary to IPv4, which started with a small closed group of implementers, the universality of IPv6 leads to a huge number of implementations. Interoperability has always been considered as a critical feature in the Internet community.
Due to the large number of IPv6 implementations, it is important to provide the market a strong signal proving the level of interoperability across various products.
To avoid confusion in the mind of customers, a globally unique logo programme should be defined. The IPv6 logo will give confidence to users that IPv6 is currently operational. It will also be a clear indication that the technology will still be used in the future. To summarize, this logo programme will contribute to the feeling that IPv6 is available and ready to be used.

The IPv6 Logo Programme consists in three phases

Phase 1 :
In a first stage, the Logo will indicate that the product includes IPv6 mandatory core protocols and can interoperate with other IPv6 implementations.

Phase 2 :
The "IPv6 ready" step implies a proper care, technical consensus and clear technical references. The IPv6 ready logo will indicate that a product has successfully satisfied strong requirements stated by the IPv6 Logo Committee (v6LC).
To avoid confusion, the logo "IPv6 Ready" will be generic. The v6LC will define the test profiles with associated requirements for specific functionalities.

Phase 3 :
Same as Phase 2 with IPsec mandated.

Table of Contents

[I] IPv6 Ready Logo Phase 2 Mobile IPv6
Self Test Specification Correspondent Node

Modification Record 2
Acknowledgements 3
Introduction 4
Table of Contents 5
1 Overview 9
2 Common Topology 12
2.1 Common Topology-1 12
2.2 Common Topology-2 13
2.3 Common Topology-3 14
3 Common Setup 15
4 Common Initialization 15
5 Common Packets 16
5.1 ICMPv6 Router Advertisement 16
5.1.1 Router Advertisement form Router 16
5.2 ICMPv6 Neighbor Solicitation 16
5.2.1 Neighbor Solicitation from Router to CN 16
5.3 ICMPv6 Neighbor Advertisement 16
5.3.1 Neighbor Advertisement from CN to Router 16
5.4 ICMPv6 Destination Unreachable 16
5.4.1 Destination Unreachable 16
5.5 ICMPv6 Parameter Problem 16
5.5.1 Parameter Problem 16
5.6 ICMPv6 Echo request 17
5.6.1 Echo request from MN (home) to CN (Receiving) 17
5.6.2 Echo request from MN to CN (DH) 17
5.7 ICMPv6 Echo reply 17
5.7.1 Echo reply from CN to MN (home)(Sending) 17
5.7.2 ICMPv6 Echo reply from CN to MN (RH2) 17
5.8 MIPv6 Home Test Init 17
5.8.1 Home Test Init from HA to CN (Receiving) 17
5.9 MIPv6 Care-of Test Init 18
5.9.1 Care-of Test Init from MN to CN 18
5.10 MIPv6 Home Test 18
5.10.1 Home Test from CN to MN (Sending) 18
5.11 MIPv6 Care-of Test 18
5.11.1 Care-of Test from CN to MN 18
5.12 MIPv6 Binding Update 18
5.12.1 Binding Update from MN to CN (DH) 18
5.12.2 Binding Update from MN to CN 19

5.12.3 Binding Update from MN to HA (DH) 19
5.13 MIPv6 Binding Acknowledgement 19
5.13.1 Binding Acknowledgement from CN to MN (RH2) 19
5.13.2 Binding Acknowledgement from CN to MN 20
5.13.3 Binding Acknowledgement from HA to MN (RH2) 20
5.14 MIPv6 Binding Error 20
5.14.1 Binding Error from CN to MN 20
6. Test Specification: Correspondent Node operation 21
6.1 Normal Operations 21
6.1.1 CN-1-1 - Return Routability 21
6.1.2 CN-1-2 - Registration - Binding Update 24
6.1.3 CN-1-3 - Registration - Route Optimization 26
6.1.4 CN-3-3-1-3 - De-Registration - From the foreign link with Alternate Care-of Address option 29
6.1.5 CN-3-3-2-1 - De-Registration - From the home link 32
6.1.6 CN-3-3-2-3 - De-Registration - From the home link, with Home Address option 35
6.1.7 CN-3-3-2-5 - De-Registration - From the home link, with Alternate Care-of Address option 38
6.1.8 CN-3-3-2-7 - De-Registration - From the home link, with Home Address option and Alternate Care-of Address option 41
6.1.9 CN-3-4-1 - Handover 44
6.1.10 CN-5-4-3 - Multiple Binding Cache entries 48
6.2 Processing Mobility Headers 53
6.2.1 Receiving HoTI 53
6.2.1.1 CN-2-1-2 - Receiving HoTI - Home Address option 53
6.2.1.2 CN-2-1-3 - Receiving HoTI - Invalid Mobility Header Len 55
6.2.1.3 CN-2-1-4 - Receiving HoTI - Invalid Mobility Header Reserved 57
6.2.1.4 CN-2-1-5 - Receiving HoTI - Invalid Mobility Header Payload Proto 59
6.2.1.5 CN-2-1-6 - Receiving HoTI - Invalid Mobility Header Checksum 61
6.2.2 Receiving CoTI 63
6.2.2.1 CN-2-2-2 - Receiving CoTI - Home Address option 63
6.2.2.2 CN-2-2-3 - Receiving CoTI - Invalid Mobility Header Len 65
6.2.2.3 CN-2-2-4 - Receiving CoTI - Invalid Mobility Header Reserved 67
6.2.2.4 CN-2-2-5 - Receiving CoTI - Invalid Mobility Header Payload Proto 69
6.2.2.5 CN-2-2-6 - Receiving CoTI - Invalid Mobility Header Checksum 71
6.2.3 Receiving BU 73
6.2.3.1 CN-2-3-3 - Receiving BU - Invalid Mobility Header Len 73
6.2.3.2 CN-2-3-4 - Receiving BU - Invalid Mobility Header Reserved 76
6.2.3.3 CN-2-3-5 - Receiving BU - Invalid Mobility Header Payload Proto 79
6.2.3.4 CN-2-3-6 - Receiving BU - Invalid Mobility Header Checksum 82
6.2.3.5 CN-2-3-9 - Receiving BU - Invalid Reserved after (K)bit 84
6.2.4 Receiving mobility message 87
6.2.4.1 CN-2-4-1 - Receiving mobility message - Invalid MH Type 87
6.3 Validating Binding Updates 90
6.3.1 Flags and options 90

6.3.1.1 CN-2-3-1-2 - Receiving BU with innvalid alignment of Binding Authorization Data option 90
6.3.1.2 CN-2-3-11 - Receiving BU with invalid Binding Authorization Data option 93
6.3.1.3 CN-2-3-10-1 - Receiving BU with (H)bit is cleared, without Nonce Indices option 96
6.3.1.4 CN-5-3-4 - Receiving BU with (H)bit is set, with Nonce Indices option 98
6.3.2 Invalid addresses 100
6.3.2.1 CN-2-6-1 - Receiving BU with invalid address - Source Address (Registration) ... 100
6.3.2.2 CN-2-6-2 - Receiving BU with invalid address - Home Address (Registration) 103
6.3.2.3 CN-2-6-4 - Receiving BU with invalid address - Source Address (De-Registration) 106
6.3.2.4 CN-5-4-2 - BU Creating Circular Reference 109
6.3.3 Registration with Alternate Care-of Address option 112
6.3.3.1 CN-3-1-1 - Registration - Different Alternate Care-of Address from Source Address 112
6.3.3.2 CN-3-1-2 - Registration - Same Alternate Care-of Address as Source Address ... 115
6.3.4 Nonce Indices 118
6.3.4.1 Home Nonce Index timeout 118
6.3.4.1.1 CN-4-2-1 - Home Nonce Index timeout - Registration from the foreign link 118
6.3.4.1.2 CN-4-2-2 - Home Nonce Index timeout - De-Registration from the foreign link121
6.3.4.1.3 CN-4-2-3 - Home Nonce Index timeout - De-Registration from the home link 124
6.3.4.2 Care-of Nonce Index timeout 127
6.3.4.2.1 CN-4-3-1 - Care-of Nonce Index timeout - Registration from the foreign link. 127
6.3.4.2.2 CN-4-3-2 - Care-of Nonce Index timeout - De-Registration from the foreign link130
6.3.4.2.3 CN-4-3-3 - Care-of Nonce Index timeout - De-Registration from the home link133
6.3.4.3 Home and Care-of Nonce Index timeout 136
6.3.4.3.1 CN-4-8-1 - Home and Care-of Nonce Index timeout - Registration 136
6.3.5 Sequence # 139
6.3.5.1 CN-5-1-1-1 - Sequence # - Greater than the value in the existing entry - 1st=10000, 2nd=10001 139
6.3.5.2 CN-5-1-1-2 - Sequence # - Greater than the value in the existing entry - 1st=10000, 2nd=42767 142
6.3.5.3 CN-5-1-1-3 - Sequence # - Greater than the value in the existing entry - 1st=42768, 2nd=0 144
6.3.5.4 CN-5-1-1-4 - Sequence # - Greater than the value in the existing entry - 1st=42768, 2nd=9999 146
6.3.5.5 CN-5-1-2-1 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000,2nd=9999 148
6.3.5.6 CN-5-1-2-2 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000,2nd=10000 150
6.3.5.7 CN-5-1-2-3 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000,2nd=42768 152
6.3.5.8 CN-5-1-2-4 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000,2nd=0 154
6.3.5.9 CN-5-1-3-1 - Sequence # - No existing entry - #=0 156

6.3.5.10 CN-5-1-3-2 - Sequence # - No existing entry - #=32768 158
6.3.5.11 CN-5-1-3-3 - Sequence # - No existing entry - #=65535 160
6.3.5.12 CN-5-4-1 - Preventing Replay Attacks 162
6.4 Sending Binding Acknowledgement 165
6.4.1 Receiving BU with (A)bit is cleared 165
6.4.1.1 CN-2-5-1 - Receiving BU with (A)bit is cleared - BU accepted 165
6.4.1.2 CN-2-5-2 - Receiving BU with (A)bit is cleared - Sequence number out of window 168
6.4.1.3 CN-2-5-3 - Receiving BU with (A)bit is cleared - Expired home nonce index 170
6.4.1.4 CN-2-5-4 - Receiving BU with (A)bit is cleared - Expired care-of nonce index 172
6.4.1.5 CN-2-5-5 - Receiving BU with (A)bit is cleared - Expired nonces 174
6.4.2 Receiving BU with (H)bit is set 176
6.4.2.1 CN-5-3-2 - Receiving BU with (H)bit is set - Type Change Disallowd (Re-Registration) 176
6.4.2.2 CN-5-3-3 - Receiving BU with (H)bit is set - Type Change Disallowed (De-Registration) 179
6.4.3 Receiving Binding Updates that fail to satisfy tests 182
6.4.3.1 CN-3-3-3 - De-Registration - Binding Updates that fail to satisfy tests 182
6.4.3.2 CN-3-4-3 - Handover - Binding Updates that fail to satisfy tests 185
6.5 Maintenance of Binding Cache Entries 188
6.5.1 Lifetime 188
6.5.1.1 CN-5-2-2 - Lifetime - 1 to 105, No existing entry 188
6.5.1.2 CN-5-2-3 - Lifetime - Over 106, No existing entry 191
6.5.1.3 CN-5-2-5 - Lifetime - 1 to M, Remaining Lifetime is M 194
6.5.1.4 CN-5-2-6 - Lifetime - M to 105, Remaining Lifetime is M 197
6.5.1.5 CN-5-2-7 - Lifetime - Over 106, Remaining Lifetime is M 200
6.5.1.6 CN-5-2-8 - Lifetime - Binding Updates that fail to satisfy tests 203
6.5.2 Receiving ICMP Error 206
6.5.2.1 CN-6-1 - ICMP Error - Persistent ICMP Destination Unreachable messages 206
6.6 Payload packets 209
6.6.1 CN-6-2-1 - Check of Home Address and Care-of Address against BCE - No entry exists 209
6.6.2 CN-6-2-2 - Check of Home Address and Care-of Address against BCE - The entry exists 211
6.6.3 CN-6-2-3 - Check of Home Address and Care-of Address against BCE - BCE is not changed 214
6.6.4 CN-6-3-1 - Receiving packets with multicast address - Source Address field 217
6.6.5 CN-6-3-2 - Receiving packets with multicast address - Home Address field 220
6.6.6 CN-6-4-1 - Processing in upper layer - Echo Checksum 222
6.6.7 CN-6-5 - Receiving packets with Type2 Routing Header 224
AUTHOR'S LIST 226

1 Overview

This document organization tests by group based on related test methodology or goals. Each group begins with a brief set of comments pertaining to all tests within that group. This is followed by a series of description blocks; each block a single test. The format of the description block is as follows:

Description block

[PURPOSE]	The PURPOSE is the short statement describing what the test attempts to achieve. It is usually phrased as a simple assertion of the future or capability to be tested.
[CATEGORY]	The CATEGORY shows you who need to satisfy the test shortly.
[REQUIREMENT OF TEST]	The REQUIREMENT describes the condition of the NUT.
[TOPOLOGY]	The TOPOLOGY describes the network used in the test.
[TEST SETUP]	The TEST SETUP describes how to initialize and configure the NUT before starting each test. If a value is not provided, then the protocol's default value is used.
[INITIALIZATION]	The INITIALIZATION describes step-by-step instructions for carrying out the setting before the test.
[PROCEDURE]	The PROCEDURE describes step-by-step instructions for carrying out the test.
[JUDGMENT]	The JUDGEMENT describes expected result. If we can observe as same result as the description of Judgment, the NUT passes the test.
[REFERENCES]	The REFERENCE section contains some parts of specification related to the tests. It also shows the document names and section numbers.

Reference to Common

Refer to a common part for some blocks because there are only several kinds of content.

Reference to Common packets

The reference to Common packets in [INITIALIZATION] and [PROCEDURE] is described.

- Refer to the packet simply.
  Example)
  5. Send Binding Update. (Refer to X.X.X)

- The packet is referred to, and amplification is described.
  Example)
  5. Send Binding Update(Sequence No=10000). (Refer to X.X.X)
  6. Receive Binding Acknowledgement. (HA0 -> NUTX) (Refer to X.X.X)
     # The Lifetime field is less than or equal to 60 seconds.

- Especially, the packet of the focus supplements the field to which it pays attention with the table form.
  Example)
  5. Send Binding Update. (Refer to X.X.X)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT(global)
Destination Option	Home Address of Mobile Node		MN(global)
Mobility Header	MH Type		5
	A		1
	H		0
	Sequence		10000
	Lifetime		60
Mobility options	Nonce Indices	Home Nonce Index	any
		Care-of Nonce Index	any
	Binding Authorization Data	Authenticator	any

Acronyms

CN	- Correspondent Node
HA	- Home Agent
MN	- Mobile Node
HL	- Home Link
FL	- Foreign Link
HoA	- Home Address
CoA	- Care-of Address
Re-Reg	- Re-Registration
De-Reg	- De-Registration
Co-Reg	- Correspondent Registration
BCE	- Binding Cache Entry
BLE	- Binding Update List Entry
ICMPv6	- Internet Control Message Protocol for IPv6
DHAAD	- Dynamic Home Agent Address Discovery
HAAD	- Home Agent Address Discovery
MPD	- Mobile Prefix Discovery

MPS - Mobile Prefix Solicitation
MPA - Mobile Prefix Advertisement
BRR - Binding Refresh Request
RR - Return Routability
HoTI - Home Test Init
CoTI - Care-of Test Init
HoT - Home Test
CoT - Care-of Test
BU - Binding Update
BA - Binding Acknowledgement
BE - Binding Error

Reference standards

This documentation covers the functions specified in the IETF RFC and Mobile IPv6 Test Profile listed below.

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

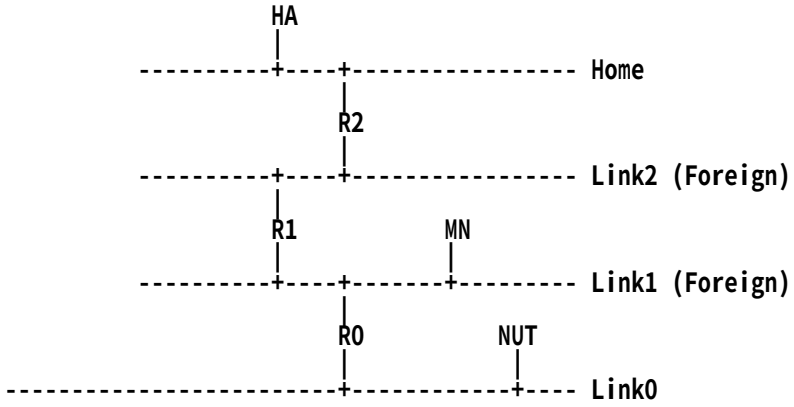
(2) RFC3776: Using IPsec to Protect Mobile IPv6 Signaling between Mobile Nodes and Home Agents
(http://www.ietf.org/rfc/rfc3776.txt)

(3) IPv6 Ready Logo Phase-2 Mobile IPv6 Policy
(http://www.ipv6ready.org/about_phase2_test.html)

(4) IPv6 Ready Logo Phase-2 Mobile IPv6 Test Specification Profile
(http://www.ipv6ready.org/about_phase2_test.html)

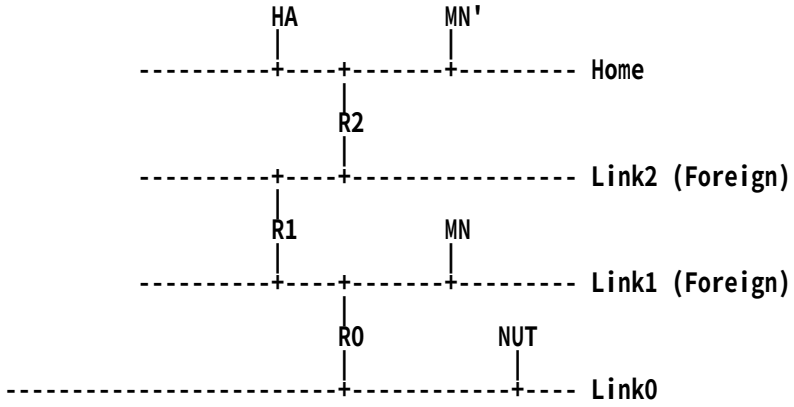
2 Common Topology

2.1 Common Topology-1



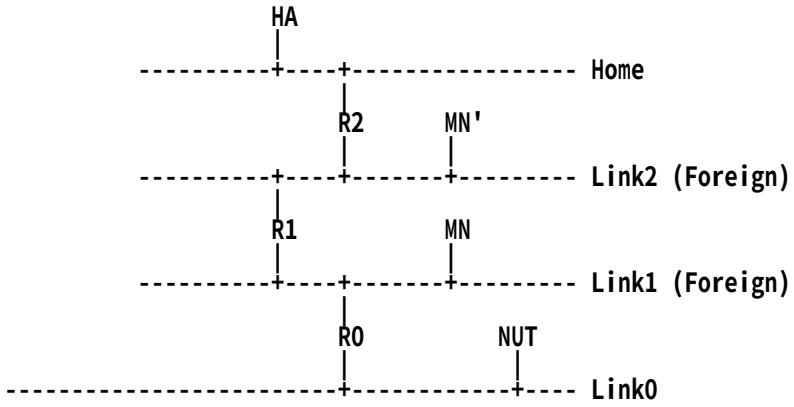
Link0	global	3ffe:501:ffff:100::/64	
Link1	global	3ffe:501:ffff:101::/64	Foreign Link
Link2	global	3ffe:501:ffff:102::/64	Foreign Link 2
Home link	global	3ffe:501:ffff:104::/64	Home Link
CN (NUT)	global	3ffe:501:ffff:100::X Auto Configuration (InterfaceID)	
MN (in Link1)	global	3ffe:501:ffff:101::Y Increased in each test	MN care-of address
MN (in Home Link)	global	3ffe:501:ffff:104::Y Increased in each test	MN home address
R0 (Link0)	global	3ffe:501:ffff:100::1	
R1 (Link1)	global	3ffe:501:ffff:101::1	
R2 (Link2)	global	3ffe:501:ffff:102::1	
HA (Home Link)	global	3ffe:501:ffff:104::1	

2.2 Common Topology-2



Link0	global	3ffe:501:ffff:100::/64	
Link1	global	3ffe:501:ffff:101::/64	Foreign Link
Link2	global	3ffe:501:ffff:102::/64	Foreign Link 2
Home Link	global	3ffe:501:ffff:104::/64	Home Link
CN (NUT)	global	3ffe:501:ffff:100::X Auto Configuration (InterfaceID)	
MN (in Link1)	global	3ffe:501:ffff:101::Y Increased in each test	MN care-of address
MN' (MN in Home Link)	global	3ffe:501:ffff:104::Y Increased in each test	MN home address
R0 (Link0)	global	3ffe:501:ffff:100::1	
R1 (Link1)	global	3ffe:501:ffff:101::1	
R2 (Link2)	global	3ffe:501:ffff:102::1	
HA (Home Link)	global	3ffe:501:ffff:104::1	

2.3 Common Topology-3



Link0	global	3ffe:501:ffff:100::/64	
Link1	global	3ffe:501:ffff:101::/64	Foreign Link
Link2	global	3ffe:501:ffff:102::/64	Foreign Link 2
Home Link	global	3ffe:501:ffff:104::/64	Home Link
CN (NUT)	global	3ffe:501:ffff:100::X Auto Configuration (InterfaceID)	
MN (in Link1)	global	3ffe:501:ffff:101::Y Increased in each test	MN care-of address
MN' (MN in Home Link2)	global	3ffe:501:ffff:102::Y Increased in each test	MN care-of address 2
MN (in Home Link)	global	3ffe:501:ffff:104::Y Increased in each test	MN home address
R0 (Link0)	global	3ffe:501:ffff:100::1	
R1 (Link1)	global	3ffe:501:ffff:101::1	
R2 (Link2)	global	3ffe:501:ffff:102::1	
HA (Home Link)	global	3ffe:501:ffff:104::1	

3 Common Setup

None

4 Common Initialization

None

5 Common Packets

5.1 ICMPv6 Router Advertisement

5.1.1 Router Advertisement form Router

IPv6 Header	Source Address	Router (link-local)
	Destination Address	All-nodes multicast address
ICMPv6	Type	134
Option	Prefix Information	(global)

5.2 ICMPv6 Neighbor Solicitation

5.2.1 Neighbor Solicitation from Router to CN

IPv6 Header	Source Address	Router (link-local)
	Destination Address	Solicited-node multicast address
ICMPv6	Type	135
	Target Address (Correspondent Node Address)	NUT (global)

5.3 ICMPv6 Neighbor Advertisement

5.3.1 Neighbor Advertisement from CN to Router

IPv6 Header	Source Address	NUT (global)
	Destination Address	Router (link-local)
ICMPv6	Type	136
	Target Address (Correspondent Node Address)	NUT (global)

5.4 ICMPv6 Destination Unreachable

5.4.1 Destination Unreachable

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	1
	Code	3
	Checksum	Any
	Unused	0
	Payload Date	Any

5.5 ICMPv6 Parameter Problem

5.5.1 Parameter Problem

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	4
	Code	0
	Checksum	Any
	Pointer	Any
	Payload Date	Any

5.6 ICMPv6 Echo request

5.6.1 Echo request from MN (home) to CN (Receiving)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128
	Code	0
	Checksum	Any
	Identifier	0
	Sequence Number	0
	Payload Data	Any

5.6.2 Echo request from MN to CN (DH)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128
	Code	0
	Checksum	Any
	Identifier	0
	Sequence Number	0
	Payload Data	Any

5.7 ICMPv6 Echo reply

5.7.1 Echo reply from CN to MN (home)(Sending)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129
	Code	0
	Checksum	Any
	Identifier	0
	Sequence Number	0
	Payload Data	Any

5.7.2 ICMPv6 Echo reply from CN to MN (RH2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129
	Code	0
	Checksum	Any
	Identifier	0
	Sequence Number	0
	Payload Data	Any

5.8 MIPv6 Home Test Init

5.8.1 Home Test Init from HA to CN (Receiving)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	Payload Prot	59
	Header Len	1
	MH Type	1
	Reserved	0
	Checksum	Any
	Hot Init Cookie	Any

5.9 MIPv6 Care-of Test Init

5.9.1 Care-of Test Init from MN to CN

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	Payload Prot	59
	Header Len	1
	MH Type	2
	Reserved	0
	Checksum	Any
	Hot Init Cookie	Any

5.10 MIPv6 Home Test

5.10.1 Home Test from CN to MN (Sending)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Mobility Header	Payload Prot	59
	Header Len	2
	MH Type	4
	Reserved	0
	Checksum	Any
	Home Nonce Index	Any
	Hot Init Cookie	Any
	Home Keygen Nonce	Any

5.11 MIPv6 Care-of Test

5.11.1 Care-of Test from CN to MN

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Mobility Header	Payload Prot	59
	Header Len	2
	MH Type	4
	Reserved	0
	Checksum	Any
	Care-of Nonce Index	Any
	Care-of Init Cookie	Any
	Care-of Keygen Nonce	Any

5.12 MIPv6 Binding Update

5.12.1 Binding Update from MN to CN (DH)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	Payload Prot		59
	Header Len		3
	MH Type		5
	Reserved		0
	Checksum		Any
	Sequence Number		Any
	A Flag		1
	H Flag		0
	L Flag		0
	K Flag		0
	Reserved		0
	Lifetime		10
Mobility options	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

5.12.2 Binding Update from MN to CN

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	Payload Prot		59
	Header Len		3
	MH Type		5
	Reserved		0
	Checksum		Any
	Sequence Number		Any
	A Flag		1
	H Flag		0
	L Flag		0
	K Flag		0
	Reserved		0
	Lifetime		0
Mobility options	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	0
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

5.12.3 Binding Update from MN to HA (DH)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Home Agent Address)	HA (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility Header	Payload Prot	59
	Header Len	3
	MH Type	5
	Reserved	0
	Checksum	Any
	Sequence Number	Any
	A Flag	1
	H Flag	1
	L Flag	0
	K Flag	0
	Reserved	0
	Lifetime	10

5.13 MIPv6 Binding Acknowledgement

5.13.1 Binding Acknowledgement from CN to MN (RH2)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	Payload Prot		59
	Header Len		3
	MH Type		6
	Reserved		0
	Checksum		Any
	Status		0
	K Flag		0
	Reserved		0
	Sequence		Any(=BU)
	Lifetime		10
Mobility options	PadN	Option Type	1
		Option Length	4
		Pad	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

5.13.2 Binding Acknowledgement from CN to MN

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Mobility Header	Payload Prot		59
	Header Len		3
	MH Type		6
	Reserved		0
	Checksum		Any
	Status		0
	K Flag		0
	Reserved		0
	Sequence		Any(=BU)
	Lifetime		0
Mobility options	PadN	Option Type	1
		Option Length	4
		Pad	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

5.13.3 Binding Acknowledgement from HA to MN (RH2)

IPv6 Header	Source Address (Home Agent Address)		HA (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	Payload Prot		59
	Header Len		3
	MH Type		6
	Reserved		0
	Checksum		Any
	Status		0
	K Flag		0
	Reserved		0
	Sequence		Any(=BU)
	Lifetime		10
Mobility options	PadN	Option Type	1
		Option Length	4
		Pad	Any

5.14 MIPv6 Binding Error

5.14.1 Binding Error from CN to MN

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)		MN (global)
Mobility Header	Payload Prot		59
	Header Len		2
	MH Type		7
	Reserved		0
	Checksum		Any
	Status		1
	Reserved		0
	Home Address (Home Address of Mobile Node)		MN (global)

6. Test Specification: Correspondent Node operation

6.1 Normal Operations

6.1.1 CN-1-1 - Return Routability

[PURPOSE]

CN-1-1 - Normal Test - Return Routability

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

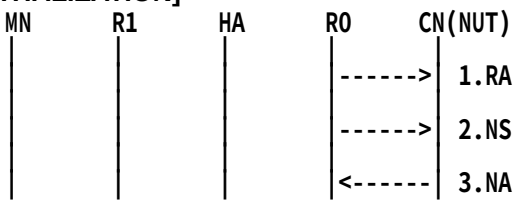
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

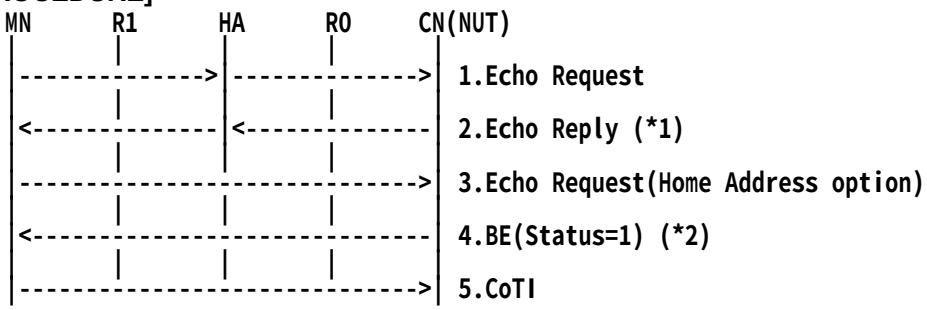
- Reboot NUT

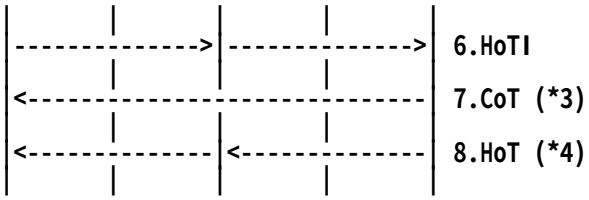
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)

[PROCEDURE]





1. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

2. Receive ICMP Echo Reply. (*1) (Refer to 5.7.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

3. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

4. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

5. Send Care-of Test Init. (Refer to 5.9.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	2

6. Send Home Test Init. (Refer to 5.8.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	1

7. Receive Care-of Test. (*3) (Refer to 5.11.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	4

8. Receive Home Test. (*4) (Refer to 5.10.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	3

[JUDGMENT]

(*1) MN receives ICMP Echo Reply.

- The Destination Address is set to the Source Address of ICMP Echo Request (MN home address).
- Type 2 Routing Header is not included.

(*2) MN receives Binding Error.
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.
- The Home Address field is set to the value in the Home Address option in the ICMP Echo Request (MN home address).

(*3) MN receives Care-of Test.
- The Destination Address is set to the Source Address of the Care-of Test Init (MN care-of address).
- Care-of Init Cookie matches the value in the Care-of Test Init.

(*4) MN receives Home Test.
- The Destination Address is set to the Source Address of the Home Test Init (MN home address).
- Home Init Cookie matches the value in the Home Test Init.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.3.1, 9.3.3, 9.4.3, 9.4.4

6.1.2 CN-1-2 - Registration - Binding Update

[PURPOSE]

CN-1-2 - Normal Test - Binding Update

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

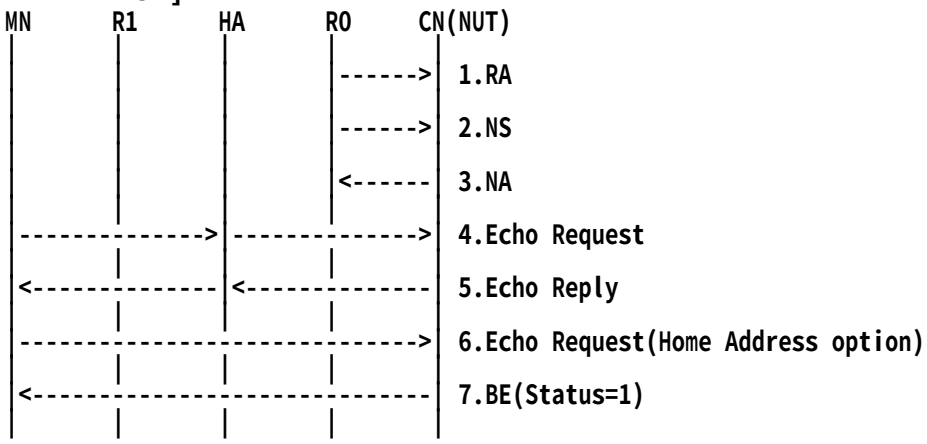
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

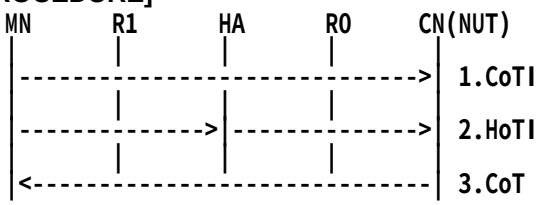
- Reboot NUT

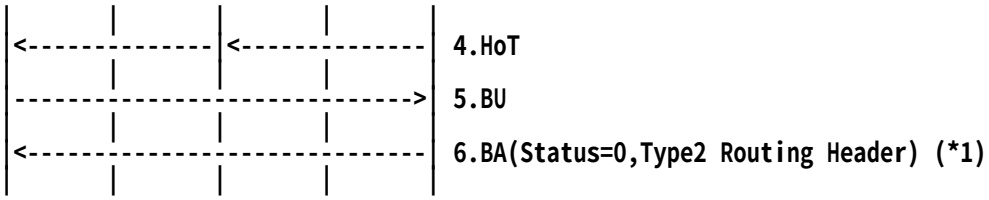
[INITIALIZATION]



1. Send Router Advertisement.(Refer to 5.1.1).
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=0,Type2 Routing Header). (*1)
(Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 9.5.2, 9.5.4, 6.1.8

6.1.3 CN-1-3 - Registration - Route Optimization

[PURPOSE]

CN-1-3 - Normal Test - Route Optimization

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

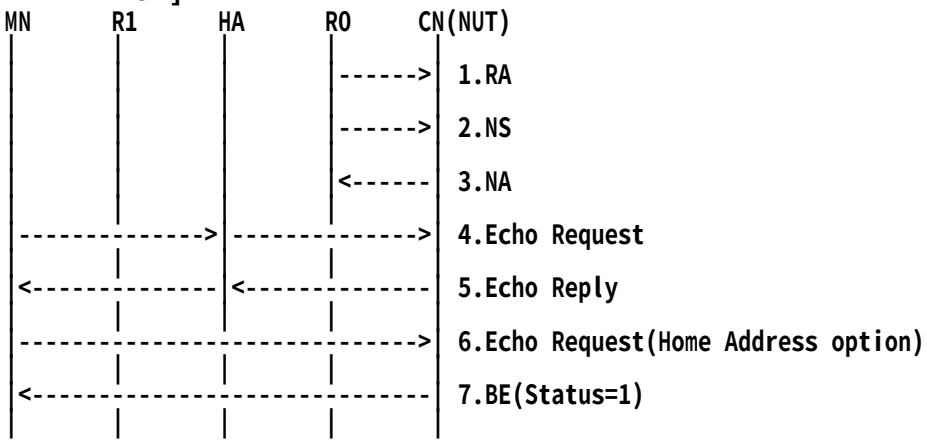
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

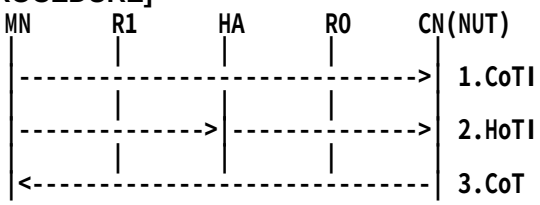
- Reboot NUT

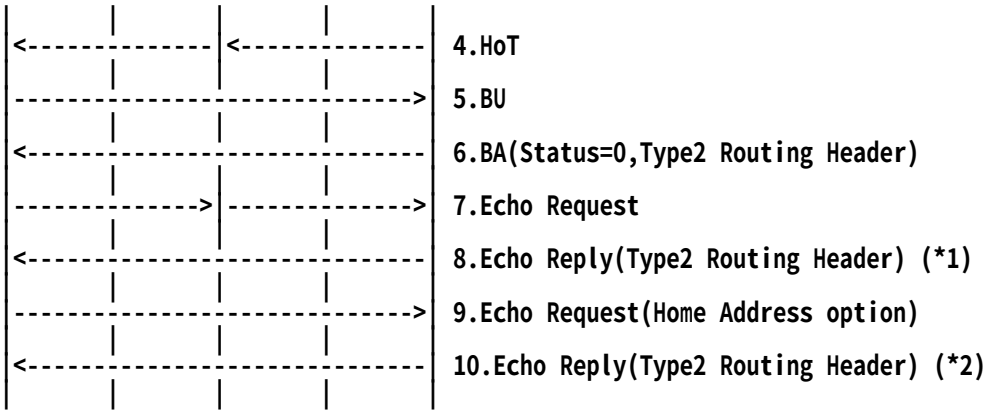
[INITIALIZATION]



1. Send Router Advertisement.(Refer to 5.1.1).
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0,Type2 Routing Header). (Refer to 5.13.1)
7. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

8. Receive ICMP Echo Reply(Type2 Routing Header). (*1) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

9. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

10. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN receives ICMP Echo Reply.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

(*2) MN receives ICMP Echo Reply.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.3.1, 9.3.2

6.1.4 CN-3-3-1-3 - De-Registration - From the foreign link with Alternate Care-of Address option

[PURPOSE]

CN-3-3-1-3 - De-Registration - From the foreign link, Alternate Care-of Address option included, after the return routability procedure

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

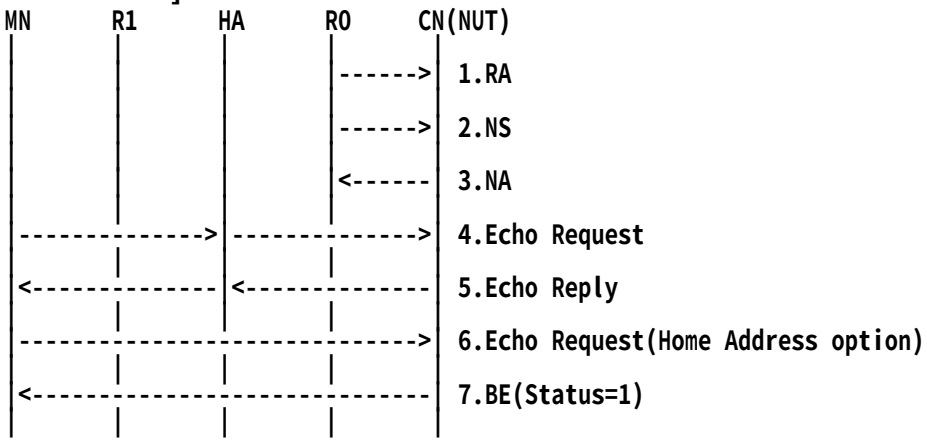
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

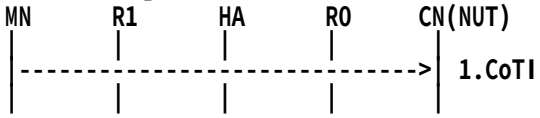
- Reboot NUT

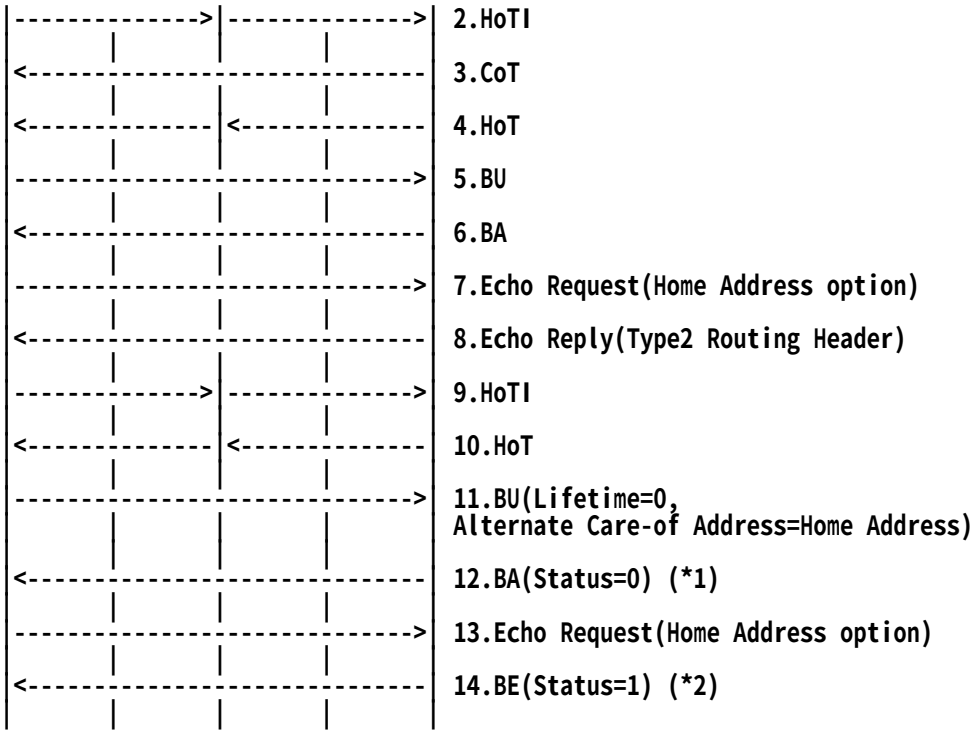
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init. (Refer to 5.8.1)
10. Receive Home Test. (Refer to 5.10.1)
11. Send Binding Update
(Lifetime=0,Alternate Care-of Address=Home Address). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
	Lifetime		0
Mobility options	Alternate Care-of Address	Option Type	3
		Option Length	16
		Alternate Care-of Address	=Home Address of Mobile Node
	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

12. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.1)

IPv6 Header	**Source Address (Correspondent Node Address)**	**NUT (global)**
	Destination Address (Source Address of an invoking Binding Update)	**MN (global)**
Type 2	**Home Address**	**MN**

Routing Header	(Home Address of Mobile Node)		(global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

13. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

14. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

(*2) MN receives Binding Error. (Binding Cache entry is deleted.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.
- The Home Address field is set to the value in the Home Address option in the ICMP Echo Request (MN home address).

