# ETSI TS 102 595 V1.2.0 (2008-04)

**Technical Specification** 

Methods for Testing and Specification (MTS); Internet Protocol Testing (IPT); IPv6 Mobility; Conformance Test Suite Structure and Test Purposes (TSS&TP)



Reference RTS/MTS-IPT-015[2]IPv6-MobTSST

Keywords

IP, IPv6, mobility, testing, TSS&TP

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### Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Methods for Testing and Specification (MTS).

#### 1 Scope

The purpose of the present document is to provide Test Suite Structure and Test Purposes (TSS&TP) for conformance tests of the mobility IPv6 protocol based on the requirements defined in the IPv6 requirements catalogue (TS 102 559 [2]) and written according to the guidelines of TS 102 351 [1], ISO/IEC 9646-2 [4] and ETS 300 406 [5].

### 2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

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#### 2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1]	ETSI TS 102 351: "Methods for Testing and Specification (MTS); Internet Protocol Testing (IPT); IPv6 Testing: Methodology and Framework".
[2]	ETSI TS 102 559: "Methods for Testing and Specification (MTS); Internet Protocol Testing (IPT): IPv6 Mobility; Requirements Catalogue".
[3]	ISO/IEC 9646-1: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 1: General concepts".
[4]	ISO/IEC 9646-2: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite specification".
[5]	ETSI ETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".
[6]	IETF RFC 3775: "Mobility Support in IPv6".
[7]	IETF RFC 4068: "Fast Handovers for Mobile IPv6".

#### 2.2 Informative references

Not applicable.

### 3 Definitions and abbreviations

#### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

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abstract test case: Refer to ISO/IEC 9646-1 [3].

Abstract Test Suite (ATS): Refer to ISO/IEC 9646-1 [3].

Implementation Under Test (IUT): Refer to ISO/IEC 9646-1 [3].

Test Purpose (TP): Refer to ISO/IEC 9646-1 [3].

#### 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ATS	Abstract Test Suite
IETF	Internet Engineering Task Force
IPv6	Internet Protocol version 6
IUT	Implementation Under Test
RC	Requirements Catalogue
RQ	Requirement
TP	Test Purpose
TSS	Test Suite Structure

# 4 Test Suite Structure (TSS)

Test Purposes have been written for IPv6 mobile nodes, correspondent nodes and home agents according to the Requirements (RQ) of the Requirements Catalogue (RC) in TS 102 559 [2]. Test Purposes have been written for behaviours requested with "MUST" or "SHOULD", optional behaviour described with "MAY" or similar wording indicating an option has not been turned into Test Purposes.

The Test Purposes have been divided into two groups:

Group 1: IPv6 Mobility - RFC 3775 [6].

Group 2: IPv6 Mobility - RFC 4068 [7].

The sub-grouping of these two group follows the structure of the RC.

Group 1 RFC 3775 [6].

Group 1.1 Overview of Mobile IPv6 Security.

Group 1.1.1 Return Routability Procedure.

Group 1.1.2 Authorizing Binding Management Messages.

Group 1.1.3 Updating Node Keys and Nonces.

Group 1.2 New IPv6 Protocol, Message Types, and Destination Option.

Group 1.2.1 Home Address option.

Group 1.3 Modifications to IPv6 Neighbor Discovery.

Group 1.3.1 Modified Router Advertisement Message Format.

Group 1.3.2 New Advertisement Interval Option Format.

Group 1.3.3 New Home Agent Information Option Format.

Group 1.4 Correspondent\_Node Operation.

Group 1.4.1 Processing Mobility Headers.

Group 1.4.2 Packet Processing.

Group 1.4.2.1 Receiving Packets with Home Address Option.

Group 1.4.3 Sending Binding Error Messages.

Group 1.4.4 Return Routability Procedure.

Group 1.4.4.1 Receiving Home Test Init Messages.

Group 1.4.4.2 Receiving care-of test Init Messages.

Group 1.4.5 Processing Bindings.

Group 1.4.5.1 Receiving binding updates.

Group 1.4.5.2 Requests to Delete a Binding.

Group 1.4.5.3 Sending Binding Acknowledgements.

Group 1.4.5.4 Sending Binding Refresh Requests.

#### Group 1.5 Home Agent Operation.

Group 1.5.1 Processing Bindings.

Group 1.5.1.1 Primary Care-of Address Registration.

Group 1.5.1.2 Primary Care-of Address De-Registration.

Group 1.5.2 Packet Processing.

Group 1.5.2.1 Intercepting Packets for a Mobile Node.

Group 1.5.2.2 Processing Intercepted Packets.

Group 1.5.2.3 Multicast Membership Control.

Group 1.5.2.4 Handling Reverse Tunnelled Packets.

Group 1.5.3 Dynamic Home Agent Address Discovery.

Group 1.5.3.1 Receiving Router Advertisement messages.

Group 1.5.4 Sending Prefix Information to the Mobile Node.

Group 1.5.4.1 Scheduling Prefix Deliveries.

Group 1.6 Mobile Node Operation.

Group 1.6.1 Packet Processing.

Group 1.6.1.1 Sending Packets While Away From Home.

Group 1.6.1.2 Interaction With Outbound IPsec Processing.

Group 1.6.1.3 Receiving Packets While Away From Home.

Group 1.6.1.4 Routing Multicast Packets.

Group 1.6.1.5 Receiving Binding Error Messages.

Group 1.6.2 Home Agent and Prefix Management.

Group 1.6.2.1 Dynamic Home Agent Address Discovery.

Group 1.6.2.2 Sending Mobile Prefix Solicitations.

Group 1.6.2.3 Receiving Mobile Prefix Advertisements.

Group 1.6.3 Movement.

Group 1.6.3.1 Using Multiple Care-of Addresses.

Group 1.6.3.2 Returning Home.

Group 1.6.4 Return Routability Procedure.

Group 1.6.4.1 Receiving Test Messages.

Group 1.6.5 Processing Bindings.

Group 1.6.5.1 Sending binding updates To The Home Agent.

Group 1.6.5.2 Receiving Binding Acknowledgements.

Group 1.6.5.3 Receiving Binding Refresh Requests.

#### Group 2 RFC 4068 [7].

Group 2.1 Protocol Operation of Network-initiated Handover.

Group 2.2 Protocol Details.

Group 2.3 Miscellaneous.

Group 2.3.1 Handover Capability Exchange.

Group 2.3.2 Fast or Erroneous Movement.

# Annex A (normative): Test Purposes (TP)

The Test Purposes have been written in the formal notation TPlan as described in annex A of TS 102 351 [1]. This original textual output file ASCII file (MOB.tplan) is contained in archive TS\_102595v010200p0.zip which accompanies the present document. The raw text file has been converted to a table format in this annex to allow better readability.

The two formats shall be considered equivalent. In the event that there appears to be syntactical or semantic differences between the two then the textual TPlan representation takes precedence over the table format in this annex.

# A.1 IPv6 Mobility - RFC 3775

### A.1.1 Overview of mobile IPv6 security

#### A.1.1.1 Return routability procedure

		Test Purpose	
Identifier:	TP_MOB_1048_01		
Summary:	Test of Return Routab	ility Procedure at mobile node	
References:	RQ_001_1048, RQ_0	01_1049, RQ_001_1047, RQ_00	1_1053,RQ_001_1054, RQ_001_1709,
	RQ_001_1711, RQ_0	01_1712	
IUT Role: Mobile_Node Test case: TC_MOB_104		TC_MOB_1048_01	
<pre>with { IUT away</pre>	/_from_home		
IUT 'ass	signed a care-of a	ddress'	
IUT read	ly to start Return	_Routability_Procedure	
}			
ensure that			
$\{ \texttt{when } \{$		ed to start Return_Routa	
then {	<pre>then { IUT sends Home_Test_Init to Home_Agent in tunneled_mode</pre>		
		source_address	
set to home_address			
		destination_address	
		Correspondent_Node_addr	cess
	-	home_init_cookie	
a		e_of_Test_Init <b>to</b> Corresp	oondent_Node
	containing	source_address	
		<pre>care_of_address</pre>	
		destination_address	
		Correspondent_Node_addr	cess
	and containing	<pre>g care_of_init_cookie }</pre>	
}			

			Test Purpose	
Identifier:	TP_MOB_10	50_01		
			ty Procedure at correspondent node	
References:	RQ 001 105	50. RQ 001	I_1051, RQ_001_1056, RQ_001_1057	.RQ 001 1058.RQ 001 1059.
			I_1033,RQ_001_1034, RQ_001_1035	,
	Corresponder		Test case:	TC_MOB_1050_01
			bility Procedure	
}				
ensure that				
$\{ \text{ when } \}$	IUT rec	eives Ho	ome Test Init <b>from</b> Home Agent	
	con	taining	source address	
		set to	home_address	
	and con	taining	destination_address	
			Correspondent_Node_address	
			home_init_cookie	
a			re_of_Test_Init <b>from</b> Mobile_1	Node
	con		source_address	
			care_of_address	
	and con		destination_address	
			Correspondent_Node_address	
			care_of_init_cookie }	
then $\{$			Test to Home_Agent	
	con	-	source_address	
	-		Correspondent_Node_address	
	and con		destination_address	
	-		home_address	
		-	home_init_cookie	
	and con		home_keygen_token	
		set to	'First (64, HMAC_SHA1 (Kcn,	
			(home address   nonce	0)))'
			home_nonce_index	
a			of_Test <b>to</b> Mobile_Node source_address	
	con		Correspondent_Node_address	
	and con		destination_address	
	and con		care of address	
	and con		care of init cookie	
			care of keygen token	
			'First (64, HMAC SHA1 (Kcn,	
			(care-of address   not	nce   1)))'
	and con	taining	care of nonce index }	
}	una con		care_or_nonce_index ;	