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 9.5.3, 9.5.4

6.1.5 CN-3-3-2-1 - De-Registration - From the home link

[PURPOSE]

CN-3-3-2-1 - De-Registration - From the home link, after the return routability procedure

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

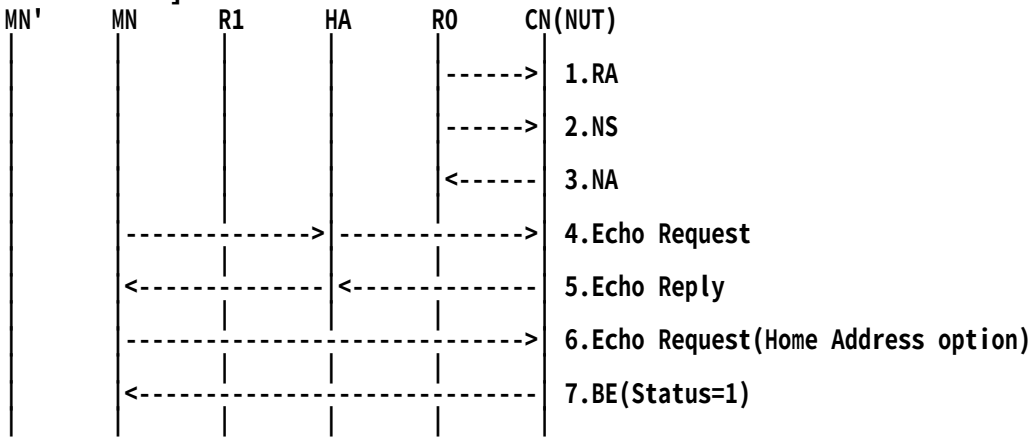
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

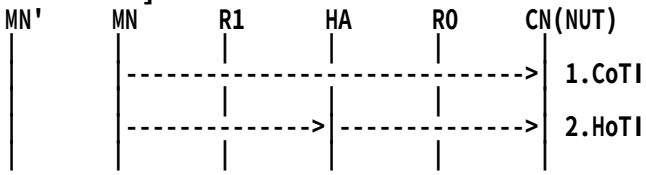
- Reboot NUT

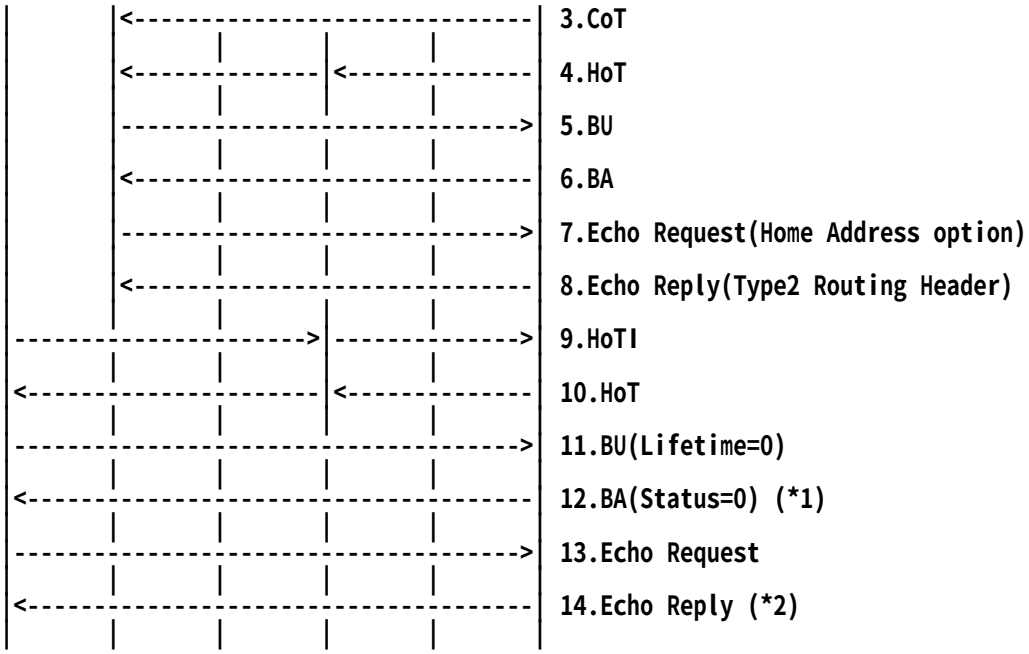
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init. (Refer to 5.8.1)
10. Receive Home Test. (Refer to 5.10.1)
11. Send Binding Update(Lifetime=0). (Refer to 5.12.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

12. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.2)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

13. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
ICMPv6	Type		128

14. Receive ICMP Echo Reply. (*2) (Refer to 5.7.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN home address).
- Type 2 Routing Header is not included.

(*2) MN' receives ICMP Echo Reply. (Binding Cache entry is deleted.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN home address).
- Type 2 Routing Header is not included.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 9.5.3, 9.5.4

6.1.6 CN-3-3-2-3 - De-Registration - From the home link, with Home Address option

[PURPOSE]

CN-3-3-2-3 - De-Registration - From the home link, Home Address option included, after the return routability procedure

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

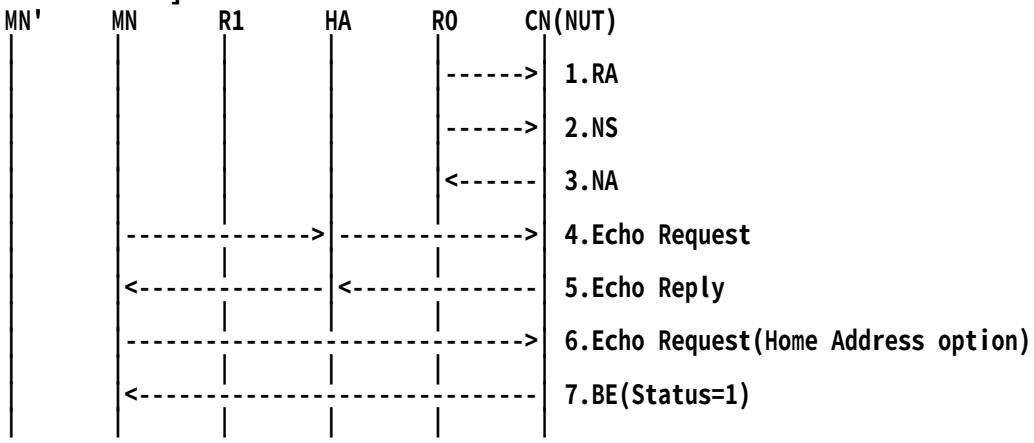
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

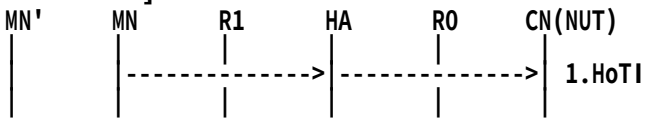
- Reboot NUT

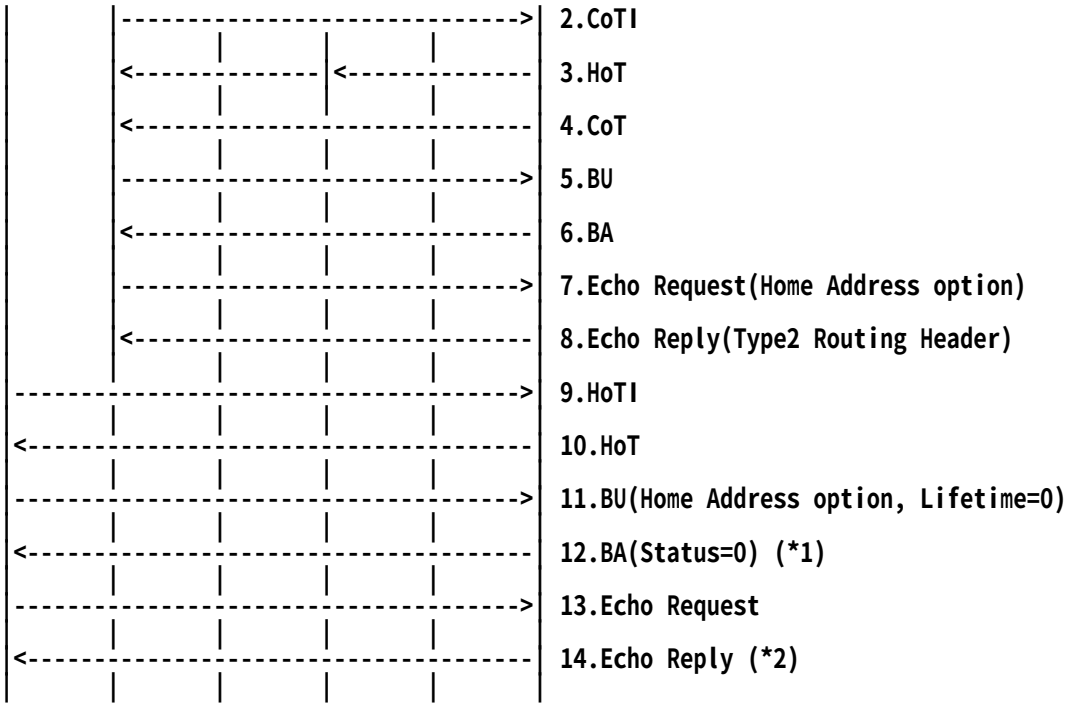
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Home Test Init. (Refer to 5.8.1)
2. Send Care-of Test Init. (Refer to 5.9.1)
3. Receive Home Test. (Refer to 5.10.1)
4. Receive Care-of Test. (Refer to 5.11.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init. (Refer to 5.8.1)
10. Receive Home Test. (Refer to 5.10.1)
11. Send Binding Update(Home Address option,Lifetime=0). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

12. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.2)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

13. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)

	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

14. Receive ICMP Echo Reply. (*2) (Refer to 5.7.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN home address).
- Type 2 Routing Header is not included.

(*2) MN' receives ICMP Echo Reply. (Binding Cache entry is deleted.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN home address).
- Type 2 Routing Header is not included.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1, 9.5.3, 9.5.4

6.1.7 CN-3-3-2-5 - De-Registration - From the home link, with Alternate Care-of Address option

[PURPOSE]

CN-3-3-2-5 - De-Registration - From the home link, Alternate Care-of Address option included, after the return routability procedure

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

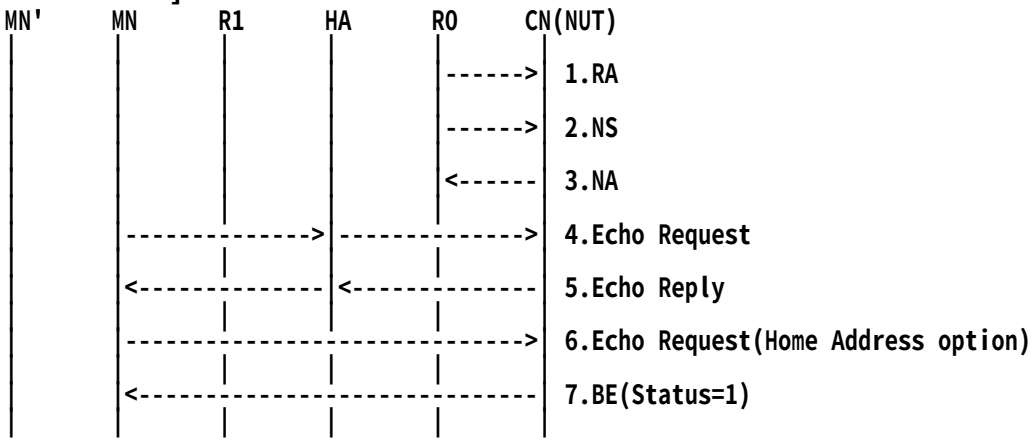
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

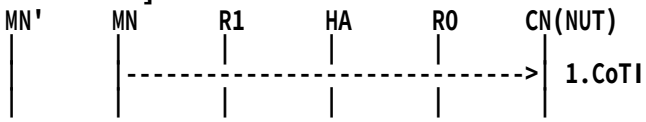
- Reboot NUT

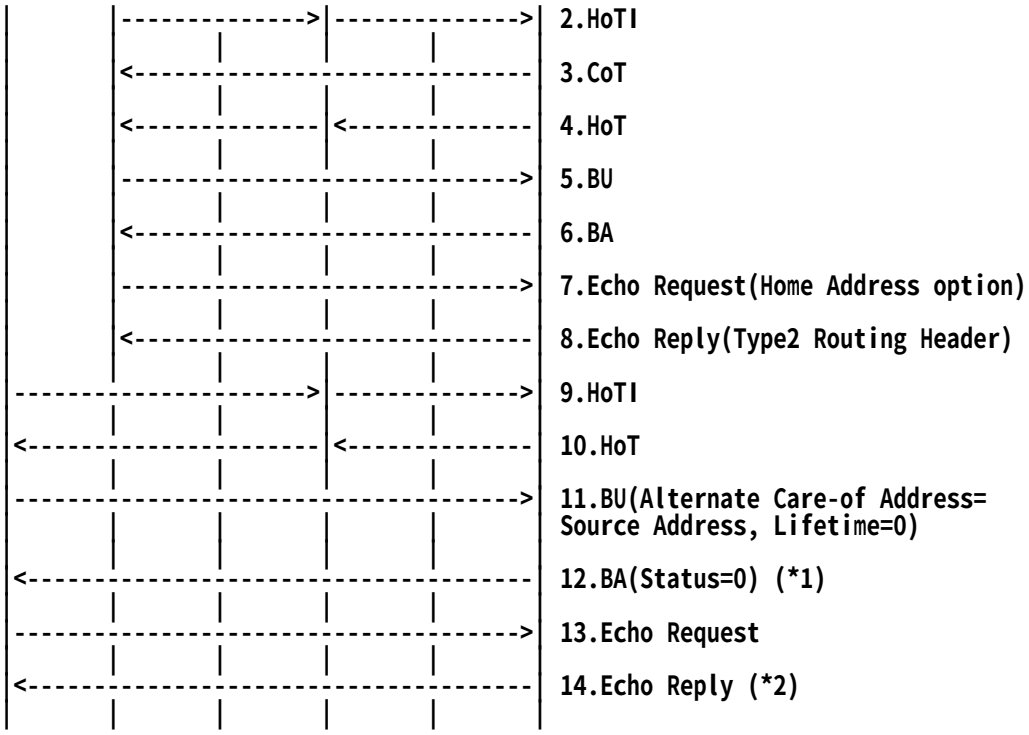
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init. (Refer to 5.8.1)
10. Receive Home Test. (Refer to 5.10.1)
11. Send Binding Update
(Alternate Care-of Address=Source Address, Lifetime=0). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	MH Type		5
	Lifetime		0
Mobility options	Alternate Care-of Address	Option Type	3
		Option Length	16
		Alternate Care-of Address	=Source Address
	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

12. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.2)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Mobility Header	MH Type		6
Mobility	PadN	Option Type	1

options	Binding Authorization Data	Option Type	5

13. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

14. Receive ICMP Echo Reply. (*2) (Refer to 5.7.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN home address).
- Type 2 Routing Header is not included.

(*2) MN' receives ICMP Echo Reply. (Binding Cache entry is deleted.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN home address).
- Type 2 Routing Header is not included.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 9.5.3, 9.5.4

6.1.8 CN-3-3-2-7 - De-Registration - From the home link, with Home Address option and Alternate Care-of Address option

[PURPOSE]

CN-3-3-2-7 - De-Registration - From the home link, Home Address option and Alternate Care-of Address option included, after the return routability procedure

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

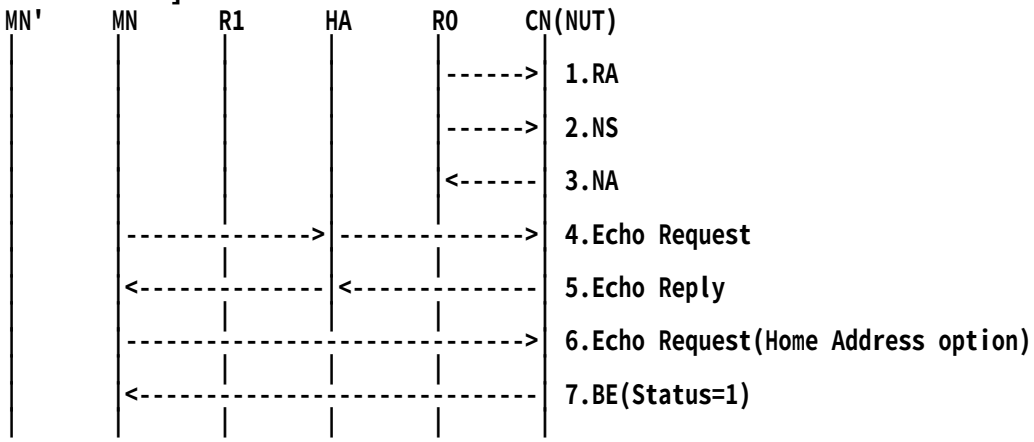
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

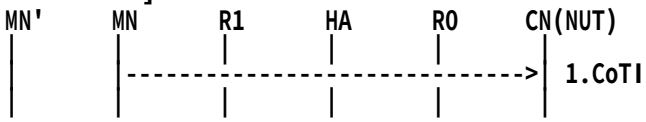
- Reboot NUT

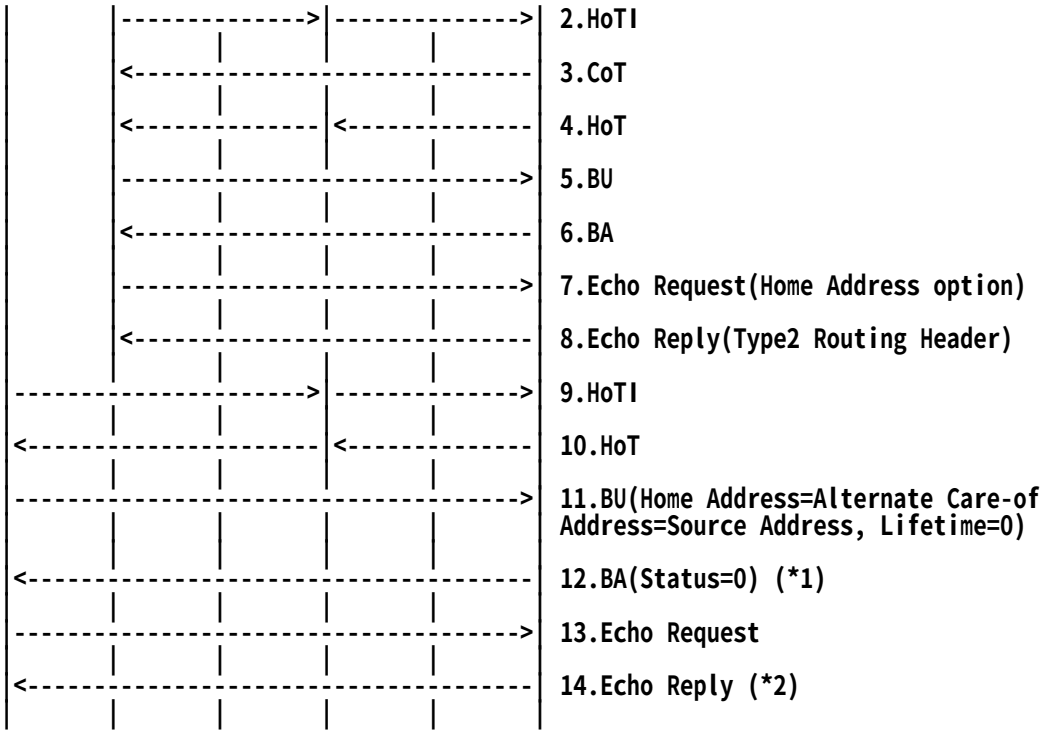
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init. (Refer to 5.8.1)
10. Receive Home Test. (Refer to 5.10.1)
11. Send Binding Update
(Home Address=Alternate Care-of Address=Source Address, Lifetime=0). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	MH Type		5
	Lifetime		0
Mobility options	Alternate Care-of Address	Option Type	3
		Option Length	16
		Alternate Care-of Address	=Source Address =Home Address
	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

12. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)

Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

13. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

14. Receive ICMP Echo Reply. (*2) (Refer to 5.7.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN home address).
- Type 2 Routing Header is not included.

(*2) MN' receives ICMP Echo Reply. (Binding Cache entry is deleted.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN home address).
- Type 2 Routing Header is not included.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 9.5.3, 9.5.4

6.1.9 CN-3-4-1 - Handover

[PURPOSE]

CN-3-4-1 - Handover - After the return routability procedure

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

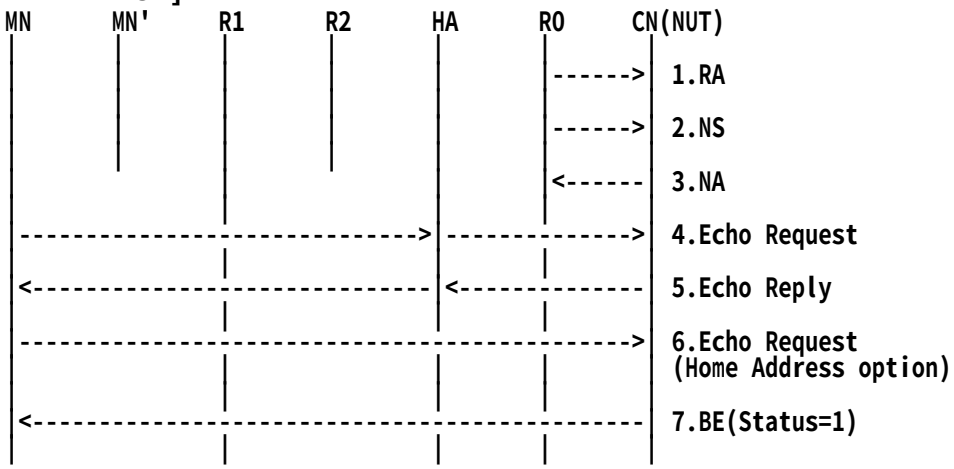
[TOPORGY]

Refer to 2.3 Common Topology-3

[TEST SETUP]

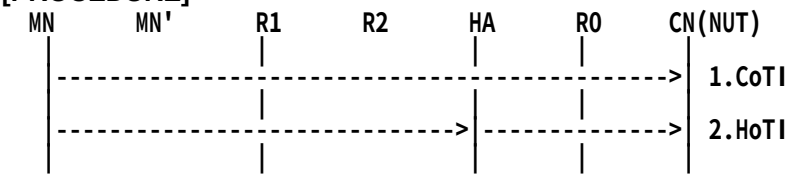
- Reboot NUT

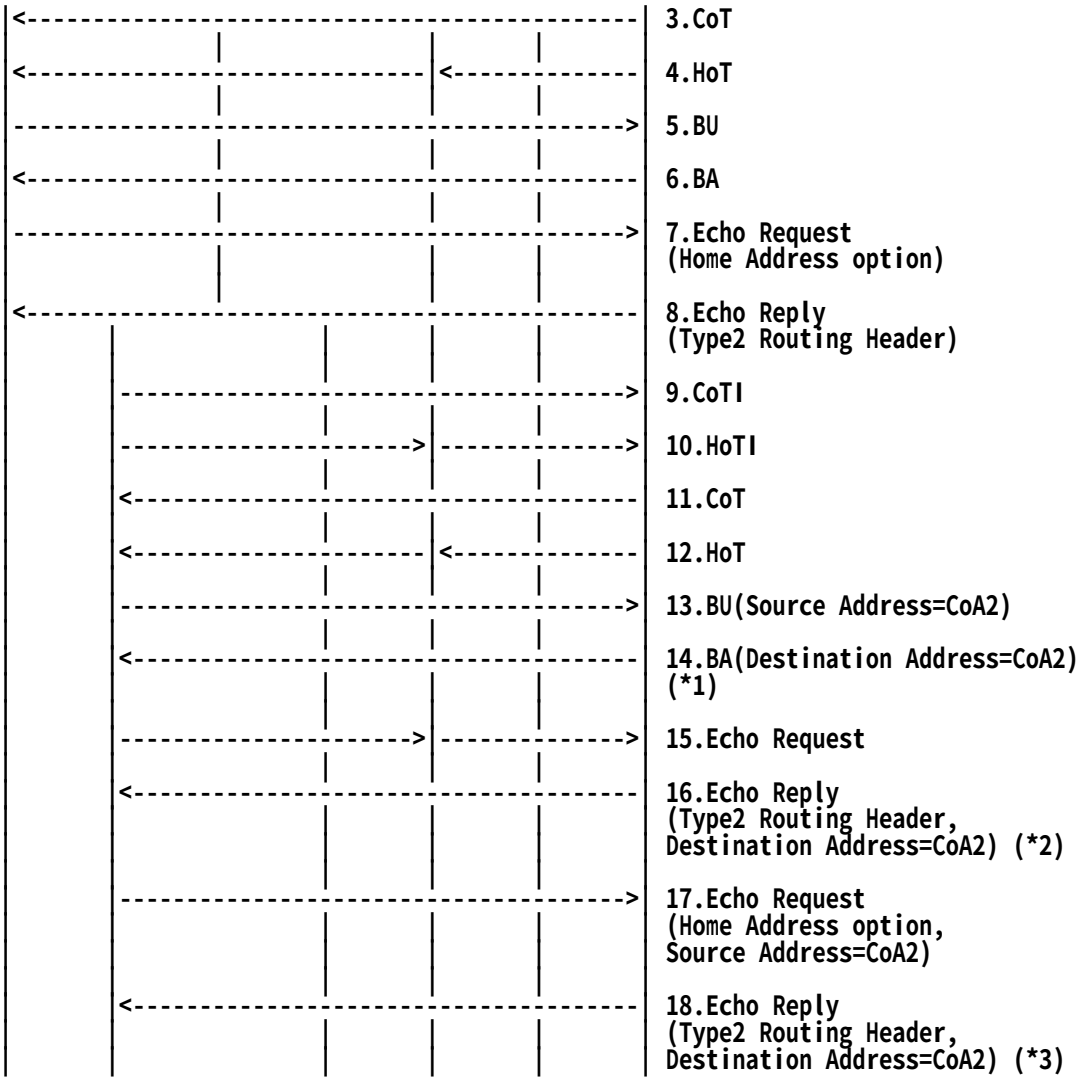
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply
(Type2 Routing Header, Destination Address=CoA1). (Refer to 5.7.2)
9. Send Care-of Test Init. (Refer to 5.9.1)
10. Send Home Test Init. (Refer to 5.8.1)
11. Receive Care-of Test. (Refer to 5.11.1)
12. Receive Home Test. (Refer to 5.10.1)
13. Send Binding Update(Source Address=CoA2). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)

Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

14. Receive Binding Acknowledgement(Destination Address=CoA2). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

15. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

16. Receive ICMP Echo Reply
(Type2 Routing Header, Destination Address=CoA2). (*2) (Refer 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

17. Send ICMP Echo Request
(Home Address option, Source Address=CoA2). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

18. Receive ICMP Echo Reply
(Type2 Routing Header, Destination Address=CoA2). (*3) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address 2).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

(*2) MN' receives ICMP Echo Reply. (Binding Cache entry is created.)
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address 2).

- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

(*3) MN' receives ICMP Echo Reply. (Binding Cache entry is created.)
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address 2).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1, 9.5.2, 9.5.4

6.1.10 CN-5-4-3 - Multiple Binding Cache entries

[PURPOSE]

CN-5-4-3 - Multiple Binding Cache entries

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

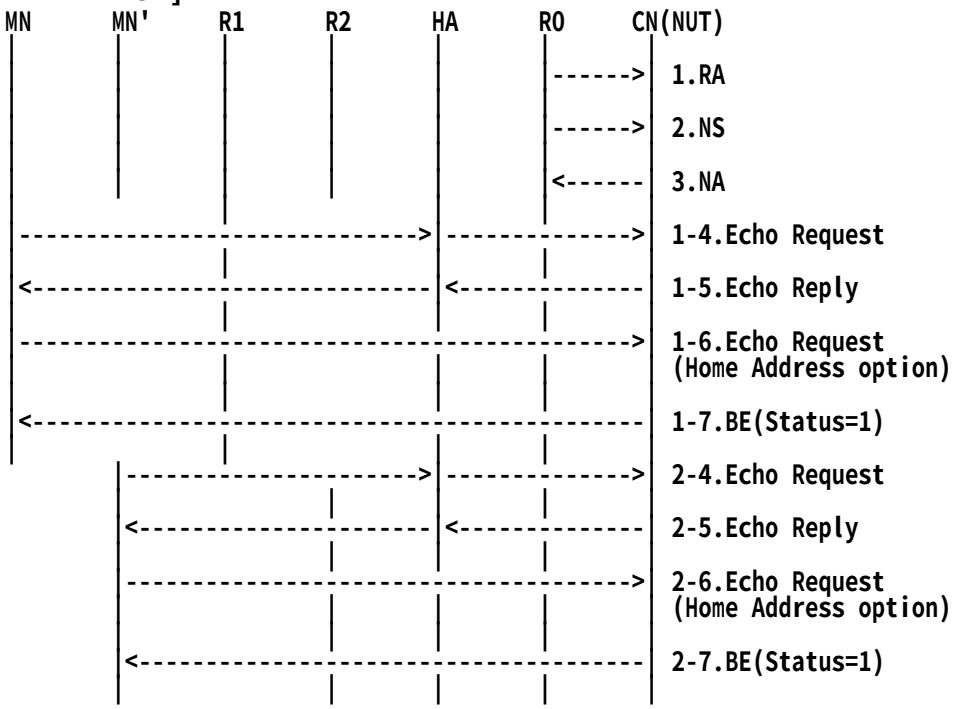
[TOPORGY]

Refer to 2.3 Common Topology-3

[TEST SETUP]

- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)

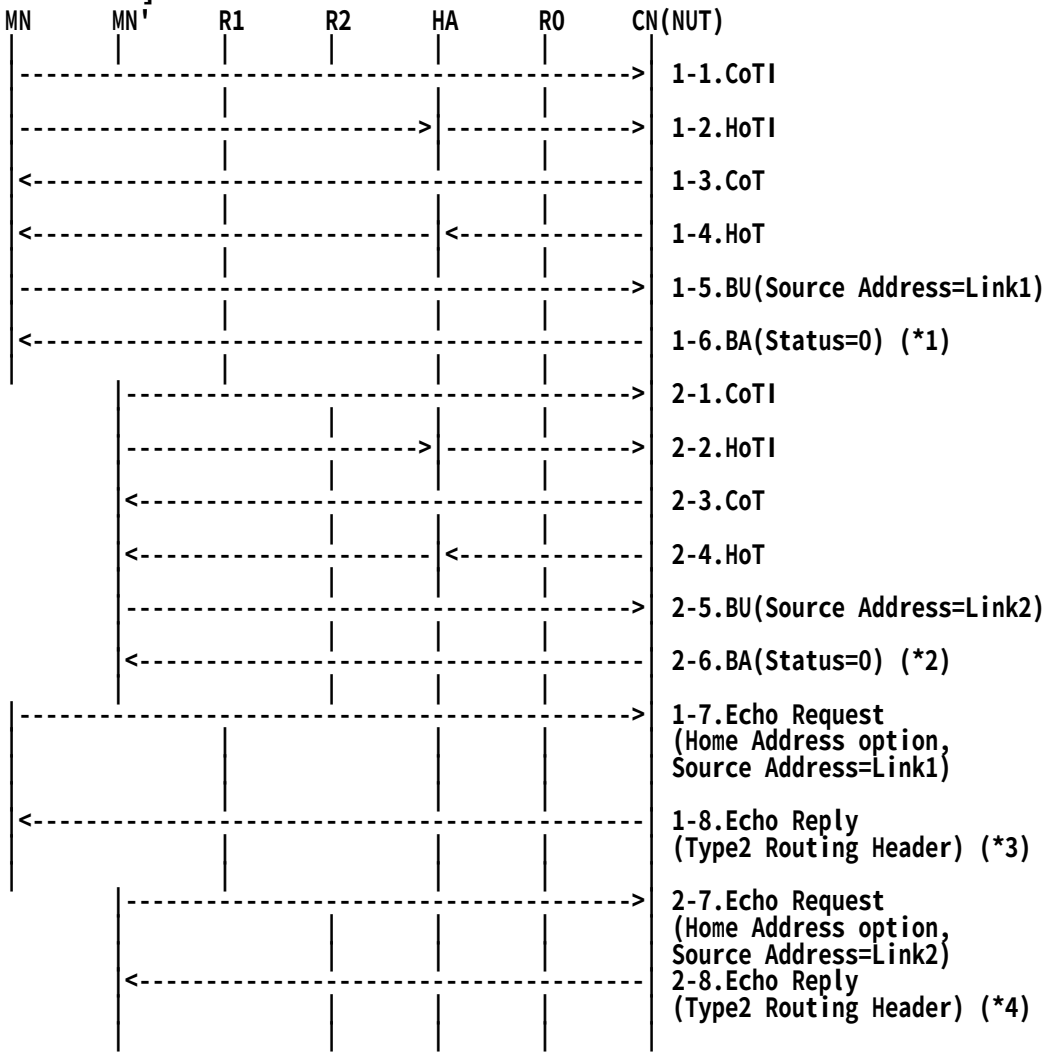
1-4. Send ICMP Echo Request. (Refer to 5.6.1)
1-5. Receive ICMP Echo Reply. (Refer to 5.7.1)
1-6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

1-7. Receive Binding Error(Status=1). (Refer to 5.14.1)

2-4. Send ICMP Echo Request. (Refer to 5.6.1)
2-5. Receive ICMP Echo Reply. (Refer to 5.7.1)
2-6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
2-7. Receive Binding Error(Status=1). (Refer to 5.14.1)

From 1-4 to 1-7 :User1(HoA1,CoA1)
From 2-4 to 2-7 :User2(HoA2,CoA2)

[PROCEDURE]



1-1. Send Care-of Test Init. (Refer to 5.9.1)
1-2. Send Home Test Init. (Refer to 5.8.1)
1-3. Receive Care-of Test. (Refer to 5.11.1)
1-4. Receive Home Test. (Refer to 5.10.1)
1-5. Send Binding Update(Source Address=Link1) (Refer to 5.12.1).

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)

	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

1-6. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

2-1. Send Care-of Test Init. (Refer to 5.9.1)

2-2. Send Home Test Init. (Refer to 5.8.1)

2-3. Receive Care-of Test. (Refer to 5.11.1)

2-4. Receive Home Test. (Refer to 5.10.1)

2-5. Send Binding Update(Source Address=Link2). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

2-6. Receive Binding Acknowledgement(Status=0). (*2) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

1-7. Send ICMP Echo Request
(Home Address option,Source Address=Link1). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
ICMPv6	Type		128

1-8. Receive ICMP Echo Reply(Type2 Routing Header). (*3) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Home Address of Mobile Node)		MN (global)
Type 2 Routing	Home Address (Home Address of Mobile Node)		MN (global)

Header		
ICMPv6	Type	129

2-7. Send ICMP Echo Request
(Home Address option,Source Address=Link2). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

2-8. Receive ICMP Echo Reply(Type2 Routing Header). (*4) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

From 1-1 to 1-8 :User1(HoA1,CoA1)
From 2-1 to 2-8 :User2(HoA2,CoA2)

[JUDGMENT]

(*1) MN1 receives Binding Acknowledgement.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address 1).
- The Status field is set to 0.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address 1.

(*2) MN2 receives Binding Acknowledgement.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address 2).
- The Status field is set to 0.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address 2.

(*3) MN1 receives ICMP Echo Reply.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address 1).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address 1.

(*4) MN2 receives ICMP Echo Reply.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of

address 2).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address 2.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.1

6.2 Processing Mobility Headers

6.2.1 Receiving HoTI

6.2.1.1 CN-2-1-2 - Receiving HoTI - Home Address option

[PURPOSE]

CN-2-1-2 - Receiving HoTI - Home Address option

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

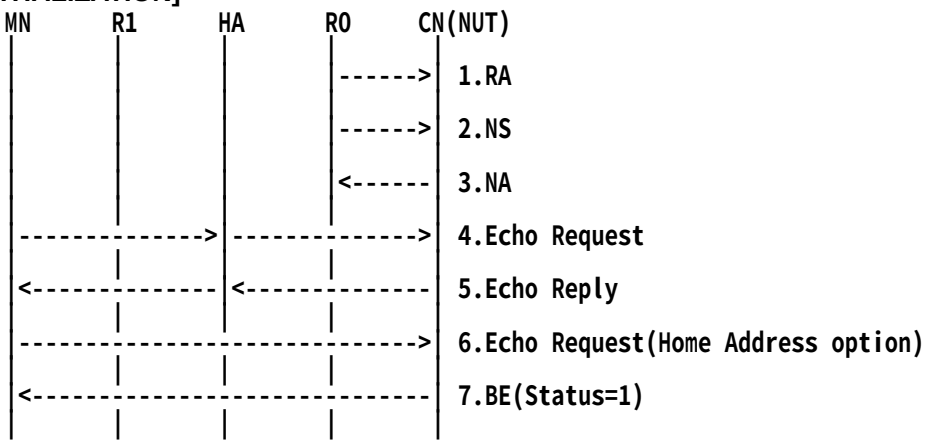
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

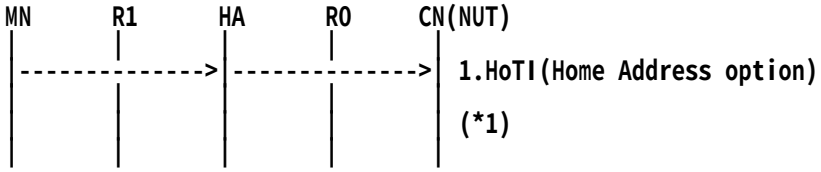
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Home Test Init(Home Address option). (Refer to 5.8.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Options Header	Home Address	MN (global)
Mobility Header	MH Type	1

*Expire HoT timer. (*1)

[JUDGMENT]

(*1) MN does not receive Home Test

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.4.1

6.2.1.2 CN-2-1-3 - Receiving HoTI - Invalid Mobility Header Len

[PURPOSE]

CN-2-1-3 - Receiving HoTI - Invalid Mobility Header Len

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

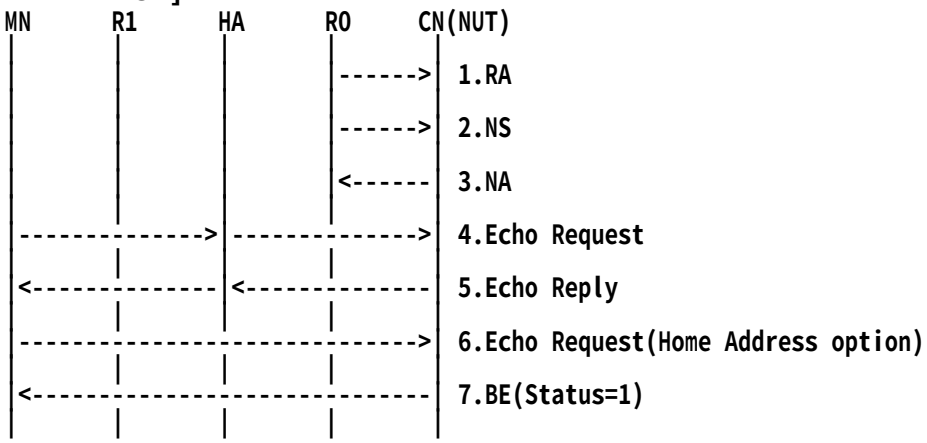
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

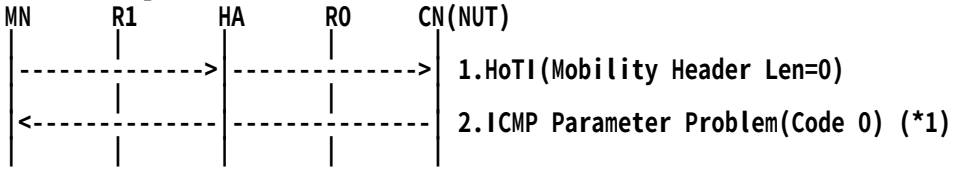
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Home Test Init(Mobility Header Len=0). (Refer to 5.8.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	1

2. Receive ICMP Parameter Problem(Code 0). (*1) (Refer to 5.5.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	4

[JUDGMENT]

(*1) MN receives ICMP Parameter Problem (Code 0).

- The Pointer field is set to 41.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.2, 6.1.3

6.2.1.3 CN-2-1-4 - Receiving HoTI - Invalid Mobility Header Reserved

[PURPOSE]

CN-2-1-4 - Receiving HoTI - Invalid Mobility Header Reserved

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

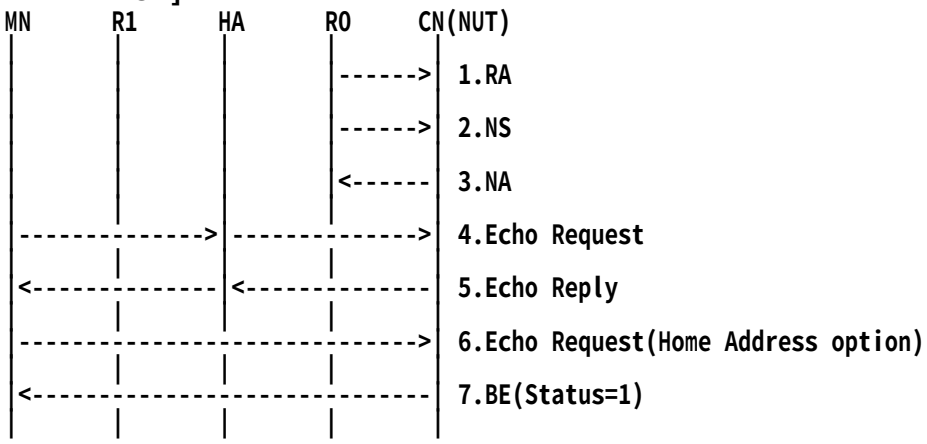
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

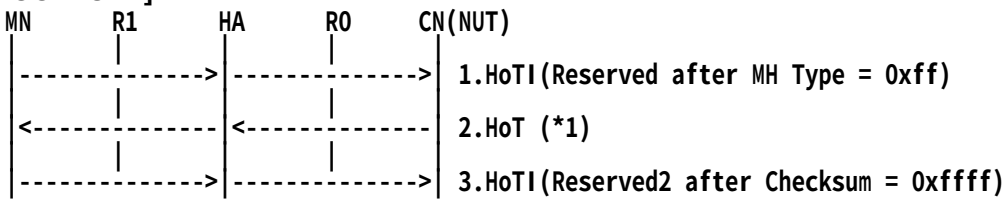
- Reboot NUT

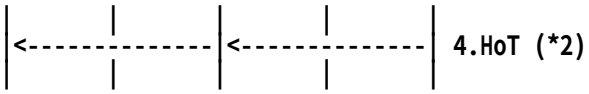
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Home Test Init(Reserved after MH Type = 0xff). (Refer to 5.8.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	1

2. Receive Home Test. (*1) (Refer to 5.10.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	3

3. Send Home Test Init(Reserved2 after Checksum = 0xffff). (Refer to 5.8.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	1

4. Receive Home Test. (*2) (Refer to 5.10.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	3

[JUDGMENT]

(*1) MN receives Home Test.

- The Destination Address is set to the Source Address of the Home Test Init (MN home address).
- Home Init Cookie matches the value in the Home Test Init.

(*2) MN receives Home Test.

- The Destination Address is set to the Source Address of the Home Test Init (MN home address).
- Home Init Cookie matches the value in the Home Test Init.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 6.1.3

6.2.1.4 CN-2-1-5 - Receiving HoTI - Invalid Mobility Header Payload Proto

[PURPOSE]

CN-2-1-5 - Receiving HoTI - Invalid Mobility Header Payload Proto

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

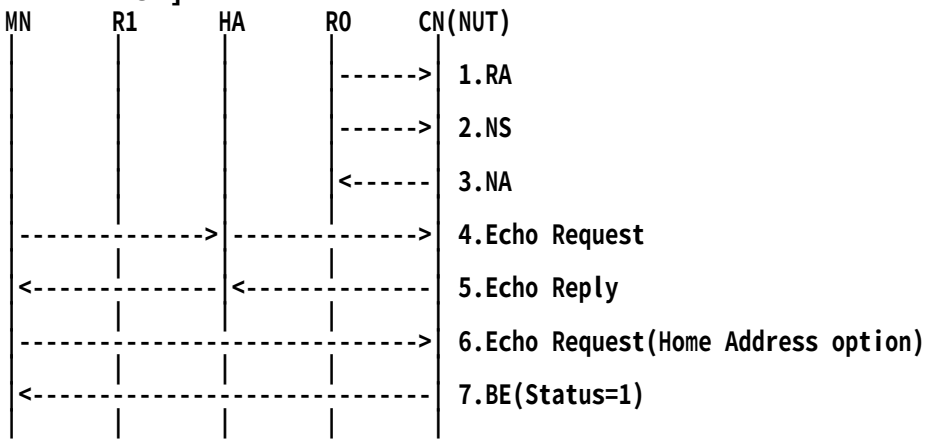
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

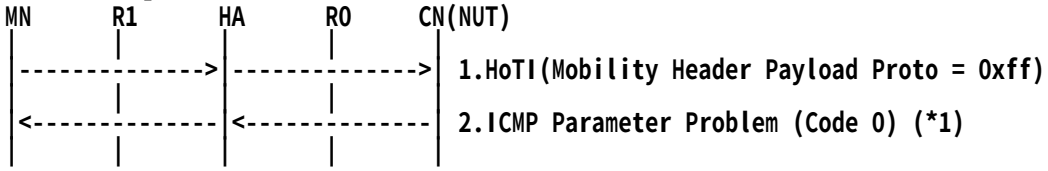
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Home Test Init(Mobility Header Payload Proto = 0xff). (Refer to 5.8.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	1

2. Receive ICMP Parameter Problem(Code 0). (*1) (Refer to 5.5.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	4

[JUDGMENT]

(*1) MN receives ICMP Parameter Problem (Code 0).

- The Pointer field is set to 40.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.2

6.2.1.5 CN-2-1-6 - Receiving HoTI - Invalid Mobility Header Checksum

[PURPOSE]

CN-2-1-6 - Receiving HoTI - Invalid Mobility Header Checksum

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

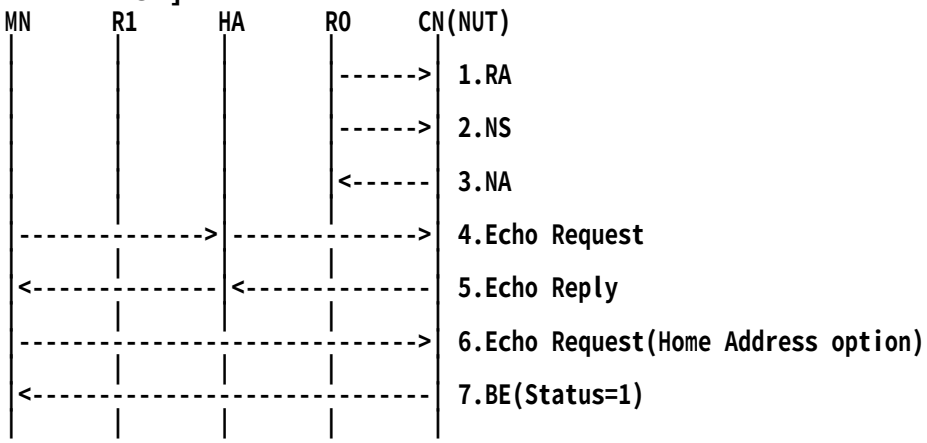
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

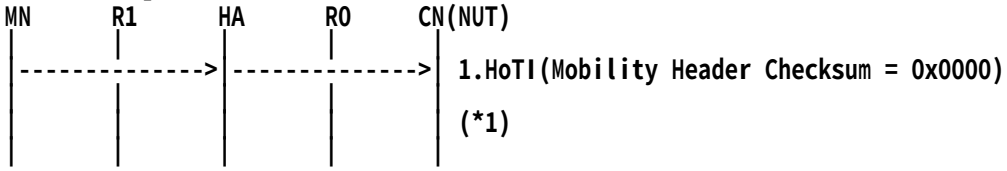
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Home Test Init(Mobility Header Checksum = 0x0000). (Refer to 5.8.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	1

*Expire HoT timer. (*1)

[JUDGMENT]

(*1) MN does not receive Home Test.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.2

6.2.2 Receiving CoTI

6.2.2.1 CN-2-2-2 - Receiving CoTI - Home Address option

[PURPOSE]

CN-2-2-2 - Receiving CoTI - Home Address option

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

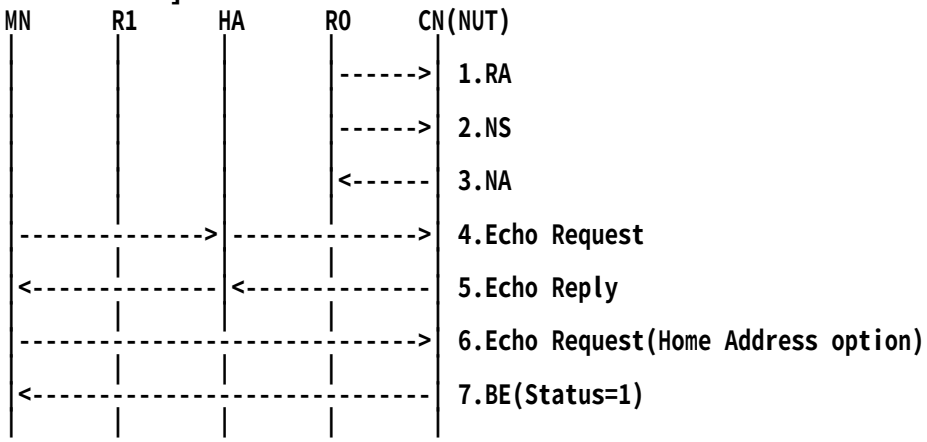
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

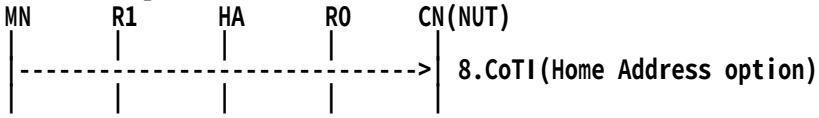
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Care-of Test Init(Home Address option). (Refer to 5.9.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	2

*Expire HoT timer. (*1)

[JUDGMENT]

(*1) MN does not receive Care-of Test

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.4.2

6.2.2.2 CN-2-2-3 - Receiving CoTI - Invalid Mobility Header Len

[PURPOSE]

CN-2-2-3 - Receiving CoTI - Invalid Mobility Header Len

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

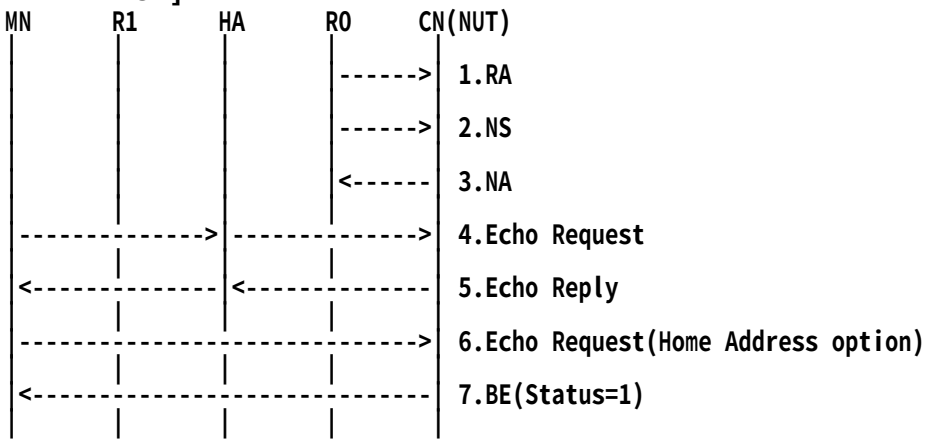
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

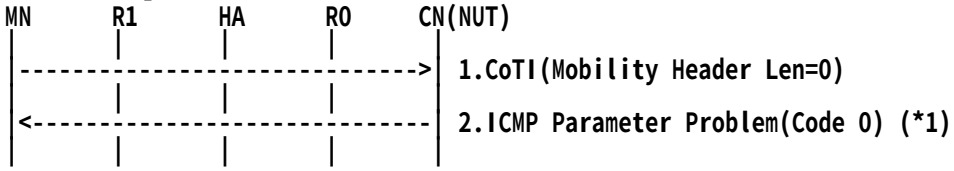
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Care-of Test Init(Mobility Header Len=0). (Refer to 5.9.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	2

2. Receive ICMP Parameter Problem(Code 0). (*1) (Refer to 5.5.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	4

[JUDGMENT]

(*1) MN receives ICMP Parameter Problem (Code 0).

- The Pointer field is set to 41.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.2, 6.1.4

6.2.2.3 CN-2-2-4 - Receiving CoTI - Invalid Mobility Header Reserved

[PURPOSE]

CN-2-2-4 - Receiving CoTI - Invalid Mobility Header Reserved

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

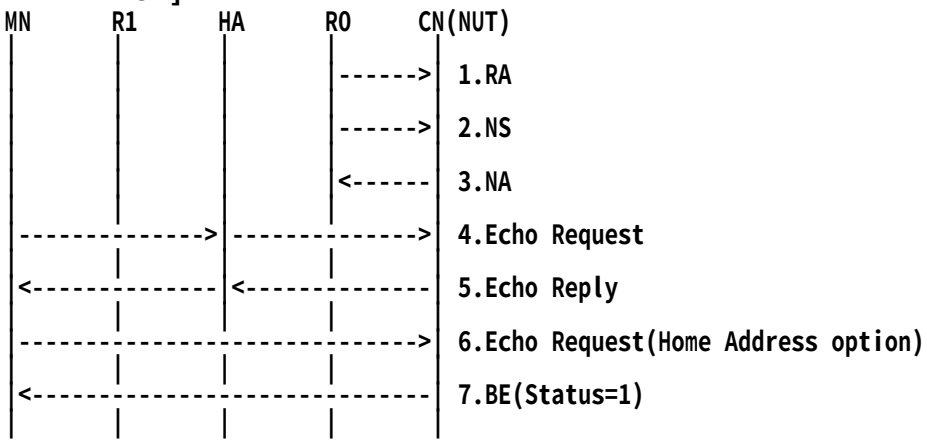
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

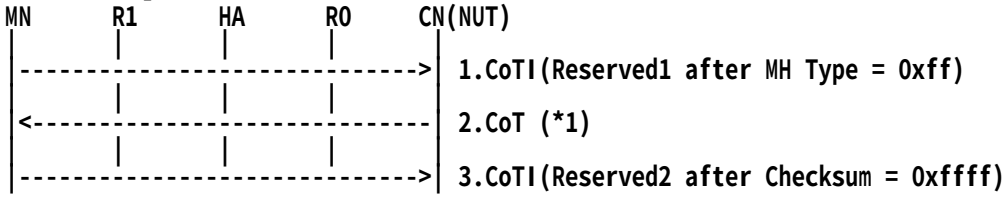
- Reboot NUT

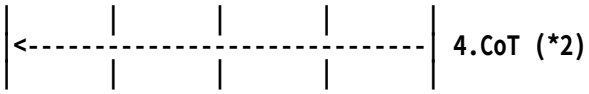
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init(Reserved1 after MH Type = 0xff). (Refer to 5.9.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	2

2. Receive Care-of Test. (*1) (Refer to 5.11.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	4

3. Send Care-of Test Init(Reserved2 after Checksum = 0xffff). (Refer to 5.9.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	2

4. Receive Care-of Test. (*2) (Refer to 5.11.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	4

[JUDGMENT]

(*1) MN receives Care-of Test.

- The Destination Address is set to the Source Address of the Care-of Test Init (MN care-of address).
- Care-of Init Cookie matches the value in the Care-of Test Init.

(*2) MN receives Care-of Test.

- The Destination Address is set to the Source Address of the Care-of Test Init (MN care-of address).
- Care-of Init Cookie matches the value in the Care-of Test Init.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 6.1.4

6.2.2.4 CN-2-2-5 - Receiving CoTI - Invalid Mobility Header Payload Proto

[PURPOSE]

CN-2-2-5 - Receiving CoTI - Invalid Mobility Header Payload Proto

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

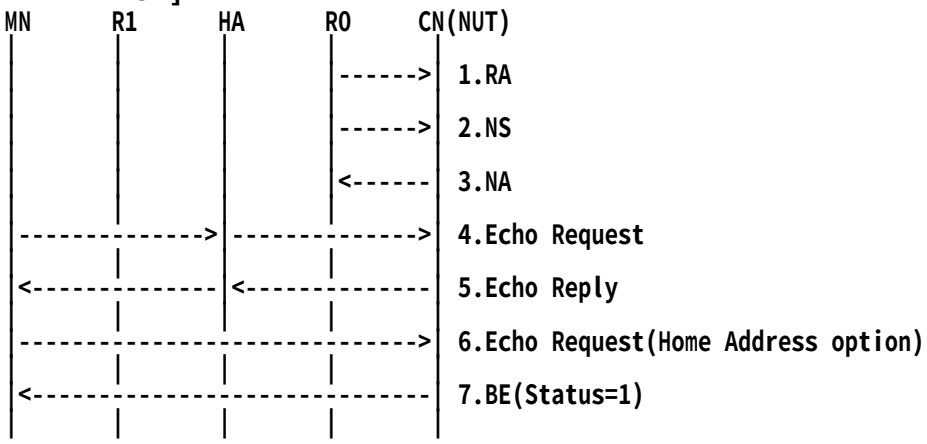
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

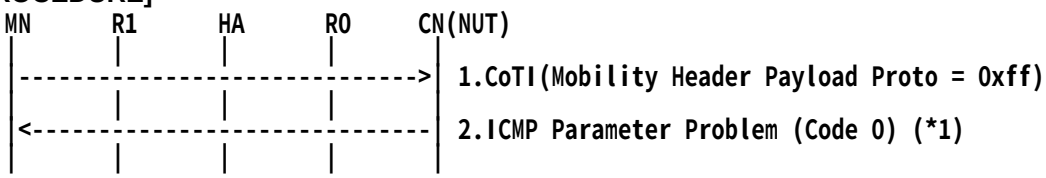
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Care-of Test Init(Mobility Header Payload Proto = 0xff). (Refer to 5.9.1)
2. Receive ICMP Parameter Problem(Code 0). (*1) (Refer to 5.5.1)

[JUDGMENT]

(*1) MN receives ICMP Parameter Problem (Code 0).
- The Pointer field is set to 40.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.2

6.2.2.5 CN-2-2-6 - Receiving CoTI - Invalid Mobility Header Checksum

[PURPOSE]

CN-2-2-6 - Receiving CoTI - Invalid Mobility Header Checksum

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

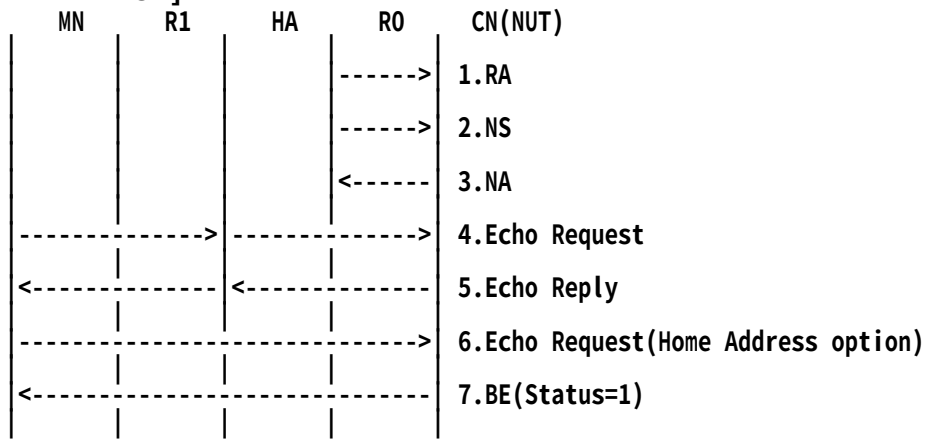
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

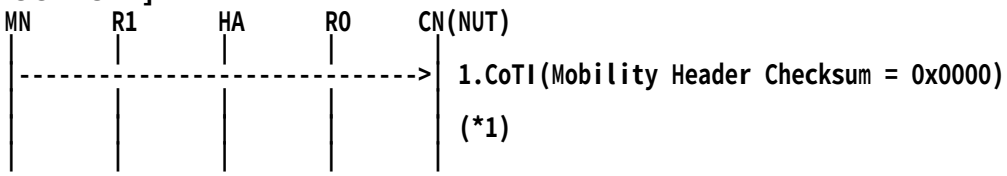
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Care-of Test Init(Mobility Header Checksum = 0x0000). (Refer to 5.9.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	2

*Expire HoT timer. **(*1)**

[JUDGMENT]

(*1) MN does not receive Care-of Test.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.2

6.2.3 Receiving BU

6.2.3.1 CN-2-3-3 - Receiving BU - Invalid Mobility Header Len

[PURPOSE]

CN-2-3-3 - Receiving BU - Invalid Mobility Header Len

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

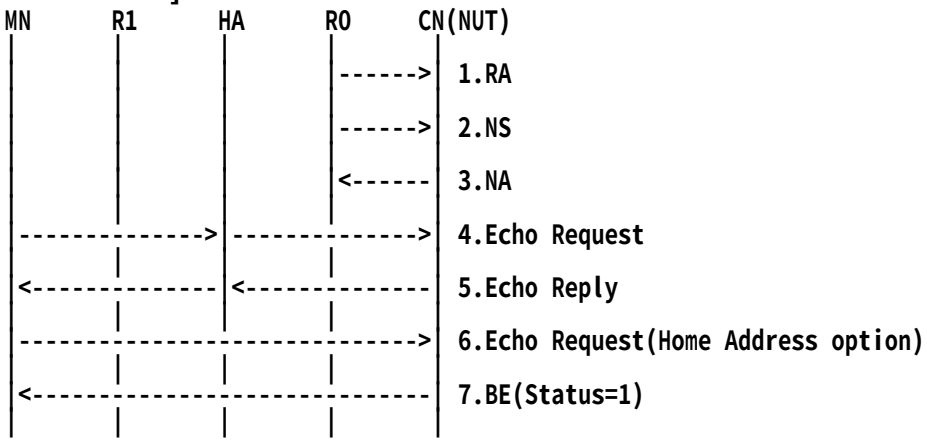
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

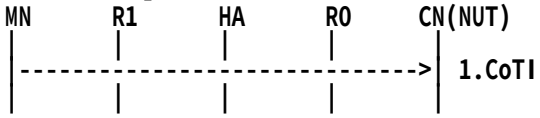
- Reboot NUT

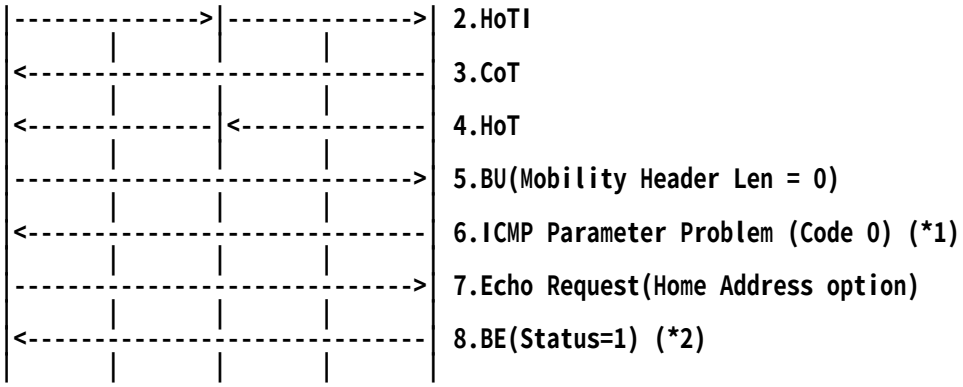
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init(Refer to 5.9.1)
2. Send Home Test Init(Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Mobility Header Len = 0). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive ICMP Parameter Problem(Code 0). (*1) (Refer to 5.5.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	4

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives ICMP Parameter Problem (Code 0).
- The Pointer field is set to 65.

(*2) MN receives ICMP Parameter Problem (Code 0).

(*3) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).

- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.2, 6.1.7

6.2.3.2 CN-2-3-4 - Receiving BU - Invalid Mobility Header Reserved

[PURPOSE]

CN-2-3-4 - Receiving BU - Invalid Mobility Header Reserved

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

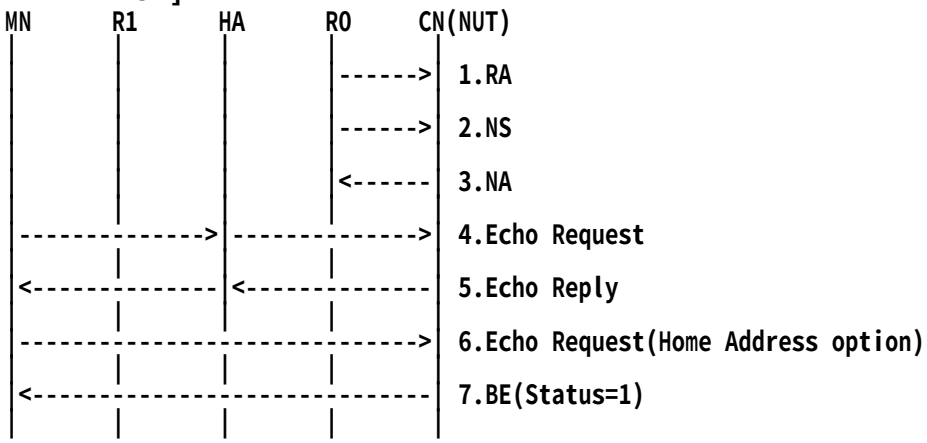
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

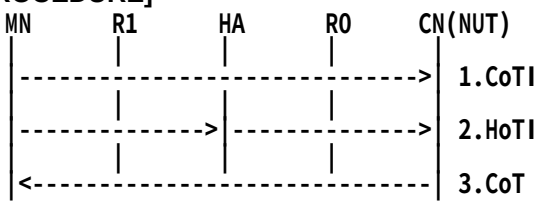
- Reboot NUT

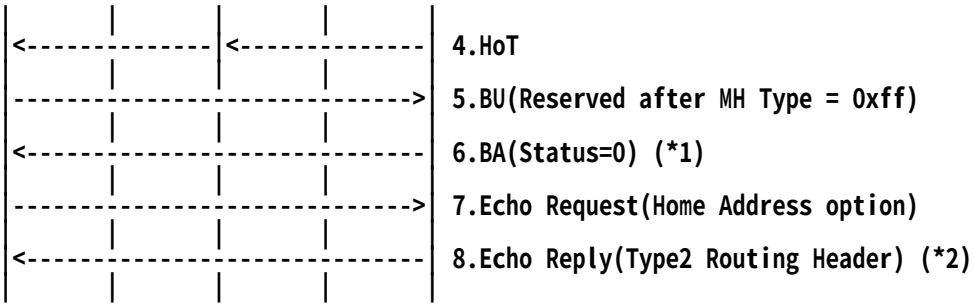
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Reserved after MH Type = 0xff). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).

- The Status field is set to 0.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is created.)
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 6.1.7

6.2.3.3 CN-2-3-5 - Receiving BU - Invalid Mobility Header Payload Proto

[PURPOSE]

CN-2-3-5 - Receiving BU - Invalid Mobility Header Payload Proto

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

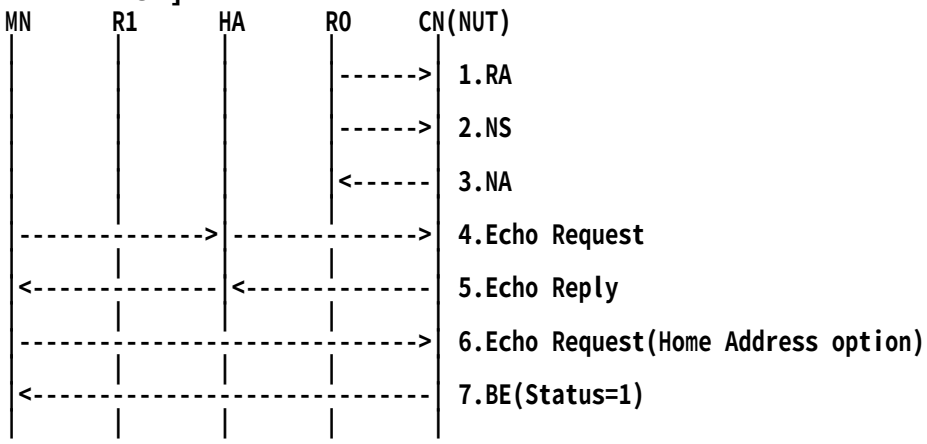
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

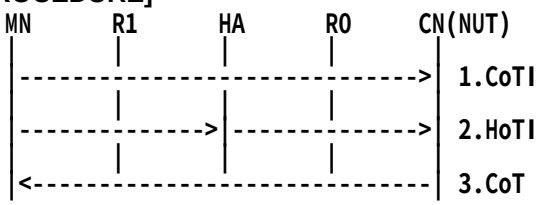
- Reboot NUT

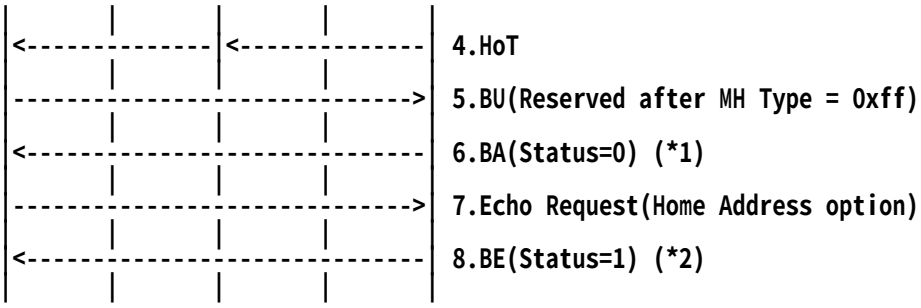
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Mobility Header Payload Proto = 0xff). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive ICMP Parameter Problem(Code 0). (*1) (Refer to 5.5.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	4

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives ICMP Parameter Problem (Code 0).
- The Pointer field is set to 64.

(*2) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.2

6.2.3.4 CN-2-3-6 - Receiving BU - Invalid Mobility Header Checksum

[PURPOSE]

CN-2-3-6 - Receiving BU - Invalid Mobility Header Checksum

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

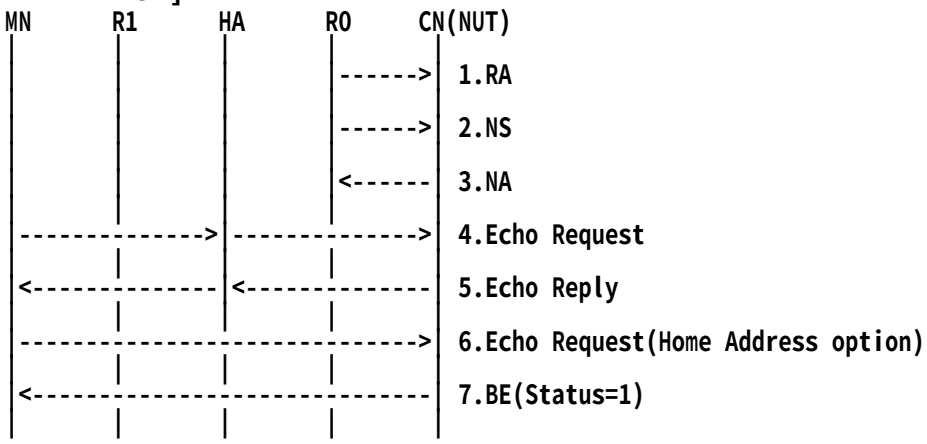
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

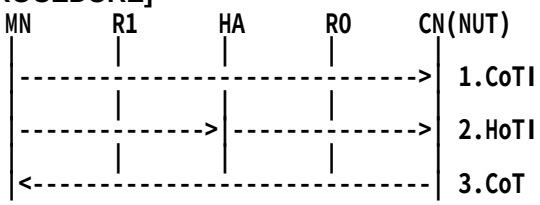
- Reboot NUT

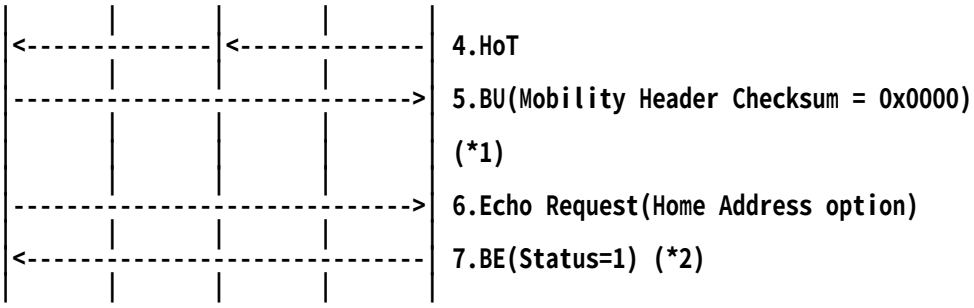
[INITIALIZATION]



1. Send Router Advertisement. (Refer to *5.1.1*)
2. Send Neighbor Solicitation. (Refer to *5.2.1*)
3. Receive Neighbor Advertisement. (Refer to *5.3.1*)
4. Send ICMP Echo Request. (Refer to *5.6.1*)
5. Receive ICMP Echo Reply. (Refer to *5.7.1*)
6. Send ICMP Echo Request(Home Address option). (Refer to *5.6.2*)
7. Receive Binding Error(Status=1). (Refer to *5.14.1*)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Mobility Header Checksum = 0x0000). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*1)

6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

7. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN receives neither Binding Acknowledgement nor Binding Error.

(*2) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.2

6.2.3.5 CN-2-3-9 - Receiving BU - Invalid Reserved after (K)bit

[PURPOSE]

CN-2-3-9 - Receiving BU - Invalid Reserved after (K)bit

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

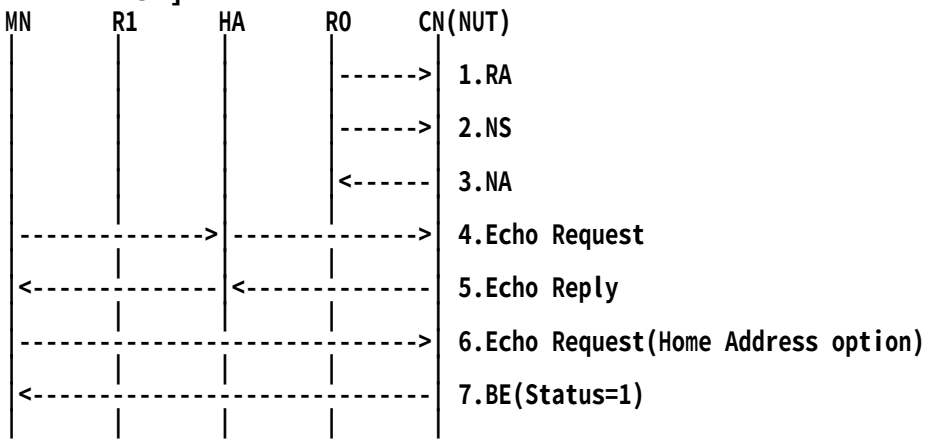
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

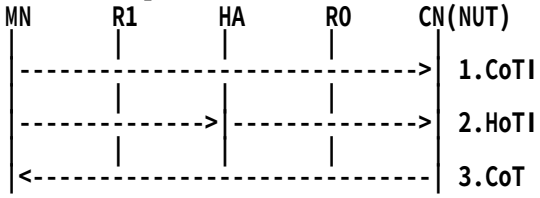
- Reboot NUT

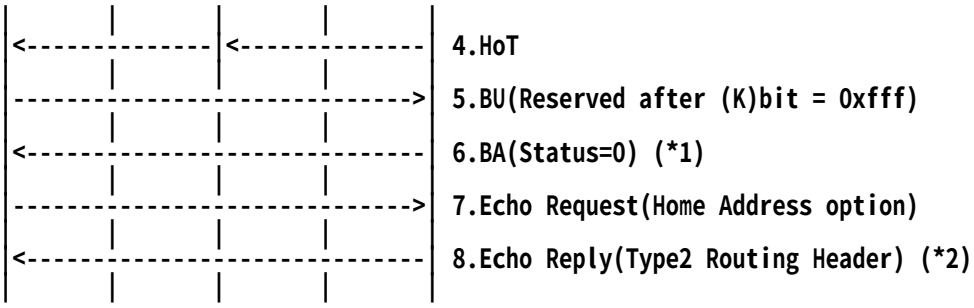
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Reserved after (K)bit = 0xfff). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).

- The Status field is set to 0.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is created.)
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 6.1.7

6.2.4 Receiving mobility message

6.2.4.1 CN-2-4-1 - Receiving mobility message - Invalid MH Type

[PURPOSE]

CN-2-4-1 - Receiving mobility message - Invalid MH Type

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

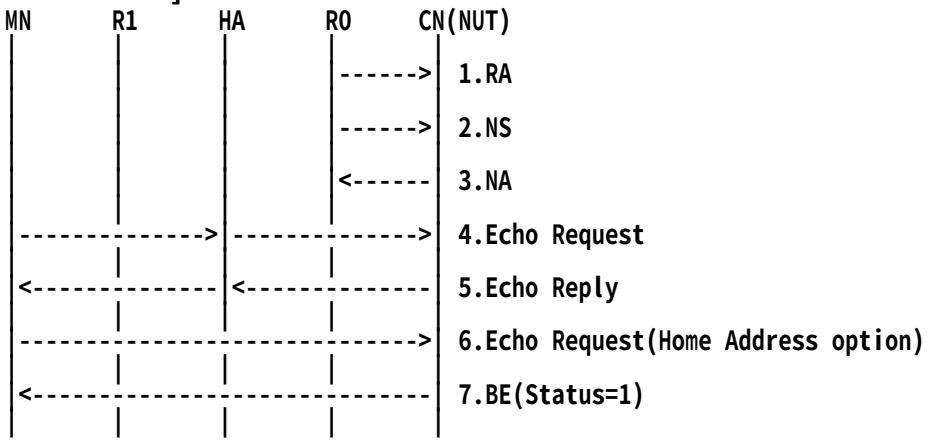
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

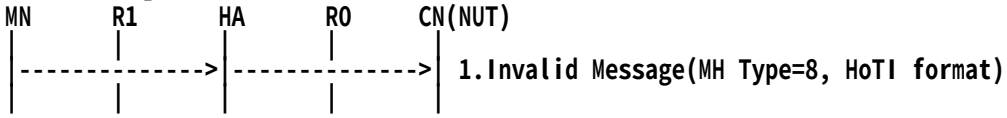
- Reboot NUT

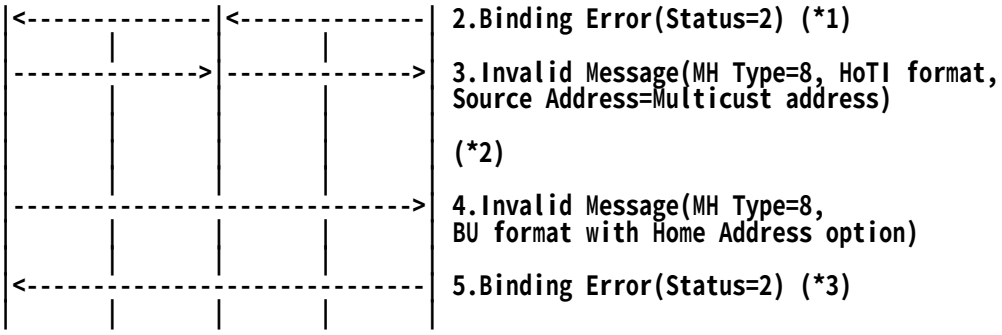
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Home Test Init(MH Type=8, HoTI format). (Refer to 5.8.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	1

2. Receive Binding Error(Status=2). (*1) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

3. Send Home Test Init

(MH Type=8, HoTI format, Source Address=Multicust address) (Refer to 5.8.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Mobility Header	MH Type	1

*Expire HoT timer. (*2)

4. Send Binding Update

(MH Type=8, BU format with Home Address option). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

5. Receive Binding Error(Status=2). (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Error.

- The Destination Address is set to pseudo Home Test Init (MN home address).
- The Status field is set to 2.

(*2) MN does not receive Binding Error.

(*3) MN receives Binding Error.
- The Destination Address is set to pseudo Binding Update (MN care-of address).
- The Status field is set to 2.
- The Home Address field is set to the value in the Home Address option in the pseudo Binding Update (MN home address).