		Test Purpose		
Identifier:	tifier: TP_MOB_1052_01			
Summary:	Test of answers of Re	eturn Routability Procedure at mobile	e node	
References:	RQ_001_1052, RQ_0	01_1061, RQ_001_2014, RQ_001_	_2034	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1052_01	
with { IUT	away_from_home			
	having sent Home			
and IUT	having sent Care	_of_Test_Init		
}				
ensure that				
$\{ \text{ when } \}$		home_test <b>from</b> Home_Agent	<b>in</b> tunneled_mode	
		<b>g</b> source_address		
		• Correspondent_Node_addres	SS	
		g destination_address		
		• home_address		
	and containin			
		g home_init_cookie		
		g home_keygen_token		
		g home_nonce_index		
ā		Care_of_Test_Init from Corr	respondent_Node	
		g source_address		
		• Correspondent_Node_addres	5S	
		g destination_address		
		• care_of_address		
		g care_of_init_cookie		
		g Care_of_keygen_token		
		g care_of_nonce_index }		
then {	IUT sends Bin	ding_Update <b>to</b> Corresponder	nt_Node }	
}				

# A.1.1.2 Authorizing binding management messages

		Test Purpose			
Identifier:	dentifier: TP_MOB_1063_01				
Summary:	Test of binding update	sent by mobile node			
References:	/ _		_1745,RQ_001_1750, RQ_001_1751,		
	RQ_001_1754, RQ_00	—			
IUT Role:	Mobile_Node	Test case:	TC_MOB_1063_01		
with { IUT	away_from_home				
and IUT	completed Return	Routability_Procedure			
}					
ensure that					
$\{ when \}$	IUT is requested t	<b>o send a</b> Binding_Update }			
		Update <b>to</b> Correspondent No	ode		
(	containing source address				
	-	e of address			
	and containing des	—			
	-	respondent Node address			
	and containing a s				
	-	nce indices option			
	_				
		ntaining home_nonce_index			
		ntaining care_of_nonce_ind			
		ding_authorization_data_o	ption		
	set to 'Fi	rst (96, HMAC_SHA1 (Kbn,			
		(care-of address   co:	rrespondent   BU)))' }		
}					

		Test Purpose		
Identifier:	TP_MOB_1075_01	-		
Summary:	Test of reaction to unrecogn	ized home nonce in binding ι	update sent by mobile node	
References:	RQ_001_1075, RQ_001_10	72		
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1075_01	
with $\{$ IUT hav	ing completed Return_R	outability_Procedure		
}				
ensure that				
$\{ \texttt{when } \{$	IUT receives Binding Update from Mobile Node		e	
	containing nonce indices option			
	set to an unrecogn	ized home nonce index	}	
then {	then { IUT sends Binding Acknowledgement to Mobile Node			
· ·	containing status			
	set to 136 expired home nonce index			
	or set to 138 exp			
}		, <u> </u>		

### A.1.1.3 Updating node keys and nonces

Summary: T References: R IUT Role: C	RQ_001_1075, RQ_001_10 Correspondent_Node	nized care-of nonce in binding 072 <b>Test case:</b> Routability_Procedure	g update sent by mobile node TC_MOB_1075_02
References: R IUT Role: C	RQ_001_1075, RQ_001_10 Correspondent_Node	072 Test case:	
IUT Role: C	Correspondent_Node	Test case:	TC_MOB_1075_02
			TC_MOB_1075_02
with { IUT havin	ng completed Return_F	Routability_Procedure	
ì			
ensure that			
{ when { IU	JT receives Binding_U	Update <b>from</b> Mobile_Node	e
contai	<b>ining</b> nonce indices of	option	
se	et to unrecognized ca	are of nonce index }	
		nowledgement <b>to</b> Mobile	Node
	<u> </u>		
	containing status		
		pired_care_of_nonce_ind	dex
	or set to 138 exp	pired nonces }	
}		,	

#### New IPv6 protocol, message types, and destination option A.1.2

### A.1.2.1 Home address option

Test Purpose					
Identifier:	dentifier: TP_MOB_1208_01				
Summary: Test reaction on home address option when this option is not recognized					
References:	References: RQ_001_1208, RQ_001_1211				
IUT Role:	Node Test case: TC_MOB_1208_01				
with { IUT conf }	figured 'so that it does not recognise the Home Address option'				
ensure that					
$\{$ when $\{$	IUT <b>receives an</b> IPv6Packet				
	containing destination_address				
	<b>set to a</b> multicast_address				
	<b>and containing</b> Home_Address_option }				
then $\{$	IUT <b>discards</b> IPv6Packet				
a	and IUT sends no response }				
}					

		Test Purpose		
Identifier:	TP_MOB_1209_01			
Summary:	Test reaction on ho	me address option when this option is r	not recognized	
References:	RQ_001_1208	· · · ·		
IUT Role:	Node	Test case:	TC_MOB_1209_01	
with { IUT co }	ntigured 'so that	t it does not recognise Home A	Address option'	
ensure that				
$\{ \texttt{when } \{$	{ when { IUT receives IPv6Packet			
	contain	ing destination_address		
	not	<b>set to a</b> multicast_address		
	and contain	ing Home Address option }		
then { IUT discards the IPv6Packet				
	and IUT sends I	CMP Parameter Problem		
containi		g 2 unrecognized IPv6 option	encountered }	
}	-		_ `	

# A.1.3 Modifications to IPv6 neighbor discovery

A.1.3.1	Modified	router	advertisement	message	format

		Test Purpose				
Identifier:	TP_MOB_1293_01 Test of modified router advertisement message format					
Summary:						
References:	RQ_001_1293, RQ_001_1294, RQ_001_1295, RQ_001_1296,RQ_001_1297, RQ_001_1298, RQ_001_1299, RQ_001_1339					
IUT Role:	Home_Agent	Test case:	TC_MOB_1293_01			
then ${}$	IUT sends modified F containing H_bit set to 1 hom and containing (modi cont	_	_option			
}	and containing Sourc	e_Link_Layer_Address_opt				

		Test Purpose				
Identifier:	TP_MOB_1310_01					
Summary:	Ignore advertisement ir	nore advertisement interval option format in messages other than Router Advertisement messages				
References:	RQ_001_1310	· · · · · · · · · · · · · · · · · · ·				
IUT Role:	Home_Agent	Test case:	TC_MOB_1310_01			
$\hat{ brace}$ ensure that $\{$ when $\{$ then $\{$	containing IUT sends a moo	er_Solicitation Duter_Solicitation Advertisement_Interval_op <b>dified</b> Router_Advertisemen vertisement Interval optic	it			

### A.1.3.2 New advertisement interval option format

Test Purpose						
Identifier:	TP_MOB_1310_02	TP MOB 1310 02				
Summary:	Ignore advertisement interv	nore advertisement interval option format in messages other than Router Advertisement message				
References:	RQ_001_1310	· ×	× · · ·			
IUT Role:	Mobile_Node,	Test case:	TC_MOB_1310_02			
	Correspondent_Node,					
	Home_Agent					
with { IUT re	ady to receive Neighbor	_Solicitation				
}						
ensure that						
$\{ \text{ when } \}$	· · · · · · · · · · · · · · · · · · ·		ton l			
		tisement_Interval_opt	ion }			
then {	IUT <b>sends</b> Neighbor	_				
	and IUT ignores Advert	isement_Interval_opti	on }			
}						

# A.1.3.3 New home agent information option format

		Test Purpose			
Identifier:	TP_MOB_1315_01				
Summary:	Ignore reserved field in home agent information option				
References:	RQ_001_1315				
IUT Role:	Mobile_Node	Test case:	TC_MOB_1315_01		
) ensure that { when {	containing Home cont	<pre>- fied Router_Advertisement a_Agent_Information_option caining a reserved_field ot set to 0 }.</pre>			

		Test Purpose			
dentifier:	TP_MOB_1328_01				
Summary:	Ignore home agent information option format in messages other than Router Advertisement				
	messages	-			
References:	RQ_001_1328				
UT Role:	Home_Agent	Test case:	TC_MOB_1328_01		
with { IUT read } ensure that	ly to receive router				

		Test Purpose		
Identifier:	TP_MOB_1328_02			
Summary:	Ignore home agent information option format in messages other than Router Advertisement messages			
References:	RQ_001_1328			
IUT Role:	Mobile_Node, Correspondent_Node, Home_Agent	Test case:	TC_MOB_1328_02	
with { IUT rea } ensure that	dy to receive Neighbo	r_Solicitation		
$\{ \texttt{when } \{$	IUT <b>receives</b> Neighbor_Solicitation <b>containing a</b> Home Agent Information option }			
then $\{$	<pre>containing a Home_Agent_Information_option } IUT sends Neighbor_Advertisement nd IUT ignores Home Agent Information option }</pre>			

# A.1.4 Correspondent\_Node operation

# A.1.4.1 Processing mobility headers

		Test Purpose	
Identifier:	TP_MOB_1399_01		
Summary:	Ignore message with check	sum error in mobility header: I	Home Test Init at Correspondent Node
References:	RQ_001_1398, RQ_001_13	399	
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1399_01
	IUT receives home_test containing incorre IUT ignores home test		
then { }	ioi ignores nome_test_		

		Test Purpose		
Identifier:	TP_MOB_1399_02			
Summary:	Ignore message with checksum error in mobility header: care-of test Init at Correspondent Node			
References:	RQ_001_1398, RQ_001_13	399		
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1399_02	
 ensure that { when { ]	y for Return_Routabi UT receives Care_of_ containing incorre UT ignores Care_of_Te	<pre>Test_Init from Mobile_ ect checksum }</pre>	Node	

		Test Purpose			
Identifier:	TP_MOB_1399_03	TP MOB 1399 03			
Summary:	Ignore message with chec	Ignore message with checksum error in mobility header: binding update at Correspondent Node			
References:	RQ_001_1398, RQ_001_1	RQ_001_1398, RQ_001_1399			
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1399_03		
) ensure that	TIM manadana Dindina				
	containing incorr		e		
then { }	IUT ignores Binding_U	ipaate }			

		Test Purpose	
dentifier:	TP_MOB_1399_04		
Summary:	Ignore message with cl	necksum error in mobility header: b	pinding update at Home Agent
References:	RQ_001_1398, RQ_00	1_1399	
UT Role:	Home_Agent	Test case:	TC_MOB_1399_04
} ensure that { when {		ng_Update <b>from</b> Mobile_Node orrect checksum }	e

		Test Purpose	
Identifier:	TP_MOB_1399_05		
Summary:	Ignore message with ch	necksum error in mobility header: I	Home Test at Mobile Node
References:	RQ_001_1398, RQ_00	1_1399	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1399_05
) ensure that		- cest <b>from</b> Home_Agent <b>in</b> to prrect checksum }	unneled_mode