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.2, 9.3.3

6.3 Validating Binding Updates

6.3.1 Flags and options

6.3.1.1 CN-2-3-1-2 - Receiving BU with innvalid alignment of Binding Authorization Data option

[PURPOSE]

CN-2-3-1-2 - Receiving BU - Invalid Mobility Option (Invalid alignment of Mobility Options)

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

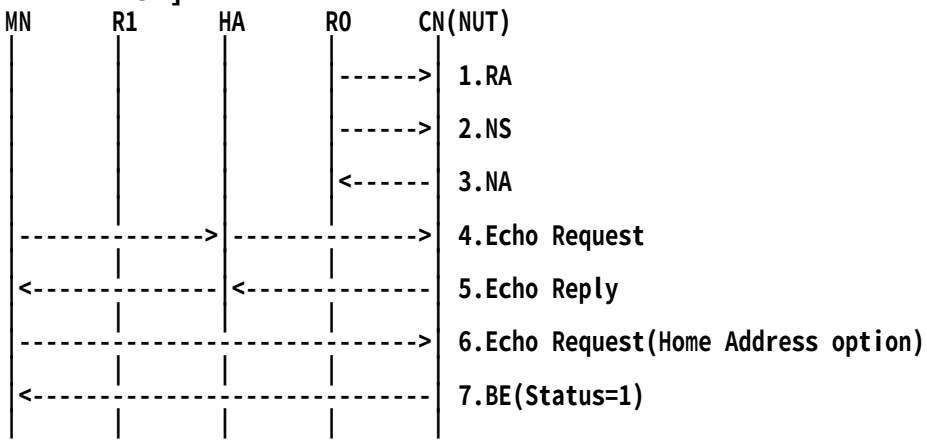
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

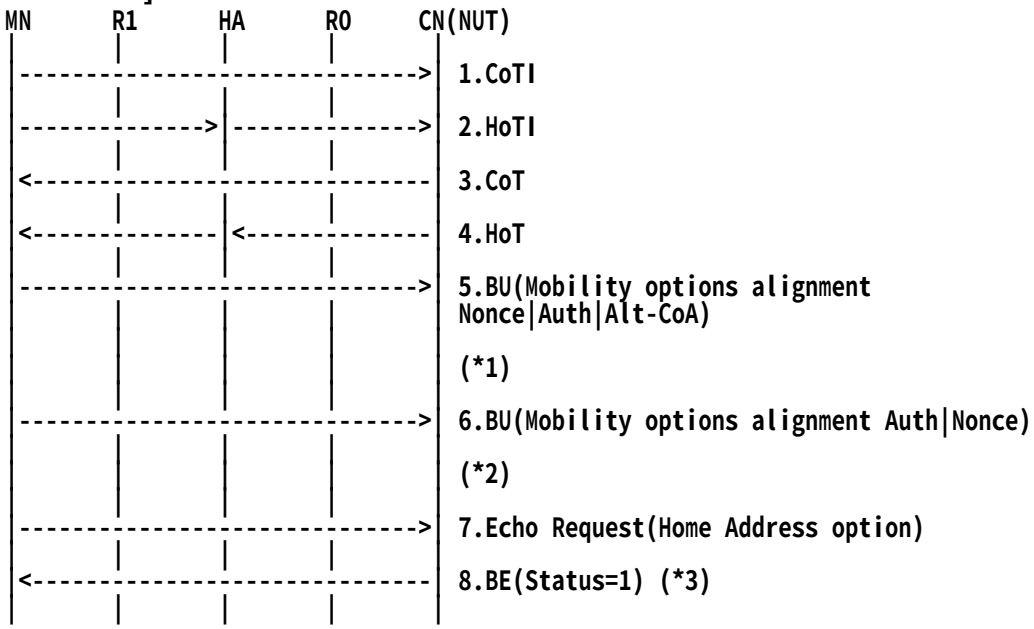
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Mobility options alignment Nonce|Auth|Alt-CoA). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any
	PadN	Option Type	1
		Option Length	4
		Pad Data	Any
	Alternate Care-of Address	Option Type	3
		Option Length	16
		Alternate Care-of Address	(global)

*Expire BA Timer(*1)

6. Send Binding Update(Mobility options alignment Auth|Nonce). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	PadN	Option Type	1
		Option Length	4
		Pad Data	Any
	Binding Authorizat	Option Type	5
		Option Length	12

	ion Data	Authenticator	Any
	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	PadN	Option Type	1
		Option Length	0
		Pad Data	-

*Expire BA Timer(*2)

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive Binding Error(Status=1). (*3) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives neither Binding Acknowledgement nor Binding Error.

(*2) MN receives neither Binding Acknowledgement nor Binding Error.

(*3) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1

6.3.1.2 CN-2-3-11 - Receiving BU with invalid Binding Authorization Data option

[PURPOSE]

CN-2-3-11 - Receiving BU - Invalid Binding Authorization Data option

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

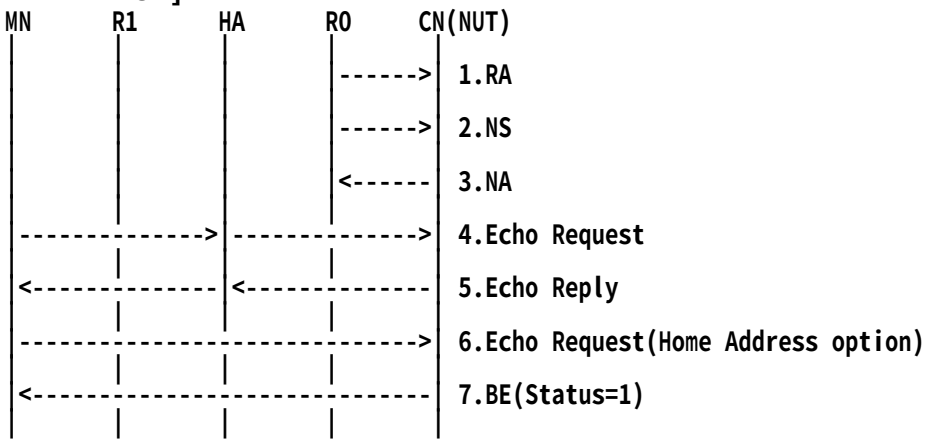
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

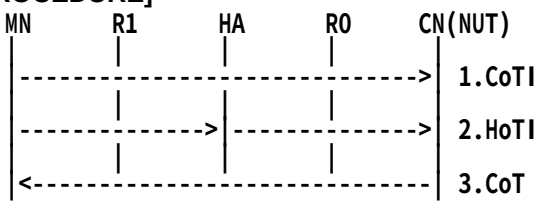
- Reboot NUT

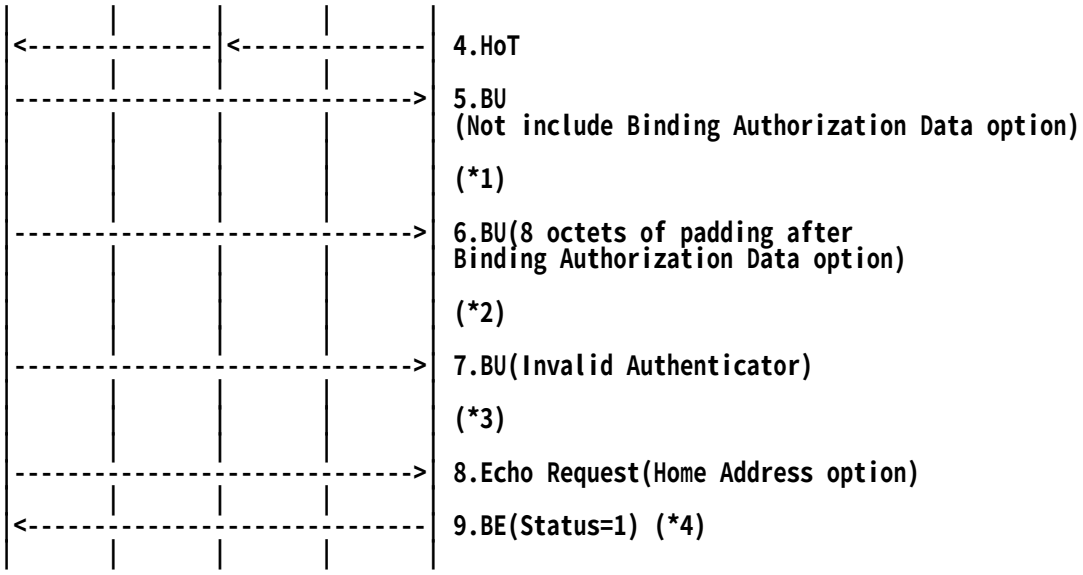
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Not include Binding Authorization Data option). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	PadN	Option Type	1
		Option Length	4
		Pad Data	Any

*Expire BA timer. (*1)

6. Send Binding Update
(8 octets of padding after Binding Authorization Data option). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any
	PadN	Option Type	1
		Option Length	4
		Pad Data	00000000 0000

*Expire BA timer. (*2)

7. Send Binding Update(Invalid Authenticator). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*3)

8. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

9. Receive Binding Error(Status=1). (*4) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives neither Binding Acknowledgement nor Binding Error.

(*2) MN receives neither Binding Acknowledgement nor Binding Error.

(*3) MN receives neither Binding Acknowledgement nor Binding Error.

(*4) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1

6.3.1.3 CN-2-3-10-1 - Receiving BU with (H)bit is cleared, without Nonce Indices option

[PURPOSE]

CN-2-3-10-1 - Receiving BU - Not include Nonce Indices option (Registration)

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

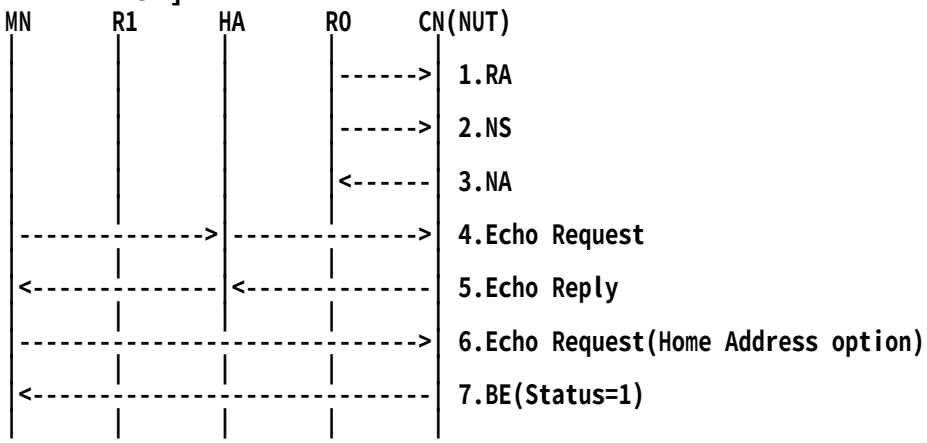
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

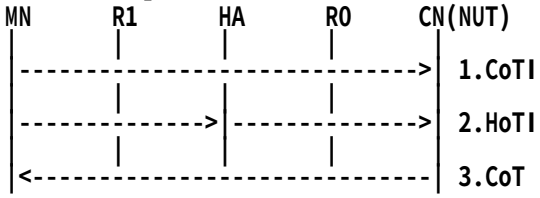
- Reboot NUT

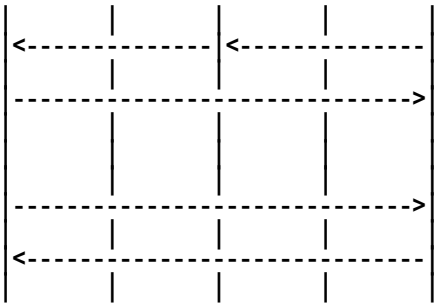
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init (Refer to 5.9.1)
2. Send Home Test Init (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Not include Nonce Indices option). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

*Expire BA timer. (*1)

6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

7. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives neither Binding Acknowledgement nor Binding Error.

(*2) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1

6.3.1.4 CN-5-3-4 - Receiving BU with (H)bit is set, with Nonce Indices option

[PURPOSE]

CN-5-3-4 - Receiving BU with (H)bit is set - with Nonce (Registration)

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

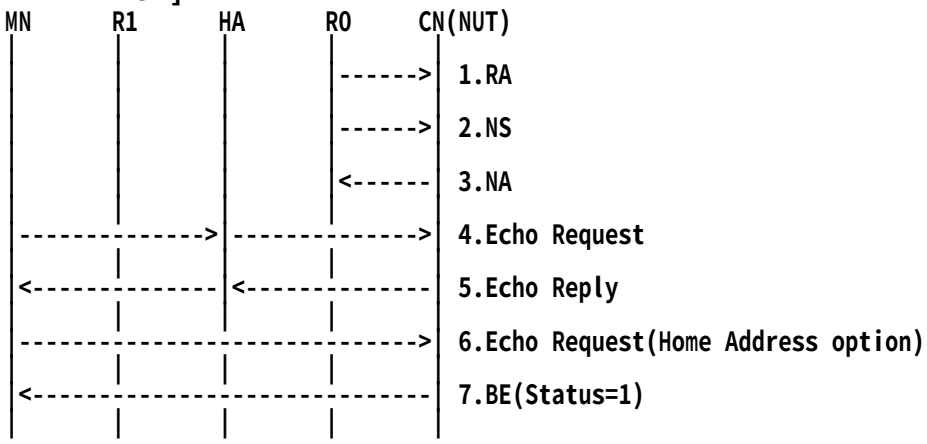
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

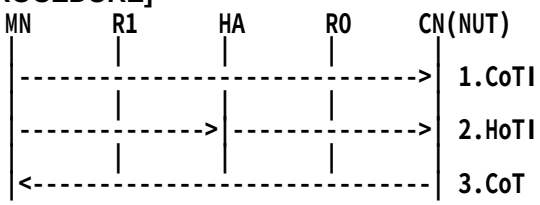
- Reboot NUT

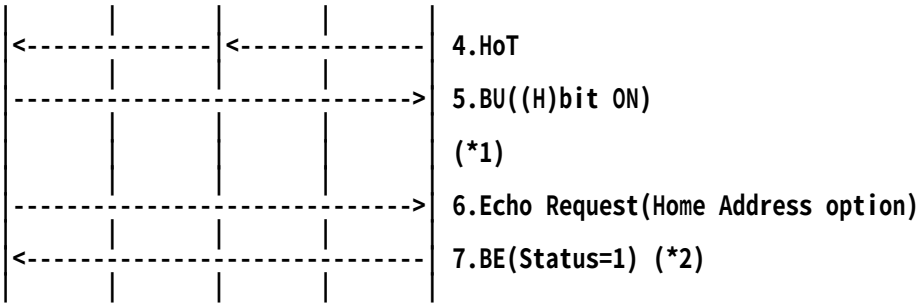
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update((H)bit ON). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*1)

6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

7. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives neither Binding Acknowledgement nor Binding Error.

(*2) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1

6.3.2 Invalid addresses

6.3.2.1 CN-2-6-1 - Receiving BU with invalid address - Source Address (Registration)

[PURPOSE]

CN-2-6-1 - Receiving BU with invalid address - Source Address (Registration)

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

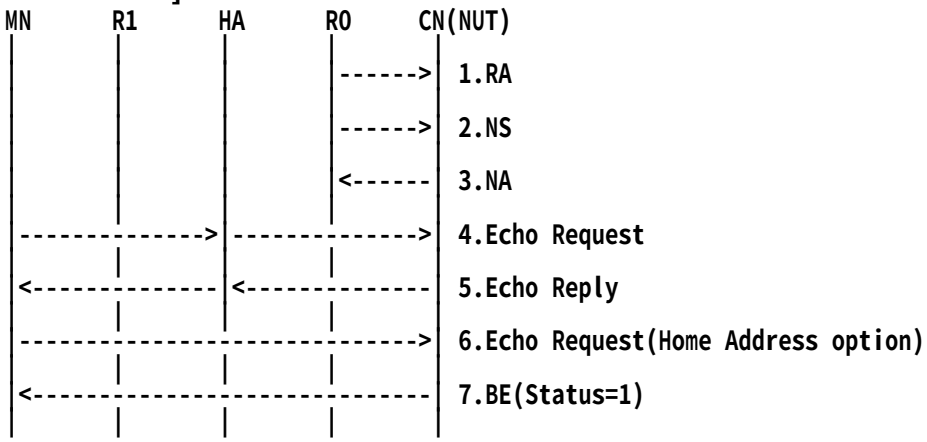
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

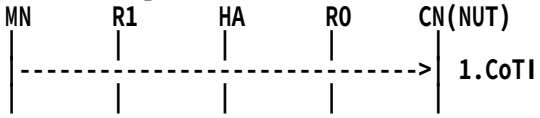
- Reboot NUT

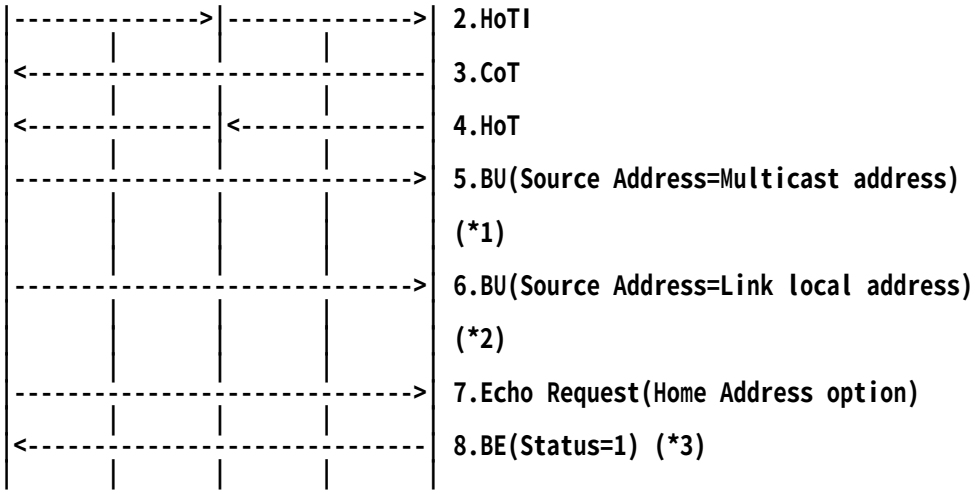
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Source Address=Multicast address). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*1)

6. Send Binding Update(Source Address=Link local address). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*2)

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive Binding Error(Status=1). (*3) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)

Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives neither Binding Acknowledgement nor Binding Error.

(*2) MN receives neither Binding Acknowledgement nor Binding Error.

(*3) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 6.1.7

6.3.2.2 CN-2-6-2 - Receiving BU with invalid address - Home Address (Registration)

[PURPOSE]

CN-2-6-2 - Receiving BU with invalid address - Home Address (Registration)

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

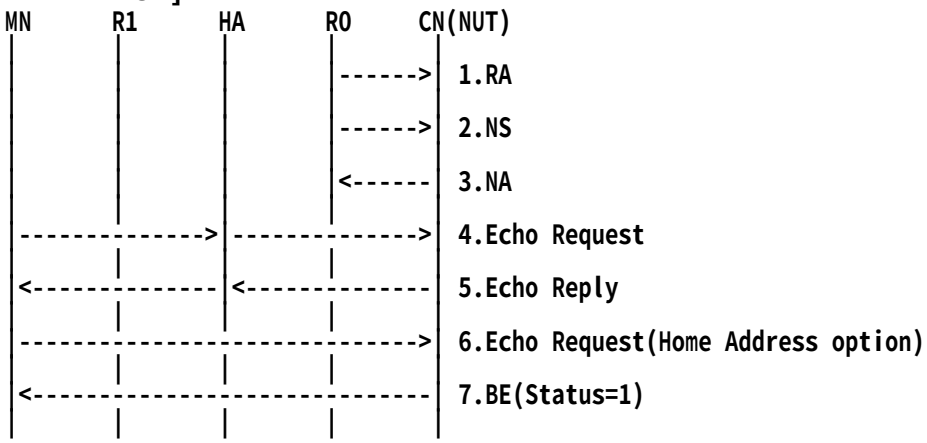
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

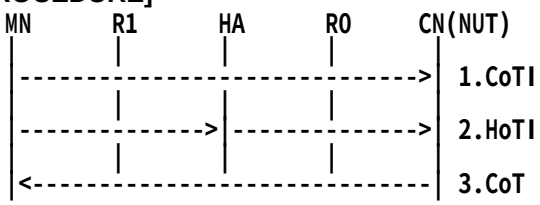
- Reboot NUT

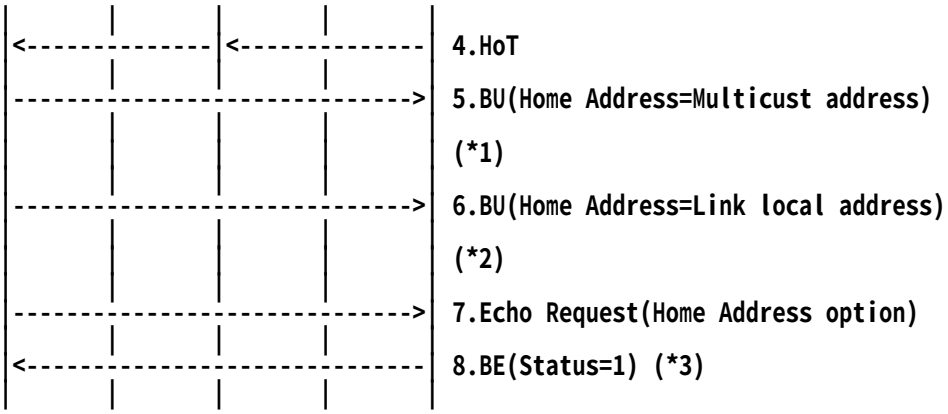
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Home Address=Multicust address). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*1)

6. Send Binding Update(Home Address=Link local address). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*2)

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive Binding Error(Status=1). (*3) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives neither Binding Acknowledgement nor Binding Error.

(*2) MN receives neither Binding Acknowledgement nor Binding Error.

(*3) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1

6.3.2.3 CN-2-6-4 - Receiving BU with invalid address - Source Address (De-Registration)

[PURPOSE]

CN-2-6-4 - Receiving BU with invalid address - Source Address (De-Registration)

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

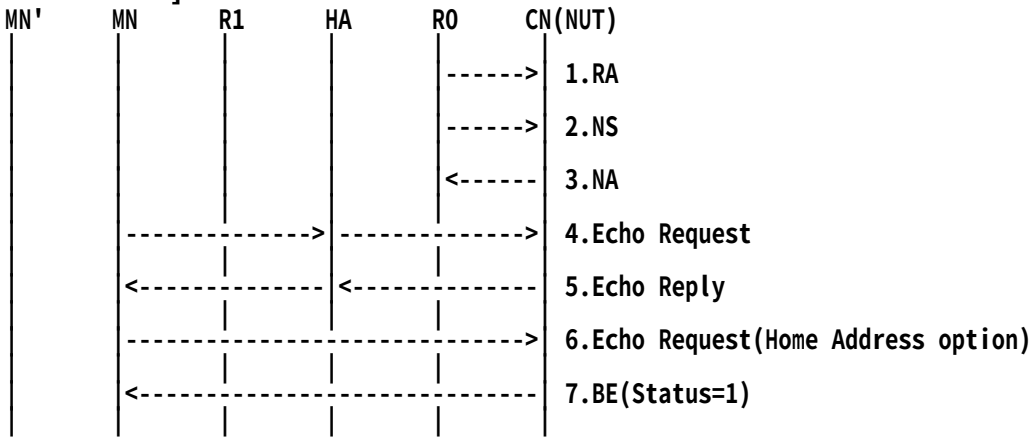
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

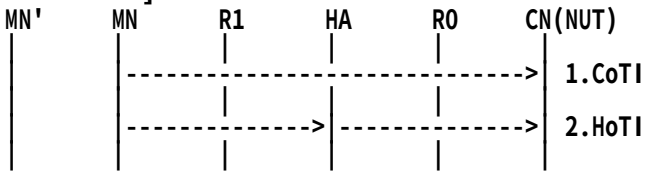
- Reboot NUT

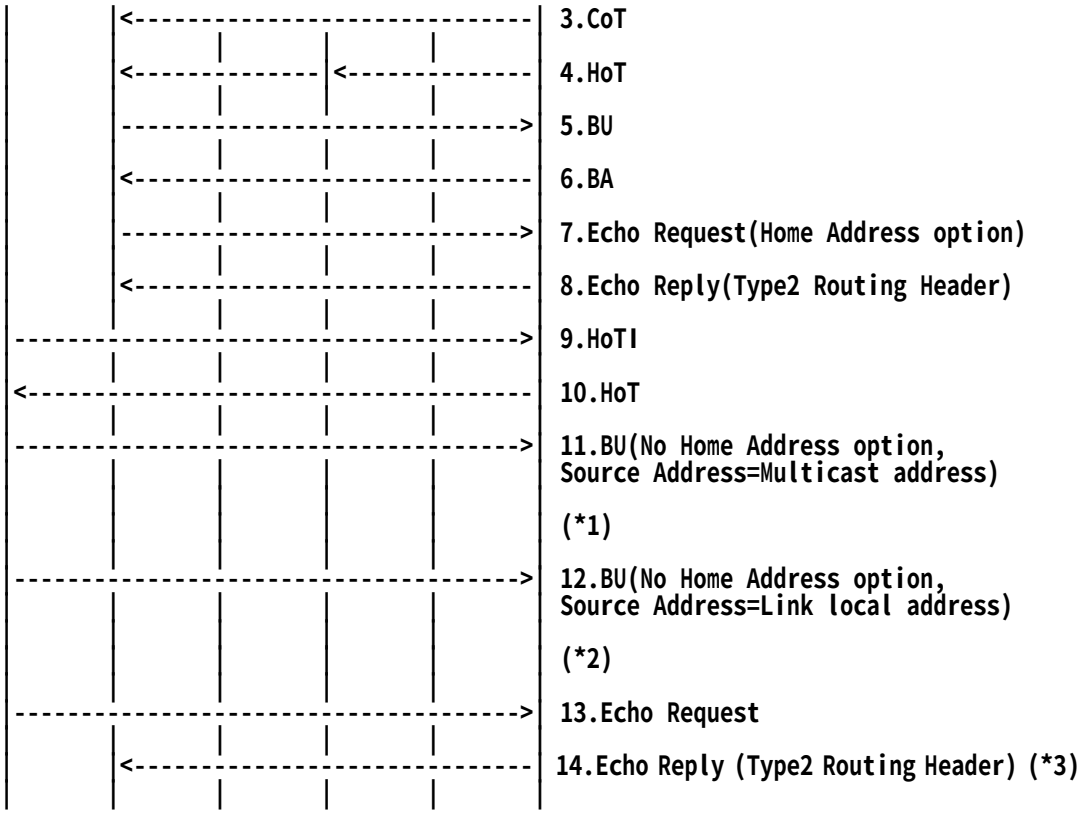
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init(Refer to 5.8.1)
10. Receive Home Test. (Refer to 5.10.1)
11. Send Binding Update

(No Home Address option, Source Address=Multicast address). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*1)

12. Send Binding Update

(No Home Address option, Source Address=Link local address). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)

	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*2)

13. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

14. Receive ICMP Echo Reply(Type2 Routing Header). (*3) (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

[JUDGMENT]

(*1) MN and MN' receives neither Binding Acknowledgement nor Binding Error.

(*2) MN and MN' receives neither Binding Acknowledgement nor Binding Error.

(*3) MN receives ICMP Echo Reply. (Binding Cache entry is not deleted.)
- The Destination Address is set to MN care-of address.
- Type 2 Routing Header is included.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1

6.3.2.4 CN-5-4-2 - BU Creating Circular Reference

[PURPOSE]

CN-5-4-2 - BU Creating Circular Reference

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

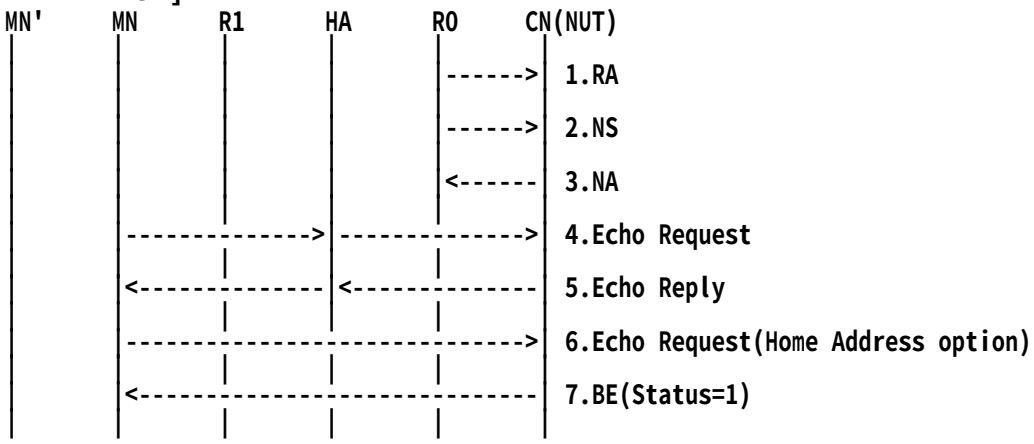
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

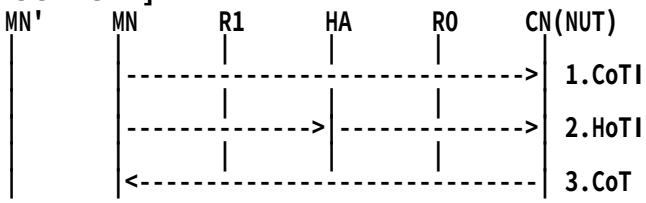
- Reboot NUT

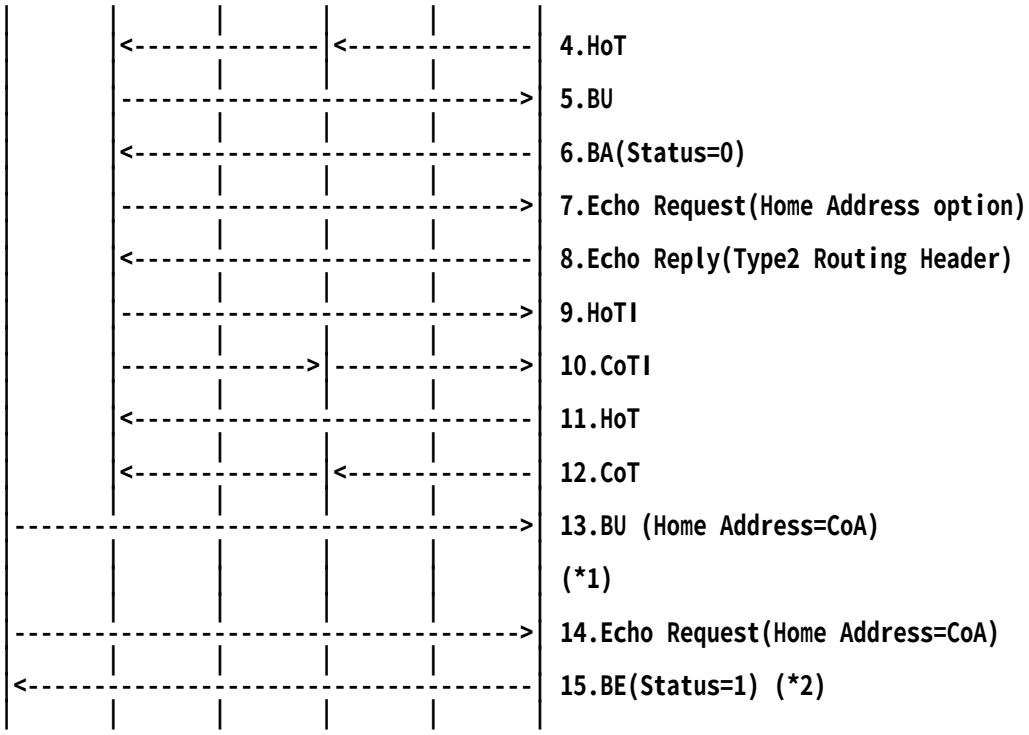
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init. (Refer to 5.8.1)
10. Send Care-of Test Init. (Refer to 5.9.1)
11. Receive Home Test. (Refer to 5.10.1)
12. Receive Care-of Test. (Refer to 5.11.1)
13. Send Binding Update(Home Address=CoA). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Expire BA timer. (*1)

14. Send ICMP Echo Request. (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)

ICMPv6	Type	128

15. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN and MN' does not receive Binding Acknowledgement.

(*2) MN' receives Binding Error.(Binding Cache entry is not created.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN home address).
- The Status field is set to 1.
- The Home Address field is set to the value in the Home Address option in the ICMP Echo Request (MN care-of address).

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 6.1.7

6.3.3 Registration with Alternate Care-of Address option

6.3.3.1 CN-3-1-1 - Registration - Different Alternate Care-of Address from Source Address

[PURPOSE]

CN-3-1-1 - Registration - Different Alternate Care-of Address from Source Address

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

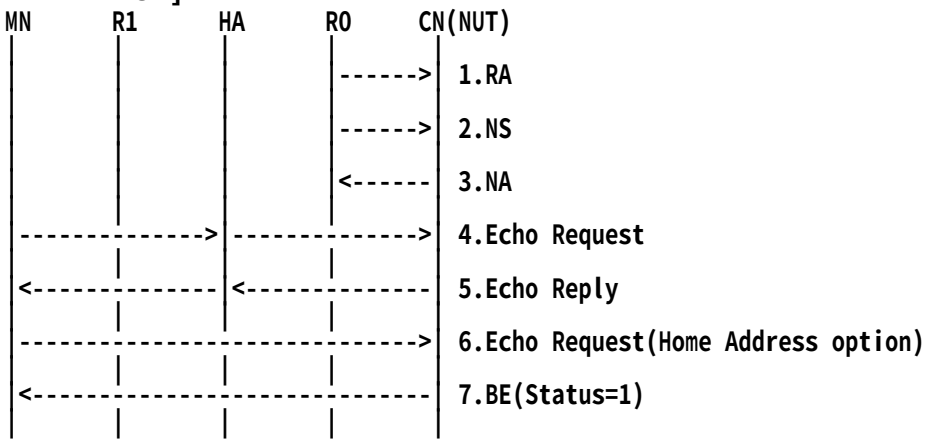
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

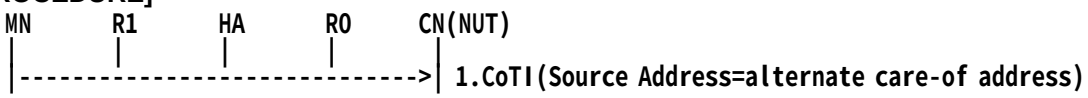
- Reboot NUT

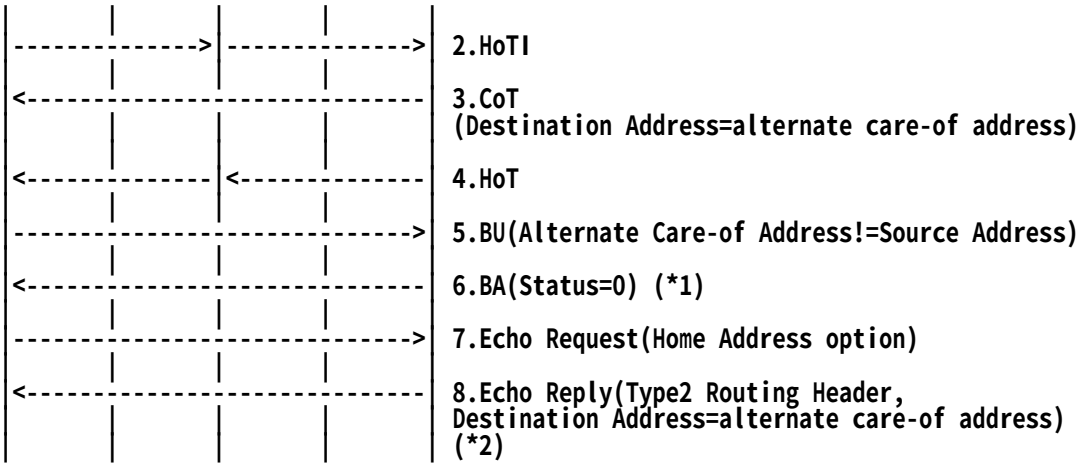
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Alternate Care-of Address!=Source Address). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Alternate Care-of Address	Option Type	3
		Option Length	16
		Alternate Care-of Address	!=Source Address
	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

6. Receive Binding Acknowledgement. (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive ICMP Echo Reply
(Type2 Routing Header,Destination Address=alternate care-of address). (*2)
(Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)

	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is created.)

- The Destination Address is set to the Alternate Care-of Address in the Binding Update.
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 9.5.4

6.3.3.2 CN-3-1-2 - Registration - Same Alternate Care-of Address as Source Address

[PURPOSE]

CN-3-1-2 - Registration - Same Alternate Care-of Address as Source Address

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

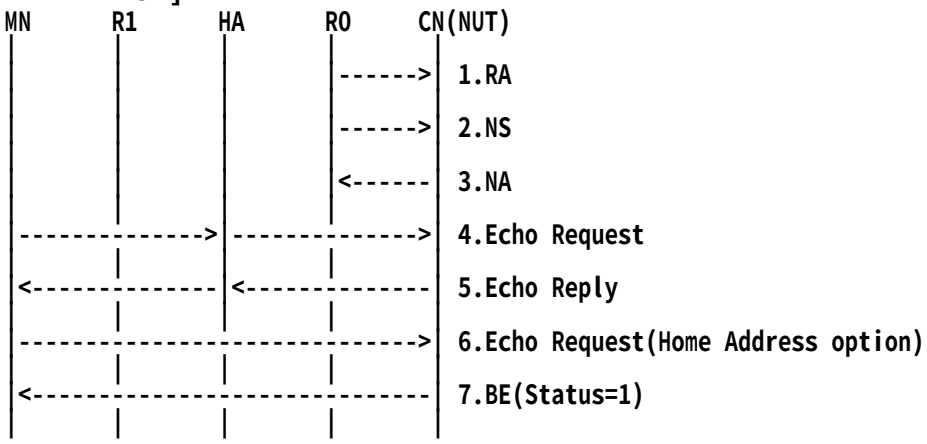
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

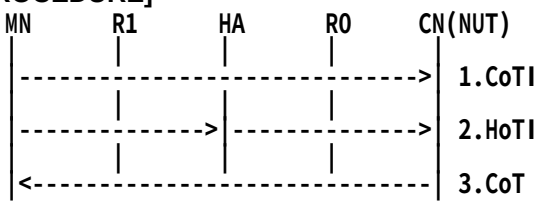
- Reboot NUT

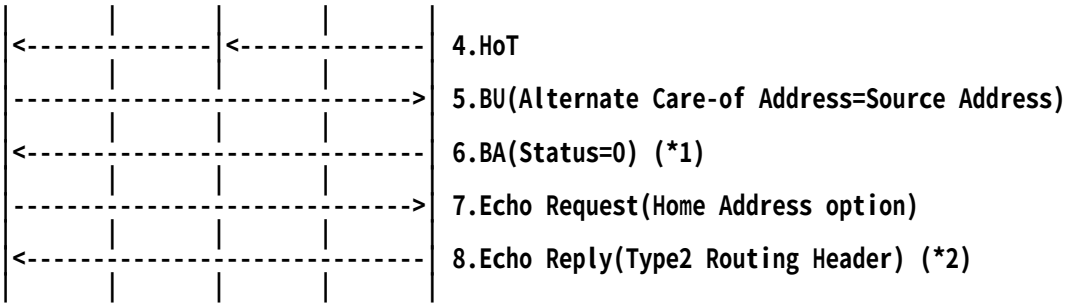
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Alternate Care-of Address=Source Address). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Alternate Care-of Address	Option Type	3
		Option Length	16
		Alternate Care-of Address	=Source Address
	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

6. Receive Binding Acknowledgement. (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
ICMPv6	Type		128

8. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Home Address of Mobile Node)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
ICMPv6	Type		129

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN

care-of address).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is created.)
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1, 9.5.4

6.3.4 Nonce Indices

6.3.4.1 Home Nonce Index timeout

6.3.4.1.1 CN-4-2-1 - Home Nonce Index timeout - Registration from the foreign link

[PURPOSE]

CN-4-2-1 - Home Nonce Index timeout - Registration from the foreign link

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

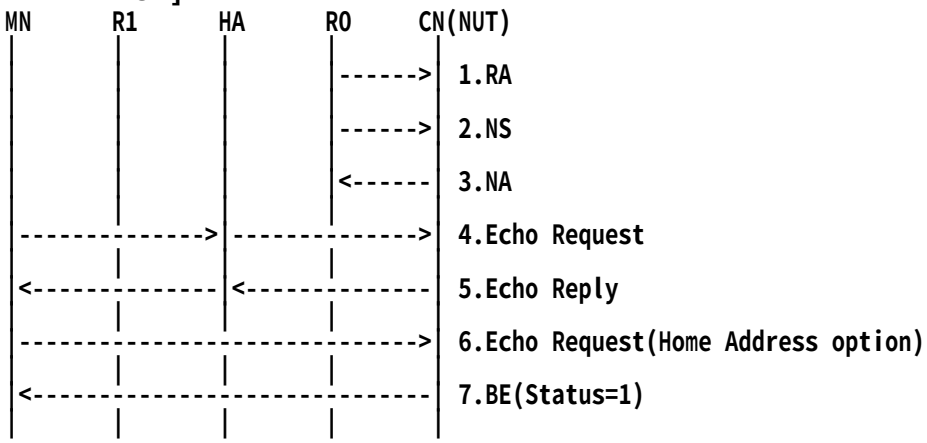
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

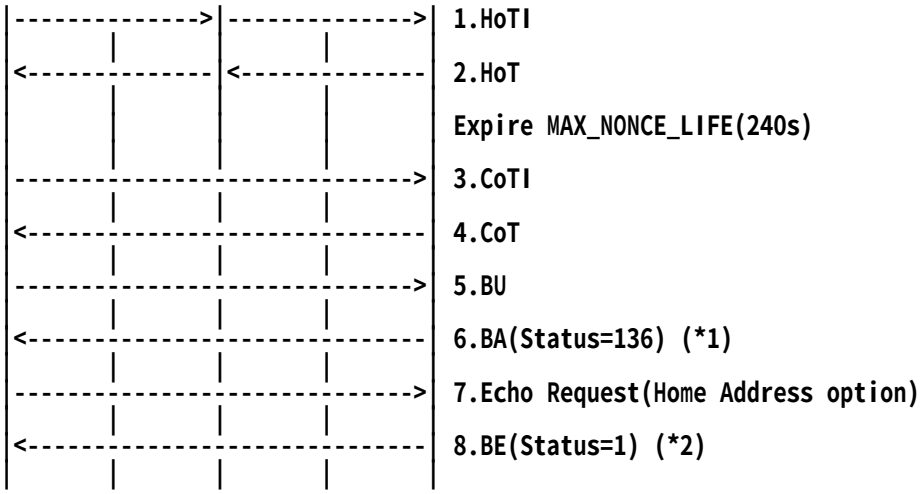
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Home Test Init. (Refer to 5.8.1)
2. Receive Home Test. (Refer to 5.10.1)
   *Expire MAX_NONCE_LIFE(240s).
3. Send Care-of Test Init. (Refer to 5.9.1)
4. Receive Care-of Test. (Refer to 5.11.1)
5. Send Binding Update. (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=136). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	6
	Status	136

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 136.
- Binding Authorization Data option is not included.

(*2) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1, 5.2.7, 12, 9.5.4

6.3.4.1.2 CN-4-2-2 - Home Nonce Index timeout - De-Registration from the foreign link

[PURPOSE]

CN-4-2-2 - Home Nonce Index timeout - De-Registration from the foreign link

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

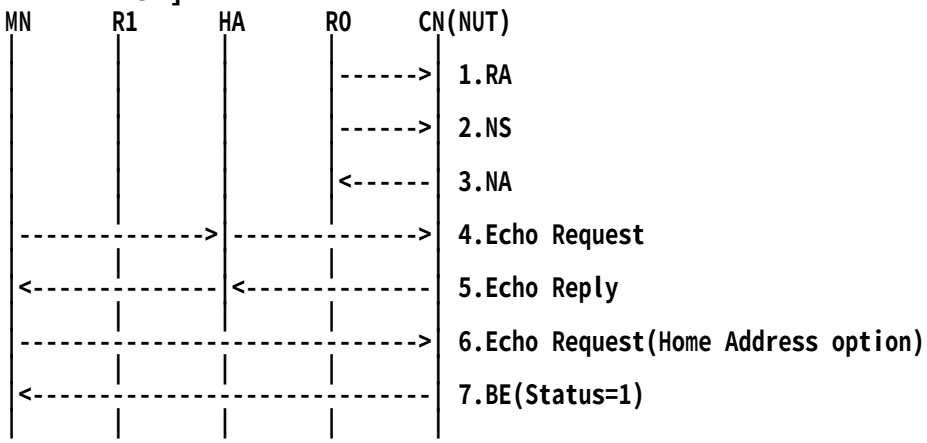
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

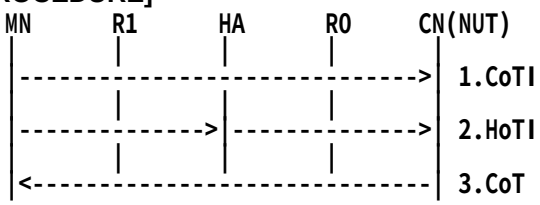
- Reboot NUT

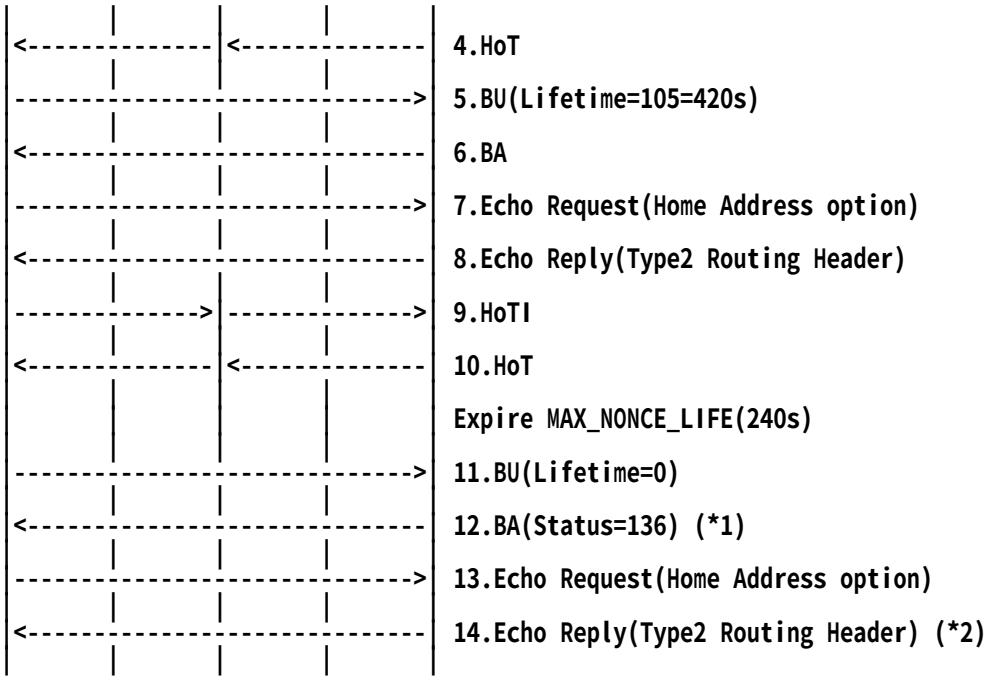
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.8.1)
2. Send Home Test Init. (Refer to 5.10.1)
3. Receive Care-of Test. (Refer to 5.9.1)
4. Receive Home Test. (Refer to 5.11.1)
5. Send Binding Update(Lifetime=105=420s). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init. (Refer to 5.8.1)
10. Receive Home Test. (Refer to 5.10.1)
    *Expire MAX_NONCE_LIFE(240s).
11. Send Binding Update(Lifetime=0). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
	Life time		0
Mobility options	Alternate Care-of Address	Option Type	3
		Option Length	16
		Alternate Care-of Address	=Source Address
	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Any
	Binding Authorization Data	Option Type	5
		Option Length	12
		Authenticator	Any

12. Receive Binding Acknowledgement(Status=136). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility	MH Type	6

Header	Status	136

13. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

14. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 136.
- Binding Authorization Data option is not included.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is not deleted.)

- The Destination Address is set to MN care-of address.
- Type 2 Routing Header is included.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 5.2.7, 12, 9.5.4

6.3.4.1.3 CN-4-2-3 - Home Nonce Index timeout - De-Registration from the home link

[PURPOSE]

CN-4-2-3 - Home Nonce Index timeout - De-Registration from the home link

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

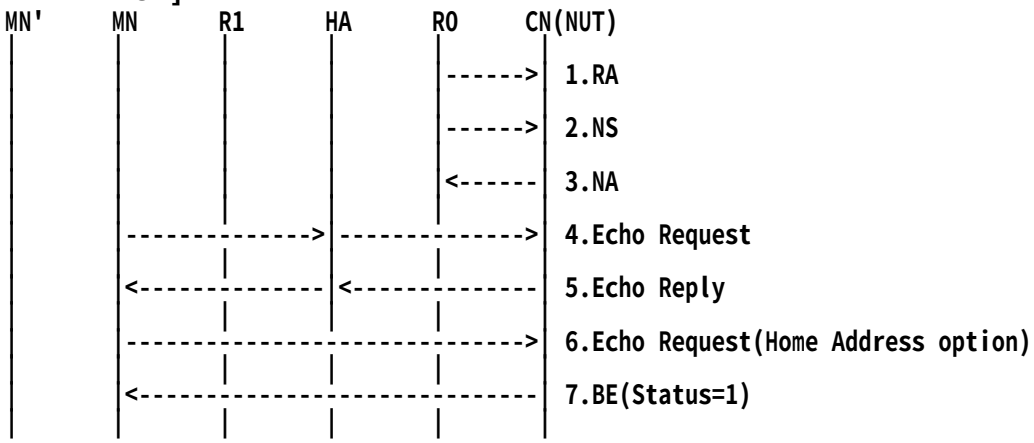
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

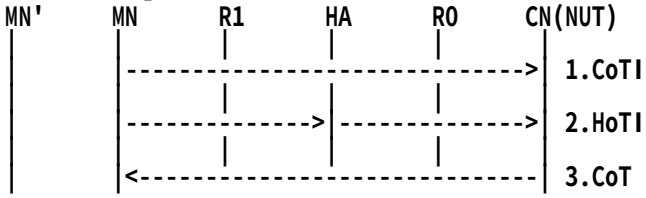
- Reboot NUT

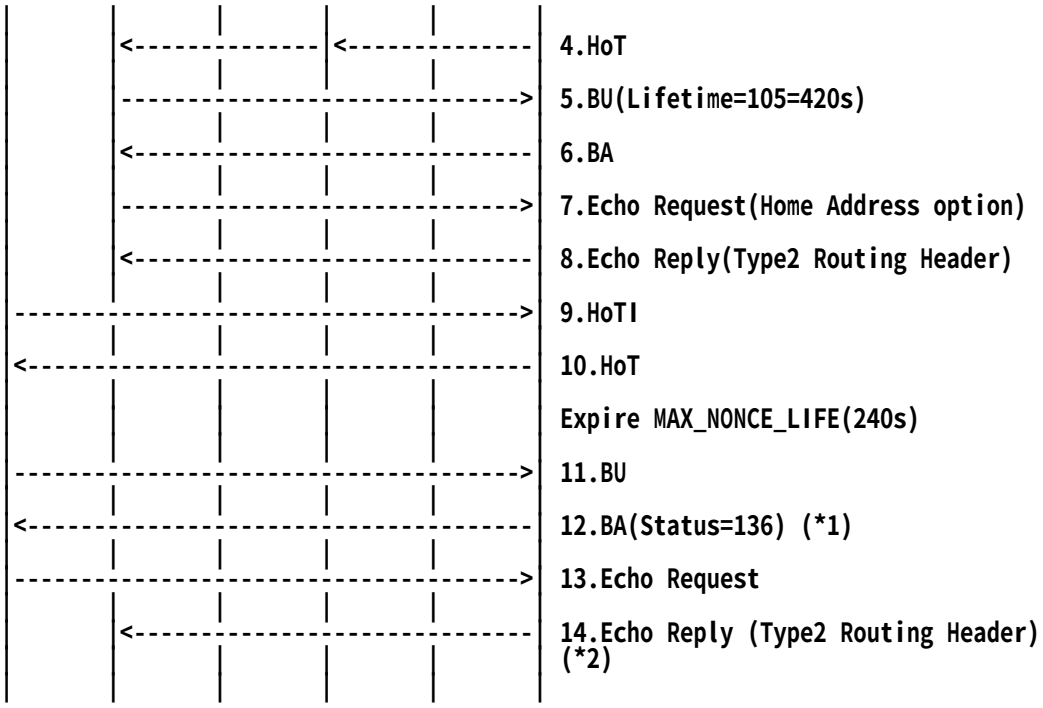
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=105=420s). (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init. (Refer to 5.8.1)
10. Receive Home Test. (Refer to 5.10.1)

    *Expire MAX_NONCE_LIFE(240s)

11. Send Binding Update. (Refer to 5.12.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

12. Receive Binding Acknowledgement(Status=136). (*1) (Refer to 5.13.2)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Mobility Header	MH Type		6
	Status		136
Mobility options	PadN	Option Type	1
		Option Length	4
		Pad	Any

13. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)

ICMPv6	Type	128

14. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN home address).
- The Status field is set to 136.
- Binding Authorization Data option is not included.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is not deleted.)

- The Destination Address is set to MN care-of address.
- Type 2 Routing Header is included.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 5.2.7, 12, 9.5.4

6.3.4.2 Care-of Nonce Index timeout

6.3.4.2.1 CN-4-3-1 - Care-of Nonce Index timeout - Registration from the foreign link

[PURPOSE]

CN-4-3-1 - Care-of Nonce Index timeout - Registration from the foreign link

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

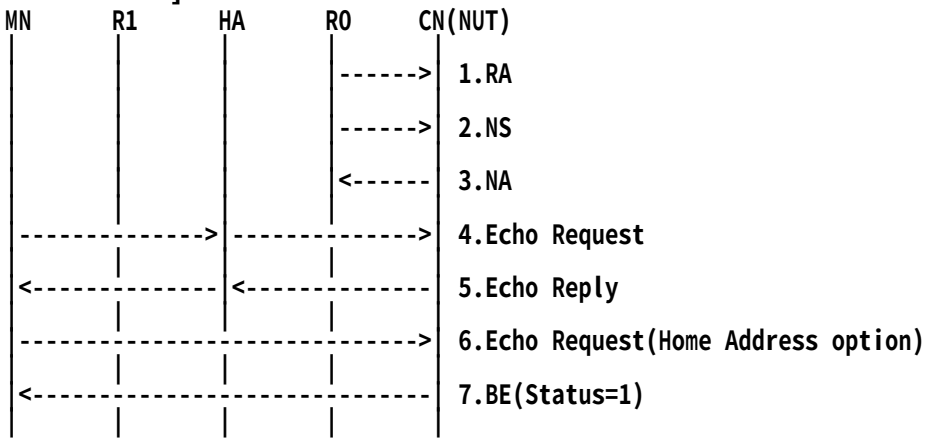
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

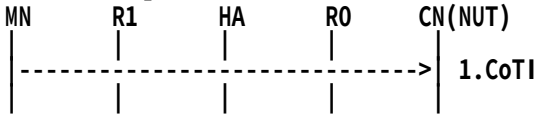
- Reboot NUT

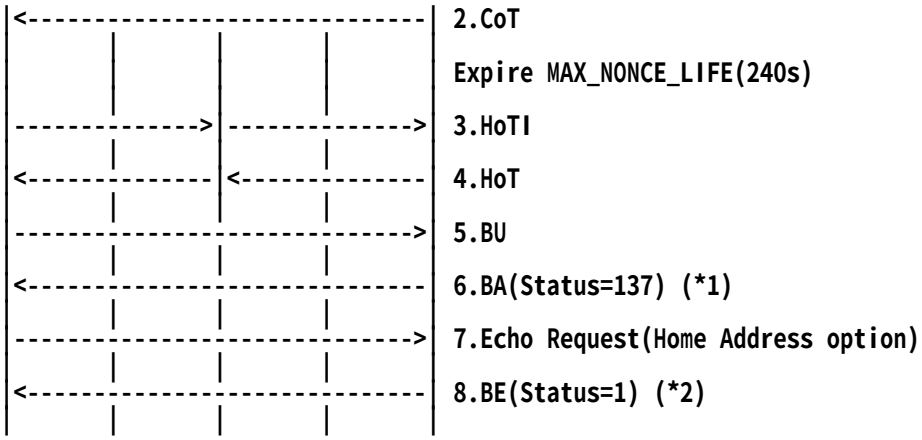
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Receive Care-of Test. (Refer to 5.11.1)
   *Expire MAX_NONCE_LIFE(240s)
3. Send Home Test Init. (Refer to 5.8.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=137). (*1) (Refer to 5.13.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	6
	Status	137

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 137.

- Binding Authorization Data option is not included.

(*2) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1, 5.2.7, 12, 9.5.4

6.3.4.2.2 CN-4-3-2 - Care-of Nonce Index timeout - De-Registration from the foreign link

[PURPOSE]

CN-4-3-2 - Care-of Nonce Index timeout - De-Registration from the foreign link

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

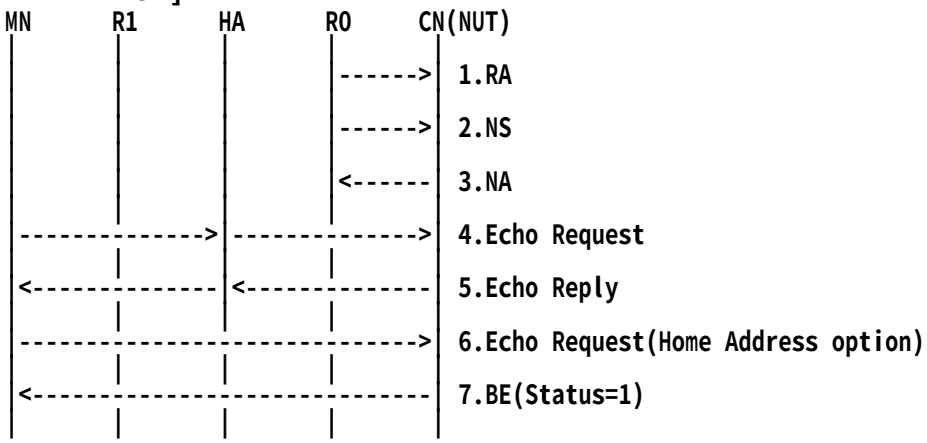
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

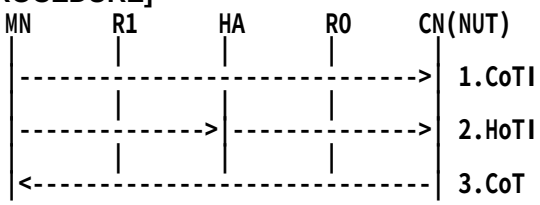
- Reboot NUT

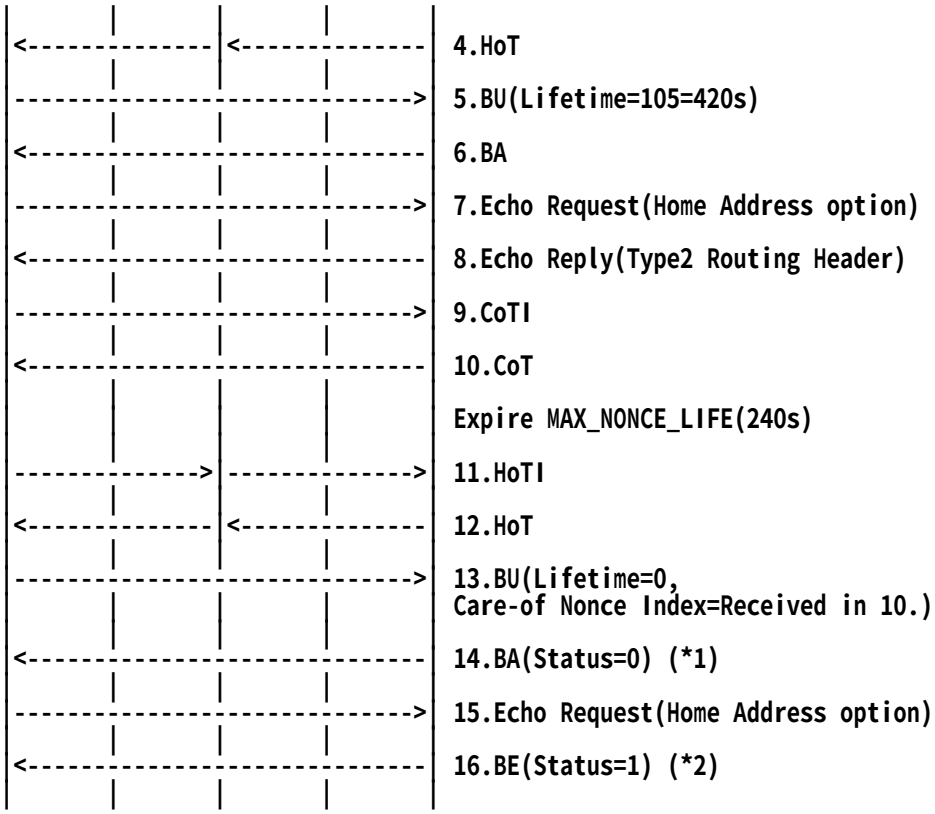
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=105=420s). (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Care-of Test Init. (Refer to 5.9.1)
10. Receive Care-of Test. (Refer to 5.11.1)

    *Expire MAX_NONCE_LIFE(240s)
11. Send Home Test Init. (Refer to 5.8.1)
12. Receive Home Test. (Refer to 5.10.1)
13. Send Binding Update(Lifetime=0,Care-of Nonce Index=Received in 10). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
	Life time		0
Mobility options	Alternate Care-of Address	Option Type	3
		Option Length	16
		Alternate Care-of Address	=Source Address
	Nonce Indices	Option Type	4
		Option Length	4
		Home Nonce Index	Any
		Care-of Nonce Index	Received in 10
	Binding Authorizat	Option Type	5
		Option Length	12

	ion Data	Authenticator	Any

14. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

15. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

16. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

(*2) MN receives Binding Error. (Binding Cache entry is deleted.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1

6.3.4.2.3 CN-4-3-3 - Care-of Nonce Index timeout - De-Registration from the home link

[PURPOSE]

CN-4-3-3 - Care-of Nonce Index timeout - De-Registration from the home link

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

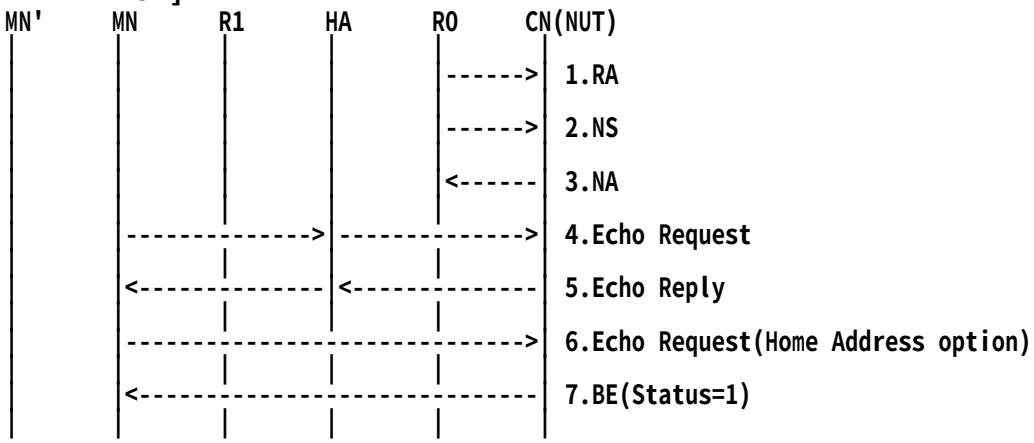
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

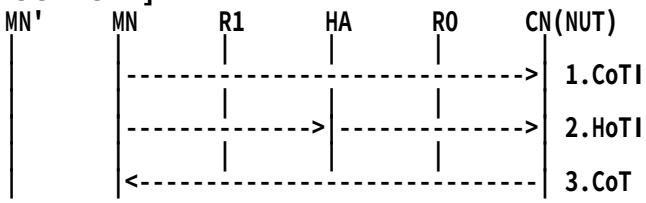
- Reboot NUT

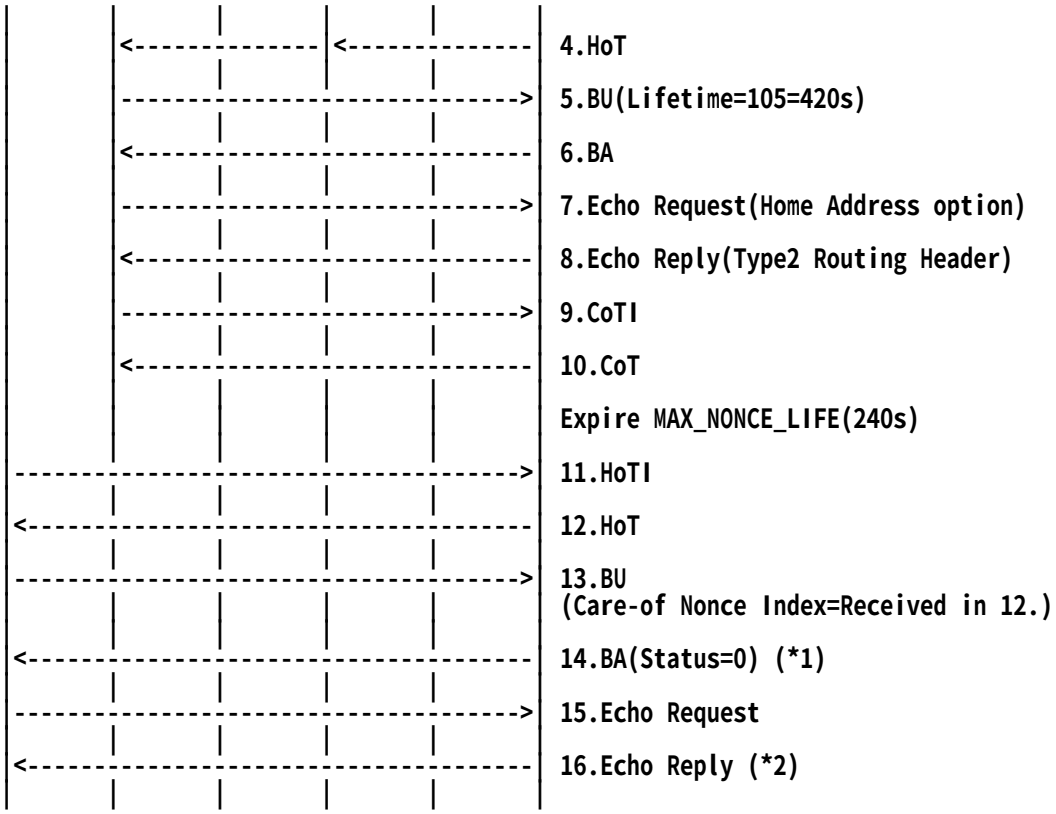
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=105=420s). (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Care-of Test Init. (Refer to 5.9.1)
10. Receive Care-of Test. (Refer to 5.11.1)
    *Expire MAX_NONCE_LIFE(240s)
11. Send Home Test Init. (Refer to 5.8.1)
12. Receive Home Test. (Refer to 5.10.1)
13. Send Binding Update(Care-of Nonce Index=Received in 12). (Refer to 5.12.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

14. Receive Binding Acknowledgement(Status=0). (*1) (Refer to 5.13.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Mobility Header	MH Type	6

Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

15. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

16. Receive ICMP Echo Reply. (*2) (Refer to 5.7.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN home address).
- The Status field is set to 0.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

(*2) MN' receives ICMP Echo Reply. (Binding Cache entry is deleted.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN home address).
- Type 2 Routing Header is not included.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1

6.3.4.3 Home and Care-of Nonce Index timeout

6.3.4.3.1 CN-4-8-1 - Home and Care-of Nonce Index timeout - Registration

[PURPOSE]

CN-4-8-1 - Home and Care-of Nonce Index timeout - Registration from the foreign link

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

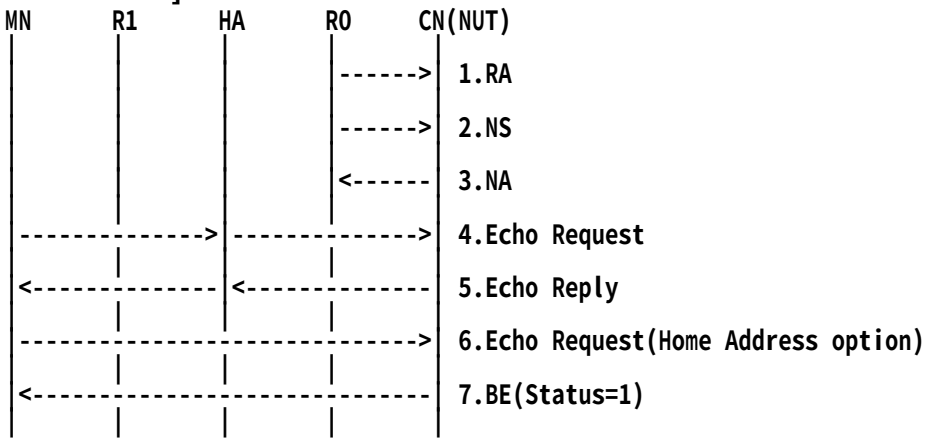
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

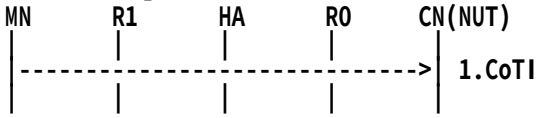
- Reboot NUT

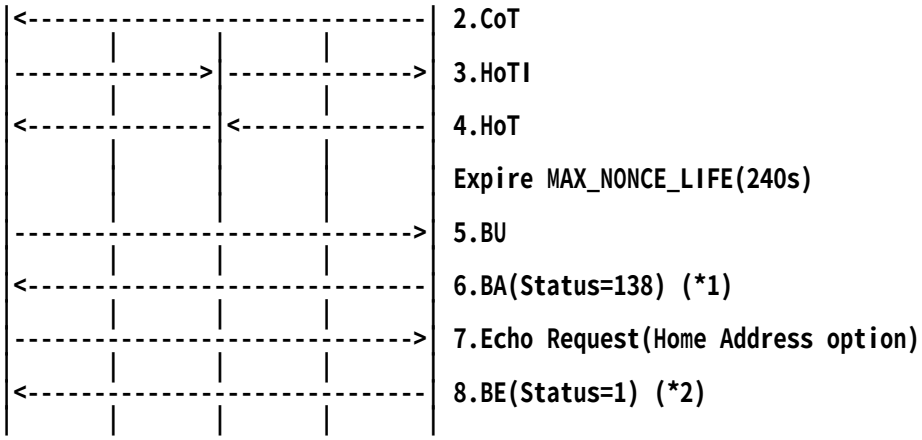
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Receive Care-of Test. (Refer to 5.11.1)
3. Send Home Test Init. (Refer to 5.8.1)
4. Receive Home Test. (Refer to 5.10.1)
   *Expire MAX_NONCE_LIFE(240s)
5. Send Binding Update. (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=138). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	6
	Status	138

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of

address).
- The Status field is set to 138.
- Binding Authorization Data option is not included.

(*2) MN receives Binding Error. (Binding Cache entry is not created.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1, 5.2.7, 12, 9.5.4

6.3.5 Sequence

6.3.5.1 CN-5-1-1-1 - Sequence # - Greater than the value in the existing entry - 1st=10000, 2nd=10001

[PURPOSE]

CN-5-1-1-1 - Sequence # - Greater than the value in the existing entry - 1st=10000, 2nd=10001

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

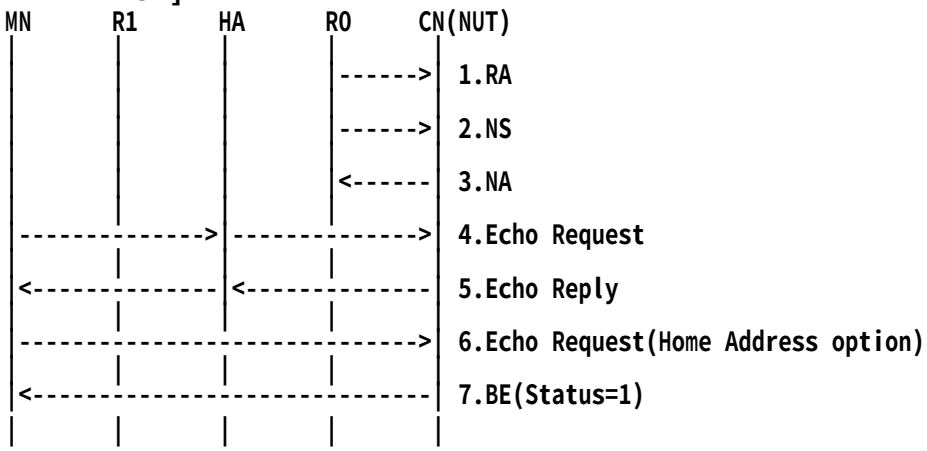
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

- Reboot NUT

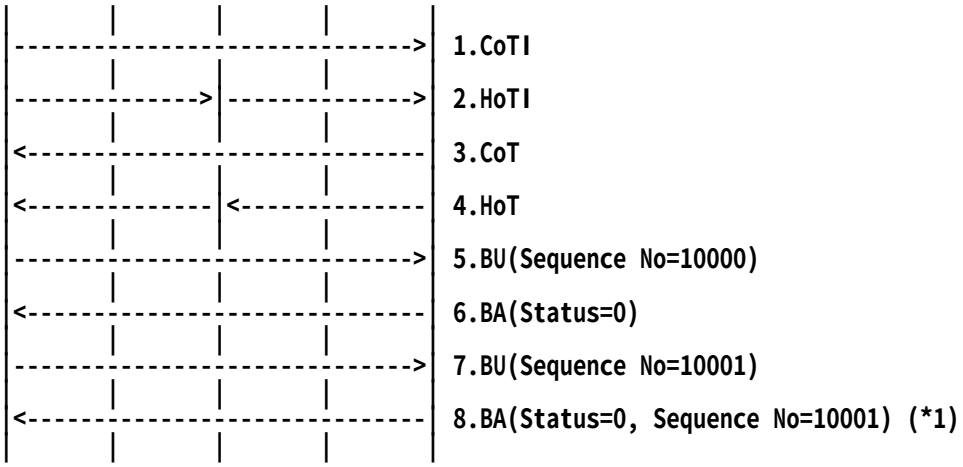
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]

MN R1 HA RO CN(NUT)



1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=10000). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0). (Refer to 5.13.1)
7. Send Binding Update(Sequence No=10001). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

8. Receive Binding Acknowledgement(Status=0, Sequence No=10001). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Sequence # field is set to the value in the Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 6.1.8

6.3.5.2 CN-5-1-1-2 - Sequence # - Greater than the value in the existing entry - 1st=10000, 2nd=42767

[PURPOSE]

CN-5-1-1-2 - Sequence # - Greater than the value in the existing entry - 1st=10000, 2nd=42767

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

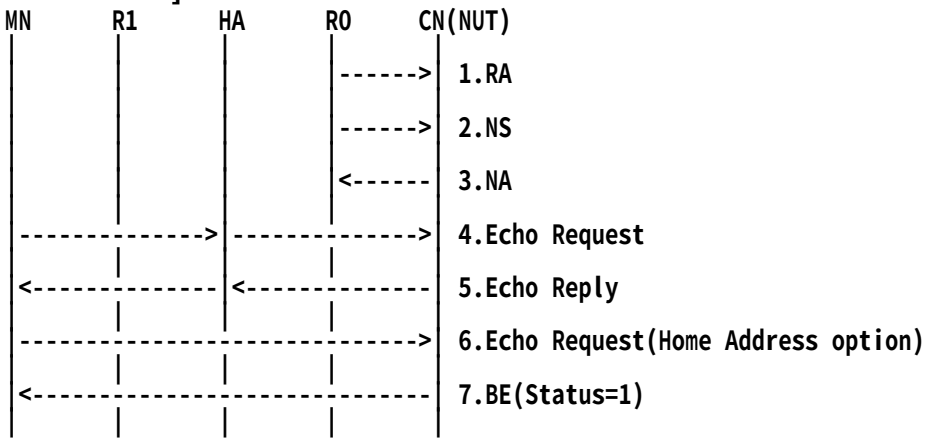
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

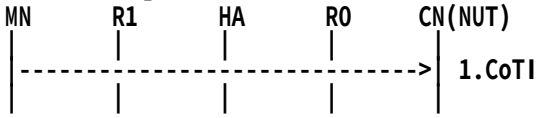
- Reboot NUT

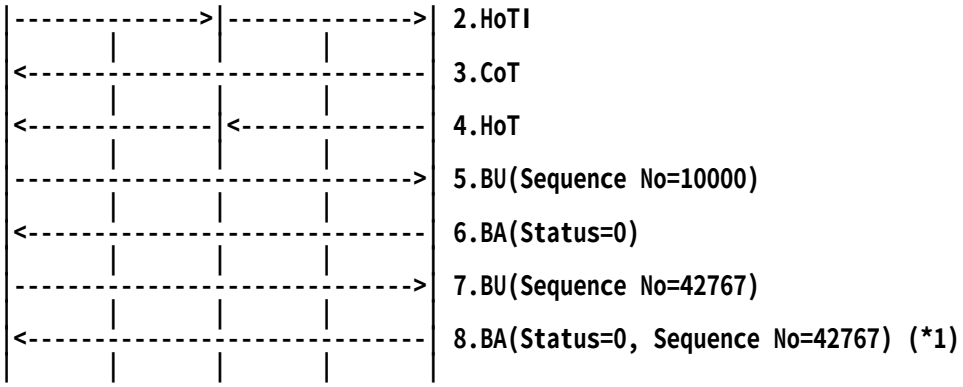
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=10000). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0). (Refer to 5.13.1)
7. Send Binding Update(Sequence No=42767). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

8. Receive Binding Acknowledgement(Status=0, Sequence No=42767). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Sequence # field is set to the value in the Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 6.1.8

6.3.5.3 CN-5-1-1-3 - Sequence # - Greater than the value in the existing entry - 1st=42768, 2nd=0

[PURPOSE]

CN-5-1-1-3 - Sequence # - Greater than the value in the existing entry - 1st=42768, 2nd=0

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

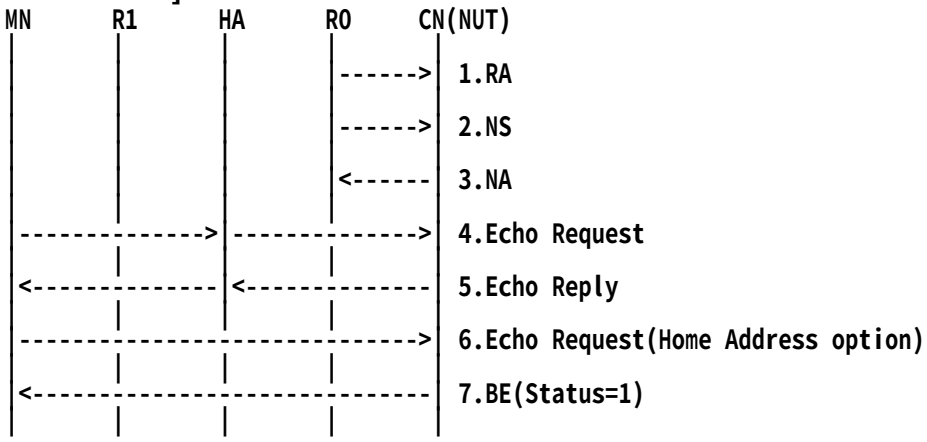
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

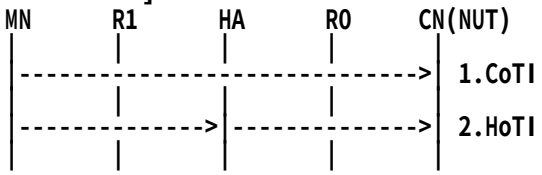
- Reboot NUT

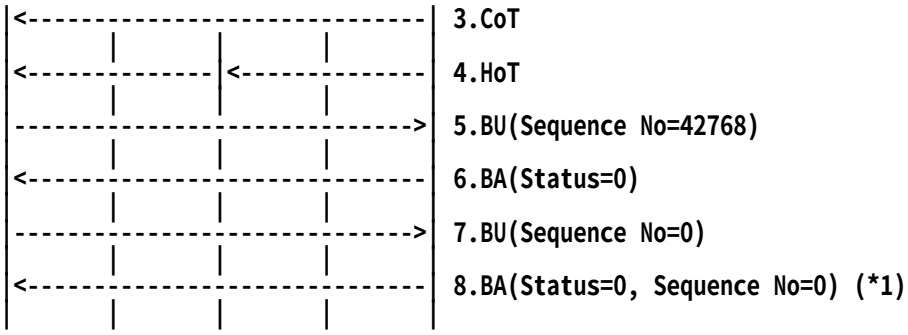
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=42768). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0). (Refer to 5.13.1)
7. Send Binding Update(Sequence No=0). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

8. Receive Binding Acknowledgement(Status=0, Sequence No=0). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Sequence # field is set to the value in the Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1, 6.1.8

6.3.5.4 CN-5-1-1-4 - Sequence # - Greater than the value in the existing entry - 1st=42768, 2nd=9999

[PURPOSE]

CN-5-1-1-4 - Sequence # - Greater than the value in the existing entry - 1st=42768, 2nd=9999

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

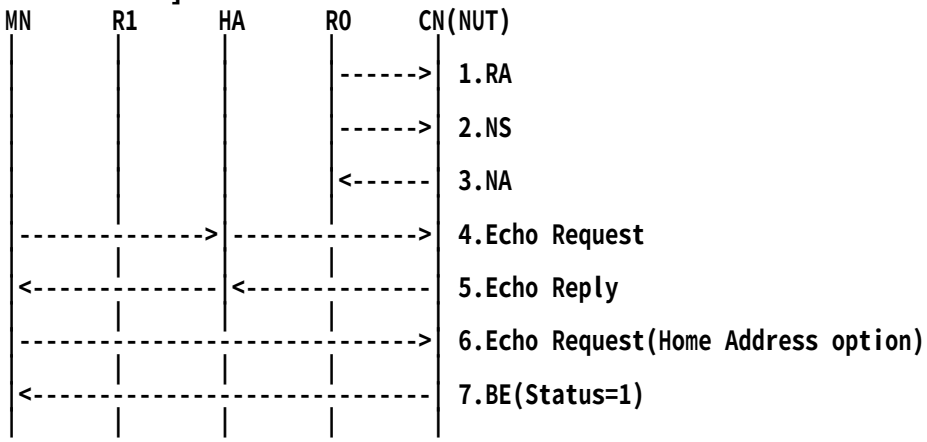
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

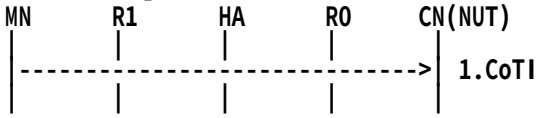
- Reboot NUT

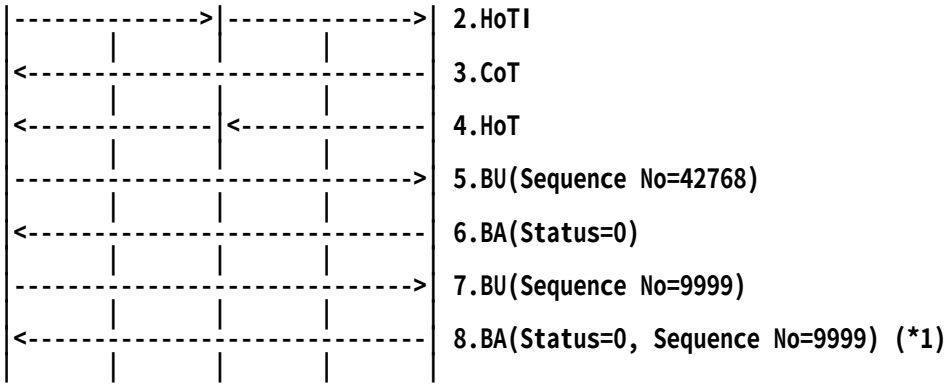
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=42768). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0). (Refer to 5.13.1)
7. Send Binding Update(Sequence No=9999). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