Test Purpose			
Identifier:	TP_MOB_1399_06		
Summary:	Ignore message with checksum error in mobility header: care-of test at Mobile Node		
References:	RQ_001_1398, RQ_001_1399		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1399_06
) ensure that { when { I	<pre>ng sent Care_of_Test_Init UT receives Care_of_Test     containing incorrect c UT ignores Care of Test }</pre>	from Correspondent	_Node

		Test Purpose	
dentifier:	TP_MOB_1401_01	•	
Summary:	Reaction to message with unknown MH type field mobility header		
References:	RQ_001_1401, RQ_001_1400,	001_1401, RQ_001_1400, RQ_001_1427	
IUT Role:	Correspondent_Node, Home Agent, Mobile Node	Test case:         TC_MOB_1401_01	
with { IUT read	dy to receive Mobility_He	eader <b>in an</b> IPv6Pa	cket
ensure that			
$\{$ when $\{$	IUT receives an IPv6	Packet	
	containing a Mob	ility_Header	
	containing an un	recognized MH_type	e_field }
then {	IUT <b>discards</b> IPv6Pac	ket	
	and IUT sends Binding Er:	ror	
	containing status	S	
	set to 2 unre	ecognized MH Type	
	and containing home_a	address_field	
	set to unspec	cified_address }	
}			

Test Purpose				
Identifier:	TP_MOB_1404_01			
Summary:	Ignore Home Test Init message with payload proto other than 59			
References:	RQ_001_1404, RQ_001_1403, RQ_001_1405, RQ_001_1406			
UT Role:	Correspondent_Node Test case: TC_MOB_14	04_01		
with { IUT rea }	ady for Return_Routability_Procedure			
ensure that				
$\{ \texttt{when} \}$	IUT receives Home Test Init from Home Agent			
	containing payload proto_field			
	not set to 59 }			
then {	IUT ignores Home Test Init			
	and optionally			
(	(IUT <b>sends</b> ICMP_Parameter_Problem <b>to</b> Home_Agent			
	containing code			
	set to 0 erroneous header field encountered			
	and containing pointer			
	<pre>indicating payload proto field) }</pre>			
}				

	Те	st Purpose		
Identifier:	TP_MOB_1404_02	•		
Summary:	Ignore care-of test Init message with	Ignore care-of test Init message with payload proto other than 59		
References:	RQ_001_1404, RQ_001_1403, RQ_	001_1405, RQ_001_14	406	
UT Role:	Correspondent_Node Te	est case:	TC_MOB_1404_02	
with { IUT rea	dy for Return Routability Pr	ocedure		
}				
ensure that				
$\{ \ \texttt{when} \ \{$	IUT receives Care_of_Test_In	it <b>from</b> Mobile_No	de	
	containing payload proto	field		
	not set to 59 }			
then {	IUT ignores Care_of_Test_Ini	t		
	and optionally			
	IUT sends ICMP_Parameter_Pro	blem <b>to</b> Mobile_No	de	
	<b>containing</b> code	—		
	set to 0 erroneous h	eader_field_encou	ntered	
	and containing pointer			
	indicating payload proto	_field) }		
}				

	Test Purpose		
Identifier:	TP_MOB_1404_03		
Summary:	Ignore binding update message with payload proto other than 59		
References:	RQ_001_1404, RQ_001_1403, RQ_001_1405, RQ_001_1406		
IUT Role:	Correspondent_Node Test case: TC_MOB_1404_03		
with { IUT havi	ring completed Return_Routability_Procedure		
}			
ensure that			
$\{ \text{ when } \{ \} \}$	IUT receives Binding_Update from Mobile_Node		
	containing payload_proto_field		
	<pre>not set to 59 }</pre>		
then $\{ \ \}$	IUT ignores Binding_Update		
ā	and optionally		
( ]	IUT <b>sends</b> ICMP_Parameter_Problem <b>to</b> Mobile_Node		
	containing code		
	<b>set to</b> 0 erroneous_header_field_encountered		
ā	and containing pointer		
	<pre>indicating payload_proto_field) }</pre>		
}			

	1	Fest Purpose	
Identifier:	TP_MOB_1404_04	•	
Summary:	gnore binding update message with payload proto other than 59		
References:	RQ_001_1404, RQ_001_1403, RQ_001_1405, RQ_001_1406		
IUT Role:	Home_Agent	Test case:	TC_MOB_1404_04
<pre>with { IUT read</pre>	y to receive Binding_Updat	te	
}			
ensure that			
$\{ \text{ when } \{ I \}$	UT receives Binding_Update	e <b>from</b> Mobile_Node	
	containing payload_prot	co_field	
	not set to 59 $\}$		
then $\{ I \}$	UT <b>ignores</b> Binding_Update		
a	nd optionally		
(I	UT <b>sends</b> ICMP_Parameter_P	roblem <b>to</b> Mobile_Node	
	containing code		
	set to 0 erroneous	_header_field_encountered	đ
a	nd containing pointer		
	<pre>indicating payload_prot</pre>	co_field) }	
}			

	1	Fest Purpose			
Identifier:	TP_MOB_1404_05				
Summary:	gnore Home Test message with payload proto other than 59				
References:	RQ_001_1404, RQ_001_1403, R	Q_001_1404, RQ_001_1403, RQ_001_1405, RQ_001_1406			
IUT Role:	Mobile_Node	Test case:	TC_MOB_1404_05		
with { IUT havi	ng sent Home_Test_Init				
}					
ensure that					
$\{ \text{ when } \{ I \}$	UT receives home_test from	<b>m</b> Home_Agent <b>in</b> tunneled_	mode		
	containing payload_pro	to_field			
	not set to 59 $\}$				
then $\{ I \}$	UT <b>ignores</b> home_test				
a	nd optionally				
(I	UT sends ICMP_Parameter_P:	roblem <b>to</b> Home_Agent			
	containing code				
	set to 0 erroneous	_header_field_encountered			
a	nd containing pointer				
	indicating payload_pro	to_field) }			
}					

		Test Purpose	
Identifier:	TP_MOB_1404_06	•	
Summary:	Ignore care-of test mes	sage with payload proto other tha	n 59
References:	RQ_001_1404, RQ_00	1_1403, RQ_001_1405, RQ_001_	_1406
IUT Role:	Mobile_Node	Test case:	TC_MOB_1404_06
with { IUT ha	ving sent Care of Te	est Init	
Ì		—	
ensure that			
$\{ \text{ when } \}$	IUT receives Care	of_Test <b>from</b> Corresponden	t Node
		load_proto_field	—
	not set to 59		
then {	IUT ignores home to	est	
	and optionally		
	(IUT sends ICMP Para	ameter Problem <b>to</b> Corresp	ondent Node
	containing code	e	—
	set to 0 e	rroneous header field enc	ountered
	and containing poin		
	indicating pay	load proto field) }	
}			

	Test Purpose	
Identifier:	TP_MOB_1408_01	
Summary:	Ignore Home Test Init message with erroneous length field	
References:	RQ_001_1408, RQ_001_1407, RQ_001_1409, RQ_001_1410	)
IUT Role:	Correspondent_Node Test case:	TC_MOB_1408_01
with { IUT rea	ady for Return_Routability_Procedure	
Ì		
ensure that		
$\{ \texttt{when } \{$	IUT receives Home_Test_Init from Home_Agent	
	containing header_length_field	
	<pre>set to less than the required length }</pre>	
then $\{$	IUT ignores Home Test Init	
	and optionally	
	(IUT sends ICMP_Parameter_Problem to Home_Agent	
	containing code	
	set to 0 erroneous_header_field_encount	ered
	and containing pointer	
	<pre>indicating header_length_field) }</pre>	
}	/	

	•	Test Purpose			
Identifier:	TP_MOB_1408_02				
Summary:	Ignore care-of test Init message w	ith erroneous length field			
References:	RQ_001_1408, RQ_001_1407, R	2_001_1408, RQ_001_1407, RQ_001_1409, RQ_001_1410			
		Test case:	TC_MOB_1408_02		
with { IUT read	y for Return_Routability_	Procedure			
}					
ensure that					
$\{ \text{ when } \{ I \}$	UT <b>receives</b> Care_of_Test_				
	containing header_leng				
	set to less than the $r$	equired_length }			
then $\{ I \}$	UT <b>ignores</b> Care_of_Test_I	nit			
a	nd optionally				
(I	UT <b>sends</b> ICMP_Parameter_P	roblem <b>to</b> Mobile_Node			
	containing code				
	set to 0 erroneous	header_field_encounter	red		
a	nd containing pointer				
	indicating header_leng	th_field) }			
}					

	Test Purpose	
Identifier:	TP_MOB_1408_03	
Summary:	Ignore binding update message with erroneous length field	
References:	RQ_001_1408, RQ_001_1407, RQ_001_1409, RQ_001_1410	
IUT Role:	Correspondent_Node Test case:	TC_MOB_1408_03
with { IUT hav:	ing completed Return Routability Procedure	
}		
ensure that		
{ <b>when</b> { ]	IUT receives Binding Update from Mobile Node	
t t	containing header length field	
	set to less than the required length }	
then {	IUT <b>ignores</b> Binding Update	
Ì	and optionally	
( ]	IUT sends ICMP Parameter Problem to Mobile Node	
	containing code	
	set to 0 erroneous header field encounter	ered
ä	and containing pointer	
	<pre>indicating header length field) }</pre>	
}		

Summary:     Ignol       References:     RQ_       IUT Role:     Hom       with { IUT ready to       }       ensure that       { when { IUT ready to	MOB_1408_04 pre binding update message wit _001_1408, RQ_001_1407, RQ	h erroneous length field	
References:     RQ_       IUT Role:     Hom       with { IUT ready to       }       ensure that       { when { IUT ready to	<u> </u>	h erroneous length field	
IUT Role:     Hom       with { IUT ready to       }       ensure that       { when { IUT ready to	001 1408, RQ 001 1407, RQ		
with { IUT ready to } ensure that { when { IUT r		_001_1409, RQ_001_1410	
) ensure that { when { IUT r	ne_Agent 1	Test case:	TC_MOB_1408_04
{ when { IUT r	<b>o receive</b> Binding_Updat	е	
and c	receives Binding_Update containing header_lengt set to less than the re- ignores Binding_Update optionally sends ICMP_Parameter_Pro- containing code set to 0 erroneous_ containing pointer indicating header_lengt	h_field quired_length } oblem to Mobile_Node header_field_encountere	ed

		Test Purpose		
Identifier:	TP_MOB_1408_05			
Summary:	Ignore Home Test mes	sage with erroneous length field		
References:	RQ_001_1408, RQ_00	01_1407, RQ_001_1409, RQ_001_	_1410	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1408_05	
with { IUT ha	ving sent Home_Test	_Init		
}				
ensure that				
$\{ \texttt{when } \}$	IUT receives home	test <b>from</b> Home_Agent <b>in</b> t	unneled_mode	
	containing hea	containing header length field		
	set to less th	<pre>an the required_length }</pre>		
then {	IUT ignores home_t	UT ignores home_test		
	and optionally			
	(IUT <b>sends</b> ICMP Parameter Problem <b>to</b> Home Agent			
	containing cod	e		
	set to 0 e	rroneous_header_field_enc	ountered	
	and containing poi	nter		
	indicating hea	der_length_field) }		
}				

	Test Purpose			
Identifier:	TP_MOB_1408_06			
Summary:	Ignore care-of test message with erroneous length field			
References:	RQ_001_1408, RQ_001_1407, RQ_001_1409, RQ_001_1410			
IUT Role:	Mobile_Node Test case:	TC_MOB_1408_06		
with { IUT hav	ring sent Care_of_Test_Init			
}				
ensure that				
$\{$ when $\{$	<pre>IUT receives Care_of_Test from Correspondent_Noc</pre>	le		
	<pre>containing header_length_field</pre>			
	set to less than the required_length $\}$			
then $\{$	IUT ignores home_test			
	and optionally			
(	[IUT <b>sends</b> ICMP_Parameter_Problem <b>to</b> Corresponden	nt_Node		
	containing code			
	<pre>set to 0 erroneous_header_field_encounte</pre>	ered		
	and containing pointer			
	<pre>indicating header_length_field) }</pre>			
}				

### A.1.4.2 Packet processing

### A.1.4.2.1 Receiving packets with home address option

		Test Purpose		
Identifier:	TP_MOB_1411_01	TP_MOB_1411_01		
Summary:	Test reaction on home address op	otion indicating non-u	inicast address	
References:	RQ_001_1411			
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1411_01	
 ensure that { when { I	UT receives IPv6Packet containing Home_Address not indicating a unical	s_option	n'	
<b>then</b> { I }	<pre>UT discards IPv6Packet }</pre>			

	Test Purpose		
Identifier:	TP_MOB_1413_01		
Summary:	Test reaction on home address option without existing b	binding	
References:	RQ_001_1413, RQ_001_1427		
IUT Role:	Correspondent_Node Test case:	TC_MOB_1413_01	
with { IUT	ready to receive Home_Address_option		
and IUT	having no Binding_Cache_entry		
}			
ensure that			
$\{$ when $\{$	IUT receives IPv6Packet		
	<b>not containing</b> binding_update_option		
	and containing Home_Address_option }		
then {	IUT <b>discards</b> IPv6Packet		
a	and IUT sends Binding_Error		
	containing status		
	<pre>set to 1 unknown_binding_for_Home_Address_destination_option</pre>		
	and containing home_address		
	<pre>set to home_address from Home_</pre>	Address_option }	
}			

		Test Purpose	
dentifier:	TP_MOB_1414_01		
Summary:	Test reaction on home addre	ess option without correspon	ding binding
References:	RQ_001_1414, RQ_001_142	27	
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1414_01
with { IU	T ready to receive Home	Address_option	
and IU	T <b>having 1 or more</b> Bind:	ing_Cache_entry	
}			
ensure that			
$\{ \texttt{when } \{$	IUT receives IPv6Pa	acket	
	not containing bind		
	and containing Home	e_Address_option	
	indicating 'add	dress for which no bi	nding exists' }
then $\{$	IUT <b>discards</b> IPv6Pa	acket	
	and IUT sends Binding_I	Error	
	containing stat	tus	
	set to 1 unknow	wn_binding_for_Home_A	ddress_destination_option
	and containing home	e_address	_
	set to home	e_address <b>from</b> Home_A	ddress_option }
}			

		Test Purpose	
Identifier:	TP_MOB_1415_01		
Summary:	Test reaction on home address op	tion from source that is	not a known care-of address
References:	RQ_001_1415, RQ_001_1427		
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1415_01
	ready to receive Home_Add		
and IUT	having a registered care_c	of_address	
ensure that			
$\{ when \}$	IUT receives IPv6Packet	t	
	containing source_a	address	
	not set to register	<b>red</b> care_of_addres	55
	and not containing binding update option		
	and containing Home_Address_option		
	indicating 'address	s for which no bir	nding exists' }
then {	IUT discards IPv6Packet	t	
i i i i i i i i i i i i i i i i i i i	and IUT sends Binding Error	r	
	containing status		
	set to 1		
	unknown bind	ding for Home Addı	ress destination option
	and containing home_add	dress	
		dress <b>from</b> Home_Ad	ldress_option }
}			

<b>F</b>		-	
		Test Purpose	
Identifier:	TP_MOB_1426_01		
Summary:	Test reaction to message with unl	known MH type field m	nobility header from non-unicast address
References:	RQ_001_1426		
IUT Role:	Correspondent_Node,	Test case:	TC_MOB_1426_01
	Home_Agent, Mobile_Node		
with { IUT read	<b>dy to receive a</b> Mobility_H	eader	
}			
ensure that			
$\{ \text{ when } \{ \} \}$	IUT <b>receives</b> IPv6Packet		
	containing Mobility_Header		
	containing	an unrecognized	MH_type_field
ä	nd containing source address		
	<b>not set to a</b> unicast_a	ddress }	
then { ]	IUT <b>sends no</b> response 'doe	s not send a Bin	ding Error message' }
}			

### A.1.4.3 Sending binding error messages

### A.1.4.4 Return routability procedure

#### A.1.4.4.1 Receiving home test init messages

		Test Purpose	
Identifier:	TP_MOB_1430_01		
Summary:	Test reaction on home test Init message with Home Address destination option		
References:	RQ_001_1430		
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1430_01
$\left. iggright\}  ight\}$ ensure that $\left\{  ight.$ when $\left\{  ight.  ight]$	y for Return_Routabili UUT receives Home_Test_ containing home_add UUT discards Home_Test_	 Init <b>from</b> Home_Agent lress_destination_opt	tion }

#### A.1.4.4.2 Receiving care-of test init messages

		Test Purpose		
Identifier:	TP_MOB_1431_01	TP_MOB_1431_01		
Summary:	Test reaction on care-of test	Test reaction on care-of test Init message with Home Address destination option		
References:	RQ_001_1431			
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1431_01	
) ensure that	<pre>iy for Return_Routabil UUT receives Care_of_T</pre>	·	Node	
then { ] }	containing home_ad IUT discards Care_of_I	ldress_destination_opt Pest_Init }	tion }	

### A.1.4.5 Processing bindings

### A.1.4.5.1 Receiving binding updates

Test Purpose		
dentifier:	TP_MOB_1432_01	
Summary:	Test reaction on binding update message without unicast routable home address	
References:	RQ_001_1432, RQ_001_1448	
UT Role:	Correspondent_Node Test case:	TC_MOB_1432_01
} ensure that { when { I	UT receives Binding_Update from Mobil containing Home_Address_option containing home address	_
then { I }	<pre>not set to a unicast_ro UT discards Binding_Update }</pre>	

	Test Purpose		
Identifier:	TP_MOB_1432_02		
Summary:	Test reaction on binding update message without unicast ro	utable home address	
References:	RQ_001_1432, RQ_001_1448, RQ_001_1478, RQ_001_14	.79	
IUT Role:	Correspondent_Node Test case:	TC_MOB_1432_02	
<pre>} ensure that { when { I a a</pre>	<pre>Ing completed Return_Routability_Procedure IUT receives Binding_Update from Mobile_Node     containing source_address     not set to a unicast_routable_address and not containing Home_Address_option } IUT discards Binding_Update }</pre>		

		Test Purpose	
Identifier:	TP_MOB_1433_01		
Summary:	Test reaction on binding update	Test reaction on binding update message when there are no Binding Cache entries	
References:	RQ_001_1433, RQ_001_1470	)	
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1433_01
with { IUT	having completed Return	n_Routability_Procedu	ıre
and IU1	having no binding_cache	e_entry	
}			
ensure that			
$\{ \texttt{when } \{$	IUT receives Binding_Upo	date <b>from</b> Mobile_Node	2
	containing any seque		
	and containing the A_Bit	t set to 0 }	
then $\{$	IUT <b>sends no</b> response }		
}			

		Test Purpose	
Identifier:	TP_MOB_1433_02		
Summary:	Test reaction on binding update message when there are no Binding Cache entries		
References:	RQ_001_1433, RQ_001_1	470	
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1433_02
<pre>} ensure that</pre>			
$\{ \text{ when } \{$	IUT receives Binding_ containing any sea and containing the A	÷ —	e
	IUT sends Binding_Ack		

	Test Purpose	
Identifier:	TP_MOB_1436_01	
Summary:	Test reaction on binding update message when auther	ntication fails
References:	RQ_001_1436, RQ_001_1437, RQ_001_1448	
IUT Role:	Correspondent_Node Test case:	TC_MOB_1436_01
with { IUT havi } ensure that	ng completed Return_Routability_Procedur	e
$\{ \text{ when } \{ I \}$	UT receives Binding_Update from Mobile_N containing the H_bit set to 0 nd containing binding_authorization_data containing an invalid auth	_option
<b>then</b> { I }	UT <b>discards</b> Binding_Update }	_ ,