8. Receive Binding Acknowledgement(Status=0, Sequence No=9999). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Sequence # field is set to the value in the Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 6.1.8

6.3.5.5 CN-5-1-2-1 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000,2nd=9999

[PURPOSE]

CN-5-1-2-1 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000, 2nd=9999

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

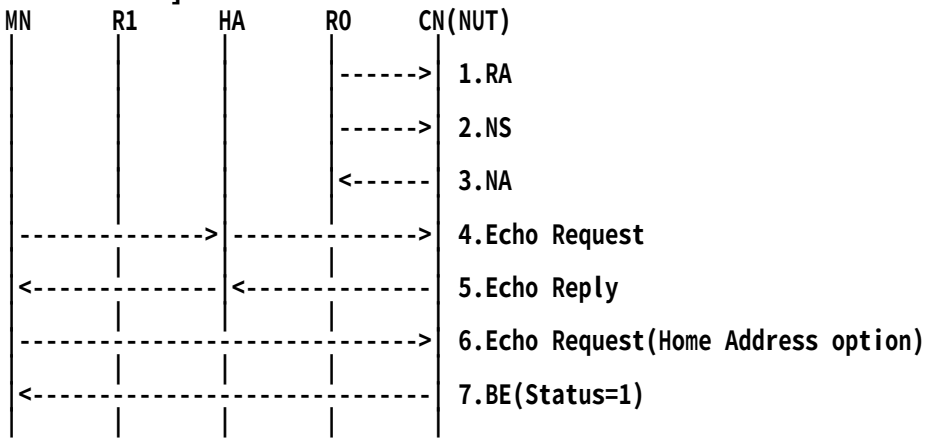
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

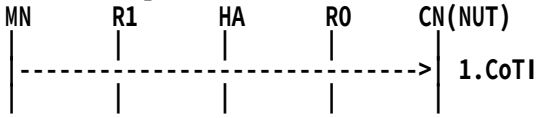
- Reboot NUT

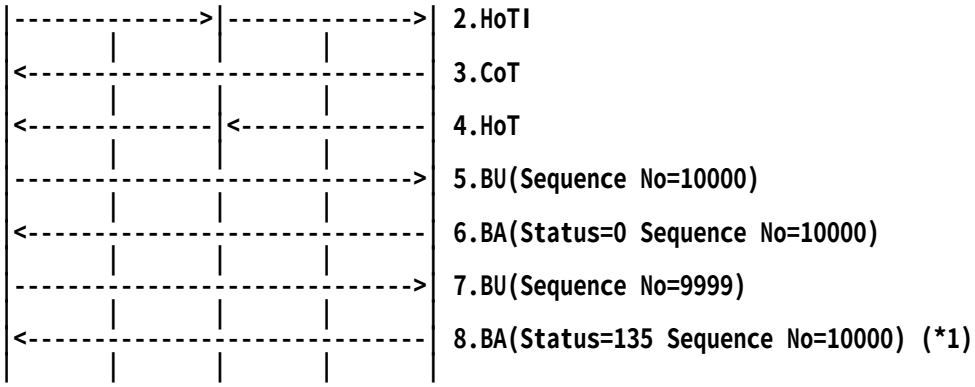
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=10000). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0 Sequence No=10000). (Refer to 5.13.1)
7. Send Binding Update(Sequence No=9999). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

8. Receive Binding Acknowledgement(Status=135 Sequence No=10000). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 135.
- The Sequence # field is set to the value in the last successful Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1

6.3.5.6 CN-5-1-2-2 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000,2nd=10000

[PURPOSE]

CN-5-1-2-2 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000, 2nd=10000

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

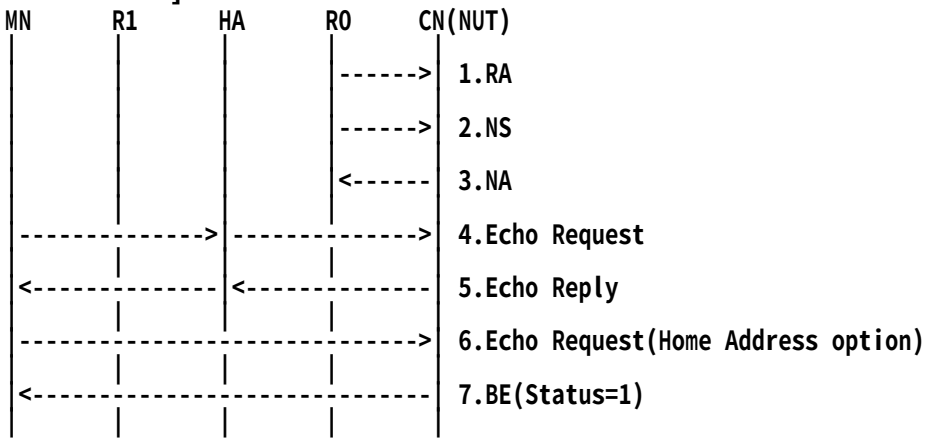
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

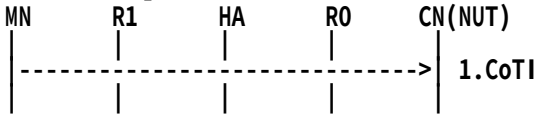
- Reboot NUT

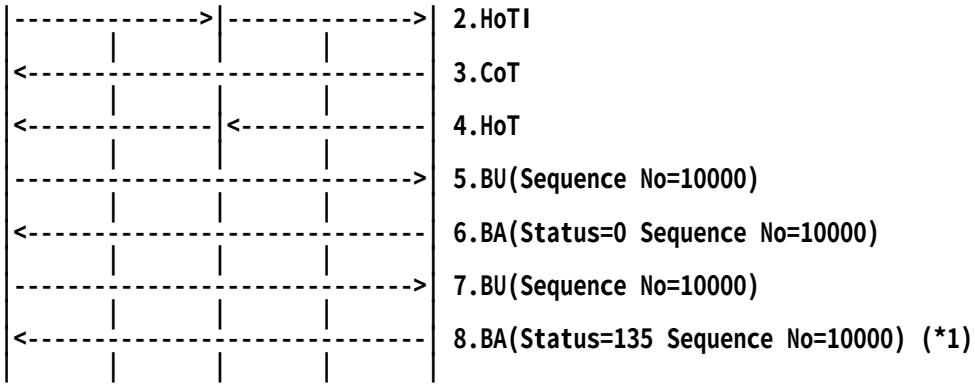
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=10000). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0 Sequence No=10000). (Refer to 5.13.1)
7. Send Binding Update(Sequence No=10000). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

8. Receive Binding Acknowledgement(Status=135 Sequence No=10000). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 135.
- The Sequence # field is set to the value in the last successful Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1

6.3.5.7 CN-5-1-2-3 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000,2nd=42768

[PURPOSE]

CN-5-1-2-3 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000, 2nd=42768

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

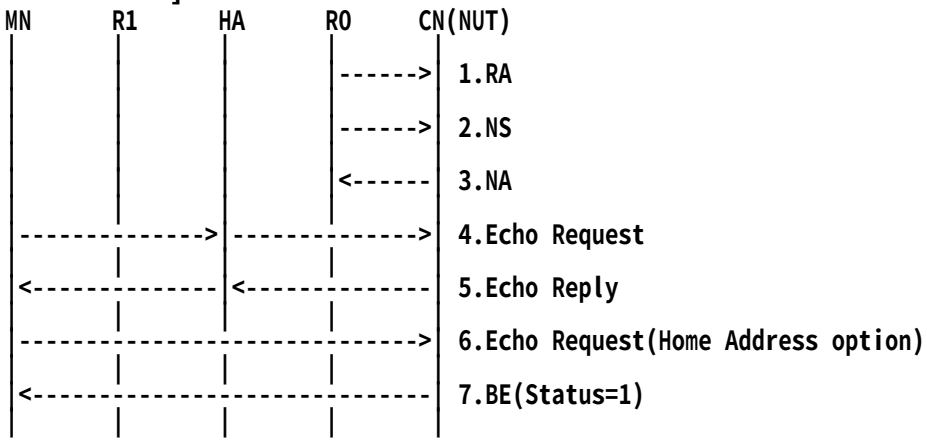
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

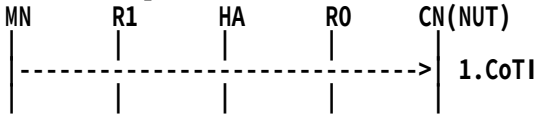
- Reboot NUT

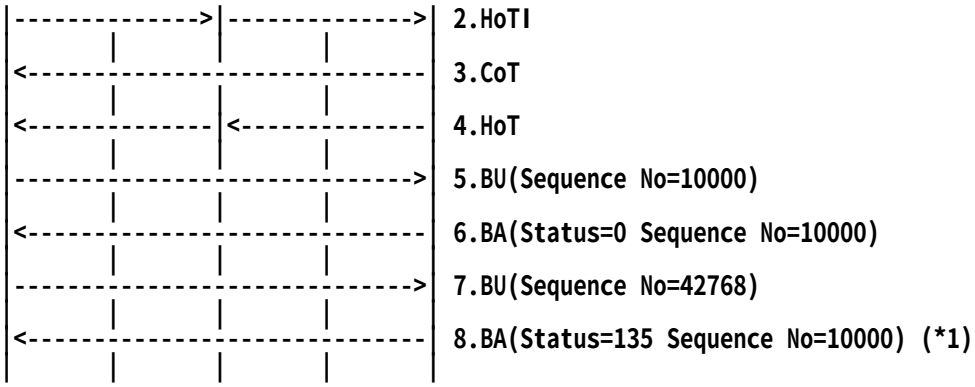
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1).(Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=10000). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0 Sequence No=10000). (Refer to 5.13.1)
7. Send Binding Update(Sequence No=42768). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

8. Receive Binding Acknowledgement(Status=135 Sequence No=10000). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 135.
- The Sequence # field is set to the value in the last successful Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1

6.3.5.8 CN-5-1-2-4 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000,2nd=0

[PURPOSE]

CN-5-1-2-4 - Sequence # - Less than or equal to the value in the existing entry - 1st=10000, 2nd=0

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

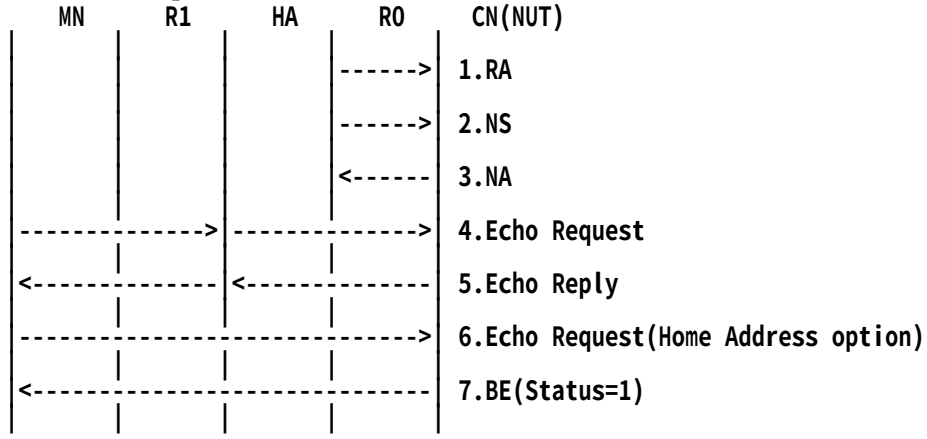
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

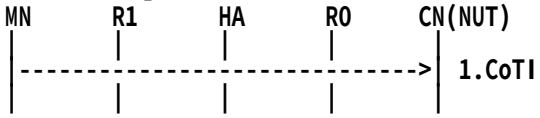
- Reboot NUT

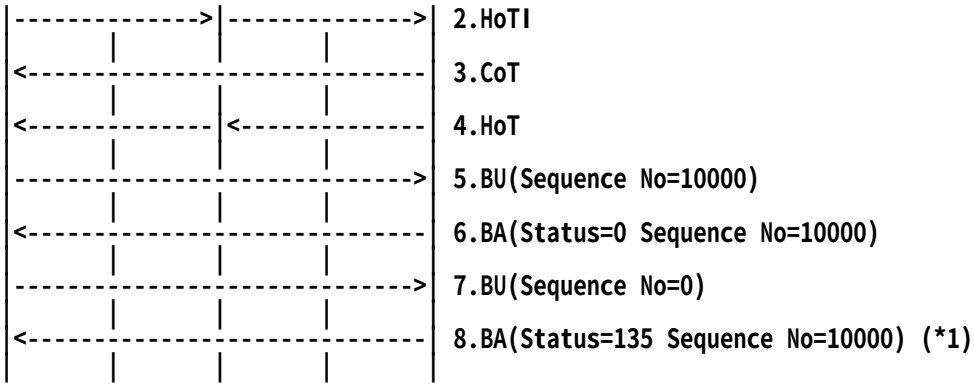
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=10000). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0 Sequence No=10000). (Refer to 5.13.1)
7. Send Binding Update(Sequence No=0). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

8. Receive Binding Acknowledgement(Status=135 Sequence No=10000). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 135.
- The Sequence # field is set to the value in the last successful Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1

6.3.5.9 CN-5-1-3-1 - Sequence # - No existing entry - #=0

[PURPOSE]

CN-5-1-3-1 - Sequence # - No existing entry - #=0

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

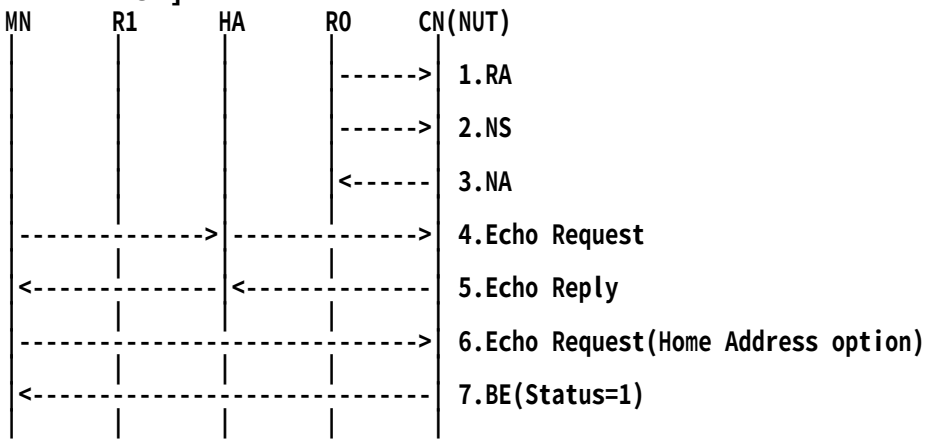
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

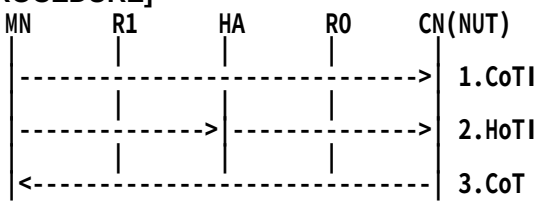
- Reboot NUT

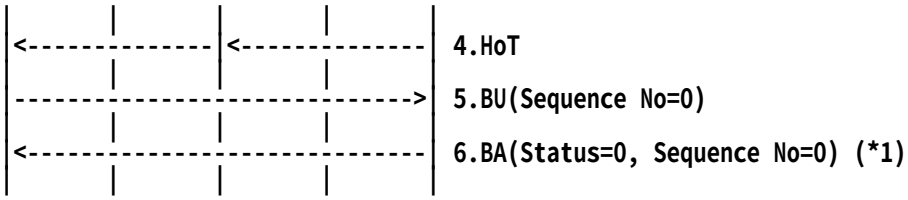
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=0). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=0, Sequence No=0). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Sequence # field is set to the value in the Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 6.1.8

6.3.5.10 CN-5-1-3-2 - Sequence # - No existing entry - #=32768

[PURPOSE]

CN-5-1-3-2 - Sequence # - No existing entry - #=32768

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

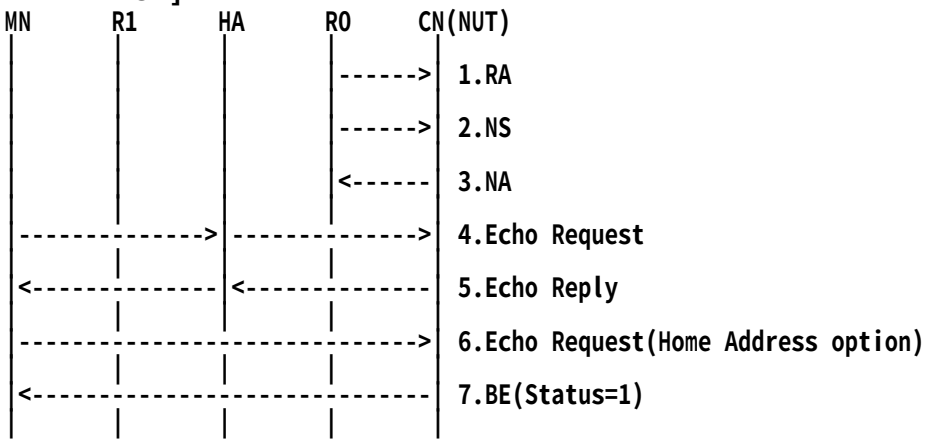
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

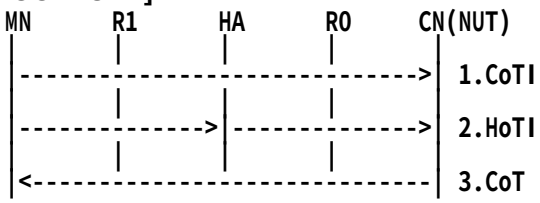
- Reboot NUT

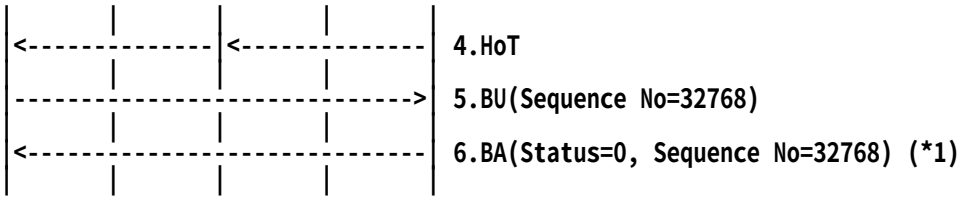
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=32768). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=0, Sequence No=32768). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Sequence # field is set to the value in the Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 6.1.8

6.3.5.11 CN-5-1-3-3 - Sequence # - No existing entry - #=65535

[PURPOSE]

CN-5-1-3-3 - Sequence # - No existing entry - #=65535

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

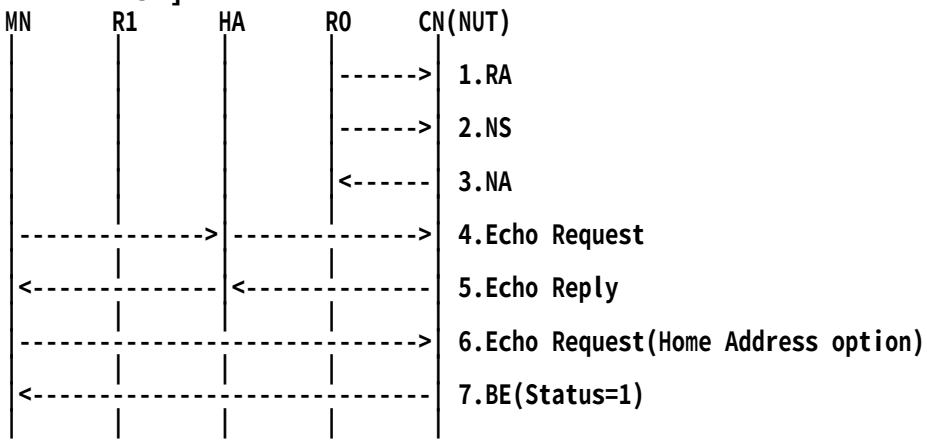
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

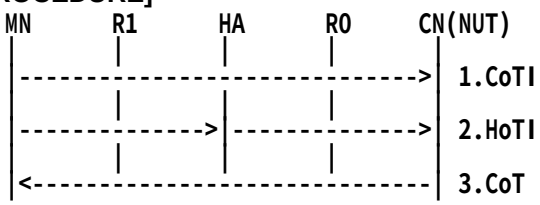
- Reboot NUT

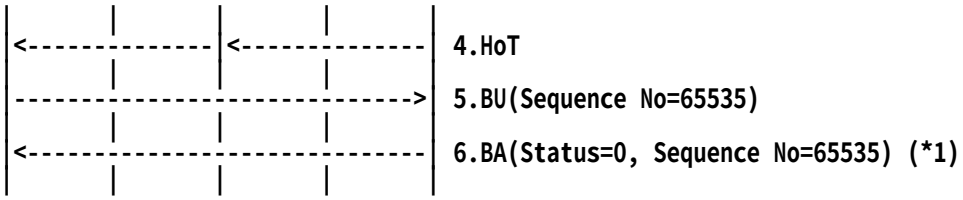
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=65535). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=0, Sequence No=65535). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Sequence # field is set to the value in the Binding Update.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1, 6.1.8

6.3.5.12 CN-5-4-1 - Preventing Replay Attacks

[PURPOSE]

CN-5-4-1 - Preventing Replay Attacks

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

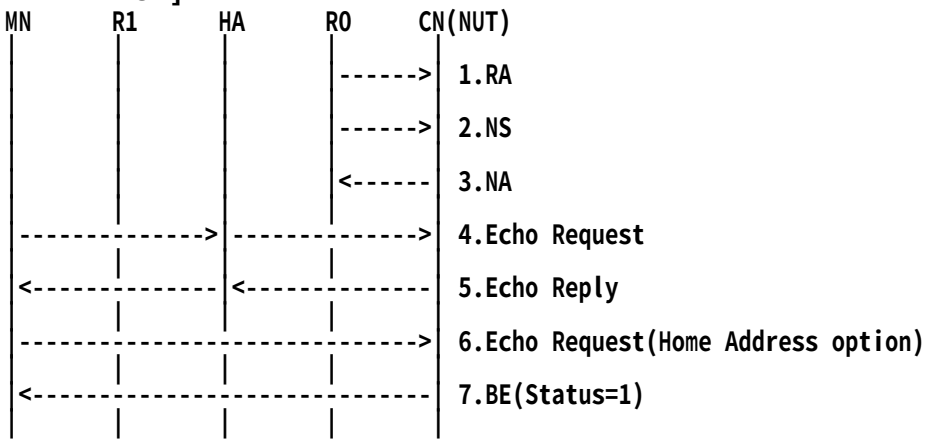
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

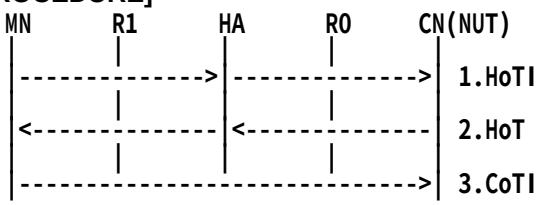
- Reboot NUT

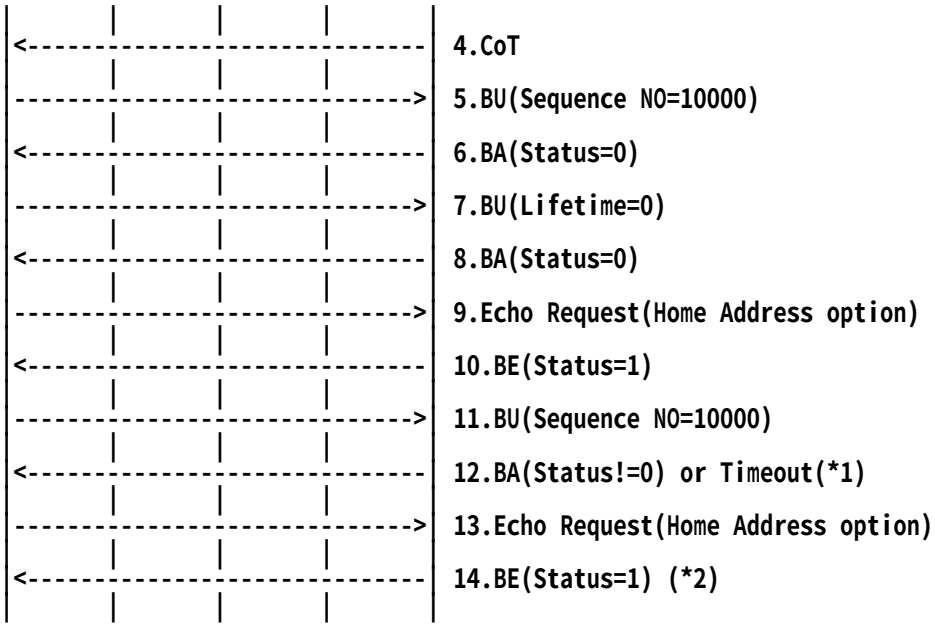
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Home Test Init. (Refer to 5.8.1)
2. Receive Home Test. (Refer to 5.10.1)
3. Send Care-of Test Init. (Refer to 5.9.1)
4. Receive Care-of Test. (Refer to 5.11.1)
5. Send Binding Update(Sequence No=10000). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0). (Refer to 5.13.1)
7. Send Binding Update(Lifetime=0). (Refer to 5.12.1)
8. Receive Binding Acknowledgement(Status=0). (Refer to 5.13.1)
9. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
10. Receive Binding Error(Status=1). (Refer to 5.14.1)
11. Send Binding Update(Sequence No=10000). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

12. Receive Binding Acknowledgement(Status!=0) or Expire BA timer. (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

13. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)

Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

14. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN does not receive Binding Acknowledgement or receives Binding Acknowledgement with the following conditions.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is not set to 0.

(*2) MN receives Binding Error.

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.
- The Home Address field is set to the value in the Home Address option in the ICMP Echo Request (MN home address).

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.3, 5.2.8

6.4 Sending Binding Acknowledgement

6.4.1 Receiving BU with (A)bit is cleared

6.4.1.1 CN-2-5-1 - Receiving BU with (A)bit is cleared - BU accepted

[PURPOSE]

CN-2-5-1 - Receiving BU with (A)bit is cleared - BU accepted

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

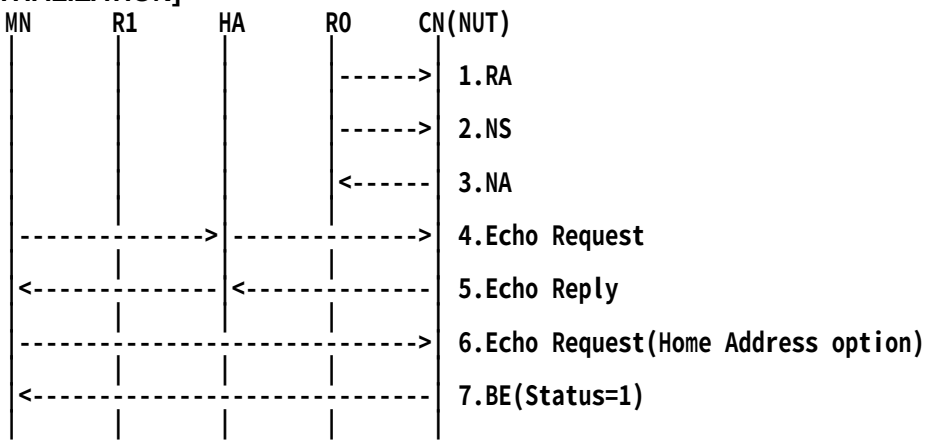
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

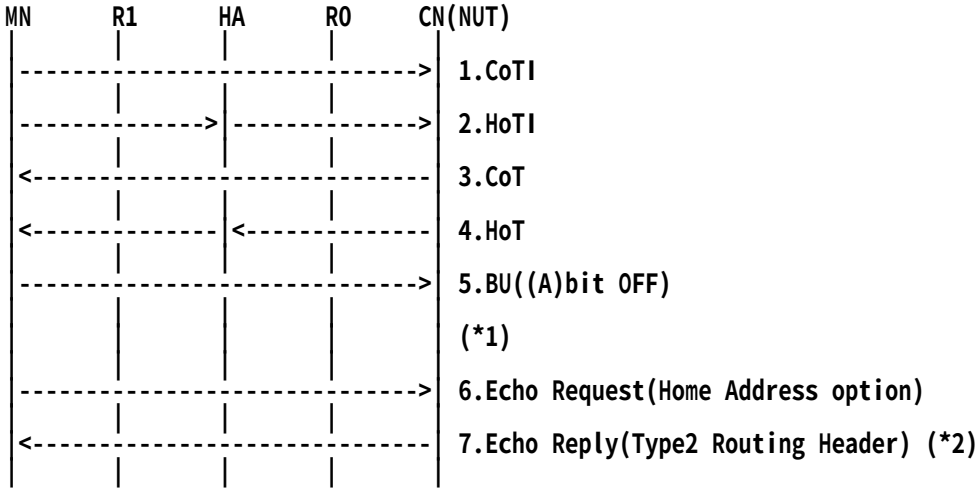
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update((A)bit OFF). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

*Receives neither Binding Acknowledgement nor Binding Error. (*1)

6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

7. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN receives neither Binding Acknowledgement nor Binding Error.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is created.)
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.4

6.4.1.2 CN-2-5-2 - Receiving BU with (A)bit is cleared - Sequence number out of window

[PURPOSE]

CN-2-5-2 - Receiving BU with (A)bit is cleared - Sequence number out of window

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

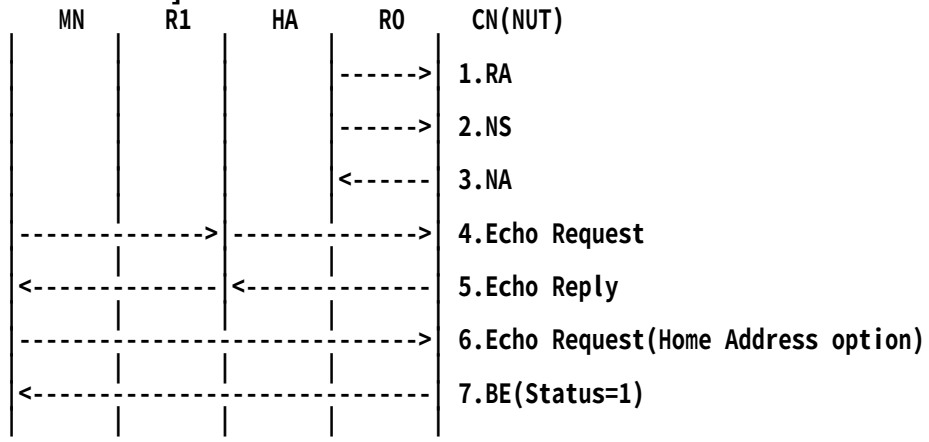
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

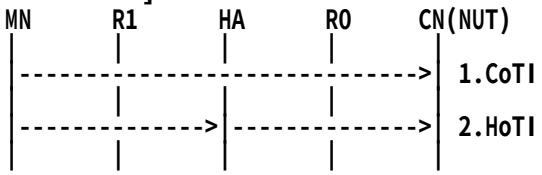
- Reboot NUT

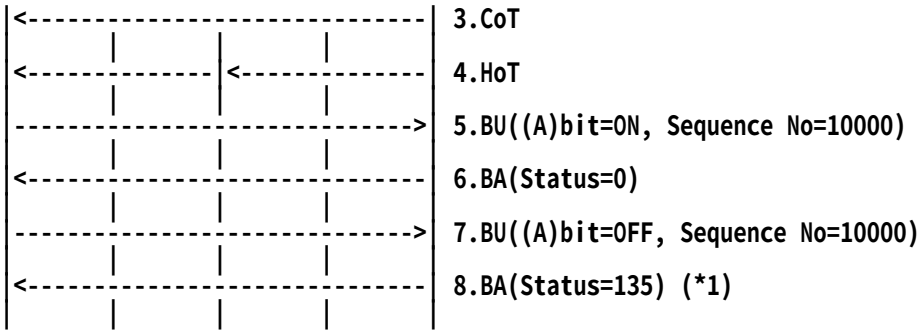
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(A bit=ON,Sequence No=10000). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0). (Refer to 5.13.1)
7. Send Binding Update(A bit=OFF,Sequence No=10000). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

8. Receive Binding Acknowledgement(Status=135). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 135.
- Binding Authorization Data option is included.
- Authenticator field of Binding Authorization Data option has the valid value.
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.4

6.4.1.3 CN-2-5-3 - Receiving BU with (A)bit is cleared - Expired home nonce index

[PURPOSE]

CN-2-5-3 - Receiving BU with (A)bit is cleared - Expired home nonce index

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

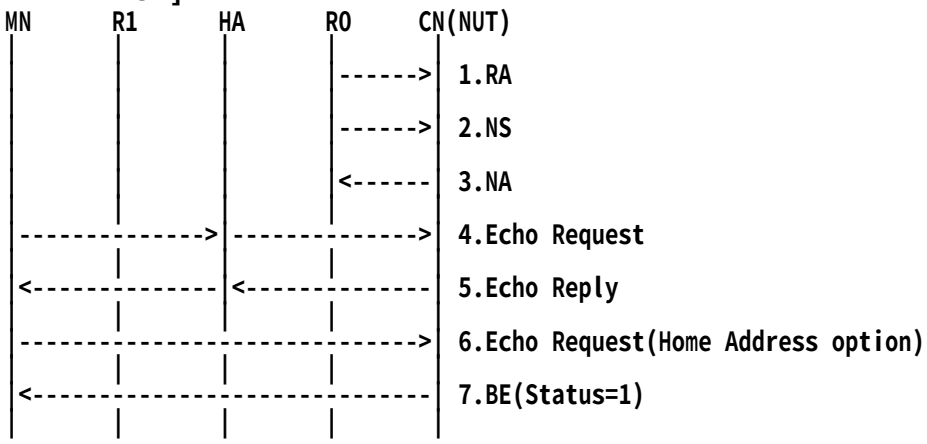
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

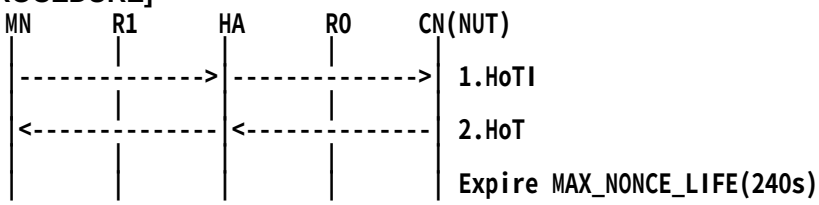
- Reboot NUT

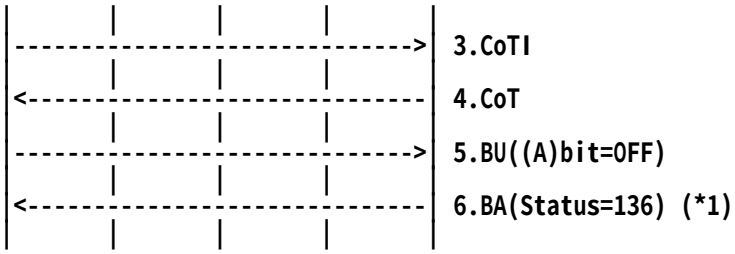
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Home Test Init. (Refer to 5.8.1)
2. Receive Home Test. (Refer to 5.10.1)
   *Expire MAX_NONCE_LIFE(240s).
3. Send Care-of Test Init. (Refer to 5.9.1)
4. Receive Care-of Test. (Refer to 5.11.1)
5. Send Binding Update((A)bit=OFF). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=136). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	6
	Status	136

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 136.
- Binding Authorization Data option is not included.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.4

6.4.1.4 CN-2-5-4 - Receiving BU with (A)bit is cleared - Expired care-of nonce index

[PURPOSE]

CN-2-5-4 - Receiving BU with (A)bit is cleared - Expired care-of nonce index

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

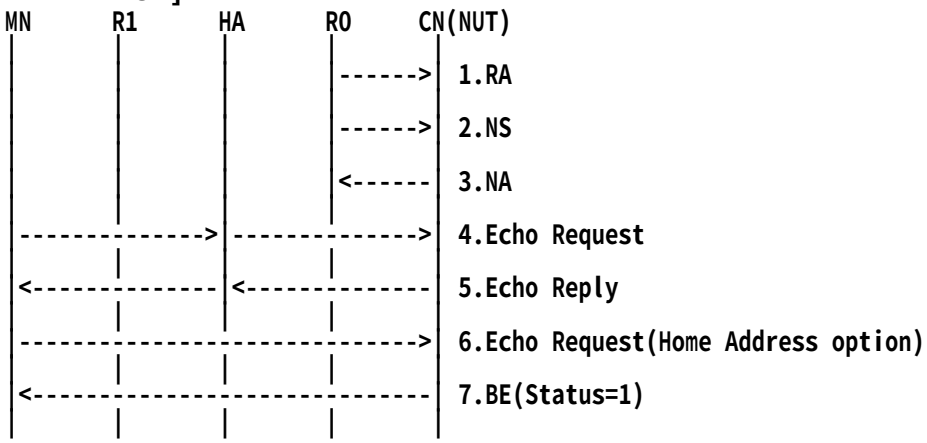
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

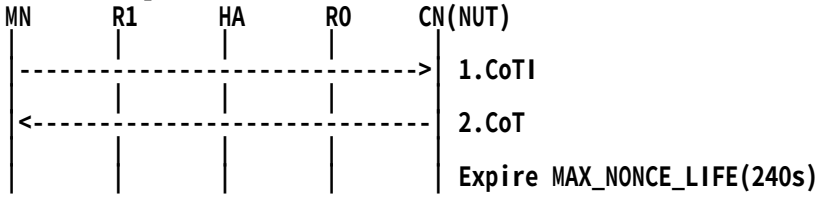
- Reboot NUT

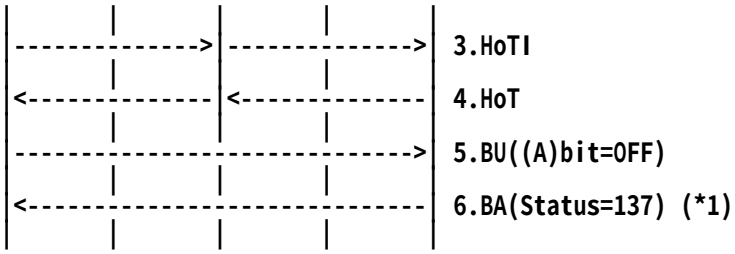
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Receive Care-of Test. (Refer to 5.11.1)
   *Expire MAX_NONCE_LIFE(240s)
3. Send Home Test Init. (Refer to 5.8.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update((A)bit=OFF). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=137). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	6
	Status	137

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 137.
- Binding Authorization Data option is not included.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.4

6.4.1.5 CN-2-5-5 - Receiving BU with (A)bit is cleared - Expired nonces

[PURPOSE]

CN-2-5-5 - Receiving BU with (A)bit is cleared - Expired nonces

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

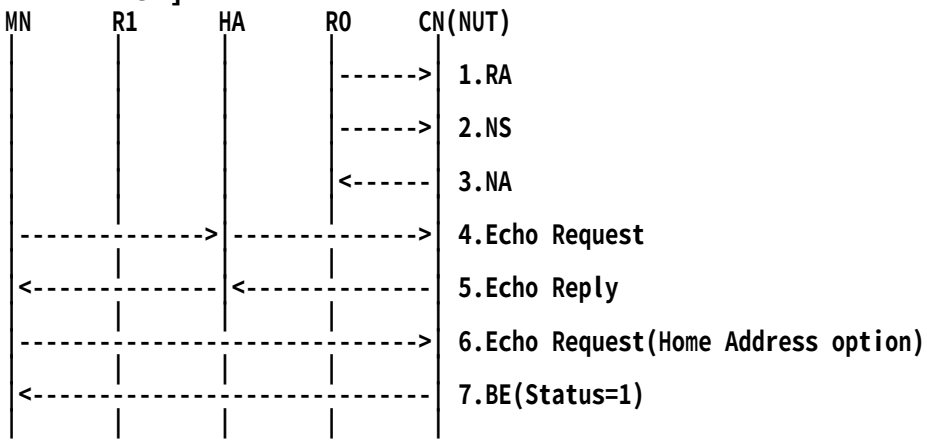
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

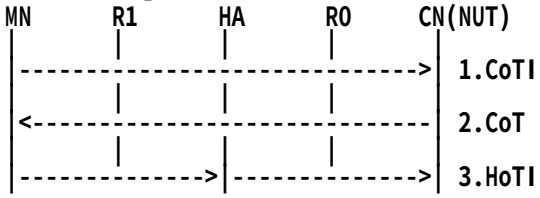
- Reboot NUT

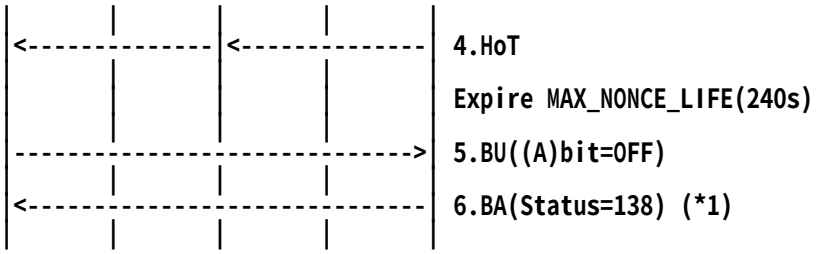
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Receive Care-of Test. (Refer to 5.11.1)
3. Send Home Test Init. (Refer to 5.8.1)
4. Receive Home Test. (Refer to 5.10.1)
   *Expire MAX_NONCE_LIFE(240s)
5. Send Binding Update((A)bit=OFF). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=138). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	6
	Status	138

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 138.
- Binding Authorization Data option is not included.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.4

6.4.2 Receiving BU with (H)bit is set

6.4.2.1 CN-5-3-2 - Receiving BU with (H)bit is set - Type Change Disallowd (Re-Registration)

[PURPOSE]

CN-5-3-2 - Receiving BU with (H)bit is set - Type Change Disallowd (Re-Registration)

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

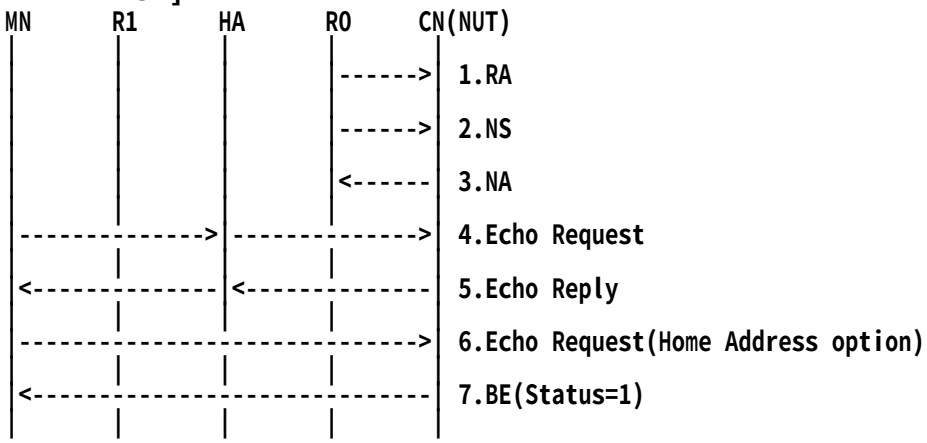
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

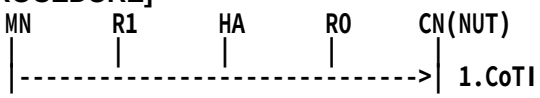
- Reboot NUT

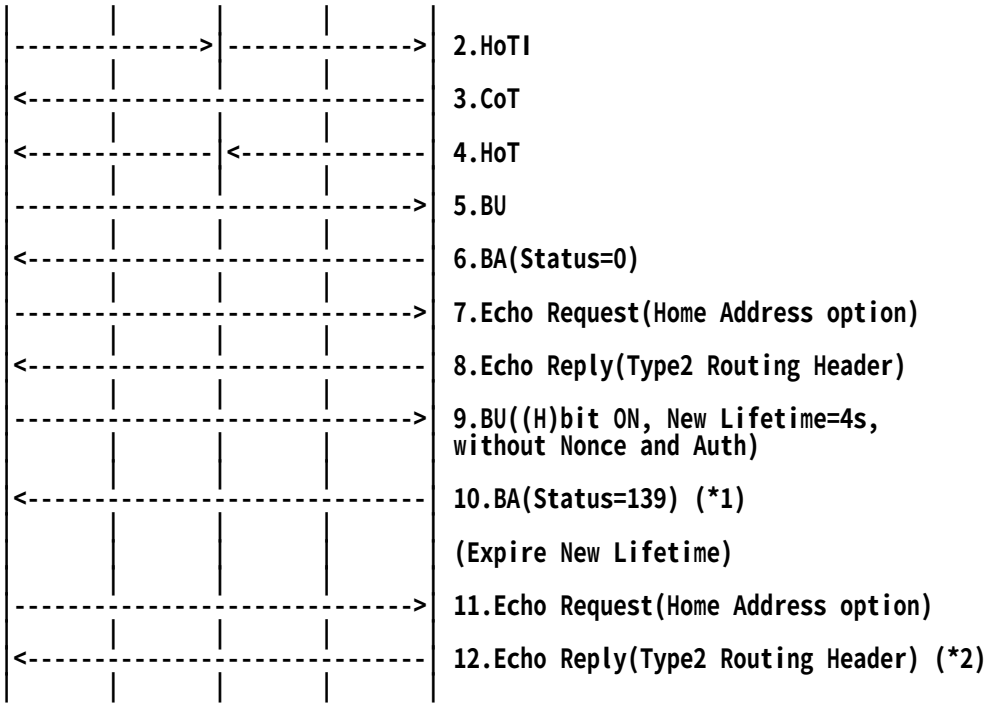
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init(Refer to 5.9.1)
2. Send Home Test Init(Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0). (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type 2 routing header). (Refer to 5.7.2)
9. Send Binding Update((H)bit ON, New Lifetime=4s). (Refer to 5.12.3)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Home Agent Address)	HA (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	5
	H Flag	1
	Lifetime	4

10. Receive Binding Acknowledgement(Status=139). (*1) (Refer to 5.13.3)

IPv6 Header	Source Address (Home Agent Address)	HA (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
Mobility Header	MH Type	6
	Status	139

*Expire New Lifetime

11. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	**Source Address (Care-of Address of Mobile Node)**	**MN (global)**
	Destination Address (Correspondent Node Address)	**NUT (global)**
Destination Option Header	**Home Address (Home Address of Mobile Node)**	**MN (global)**
ICMPv6	**Type**	**128**

12. Receive ICMP Echo Reply(Type 2 routing header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 139.

(*2) MN receives ICMP Echo Reply.