	Test Purpose		
Identifier:	TP_MOB_1437_01		
Summary:	Test reaction on binding update message when authentication fails		
References:	RQ_001_1437, RQ_001_1438, RQ_001_1448		
IUT Role:	Correspondent_Node Test case:	TC_MOB_1437_01	
ensure that $\{$ when $\{$	<pre>ng completed Return_Routability_Procedure IUT receives Binding_Update from Mobile_N containing H_Bit set to 0 nd not containing binding_authorization_data IUT discards Binding Update }</pre>		

dentifier:	TD MOD 4400 04		
	TP_MOB_1439_01		
Summary:	Test reaction on binding up	date message when authentic	cation fails
References:	RQ_001_1439, RQ_001_14	448	
UT Role:	Correspondent_Node	Test case:	TC_MOB_1439_01
	containing H_Bit s and containing Binding	Jpdate <b>from</b> Mobile_Node set to 0 g_Authorization_Data_op evious Binding Authori:	ption

Test Purpose			
Identifier:	TP_MOB_1440_01		
Summary:	Test reaction on binding update message when authentication fails		
References:	RQ_001_1440, RQ_001_14	148	
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1440_01
and contai	IUT receives Binding_U containing H_Bit s ining binding_authoriz not containing trail IUT discards Binding_U	zation_data_option Ling_padding }	

		Test Purpose	
Identifier:	TP_MOB_1441_01		
Summary:	Test reaction on binding update message with Nonce Indices option		
References:	RQ_001_1441, RQ_001_1448		
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1441_01
) ensure that { when { I a	<pre>ng completed Return_Routa UT receives Binding_Updat     containing H_Bit set t ind containing nonce_indic UT discards Binding_Updat</pre>	<pre>e from Mobile_1 o 1 es_option }</pre>	

	Test Purpose	
Identifier:	TP_MOB_1442_01	
Summary:	Test reaction on binding update message when there ar	re Binding Cache entries
References:	RQ_001_1434, RQ_001_1442, RQ_001_1811	
IUT Role:	Correspondent_Node Test case:	TC_MOB_1442_01
with { IUT	having completed Return_Routability_Proceed	dure
and IUT	having a binding cache entry for the mobil	le node
}		—
ensure that		
$\{ \text{ when } \}$	IUT receives Binding Update from Mobile Nod	de
· · ·	containing sequence number	
	less than or equal to the previou	<b>us</b> sequence number }
then {	IUT sends Binding Acknowledgement	,
· ·	containing status	
	set to 135 sequence number out of winder	OW
	and containing sequence number	
	indicating previous accepted sequence	number }
}	· · · · · · · · · · · · · · · · · · ·	)

	Test Purpose
Identifier:	TP_MOB_1443_01
Summary:	Test reaction on binding update message when there are Binding Cache entries
References:	RQ_001_1434, RQ_001_1443, RQ_001_1444
IUT Role:	Correspondent_Node Test case: TC_MOB_1443_01
with { IUT h	having completed Return_Routability_Procedure
} ensure that { when { I	<pre>having a binding_cache_entry for the home_address IUT receives Binding_Update from Mobile_Node     containing H_Bit     not set to previous received H_Bit for this home_address } IUT sends Binding_Acknowledgement     containing status         set to 139 registration_type_change_disallowed }</pre>
}	

	Test Purpose	
Identifier: 1	TP_MOB_1445_01	
Summary:	Test reaction on binding update message when nonces have expired	
References:	RQ_001_1445, RQ_001_1435, RQ_001_1471, RQ_001_1474, RQ_001_1475	
IUT Role: (	Correspondent_Node Test case: TC_MOB_1445_01	
with { IUT h	having completed Return_Routability_Procedure	
} ensure that { when { IU an then { IU	<pre>having a binding_cache_entry for the home_address UT receives Binding_Update from Mobile_Node     containing expired home_nonce_index nd containing valid care_of_nonce_index } UT sends Binding_Acknowledgement     containing status         set to 136 expired_home_nonce_index ot containing binding_authorization_data_mobility_option }</pre>	

	Test Purpose	
Identifier:	TP_MOB_1446_01	
Summary:	Test reaction on binding update message when nonces have expired	
References:	RQ_001_1446, RQ_001_1435, RQ_001_1471, RQ_001_1474, RQ_001_1475	
IUT Role:	Correspondent_Node Test case: TC_MOB_1446_01	
with { IUT	T having completed Return_Routability_Procedure	
and IUT	T <b>having a</b> binding_cache_entry <b>for the</b> home_address	
}		
ensure that		
$\{$ when $\{$	IUT <b>receives</b> Binding_Update <b>from</b> Mobile_Node	
	containing a valid home_nonce_index	
	<b>and containing an expired</b> care_of_nonce_index }	
then $\{$	IUT <b>sends</b> Binding_Acknowledgement	
	containing status	
	<pre>set to 137 expired_care_of_nonce_index</pre>	
	<pre>and not containing binding_authorization_data_mobility_option }</pre>	
}		

	Test Purpose	
Identifier:	TP_MOB_1447_01	
Summary:	Test reaction on binding update message when nonces have expired	
References:	RQ_001_1447, RQ_001_1435, RQ_001_1471, RQ_001_1474, RQ_001_1475	
IUT Role:	Correspondent_Node Test case: TC_MOB_1447_01	
with { IUT	having completed Return_Routability_Procedure	
and IUT	having a binding_cache_entry for the home_address	
ensure that		
$\{ \texttt{when } \{$	<pre>IUT receives Binding_Update from Mobile_Node containing an expired home_nonce_index</pre>	
then {	<pre>and containing an expired care_of_nonce_index } IUT sends Binding_Acknowledgement     containing status     set to 138 Expired_nonces and not containing binding_authorization_data_mobility_option }</pre>	
}		

A.1.4.5.2	Requests to delete a	binding
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	Test Purpose		
Identifier:	TP_MOB_1465_01		
Summary:	Test reaction on binding update message with zero lifetime		
References:	RQ_001_1465, RQ_001_1466, RQ_001_1470		
IUT Role:	Correspondent_Node Test case:	TC_MOB_1465_01	
with { IUT	having completed Return_Routability_Procedure		
and IUT	having 1 or more binding_cache_entry		
}			
ensure that			
$\{ \text{ when } \{ \} \}$	IUT receives Binding_Update from Mobile_Node		
	containing H_Bit set to 0		
ā	and containing lifetime set to 0		
ā	and containing A_Bit set to 0 }		
then { ]	then { IUT sends no response }		
}			

		Test Purpose	
Identifier:	Immary:         Test reaction on binding update message with zero lifetime		
Summary:			le
References:			
IUT Role:	Correspondent_Node	Test case:	TC_MOB_1465_02
and IUT } ensure that { when { ] a	having 1 or more bir	_Update from Mobile_Node set to 0 ime set to 0 set to 1 }	

A.1.4.5.3	Sending	binding	acknowl	edgements

	Test Purpose		
Identifier:	TP_MOB_1470_01		
Summary:	Test sending of Binding Acknowledgement message to accept binding update message		
References:	RQ_001_1470, RQ_001_1473, RQ_001_1476, RQ_001_1477,RQ_001_1480, RQ_001_1066, RQ_001_1067		
IUT Role:	Correspondent_Node Test case: TC_MOB_1470_01		
<pre>with { IUT hav:         }</pre>	ing completed Return_Routability_Procedure		
ensure that			
$\{$ when $\{$ $\}$	<pre>IUT receives a valid Binding_Update from Mobile_Node</pre>		
	set to a unicast_address not equal to the home_address		
	and containing A_Bit set to 1 }		
then { ]	IUT <b>sends</b> Binding_Acknowledgement		
	containing destination_address		
	set to the received source_address		
ä	and containing status set to less than 128		
ä	and containing sequence_number		
	set to sequence_number received in the Binding_Update		
ä	and containing type_2_routing_header		
ä	and containing binding authorization data mobility option		
	containing authenticator_field		
	set to		
	'First (96, HMAC_SHA1 (Kbm,		
	(care-of address   correspondent   BA)))' }		
}			

	Test Purpose		
Identifier:	TP_MOB_1481_01		
Summary:	Test sending of Binding Acknowledgement message to accept binding update message from home		
-	address		
References:	RQ_001_1470, RQ_001_1473, RQ_001_1476, RQ_001_1477, RQ_001_1481, RQ_001_1066,		
IUT Role:	RQ_001_1067         Test case:         TC_MOB_1481_01		
with { IUT havi	ng completed Return_Routability_Procedure		
}			
ensure that			
$\{ \text{ when } \{ I \}$	UT receives valid Binding_Update from Mobile_Node		
	containing source_address		
	set to home_address		
a	<pre>ind containing A_Bit set to 1 }</pre>		
then $\{ I \}$	UT sends Binding_Acknowledgement		
	<b>containing</b> destination_address		
	set to received source address		
а	nd containing status set to less than 128		
	nd containing sequence_number		
	set to sequence number received in the Binding Update		
and n	ot containing type_2_routing_header		
	nd containing binding authorization data mobility option		
	containing authenticator field		
	set to		
	'First (96, HMAC_SHA1 (Kbm,		
	(care-of address   correspondent   BA)))' }		
}	(care of address   correspondenc   bA/// j		

A.1.4.5.4 Sending binding refresh requests

		Test Purpose	
dentifier:	TP_MOB_1483_01		
Summary:	Test generation of Binding I	Refresh Request message	
References:	RQ_001_1483	· · · · · · · · · · · · · · · · · · ·	
UT Role:	Correspondent_Node	Test case:	TC_MOB_1483_01
IUT } ensure that { when { ]	having a binding_cach ready to send Binding IUT is requested to se IUT sends Binding_Refi	g_Refresh_Request end a Binding_Refresh resh_Request	_
}	containing destina set to home_ad	ation_address ddress <b>of</b> mobile_node	• }

# A.1.5 Home agent operation

# A.1.5.1 Processing bindings

### A.1.5.1.1 Primary care-of address registration

		Test Purpose		
Identifier:	TP_MOB_1432_03			
Summary:	Test reaction on binding update message without unicast routable home address			
References:	RQ_001_1432, RQ_00	1_1448		
UT Role:	Home_Agent	Test case:	TC_MOB_1432_03	
<pre>vith { IUT re</pre>	ady to receive Bind:	ing Update		
}		—		
ensure that				
	TUT receives Bindir	UT receives Dinding Undate from Mobile Node		
( when (		<pre>UT receives Binding_Update from Mobile_Node containing source address</pre>		
	-	—		
	set to care	e_of_address		
	and containing a Ho	ome_Address_option		
	Co	ontaining home address		
	no	ot set to a unicast routal	ble address }	
then {		JT discards Binding Update }		
l chiefi (	ioi arboarab billati			
ſ				