(The lifetime of the Binding Cache entry is not initialized by the second registration.)

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1

6.4.2.2 CN-5-3-3 - Receiving BU with (H)bit is set - Type Change Disallowed (De-Registration)

[PURPOSE]

CN-5-3-3 - Receiving BU with (H)bit is set - Type Change Disallowed (De-Registration)

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

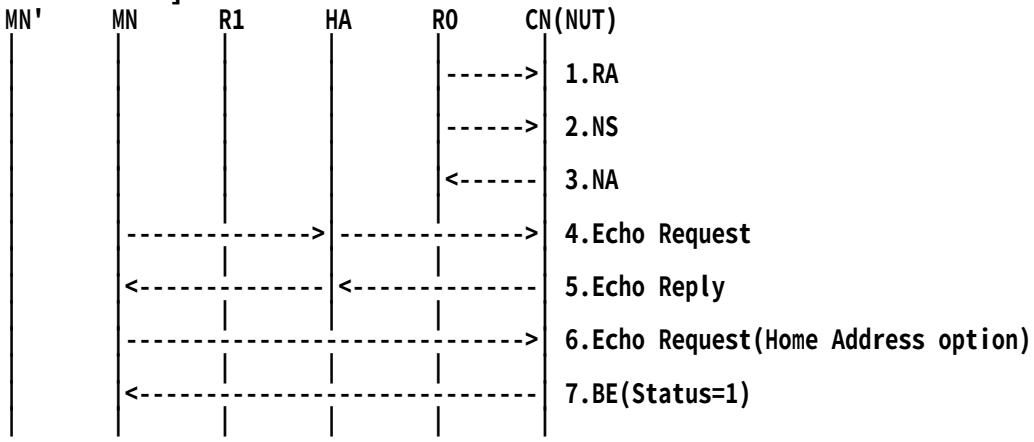
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

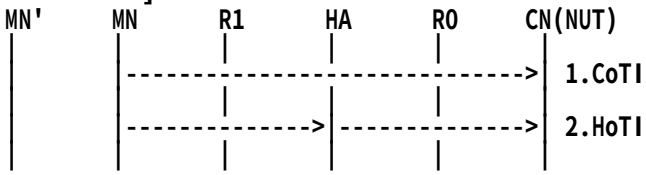
- Reboot NUT

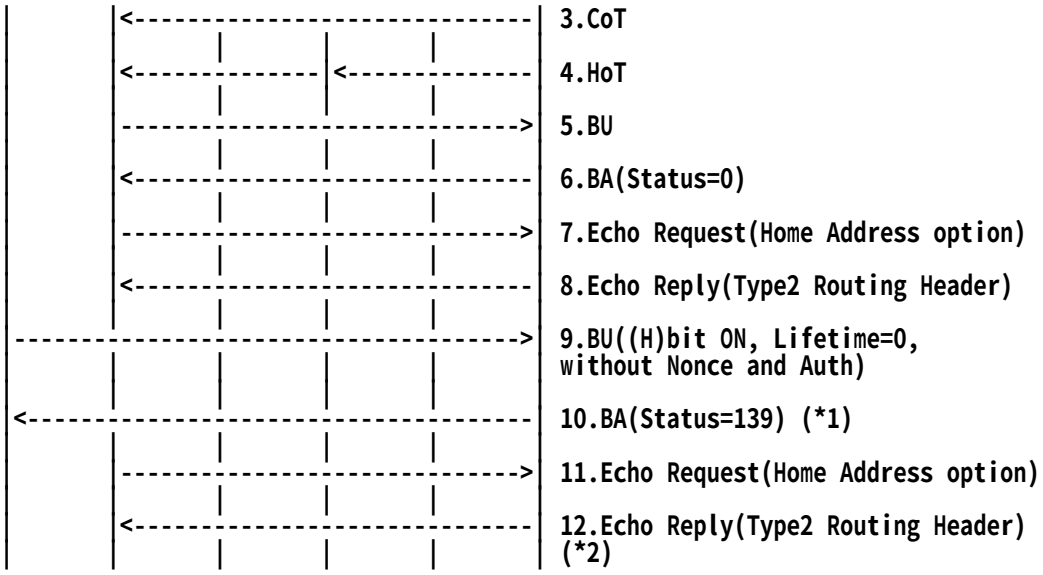
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init(Refer to 5.9.1)
2. Send Home Test Init(Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0). (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type 2 routing header). (Refer to 5.7.2)
9. Send Binding Update((H)bit ON,Lifetime=0). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

10. Receive Binding Acknowledgement(Status=139). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

11. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

12. Receive ICMP Echo Reply(Type 2 routing header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN home address).
- The Status field is set to 139.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is not deleted.)

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.1

6.4.3 Receiving Binding Updates that fail to satisfy tests

6.4.3.1 CN-3-3-3 - De-Registration - Binding Updates that fail to satisfy tests

[PURPOSE]

CN-3-3-3 - De-Registration - Binding Updates that fail to satisfy tests

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

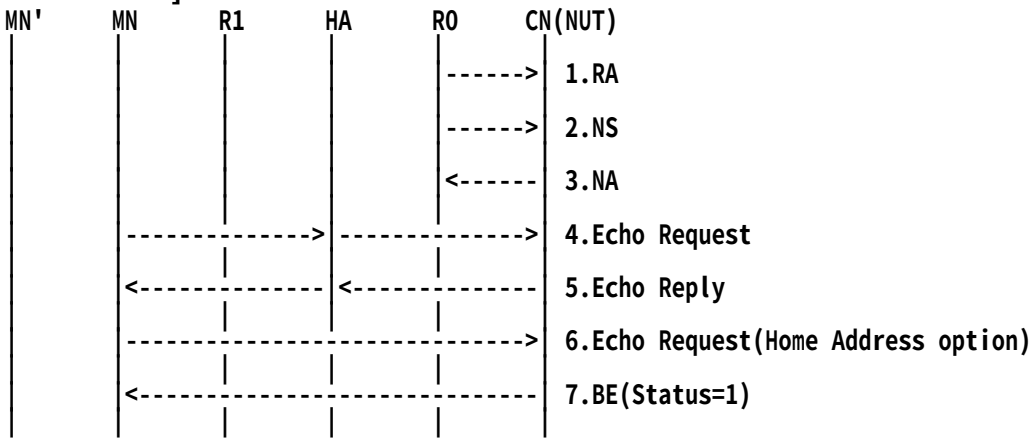
[TOPORGY]

Refer to 2.2 Common Topology-2

[TEST SETUP]

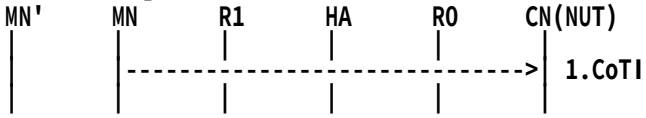
- Reboot NUT

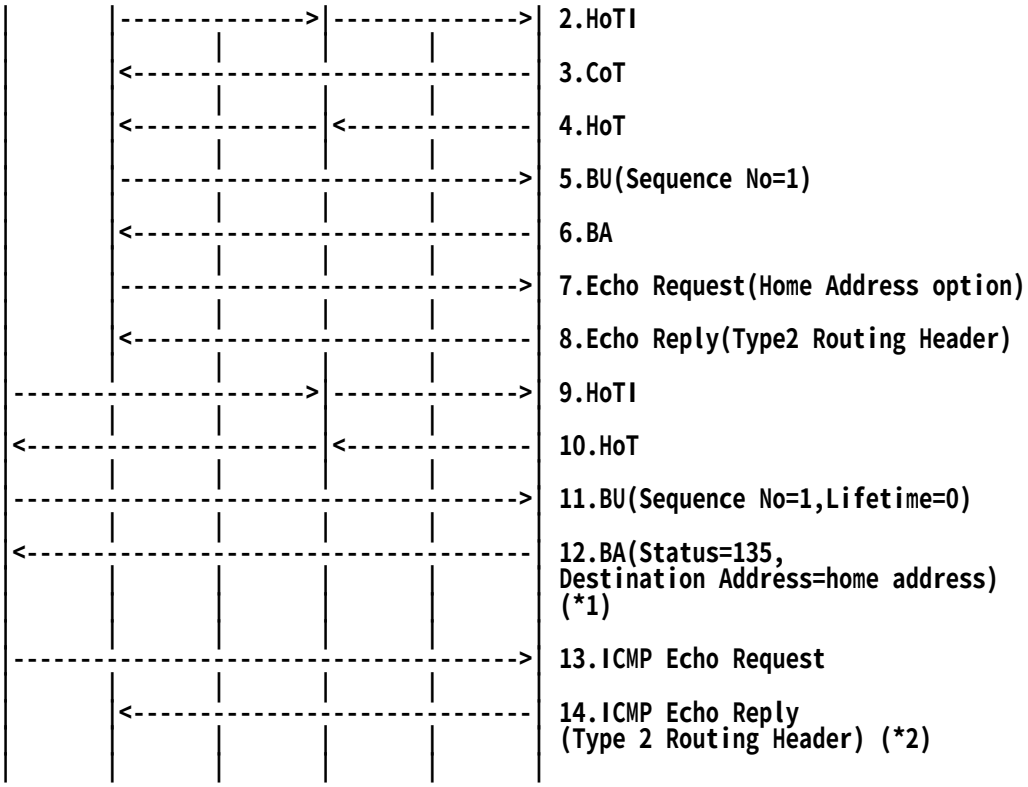
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=1). (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Home Test Init. (Refer to 5.8.1)
10. Receive Home Test. (Refer to 5.10.1)
11. Send Binding Update(Sequence No=1,Lifetime=0). (Refer to 5.12.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

12. Receive Binding Acknowledgement(Status=135,Destination Address=home address). (*1) (Refer to 5.13.2)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

13. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

14. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN home address).
- The Status field is set to 135.
- Type 2 Routing Header is not included.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is not deleted.)

- The Destination Address is set to MN care-of address.
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1, 9.5.4

6.4.3.2 CN-3-4-3 - Handover - Binding Updates that fail to satisfy tests

[PURPOSE]

CN-3-4-3 - Handover - Binding Updates that fail to satisfy tests

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

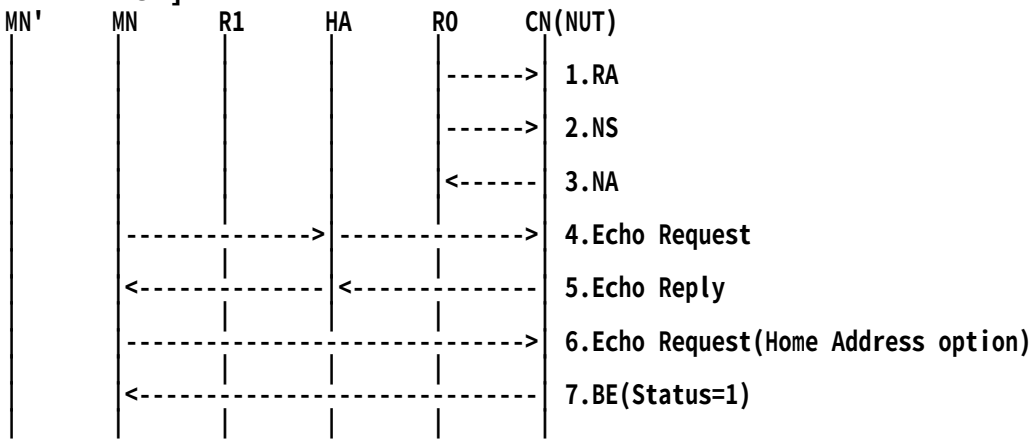
[TOPORGY]

Refer to 2.3 Common Topology-3

[TEST SETUP]

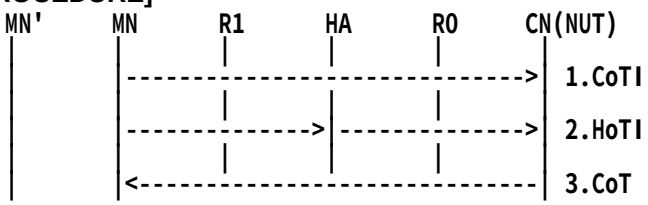
- Reboot NUT

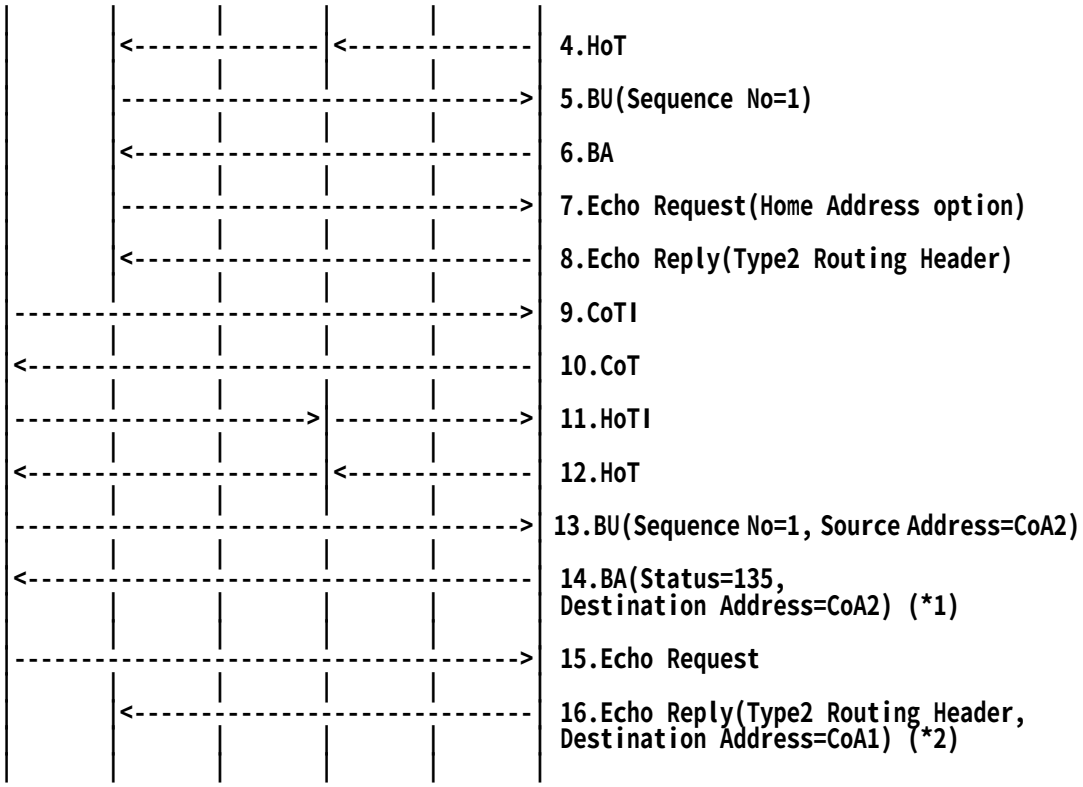
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Sequence No=1). (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header,Destination Address=Link1). (Refer to 5.7.2)
9. Send Care-of Test Init. (Refer to 5.9.1)
10. Receive Care-of Test. (Refer to 5.11.1)
11. Send Home Test Init. (Refer to 5.8.1)
12. Receive Home Test. (Refer to 5.10.1)
13. Send Binding Update(Sequence No=1,Source Address=CoA2). (Refer to 5.12.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

14. Receive Binding Acknowledgement(Status=135,Destination Address=CoA2). (*1) (Refer to 5.13.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking Binding Update)	MN (global)
Mobility Header	MH Type	6

Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

15. Send ICMP Echo Request. (Refer to 5.6.1)

IPv6 Header	Source Address (Home Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
ICMPv6	Type	128

16. Receive ICMP Echo Reply(Type2 Routing Header,Destination Address=CoA1). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address 2).
- The Status field is set to 135.
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is not changed.)

- The Destination Address is set to MN care-of address 1.
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.1, 9.5.4

6.5 Maintenance of Binding Cache Entries

6.5.1 Lifetime

6.5.1.1 CN-5-2-2 - Lifetime - 1 to 105, No existing entry

[PURPOSE]

CN-5-2-2 - Lifetime - 1 to 105, No existing entry

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

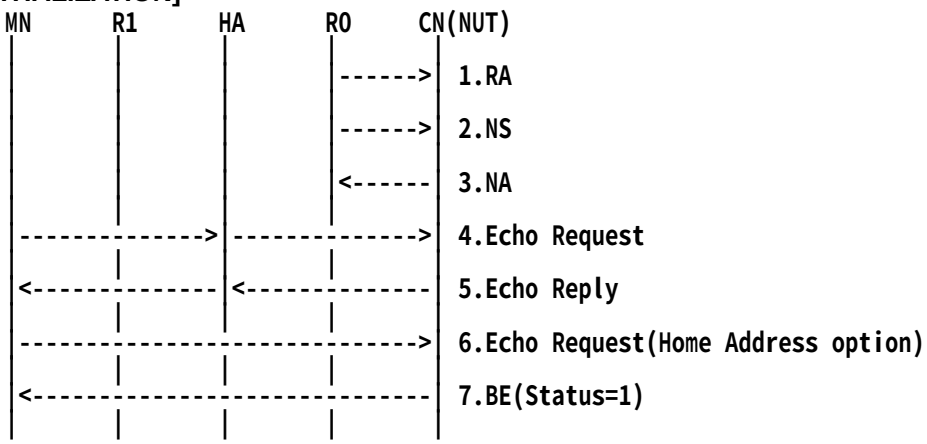
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

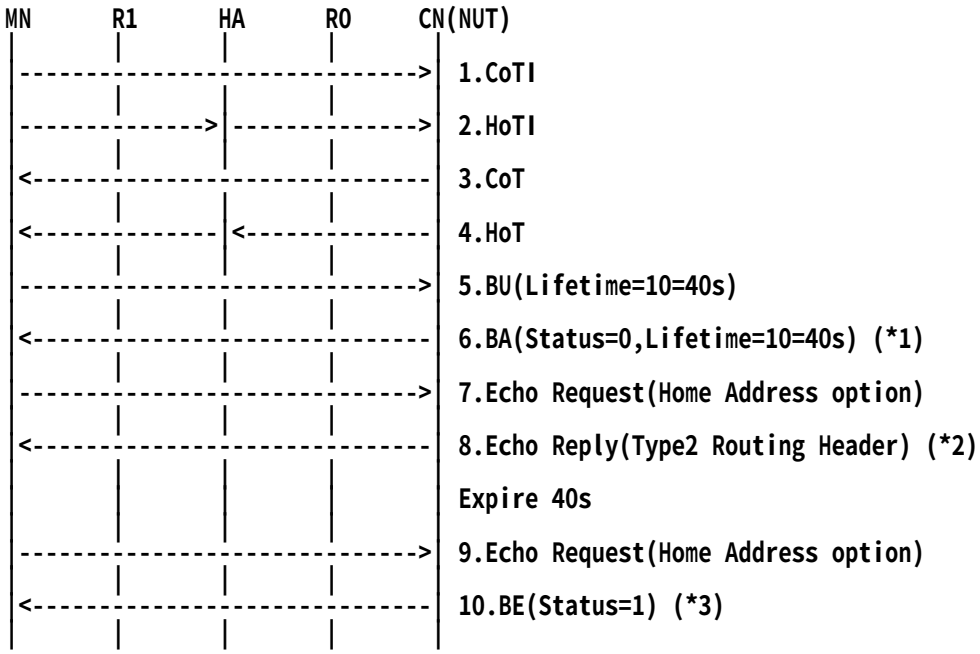
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=10=40s). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=0,Lifetime=10=40s). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)

Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

*Expire 40s

9. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

10. Receive Binding Error(Status=1). (*3) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Lifetime field is less than or equal to the value in the Binding Update.

(*2) MN receives ICMP Echo Reply.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

(*3) MN receives Binding Error. (Lifetime expires.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.2, 6.1.8

6.5.1.2 CN-5-2-3 - Lifetime - Over 106, No existing entry

[PURPOSE]

CN-5-2-3 - Lifetime - Over 106, No existing entry

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

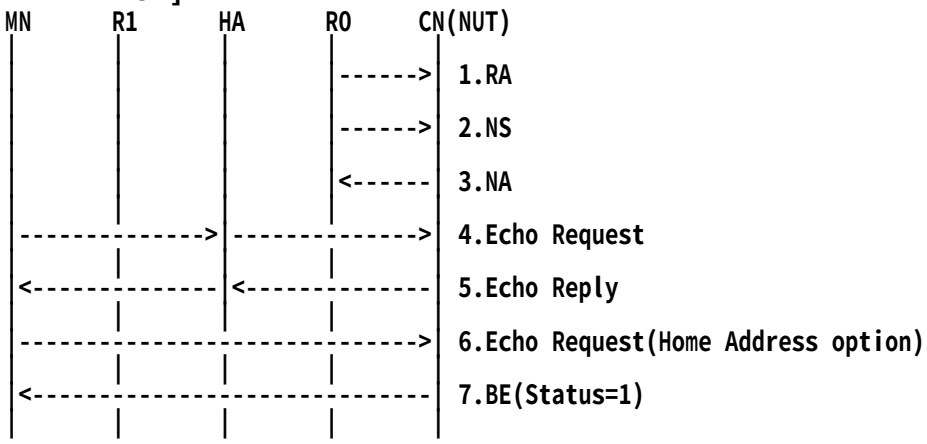
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

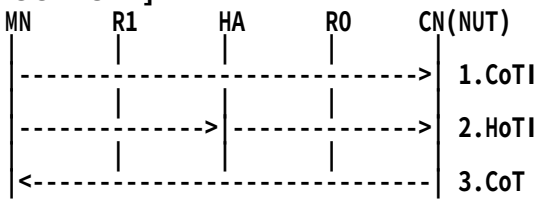
- Reboot NUT

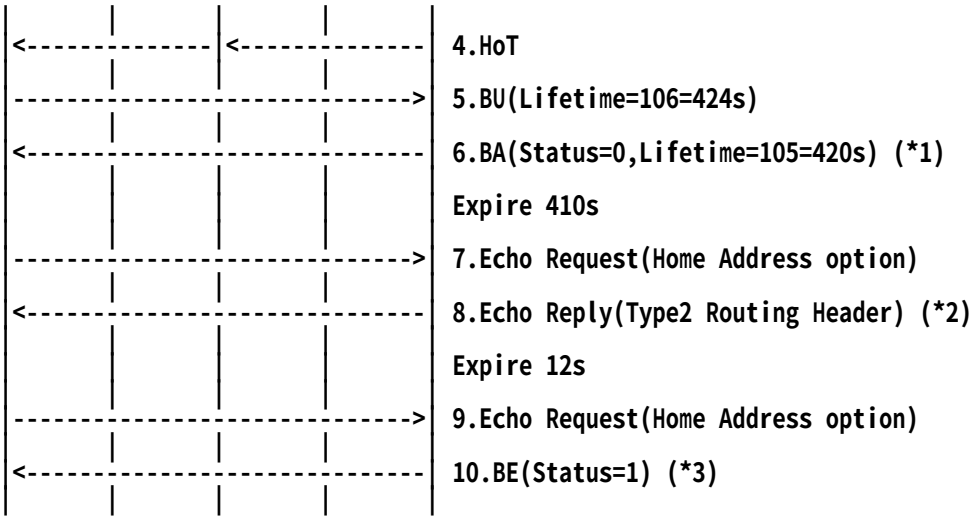
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=106=424s). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

6. Receive Binding Acknowledgement(Status=0,Lifetime=105=420s). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

*Expire 410s

7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

8. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

*Expire 12s

9. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

10. Receive Binding Error(Status=1). (*3) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Lifetime field is set to 105.

(*2) MN receives ICMP Echo Reply.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

(*3) MN receives Binding Error. (Lifetime expires.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.2, 5.2.6, 12, 6.1.8

6.5.1.3 CN-5-2-5 - Lifetime - 1 to M, Remaining Lifetime is M

[PURPOSE]

CN-5-2-5 - Lifetime - 1 to M, Remaining Lifetime is M

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

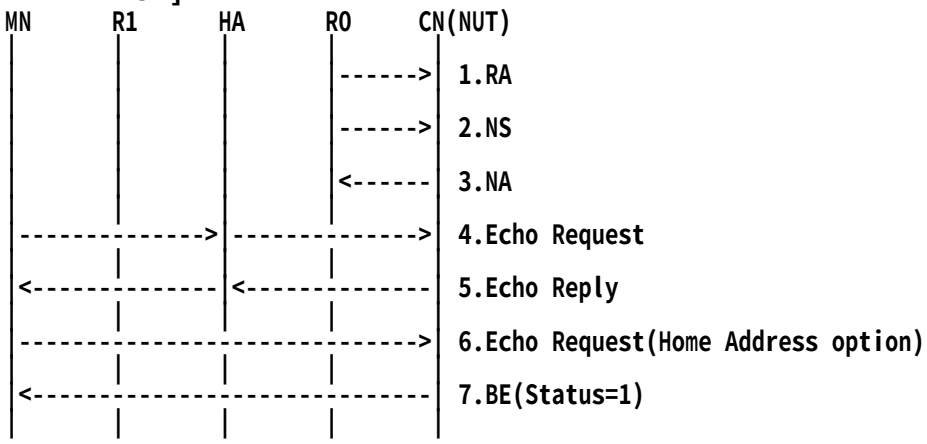
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

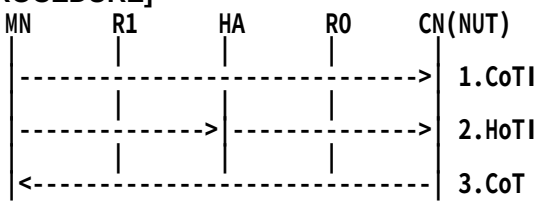
- Reboot NUT

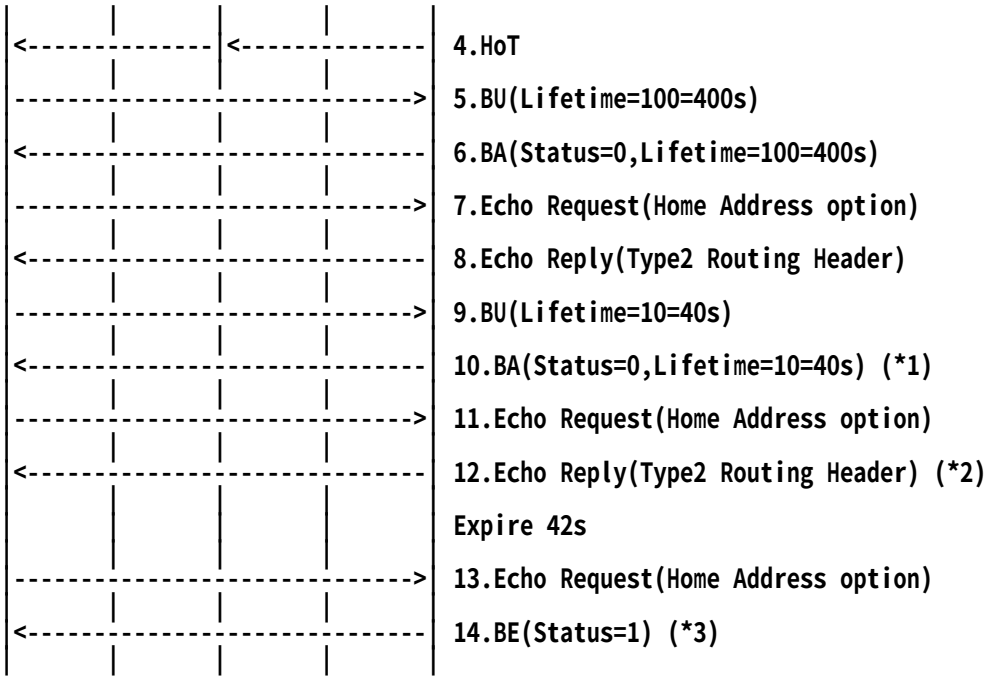
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=100=400s). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0,Lifetime=100=400s). (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Binding Update(Lifetime=10=40s). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

10. Receive Binding Acknowledgement(Status=0,Lifetime=10=40s). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

11. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option	Home Address (Home Address of Mobile Node)	MN (global)

Header		
ICMPv6	Type	128

12. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

*Expire 42s

13. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

14. Receive Binding Error(Status=1). (*3) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Lifetime field is less than or equal to the value in the Binding Update.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is updated.)

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

(*3) MN receives Binding Error. (The lifetime initialized by the second registration expires.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.2, 6.1.8

6.5.1.4 CN-5-2-6 - Lifetime - M to 105, Remaining Lifetime is M

[PURPOSE]

CN-5-2-6 - Lifetime - M to 105, Remaining Lifetime is M

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

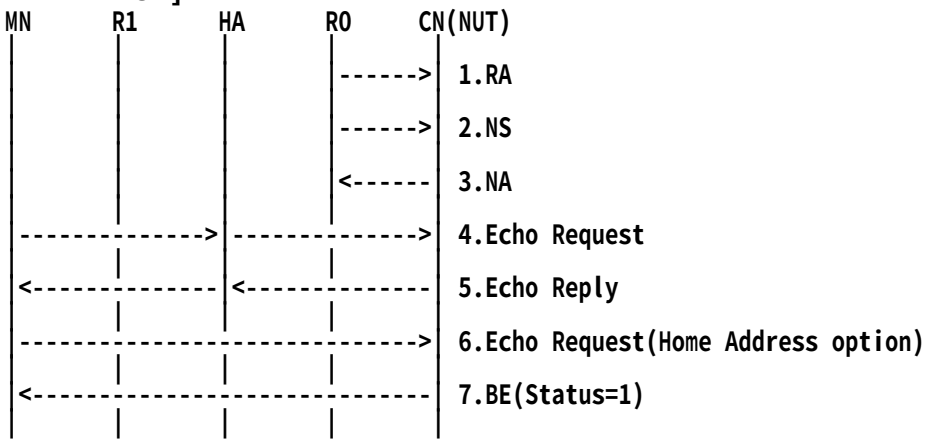
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

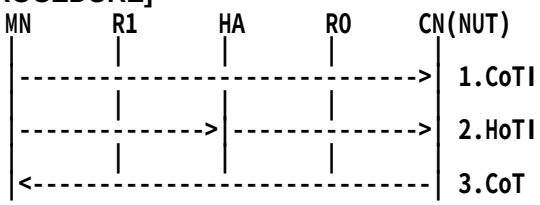
- Reboot NUT

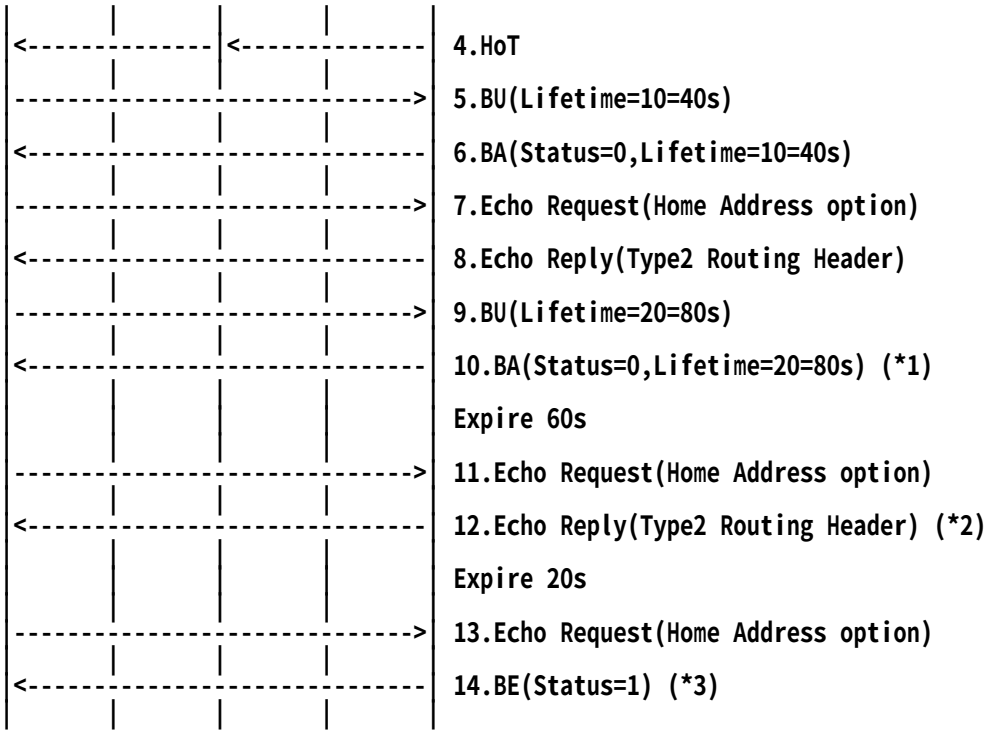
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=10=40s). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0,Lifetime=10=40s). (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Binding Update(Lifetime=20=80s). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

10. Receive Binding Acknowledgement(Status=0,Lifetime=20=80s). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

*Expire 60s

11. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

12. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

*Expire 20s

13. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

14. Receive Binding Error(Status=1). (*3) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Lifetime field is less than or equal to the value in the Binding Update.

(*2) MN receives ICMP Echo Reply. (The lifetime initialized by the second registration does not expire.)

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

(*3) MN receives Binding Error. (The lifetime initialized by the second registration expires.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.2, 6.1.8

6.5.1.5 CN-5-2-7 - Lifetime - Over 106, Remaining Lifetime is M

[PURPOSE]

CN-5-2-7 - Lifetime - Over 106, Remaining Lifetime is M

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

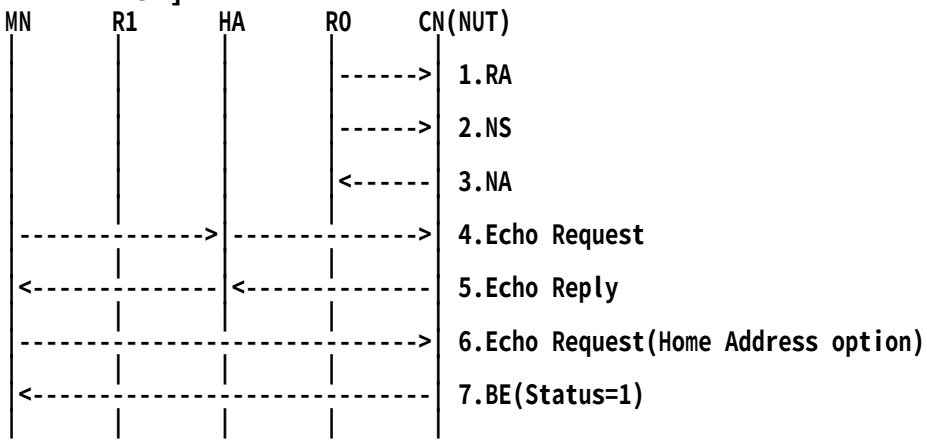
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

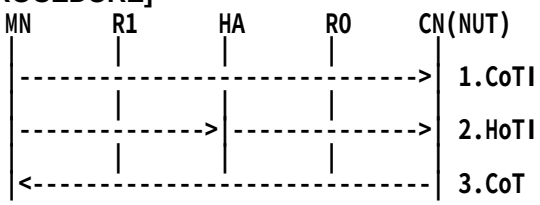
- Reboot NUT

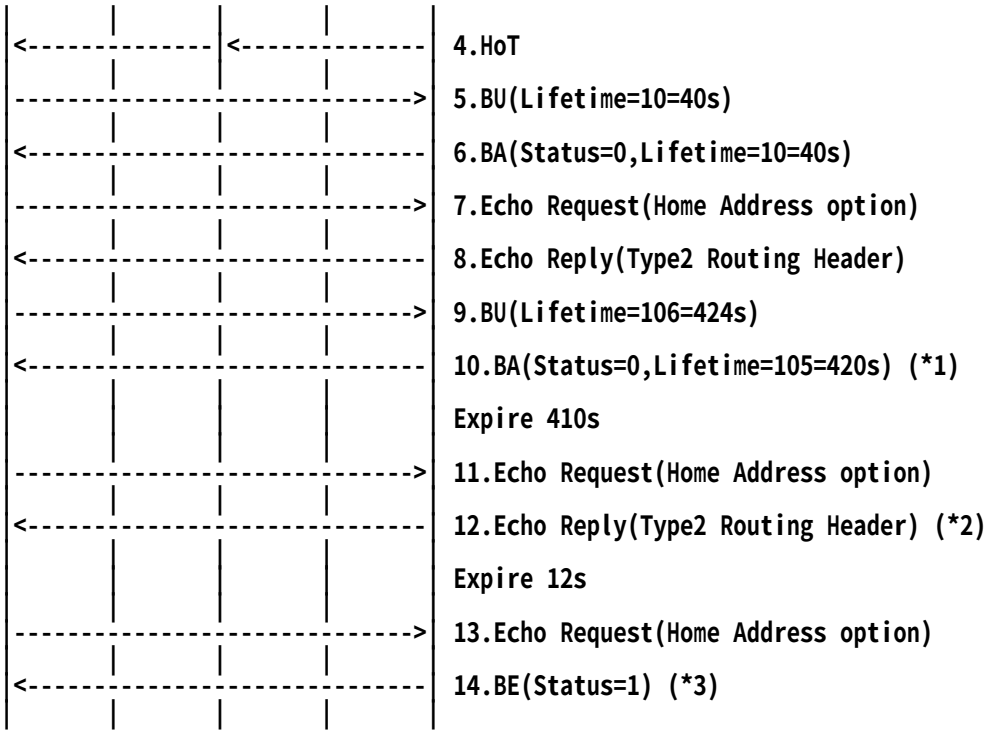
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=10=40s). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0,Lifetime=10=40s). (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Binding Update(Lifetime=106=424s). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

10. Receive Binding Acknowledgement(Status=0,Lifetime=105=420s). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

*Expire 410s

11. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

12. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

*Expire 12s

13. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

14. Receive Binding Error(Status=1). (*3) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- The Status field is set to 0.
- The Lifetime field is set to 105.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is updated.)
- The Destination Address is set to the Source Address of the Binding Update (MN care-of address).
- Type 2 Routing Header is included.