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		Test Purpose		
Identifier:	TP_MOB_1441_02			
Summary:	Test reaction on binding update message with Nonce Indices option			
References:	RQ_001_1441, RQ_00	RQ_001_1441, RQ_001_1448		
IUT Role:	Home_Agent	Test case:	TC_MOB_1441_02	
ensure that	containing sour	J_1 ng_Update <b>from</b> Mobile_Node	e	
then { }	and containing H_B: and containing none IUT discards Bindin	ce_indices_option }		

	Test Purpose		
Identifier:	TP_MOB_1442_02		
Summary:	Test reaction on binding update message when there are Binding Cache entries		
References:	RQ_001_1434, RQ_001_1442, RQ_001_1811		
IUT Role:	Home_Agent Test case:	TC_MOB_1442_02	
with { IUT havi:	<b>ng a</b> binding_cache_entry <b>for the</b> Mobile_	Node	
}			
ensure that			
$\{ \text{ when } \{ I \}$	UT <b>receives</b> Binding_Update <b>from</b> Mobile_1	Node	
	containing source_address		
	<pre>set to care_of_address</pre>		
a	nd containing sequence number		
	less than or equal to the previou	<b>us</b> sequence number	
	received f:	rom the Mobile Node }	
then $\{ I \}$	UT <b>sends</b> Binding Acknowledgement		
	containing status		
	set to 135 sequence number out or	f window	
a	nd containing sequence number	-	
	set to previous accepted sequence	e number }	
}		,	

		Test Purpose		
Identifier:	TP_MOB_1493_01			
Summary:	Test reaction on bindin	Test reaction on binding update message when there are Binding Cache entries		
References:	RQ_001_1493			
IUT Role:	Home_Agent	Test case:	TC_MOB_1493_01	
with { IUT rea	dy to receive Bind	ing_Update		
}				
ensure that				
$\{ \texttt{when } \{$	IUT receives Bindi	ng_Update <b>from</b> Mobile_Node	2	
	containing sou	rce_address		
	set to car	e_of_address		
	and containing Home_Address_option			
	set to 'no:	n on-link address' }		
then {	IUT <b>discards</b> Bindi	ng_Update		
	and optionally			
	(IUT sends Bin	ding Acknowledgement		
	containing	g status		
	set to	• 132 not_home_subnet) }		
}				

		Test Purpose		
Identifier:	TP_MOB_1496_01	TP_MOB_1496_01		
Summary:	Test reaction on binding upo	Test reaction on binding update message when Home Agent functionaliy is not implemented		
References:	RQ_001_1496			
IUT Role:	Correspondent_Node, Mobile_Node	Test case:	TC_MOB_1496_01	
<pre> } ensure that { when {     then {         then {         } } }</pre>	IUT receives valid Bin IUT sends Binding_Ackn containing status set to 131 hom	<u></u>		

	Test Purpose		
Identifier:	TP_MOB_1502_01		
Summary:	Test reaction on binding update message when Duplicate Address Detection fails		
References:	RQ_001_1502, RQ_001_1501, RQ_001_1503		
UT Role:	Home_Agent Test case: TC_MOB_1502_01		
with { IUT re	eady to receive Binding Update		
}			
ensure that			
$\{ \texttt{when } \{$	{ IUT receives Binding_Update from Mobile_Node		
	containing source_address		
	<pre>set to care_of_address }</pre>		
then	{ IUT <b>sends</b> Neighbor_Solicitation IUT starts		
	containing source_address Duplicate		
	<b>set to</b> unspecified_address Address		
	and containing destination_address Detection (DAD)		
	<pre>set to care_of_address }</pre>		
when	{ IUT receives Neighbor_Advertisement DAD fails		
	containing source_address		
	<pre>set to care_of_address}</pre>		
then	{ IUT <b>sends</b> Binding_Acknowledgement		
	containing status		
	<pre>set to 134 Duplicate_Address_Detection_failed }</pre>		
}			

	Test Purpose				
Identifier:	TP_MOB_1510_01				
Summary: Test reaction on binding update message when Duplicate Address Detection succeeds					
References:					
RQ_001_2013, RQ_001_2029					
IUT Role:	Home_Agent Test case: TC_MOB_1510_01				
<pre>with { IUT read</pre>	y to receive Binding Update				
}	_				
ensure that					
$\{$ when $\{$ I	IUT receives Binding_Update from Mobile_Node				
	containing source_address				
	<b>set to</b> care_of_address				
a	and containing A_Bit set to 1 }				
then $\{ I \}$	IUT <b>sends</b> Neighbor_Solicitation IUT starts				
	containing source_address Duplicate				
	set to an unspecified address Address				
a	and containing destination_address Detection (DAD)				
	<pre>set to care_of_address }</pre>				
when $\{ I \}$	IUT receives no Neighbor_Advertisement DAD succeeds				
	containing source_address				
	<pre>set to care_of_address }</pre>				
then $\{ I \}$	IUT <b>sends</b> Binding_Acknowledgement				
	containing source_address				
	set to address of Home Agent				
a	and containing destination_address				
	set to care_of_address				
a	and containing Type_2_Routing_header				
	indicating home_address				
a	and containing ESP_header				
a	and containing status				
	set to 0 Binding_Update_accepted				
a	and containing sequence_number				
	<pre>set to sequence_number received in Binding_Update</pre>				
a	and containing a valid lifetime }				
}					

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		Test Purpose		
dentifier:	TP_MOB_1510_02	•		
Summary:	Test reaction on bindi	ng update message when D	uplicate Address Detection succeeds, A = 0	
References: RQ_001_1510, RQ_001_1501, RQ_001_1511, RQ_001_1516, RQ_001_1517, RQ_001_20				
RQ_001_2013, RQ_001_2029				
UT Role:	Home_Agent	Test case:	TC_MOB_1510_02	
with { IUT rea	dy to receive Bin	ling_Update		
}				
ensure that				
$\{$ when $\{$		ing_Update <b>from</b> Mobil	e_Node	
	containing so	_		
		re_of_address		
	and containing A_			
then $\{$	IUT <b>sends</b> Neighbo		IUT starts	
	containing so		Duplicate	
	set to an uns	pecified_address	Address	
	and containing de	stination_address	Detection (DAD)	
	<b>set to</b> ca	re_of_address }		
when $\{$	IUT receives no N	eighbor_Advertisement	DAD succeeds	
	containing so			
	<b>set to</b> ca	re_of_address }		
t then	IUT <b>sends</b> Binding			
	containing so	urce_address		
	set to ad	dress <b>of</b> Home_Agent		
	and containing de	stination_address		
	set to ca	re_of_address		
	and containing Ty	pe_2_Routing_header		
	indicating ho	ne address		
	and containing ES	P header		
	and containing st			
	set to 0	Binding Update accept	ed	
	and containing se			
		quence_number receive	d in Binding Update	
	and containing a			
}	5.4	5		

		Test Purpose		
Identifier: TP MOB 1512 01				
Summary:	Test reaction on bindin	g update message when [	Duplicate Address Detection succeeds, depreca	ated
subnet prefix				
References: RQ_001_1512, RQ_001_1510, RQ_001_1501, RQ_001_1511			RQ 001 1511	
IUT Role:	Home_Agent	Test case:	TC_MOB_1512_01	
with { IUT rea	ady to receive Bind	ing Update		
) }	_			
ensure that				
$\{ \ \texttt{when} \ \{$	IUT receives Bindi	ng_Update <b>from</b> Mobil	ile_Node	
	containing sou		—	
	<b>set to</b> car	e_of_address		
	and containing	A Bit set to 1		
	and containing	Home Address option	n	
	indicating	home address having	ng deprecated subnet prefix }	
then {	IUT sends Neighbor	Solicitation	IUT starts	
	containing sou	_ rce address	Duplicate	
	set to uns	rce_address pecified_address	Address	
	and containing des			
	set to car	e of address }		
when {		ighbor Advertisement	nt DAD succeeds	
	containing sou	rce address		
	set to car	e of address }		
then {	IUT sends Binding	Acknowledgement		
	containing sta			
	-		discovery necessary }	
}		+		

	Test Purpose				
Identifier:	TP_MOB_1513_01				
Summary:	Test reaction on binding update message when Duplicate Address Detection succeeds, K = 1				
References:					
IUT Role:	Home_Agent Test case:	TC_MOB_1513_01			
	<b>y to receive</b> Binding_Update				
	amically established IPsec_security_a				
		the used key management protocol to the			
new care-of add	ress every time it moves'				
}					
ensure that					
$\{ \text{ when } \{ I \}$	UT receives Binding_Update from Mobi	.le_Node			
	containing source_address				
	<pre>set to care_of_address</pre>				
	nd containing A_Bit set to 1				
	nd containing K_Bit set to 1 }				
then { I	5 _	IUT starts			
	containing source_address	Duplicate			
	<pre>set to unspecified_address</pre>	Address			
a	nd containing destination address				
	<pre>set to care_of_address }</pre>				
when { I	UT receives no Neighbor Advertisemen	t DAD succeeds			
	containing source address				
	<b>set to</b> care of address }				
then { I	UT sends Binding Acknowledgement				
, i i i i i i i i i i i i i i i i i i i	containing status				
	set to 0 Binding Update accep	oted			
a	nd containing K Bit set to 1 }				
}	,				

	Test Purpose				
Identifier: TP_MOB_1518_01					
Summary: Test reaction on binding update message when Duplicate Address Detection succeeds, Bind					
-	Cache in non-volatile storage				
References:	RQ_001_1518, RQ_001_1501, RQ_001_1510				
UT Role:	Home_Agent Test case:	TC_MOB_1518_01			
with { IUT	ready to receive Binding_Update				
and IU	I 'storing Binding Cache entries in nc	on-volatile storage'			
}					
ensure that					
$\{$ when $\{$	IUT receives Binding_Update from	Mobile_Node			
	<pre>containing source_address</pre>				
	<pre>set to care_of_address</pre>				
	and containing A_Bit set to 1 $\}$				
then $\{$	<b>J</b> <u>–</u>	IUT starts			
	<pre>containing source_address</pre>				
	<pre>set to unspecified_addres</pre>				
	and containing destination_addres	S			
	<b>set to</b> care_of_address }				
when $\{$	<b>_</b>	sement DAD succeeds			
	<pre>containing source_address</pre>				
	<b>set to</b> care_of_address }				
t then	<u> </u>				
	containing status				
	<b>set to</b> 0 Binding_Update_a				
	and not containing Binding_Refresh_Ad	<pre>lvice_mobility_option }</pre>			
}					