(*3) MN receives Binding Error. (The lifetime initialized by the second registration expires.)
- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.5.2, 5.2.6, 12, 6.1.8

6.5.1.6 CN-5-2-8 - Lifetime - Binding Updates that fail to satisfy tests

[PURPOSE]

CN-5-2-8 - Lifetime - Binding Updates that fail to satisfy tests

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

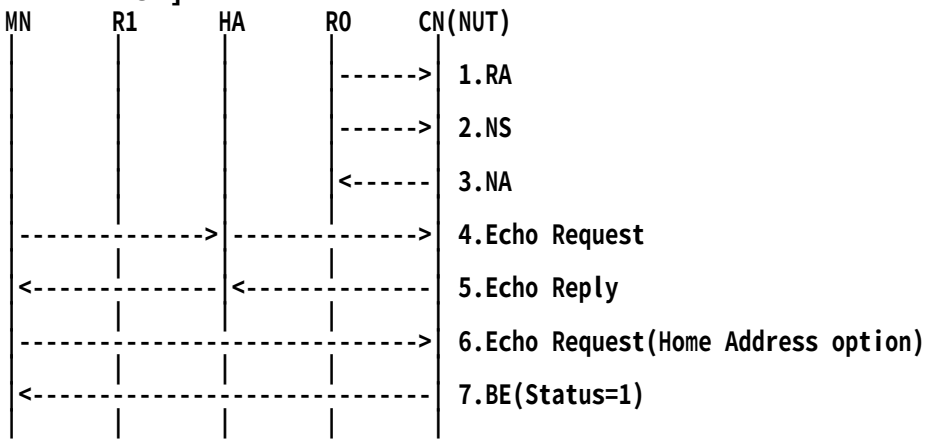
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

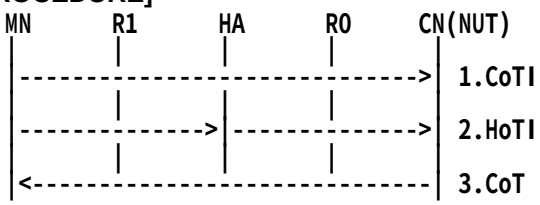
- Reboot NUT

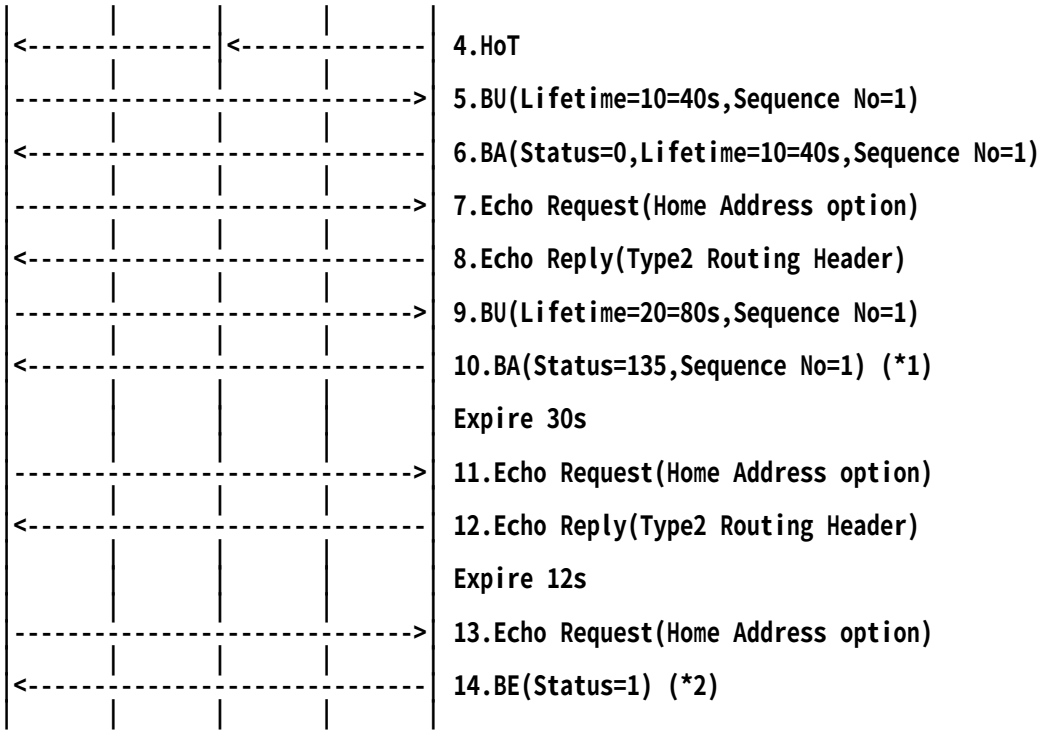
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=10=40s,Sequence No=1). (Refer to 5.12.1)
6. Receive Binding Acknowledgement(Status=0,Lifetime=10=40s,Sequence No=1). (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send Binding Update(Lifetime=20=80s,Sequence No=1). (Refer to 5.12.1)

IPv6 Header	Source Address (Care-of Address of Mobile Node)		MN (global)
	Destination Address (Correspondent Node Address)		NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		5
Mobility options	Nonce Indices	Option Type	4
	Binding Authorization Data	Option Type	5

10. Receive Binding Acknowledgement(Status=135,Sequence No=1). (*1) (Refer to 5.13.1)

IPv6 Header	Source Address (Correspondent Node Address)		NUT (global)
	Destination Address (Source Address of an invoking Binding Update)		MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)		MN (global)
Mobility Header	MH Type		6
Mobility options	PadN	Option Type	1
	Binding Authorization Data	Option Type	5

*Expire 30s

11. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

12. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

*Expire 12s

13. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

14. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Acknowledgement.

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address 2).
- The Status field is set to 135.
- Type 2 Routing Header is included.
- The Home Address field of Type 2 Routing Header is set to MN home address.

(*2) MN receives Binding Error. (The lifetime initialized by the first registration expires.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.5.2, 6.1.8, 9.5.1

6.5.2 Receiving ICMP Error

6.5.2.1 CN-6-1 - ICMP Error - Persistent ICMP Destination Unreachable messages

[PURPOSE]

CN-6-1 - ICMP Error - Persistent ICMP Destination Unreachable messages

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

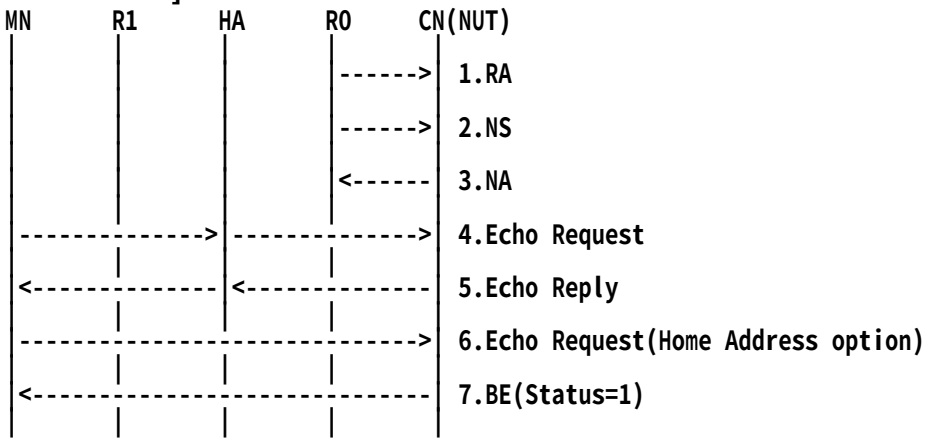
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

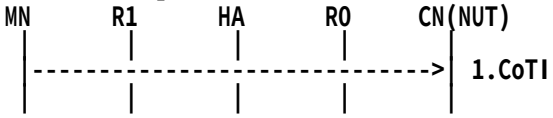
- Reboot NUT

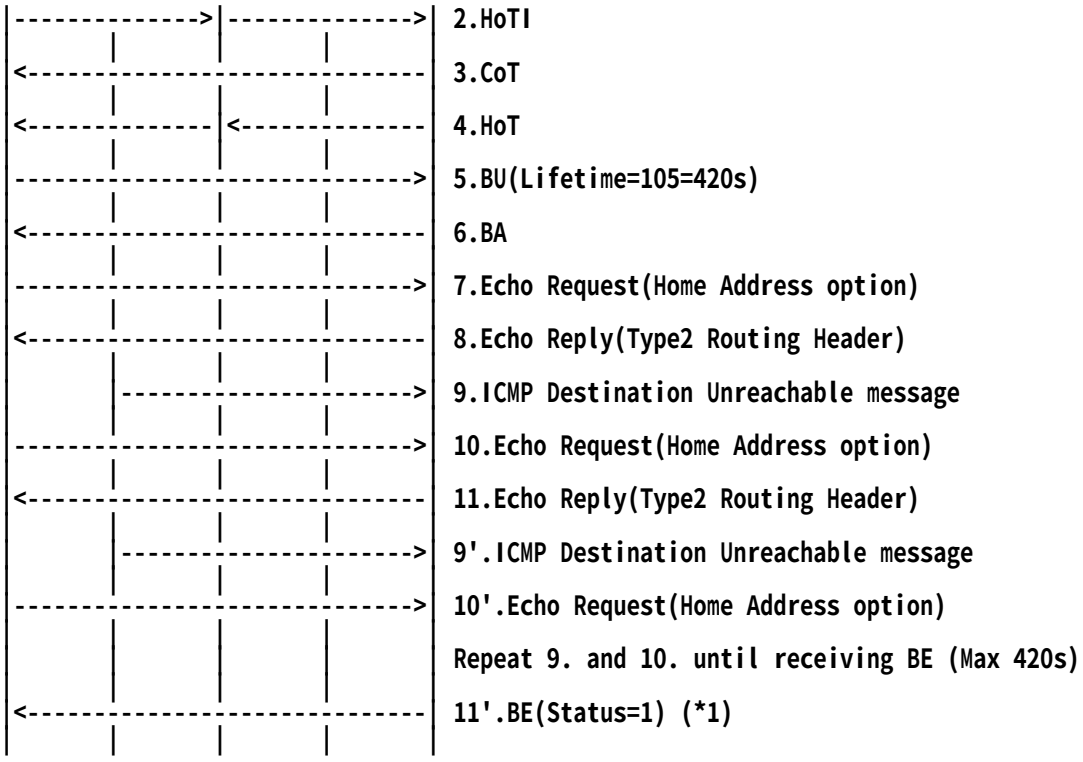
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update(Lifetime=105=420s). (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send ICMP Destination Unreachable message. (Refer to 5.4.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	1

10. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
11. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)

9'. Send ICMP Destination Unreachable message. (Refer to 5.4.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	1

10'. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

*Repeat 9. and 10. until receiving Bindig Error (Max 420s)

11'. Receive Binding Error(Status=1). (*1) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Error. (Binding Cache entry is deleted.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.3.4

6.6 Payload packets

6.6.1 CN-6-2-1 - Check of Home Address and Care-of Address against BCE - No entry exists

[PURPOSE]

CN-6-2-1 - Check of Home Address and Care-of Address against BCE - No entry exists

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

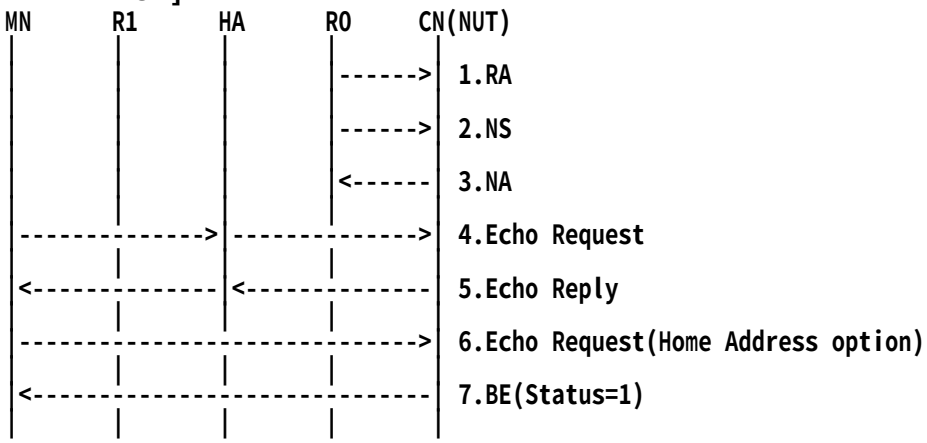
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

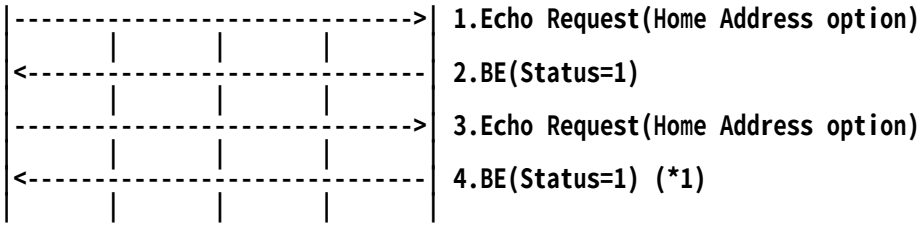
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
2. Receive Binding Error(Status=1). (Refer to 5.14.1)
3. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

4. Receive Binding Error(Status=1). (*1) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Error. (Binding Cache entry is not created.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address).
- The Status field is set to 1.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.1

6.6.2 CN-6-2-2 - Check of Home Address and Care-of Address against BCE - The entry exists

[PURPOSE]

CN-6-2-2 - Check of Home Address and Care-of Address against BCE - The entry exists

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

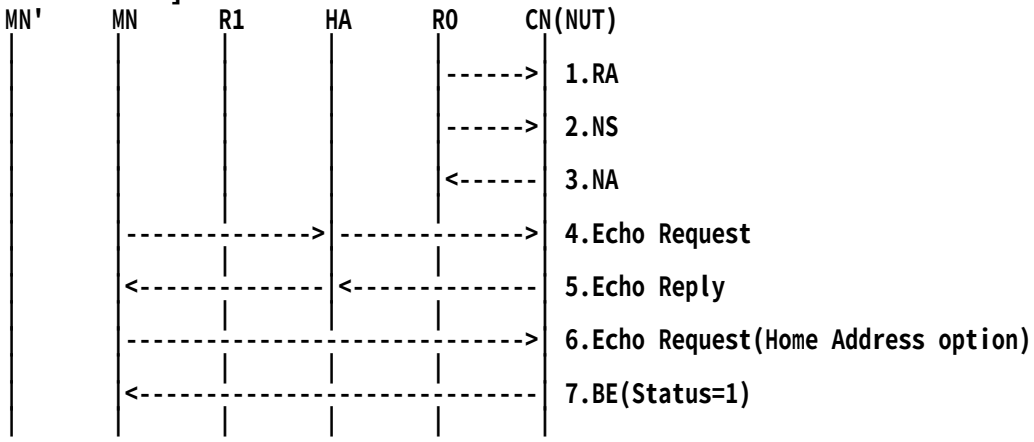
[TOPORGY]

Refer to 2.3 Common Topology-3

[TEST SETUP]

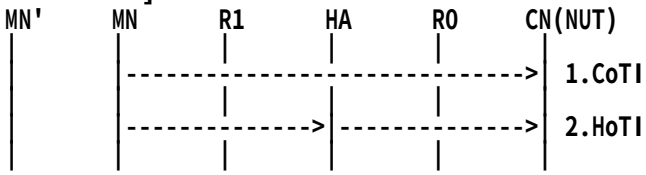
- Reboot NUT

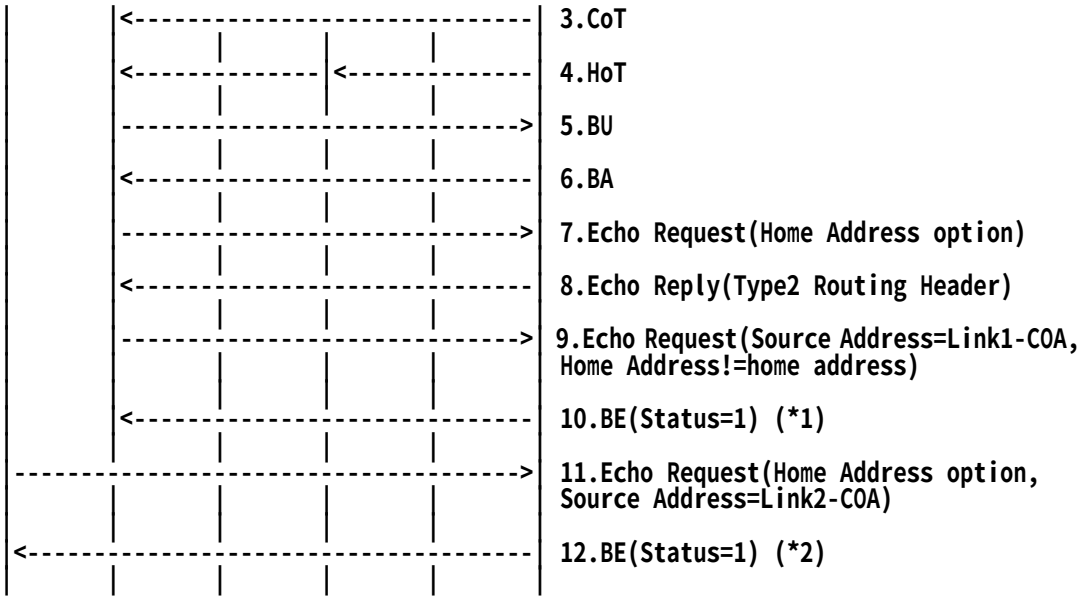
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send ICMP Echo Request(Source Address=Link1-COA,Home Address!=home address) (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

10. Receive Binding Error(Status=1). (*1) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

11. Send ICMP Echo Request(Home Address option, Source Address=Link2-COA) (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

12. Receive Binding Error(Status=1). (*2) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)

Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

[JUDGMENT]

(*1) MN receives Binding Error.

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address 1).
- The Status field is set to 1.
- The Home Address field is set to the value in the Home Address option in the ICMP Echo Request (Invalid MN home address).

(*2) MN' receives Binding Error.

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address 2).
- The Status field is set to 1.
- The Home Address field is set to the value in the Home Address option in the ICMP Echo Request (MN home address).

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.3.1, 9.3.3

6.6.3 CN-6-2-3 - Check of Home Address and Care-of Address against BCE - BCE is not changed

[PURPOSE]

CN-6-2-3 - Check of Home Address and Care-of Address against BCE - BCE is not changed

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

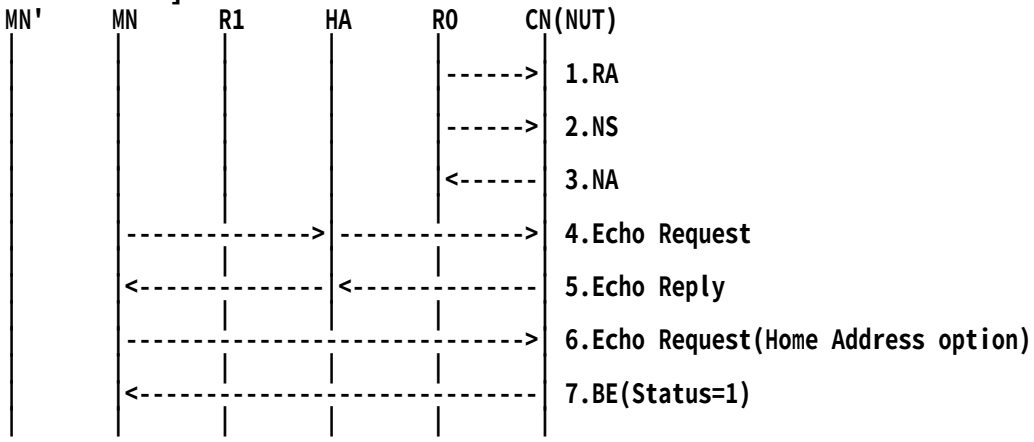
[TOPORGY]

Refer to 2.3 Common Topology-3

[TEST SETUP]

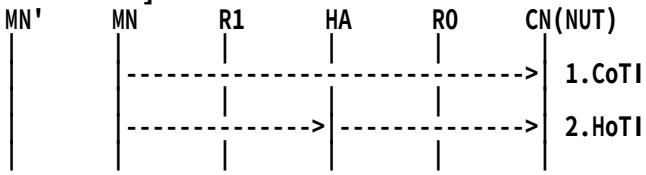
- Reboot NUT

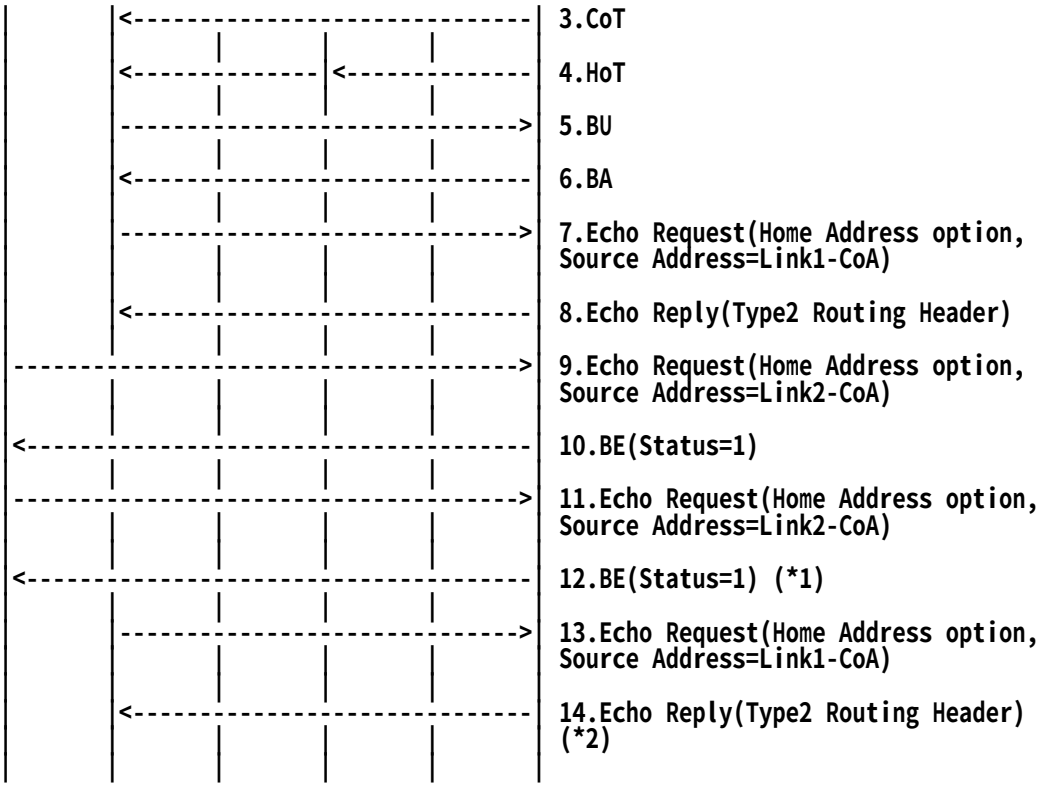
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Source Address=Link1-CoA). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send ICMP Echo Request(Source Address=Link2-CoA) (Refer to 5.6.2)
10. Receive Binding Error(Status=1). (Refer to 5.14.1)
11. Send ICMP Echo Request(Source Address=Link2-CoA) (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

12. Receive Binding Error(Status=1). (*1) (Refer to 5.14.1)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Source Address of an invoking packet with Home Address option)	MN (global)
Mobility Header	MH Type	7
	Home Address (Home Address of Mobile Node)	MN (global)

13. Send ICMP Echo Request(Source Address=Link1-CoA). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option	Home Address (Home Address of Mobile Node)	MN (global)

Header		
ICMPv6	Type	128

14. Receive ICMP Echo Reply(Type2 Routing Header). (*2) (Refer to 5.7.2)

IPv6 Header	Source Address (Correspondent Node Address)	NUT (global)
	Destination Address (Home Address of Mobile Node)	MN (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	129

[JUDGMENT]

(*1) MN' receives Binding Error. (Binding Cache entry is not created or updated.)

- The Destination Address is set to the Source Address of ICMP Echo Request (MN care-of address 2).
- The Status field is set to 1.

(*2) MN receives ICMP Echo Reply. (Binding Cache entry is not deleted or updated.)

- The Destination Address is set to the Source Address of the Binding Update (MN care-of address 1).
- Type 2 Routing Header is included.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.1

6.6.4 CN-6-3-1 - Receiving packets with multicast address - Source Address field

[PURPOSE]

CN-6-3-1 - Receiving packets with multicast address - Source Address field

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

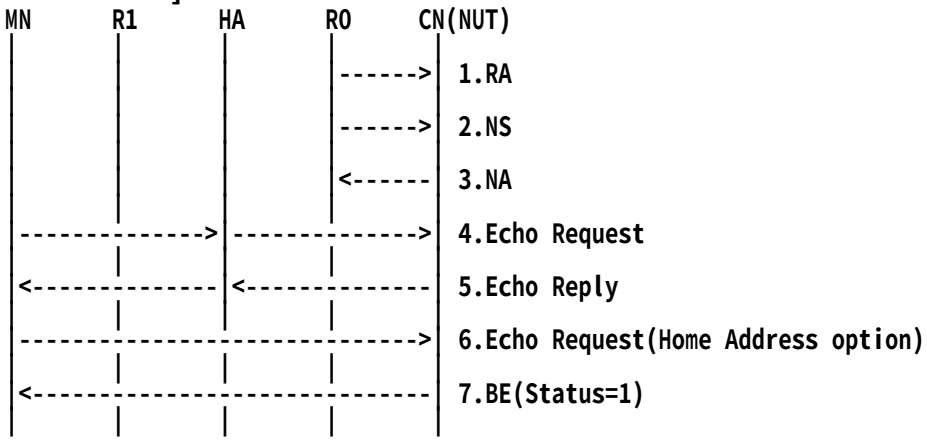
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

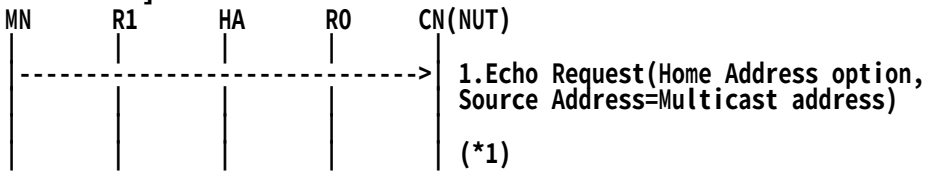
- Reboot NUT

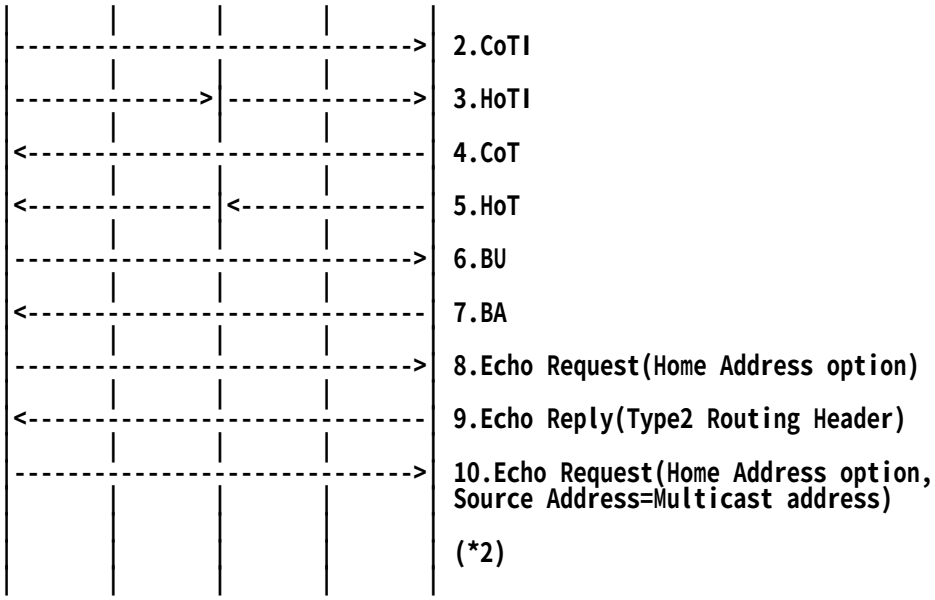
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send ICMP Echo Request(Home Address option, Source Address=Multicast address) (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

*Expire ICMP Echo Reply timer. (*1)

2. Send Care-of Test Init. (Refer to 5.9.1)
3. Send Home Test Init. (Refer to 5.8.1)
4. Receive Care-of Test. (Refer to 5.11.1)
5. Receive Home Test. (Refer to 5.10.1)
6. Send Binding Update. (Refer to 5.12.1)
7. Receive Binding Acknowledgement. (Refer to 5.13.1)
8. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
9. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
10. Send ICMP Echo Request(Home Address option, Source Address=Multicast address) (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

*Expire ICMP Echo Reply timer. (*2)

[JUDGMENT]

(*1) MN receives neither ICMP Echo Reply nor Binding Error.

(*2) MN receives neither ICMP Echo Reply nor Binding Error.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 9.3.1, 9.3.3

6.6.5 CN-6-3-2 - Receiving packets with multicast address - Home Address field

[PURPOSE]

CN-6-3-2 - Receiving packets with multicast address - Home Address field

[CATEGORY]

HOST : BASIC FUNCTION

ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

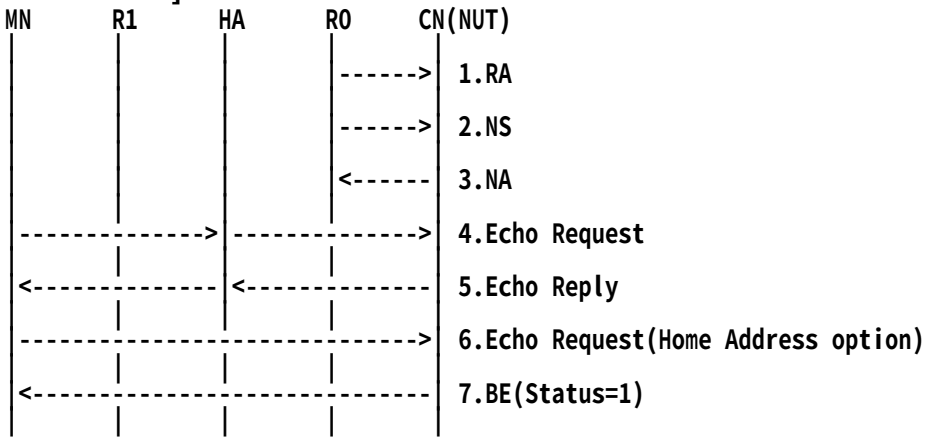
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

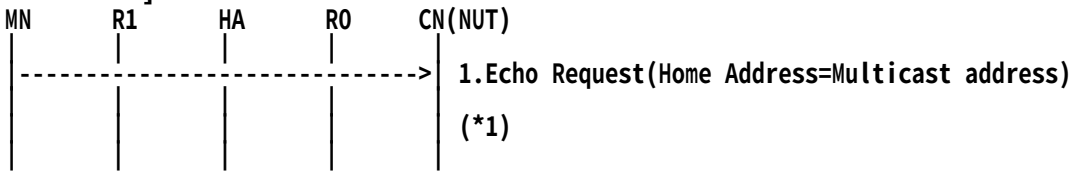
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send ICMP Echo Request(Home Address=Multicast address). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

*Expire ICMP Echo Reply timer. (*1)

[JUDGMENT]

(*1) MN receives neither Binding Error nor ICMP Echo Reply.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.3.1, 9.3.3

6.6.6 CN-6-4-1 - Processing in upper layer - Echo Checksum

[PURPOSE]

CN-6-4-1 - Processing in upper layer - Echo Checksum

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

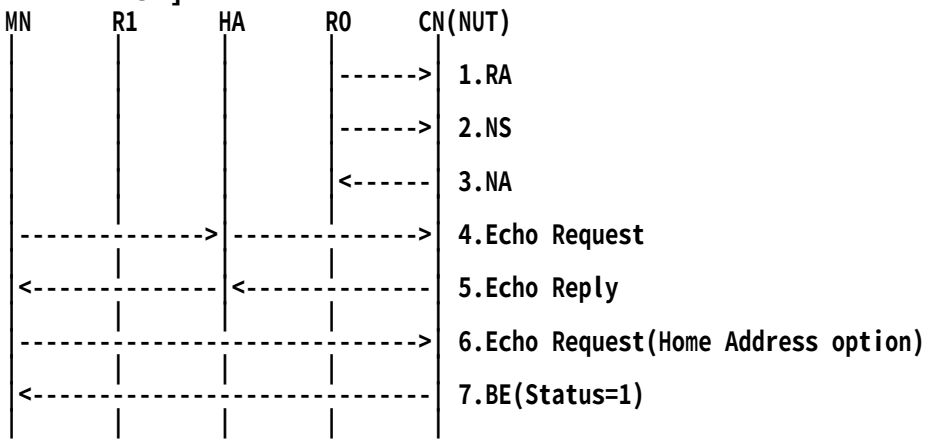
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

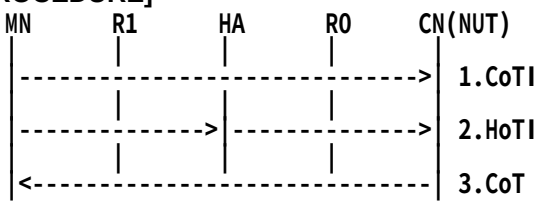
- Reboot NUT

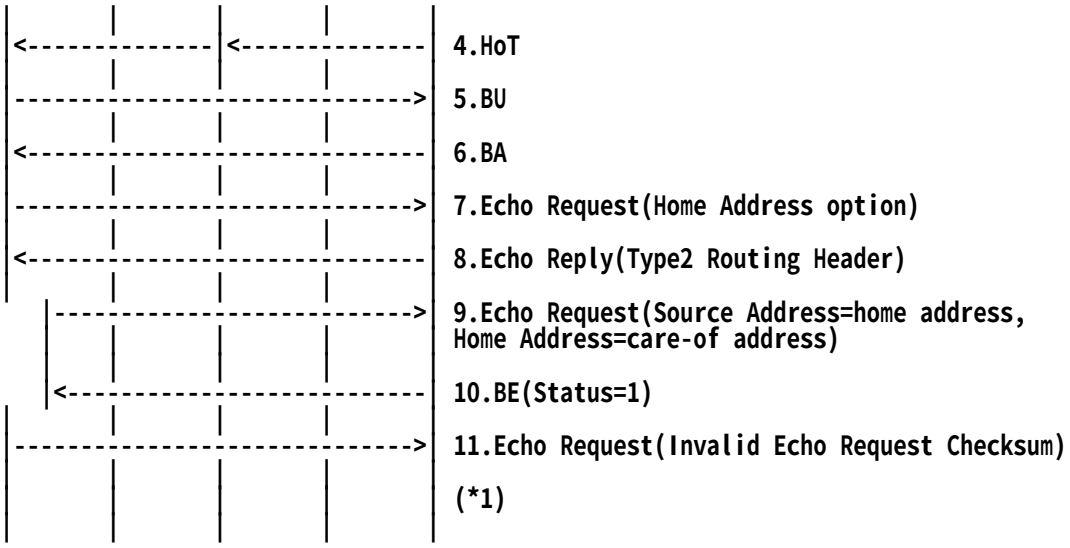
[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]





1. Send Care-of Test Init. (Refer to 5.9.1)
2. Send Home Test Init. (Refer to 5.8.1)
3. Receive Care-of Test. (Refer to 5.11.1)
4. Receive Home Test. (Refer to 5.10.1)
5. Send Binding Update. (Refer to 5.12.1)
6. Receive Binding Acknowledgement. (Refer to 5.13.1)
7. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
8. Receive ICMP Echo Reply(Type2 Routing Header). (Refer to 5.7.2)
9. Send ICMP Echo Request(Source Address=home address,Home Address=care-of address).
(Refer to 5.6.2)
10. Receive Binding Error(Status=1). (Refer to 5.14.1)
11. Send ICMP Echo Request(Home Address option,
Echo Request Checksum=Calculated without exchanging Home Address field and Source Addres field). (Refer to 5.6.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Destination Option Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

*Receives neither ICMP Echo Reply nor Binding Error. (*1)

[JUDGMENT]

(*1) MN receives neither ICMP Echo Reply nor Binding Error.

[REFERENCES]

RFC3775 Mobility Support in IPv6
See Section 9.3.1

6.6.7 CN-6-5 - Receiving packets with Type2 Routing Header

[PURPOSE]

CN-6-5 - Receiving packets with Type2 Routing Header

[CATEGORY]

HOST : BASIC FUNCTION
ROUTER : BASIC FUNCTION

[REQUIREMENT OF TEST]

NONE

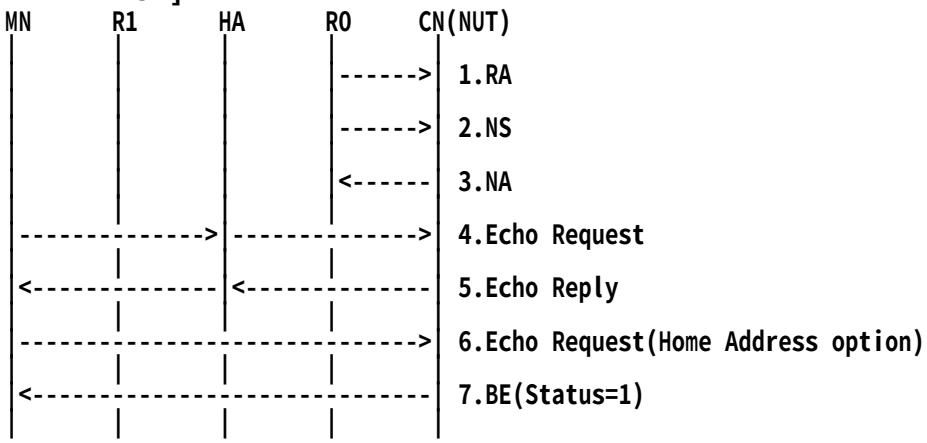
[TOPORGY]

Refer to 2.1 Common Topology-1

[TEST SETUP]

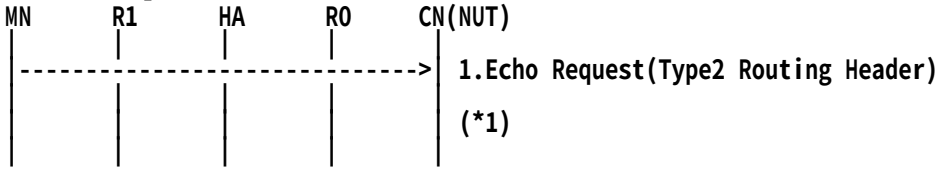
- Reboot NUT

[INITIALIZATION]



1. Send Router Advertisement. (Refer to 5.1.1)
2. Send Neighbor Solicitation. (Refer to 5.2.1)
3. Receive Neighbor Advertisement. (Refer to 5.3.1)
4. Send ICMP Echo Request. (Refer to 5.6.1)
5. Receive ICMP Echo Reply. (Refer to 5.7.1)
6. Send ICMP Echo Request(Home Address option). (Refer to 5.6.2)
7. Receive Binding Error(Status=1). (Refer to 5.14.1)

[PROCEDURE]



1. Send ICMP Echo Request(Type2 Routing Header). (Refer to 5.7.2)

IPv6 Header	Source Address (Care-of Address of Mobile Node)	MN (global)
	Destination Address (Correspondent Node Address)	NUT (global)
Type 2 Routing Header	Home Address (Home Address of Mobile Node)	MN (global)
ICMPv6	Type	128

*Expire ICMP Echo Reply timer. (*1)

[JUDGMENT]

(*1) The Echo Request is silently discarded.

[REFERENCES]

RFC3775 Mobility Support in IPv6

See Section 8.2

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