		Test Purpose		
Identifier: TP_MOB_1526_01				
Summary: Test reaction on binding update message for De-Registration when no Binding Cache entr				
References:	RQ_001_1526, RQ_00	1_1527, RQ_001_1535		
IUT Role:	Home_Agent	Test case:	TC_MOB_1526_01	
with { IUT re	ady to receive Bindi	lng_Update		
IUT ha	<b>ving no</b> binding_cach	ne_entry <b>for the</b> Mobile_N	Iode	
}				
ensure that				
$\{ \texttt{when } \}$	IUT receives Bindir	ng_Update <b>from</b> Mobile_Nod	le	
	containing sour	cce_address		
	set to home	e_address		
	and containing A_Bi	t set to 1		
	and containing H_Bi			
	and containing life	etime set to 0 }		
then {	IUT rejects Binding	g_Update		
	and optionally			
	(IUT sends H	Binding_Acknowledgement		
	contair	ing destination_address		
		<b>to</b> Mobile_Node link_lay	ver_address	
	and contair	ning status		
	set	<b>to</b> 133 not_home_agent_f	<pre>ior_this_mobile_node) }</pre>	
}				

A.1.5.1.2	Primarv car	e-of address	de-registration
-			

Test Purpose							
Identifie	er:	TP_MOI	3_1529_01	-			
Summa	iry:	Test rea	Test reaction on binding update message for De-Registration				
Referen	ices:	RQ_001	Q_001_1529, RQ_001_1527, RQ_001_1530, RQ_001_1531, RQ_001_1532, RQ_001_1533, Q_001_2004, RQ_001_2013				
IUT Role	e:	Home_A		Test case:	TC_MOB_1529_01		
with {	IUT read	y to re	eceive Bind:	ing Update			
1	IUT <b>havi</b>	ng a b	inding_cache	e_entry for the Mobile_Node			
ensure	that						
{	when $\{$	IUT		inding_Update <b>from</b> Mobile_Node			
			containing	source_address			
			set to	home_address			
		and	containing	A_Bit set to 1			
		and	containing	H_Bit set to 1			
		and	containing	lifetime <b>set to</b> 0 }			
	then {	IUT	sends Bind:	ing Acknowledgement			
			containing	source address			
				address <b>of</b> Home Agent			
		and		destination address			
				home address			
		and		ESP header			
			containing	—			
			-	0 Binding Update accepted			
		and		sequence number			
			-	sequence number received in Bin	ding Update		
		and		lifetime set to 0	<u>0</u> -P.00.00		
	а		-	Binding Refresh Advice mobility	option }		
}	-		· · · · · · · · · · · · · · · · · · ·	· <u> </u>			
## A.1.5.2 Packet processing

## A.1.5.2.1 Intercepting packets for a mobile node

	Test Purpose			
Identifier:	TP_MOB_1537_01			
Summary:	Test generation of Neighbor Advertisement message after creating binding			
References:	RQ_001_1537, RQ_001_1539, RQ_001_1540, RQ_001_1541, RQ_001_1542, RQ_001_1543,			
	RQ_001_1544			
IUT Role:	Home_Agent Test case: TC_MOB_1537_01			
with { IUT havi	<pre>ing a new binding_cache_entry for a specific Mobile_Node</pre>			
}				
ensure that				
$\{ \text{ when } \{ I \}$	<pre>UUT is requested to send Neighbor_Advertisement }</pre>			
then $\{ I \}$	UUT <b>sends</b> Neighbor_Advertisement			
	containing destination_address			
	<b>set to</b> multicast_address			
a	and containing target_address			
	<b>set to</b> address <b>of</b> Mobile_Node			
a	and containing R_Bit set to 0			
a	and containing S_Flag set to 0			
a	and containing O_Flag set to 1			
a	and containing Target_Link_layer_Address_option			
	<pre>set to link_layer_address of Home_Agent }</pre>			
}				

	Test Purpose				
Identifier:	TP_MOB_1538_01				
Summary:	Test generation of Neighbor Advertisement message after creating binding				
References:	RQ_001_1538, RQ_001_1539, RQ_001_1540, RQ_001_1541, RQ_001_1542, RQ_001_1543, RQ_001_1544				
	Home_Agent Test case: TC_MOB_1538_01				
	<pre>having new binding_Cache_entry for a specific Mobile_Node</pre>				
י ע	'(L bit was set)'				
then { I a a a	<pre>IUT is requested to send Neighbor_Advertisement } IUT sends Neighbor_Advertisement     containing destination_address         set to multicast_address and containing target_address         set to link_local_address of Mobile_Node and containing R_Bit set to 0 and containing S_Flag set to 1</pre>				
	and containing O_Flag set to 1 and containing Target Link layer Address option				
	set to link layer address of Home Agent }				
}					

		Test Purpose			
Identifier:	TP_MOB_1547_01				
Summary:	Test reaction to Neighbor Solicitation message				
References:	RQ_001_1547, RQ_001_1548, RQ_001_1549				
IUT Role:	Home_Agent	Home Agent Test case: TC MOB 1547 01			
with { IUT hav	<b>ing a</b> binding_cach	e_entry <b>for a specific</b> Mo	bile_Node		
}					
ensure that					
$\{ \text{ when } \}$	IUT receives Neigh	bor Solicitation			
	containing tar	containing target address			
	set to add	ress <b>of</b> Mobile Node }			
then {	IUT sends Neighbor				
,	containing target address				
	set to address of Mobile Node				
	and containing R Bit set to 0				
		get Link layer Address op	tion		
	-	k layer address <b>of</b> Home A			
}	u				

#### A.1.5.2.2 Processing intercepted packets

	Test Purpose				
Identifier:	TP_MOB_1551_01				
Summary:	Test tunnelling of intercepted packets				
References:	RQ_001_1551, RQ_001_1550				
IUT Role:	Home_Agent Test case: TC_MOB_1551_01				
with { IUT havi	<pre>.ng a binding_cache_entry for a specific Mobile_Node</pre>				
}					
ensure that					
$\{ \text{ when } \{ I \}$	UT receives an IPv6Packet				
	containing destination_address				
	<pre>set to address of Mobile_Node }</pre>				
then { I	UT <b>sends an</b> IPv6Packet <b>in</b> tunneled_mode <b>to</b> Mobile_Node				
	containing source_address				
	set to address of Home_Agent				
a	nd containing destination_address				
	<pre>set to primary_care_of_address of Mobile_Node }</pre>				
}					

		Test Purpose				
Identifier:	TP_MOB_1552_01	TP_MOB_1552_01				
Summary:	Test discard of packets to	Test discard of packets to Mobile_Node link local address				
References:	RQ_001_1552, RQ_001_	RQ_001_1552, RQ_001_1553				
IUT Role:	Home_Agent	Home_Agent Test case: TC_MOB_1552_01				
with { IUT h	<pre>aving a binding_cache_</pre>	entry for a specific l	Mobile_Node			
}						
ensure that						
{ when	{ IUT receives an IPv6	Packet				
	containing desti	nation_address				
	set to link	local_address <b>of</b> Mobil	le_Node }			
then	{ IUT discards IPv6Pac	ket				
	and optionally					
	(IUT <b>sends</b> ICMP_	Destination_Unreachab	le			
	containing	code				
	set to 3 address unreachable					
	and containing destination_address					
	set to	source_address of rec	<pre>eived IPv6Packet) }</pre>			
}						

Test Purpose				
Identifier:	TP_MOB_1555_01			
Summary:	Test discard of multicast packets with link local scope			
References:	RQ_001_1555, RQ_001_1556			
IUT Role:	Home_Agent	Test case:	TC_MOB_1555_01	
and IUT } ensure that { when { I	ng a binding_cache_entry 'having obtained Mobile_N UT receives an IPv6Packet containing destination set to link_local_ UT discards the IPv6Packe	ode multicast grou _address multicast_address	p membership'	

	1	Fest Purpose		
Identifier:	TP_MOB_1557_01	·		
Summary:	Test tunnelling of intercepted multicast packets with global scope			
References:	RQ_001_1557			
IUT Role:	Home_Agent Test case: TC_MOB_1557_01			
with { IUT	having a binding_cache_ent	ry for a specifi	<b>c</b> Mobile_Node	
and IUT	'having obtained Mobile_No	ode multicast gro	up membership'	
}				
ensure that				
$\{ \text{ when } \{ I \}$	UT receives an IPv6Packet			
	containing destination	_address		
	<b>set to</b> global_mult:	icast_address 'to	which Mobile_Node is subscribed'	
}				
then { I	IUT <b>sends</b> IPv6Packet <b>in</b> tur	nneled_mode <b>to</b> Mo	bile_Node	
	containing source_addre	ess		
	set to address of H	Home_Agent		
a	and containing destination			
	<b>set to</b> primary_care	e_of_address <b>of</b> M	obile_Node }	
}	_			

## A.1.5.2.3 Multicast membership control

Test Purpose				
Identifier:	TP_MOB_1562_01			
Summary:	Test generation of MLD Query message			
References:	RQ_001_1562			
IUT Role:	Home_Agent	Test case:	TC_MOB_1562_01	
		che_entry <b>for a specifi</b> lticast Membership Cont		
	UT is requested to UT sends MLD_Query	<pre>send MLD_Query } in tunneled_mode to Mob</pre>	pile_Node }	

	Test Purpose				
Identifier:	TP_MOB_1568_01				
Summary:	Test reverse tunnelling support				
References:	RQ_001_1568, RQ_001_1569				
IUT Role:	Home_Agent Test case: TC_MOB_1568_01				
with { IUT havi }	<pre>ing a binding_cache_entry for a specific Mobile_Node</pre>				
ensure that					
$\{ \text{ when } \}$	<pre>IUT receives an IPv6Packet in tunneled_mode from Mobile_Node containing source_address set to primary_care_of_address of Mobile_Node</pre>				
a	and containing a valid ESP_header }				
then $\{$	<pre>IUT sends IPv6Packet not in tunneled_mode }</pre>				

#### A.1.5.2.4 Handling reverse tunnelled packets

		Test Purpose		
Identifier:	TP_MOB_1570_01			
Summary:	Test reverse tunnelling support			
References:	RQ_001_1570			
IUT Role:	Home_Agent	Test case:	TC_MOB_1570_01	

## A.1.5.3 Dynamic home agent address discovery

#### A.1.5.3.1 Receiving router advertisement messages

Test Purpose					
Identifier:	P_MOB_1576_01				
Summary:	Fest of home agent list administration, no entry created				
References:	RQ_001_1576, RQ_001_1588				
IUT Role:	Home_Agent Test case: TC_MOB_1576_01				
<pre>with { IUT havi</pre>	.ng Home_Agents_list_entry for a specific Home_Agent				
}					
ensure that					
$\{ \texttt{when } \{$	IUT <b>receives</b> Router_Advertisement <b>from</b> Home_Agent				
	containing H_Bit set to 0				
a	nd IUT receives ICMP_Home_Agent_Address_Discovery_Request				
	from Mobile_Node				
	containing destination_address				
	<pre>set to anycast_address of Home_Agent }</pre>				
then {	IUT <b>sends</b> ICMP_Home_Agent_Address_Discovery_Reply				
	containing source_address				
	set to global unicast address of Home Agent				
	and containing Home Agent Addresses				
	not set to address of Home Agent				
that sent Router_Advertisement					
or IUT sends no response }					
}					

Test Purpose						
Identifier:	TP_MOE	TP_MOB_1582_01				
Summary:	Test of home agent list administration, no entry created					
References:	RQ_001_1582, RQ_001_1588					
IUT Role:				TC_MOB_1582_01		
}	. <b>ng</b> Home	_Agents_list_entry <b>for a s</b>	ecific Home_Agent			
ensure that			_			
$\{ \text{ when } \}$	IUT	receives Router_Advertiseme	ent <b>from</b> Home_Agen	it		
		containing H_Bit set to 1				
		<b>containing</b> router_lifetime				
a	nd IUT	<b>receives</b> ICMP_Home_Agent_A	ldress_Discovery_R	lequest		
		<pre>from Mobile_Node</pre>				
		containing destination_add:	ress			
		<b>set to</b> anycast_address	of Home Agent }			
then {	IUT	sends ICMP Home Agent Addre		Y		
· ·		containing source address		-		
		set to global unicast a	address <b>of</b> Home Ac	rent		
	and	containing Home Agent Addre				
		not set to address of Home Agent				
	that sent Router Advertisement					
	or TIT	sends no response }				
}	<b>01</b> 101					

		Test Purpose		
Identifier:	TP_MOB_1588_01			
Summary:	Test of home agent list administration, entry created			
References:	RQ_001_1588			
IUT Role:	Home_Agent	Test case:	TC_MOB_1588_01	
with { IUT havi	ng Home_Agents_list_entry	for a specific H	Home_Agent	
}				
ensure that				
$\{$ when $\{$	IUT receives valid Rou	ter_Advertisement	t <b>from</b> Home_Agent	
	containing H_Bit s	set to 1		
a	nd IUT receives ICMP_Home_Agent_Address_Discovery_Request			
	<pre>from Mobile_Node</pre>			
	containing destination_address			
	<b>set to</b> anycast	address <b>of</b> Home	Agent }	
then {	IUT sends ICMP Home Agent Address Discovery Request			
	containing source	address	_	
	set to global	unicast address d	of Home Agent	
	or IUT sends no response	}		
}				

## A.1.5.4 Sending prefix information to the mobile node

## A.1.5.4.1 Scheduling prefix deliveries

		Test Purpose	
Identifier:	TP_MOB_1591_01		
Summary:	Test generation of unsolicited Mobile Prefix Advertisement message		
References:	RQ 001 1591, RQ 001 1595, RQ 001 1812, RQ 001 1606		
IUT Role:	Home_Agent	Test case:	TC_MOB_1591_01
with { IUT	having a binding_cach	ne_entry for a specific	<b>z</b> Mobile_Node
and IUT	ready to send Mobile_	Prefix_Advertisement	}
a ch	ange of the state of t	the flags for the pref:	ix of the Mobile_Node
home	address occurred or a	a prefix matching the I	Mobile_Node home
regi	stration is added or i	its information changed	d or the preferred
life	ime is reconfigured.	To be discussed, if the	his can be triggered!
ensure that			
$\{ \text{ when } \}$	IUT is requested to se	end Mobile Prefix Adve:	rtisement }
then {	IUT <b>sends</b> Mobile Prefi	ix Advertisement <b>to</b> Mol	bile Node
	containing source	address	_
	set to address	s <b>of</b> Home Agent	
	and containing destination		
	set to home address of Mobile Node		
	and containing type 2	routing header	
		ddress <b>of</b> Mobile_Node	}
}			

	Test Purpose		
Identifier:	TP_MOB_1594_01		
Summary:	Test generation of solicited Mobile Prefix Advertisement message		
References:	RQ_001_1594, RQ_001_1813, RQ_001_1606, RQ_001_2016, RQ_001_2029, RQ_001_2030		
IUT Role:	Home_Agent Test case: TC_MOB_1594_01		
with { IUT havi	ing a binding_cache_entry for a specific Mobile_Node		
}			
ensure that			
$\{ \text{ when } \{ \} \}$	IUT <b>receives</b> Mobile_Prefix_Solicitation <b>from</b> Mobile_Node		
	<b>containing</b> home_address_destination_option		
	<pre>indicating home_address of Mobile_Node</pre>		
a	and containing ESP_header }		
then { ]	UT sends Mobile_Prefix_Advertisement to Mobile_Node		
	containing source address		
	set to address of Home Agent		
ā	and containing destination address		
	set to home address of Mobile Node		
a	and containing type 2 routing header		
	indicating home address of Mobile Node }		
}	,		

		Test Purpose		
Identifier:	TP_MOB_1595_01			
Summary:	Test sending of Mobile Prefix Advertisement message after MaxMobPfxAdvInterval			
References:	RQ_001_1595, RQ_001_1606	RQ_001_1595, RQ_001_1606		
IUT Role:	Home_Agent	Test case:	TC_MOB_1595_01	
with { IUT havi	<b>.ng a</b> binding_cache_entry	for a specific l	Mobile_Node	
}				
ensure that				
$\{$ when $\{$ I	UT is requested to send Mobile Prefix Advertisement			
	after MaxMobPfxAdvInterval expires }			
then $\{ I \}$	UT <b>sends</b> Mobile_Prefix_Advertisement <b>to</b> Mobile_Node			
	containing source address			
	set to address of	Home_Agent		
a	nd containing destination_address			
	set to home_address of Mobile_Node			
a	nd containing type_2_routing_header			
	<pre>indicating home_address of Mobile_Node }</pre>			
}				

		Test Purpose	
Identifier:	TP_MOB_1601_01		
Summary:	Test repetition of sending of Mobile Prefix Advertisement message		
References:	RQ_001_1601, RQ_00	1_1606	
IUT Role:	Home_Agent	Test case:	TC_MOB_1601_01
with { IUT	having a binding of	cache_entry for a specifi	<b>c</b> Mobile_Node
and IUT	having sent Mobile	e Prefix Advertisement	—
	to this specific Mobile Node		
}	-	—	
ensure that			
$\{ \text{ when } \{ I \}$	UT not receives Mo	bile Prefix Solicitation	<pre>from Mobile Node}</pre>
then { I	UT <b>sends</b> Mobile Pr	refix Advertisement to Mo	bile Node
ť	after PREFIX ADV TIMEOUT }		
}	_		

		Test Purpose	
Identifier:			
Summary:	Test repetition of sendi	ng of Mobile Prefix Advertisement	message
References:	RQ_001_1601, RQ_00	1_1606	
IUT Role:	Home_Agent	Test case:	TC_MOB_1601_02
}	5 1	Mobile Prefix Advertiseme Mobile_Node once'	nt
ensure that { when { then { } }	IUT sends Mobile_P	<pre>bile_Prefix_Solicitation refix_Advertisement to Mo PREFIX_ADV_TIMEOUT }</pre>	_ ,

		Test Purpose		
Identifier:	TP_MOB_1601_03			
Summary:	Test repetition of send	Test repetition of sending of Mobile Prefix Advertisement message		
References:	RQ_001_1601, RQ_0	01_1606		
IUT Role:	Home_Agent	Test case:	TC_MOB_1601_03	
and IUT	'having repeated	<pre>_cache_entry for a specifi Mobile Prefix Advertiseme Mobile_Node twice'</pre>		
	IUT <b>sends</b> Mobile_H	<pre>bbile_Prefix_Solicitation Prefix_Advertisement to Mc PREFIX_ADV_TIMEOUT }</pre>	_ ,	

	Test Purpose		
Identifier:	TP_MOB_1602_01		
Summary:	Test stop of sending of Mobile Prefix Advertisement message after binding expires		
References:	RQ_001_1601, RQ_001_1606		
IUT Role:	Home_Agent Test case:	TC_MOB_1602_01	
•	<pre>having a binding_cache_entry for a specific Mo 'having repeated Mobile Prefix Advertisement to this specific Mobile_Node once'</pre>		
	<pre>IUT receives no Mobile_Prefix_Solicitation and binding of Mobile_Node expires     before 2 times PREFIX_ADV_TIMEOUT } UUT sends no Mobile_Prefix_Advertisement to Mob</pre>	_	

- A.1.6 Mobile node operation
- A.1.6.1 Packet processing

#### A.1.6.1.1 Sending packets while away from home

	Test Purpose		
Identifier:	TP_MOB_1615_01		
Summary:	Test generation of IPv6 packets when no binding to Correspondent_Node exists		
References:	RQ_001_1615, RQ_001_1819		
IUT Role:	Mobile_Node Test case: TC_MOB_1615_01		
with { IUT	away_from_home		
and IUT	having a binding to Home_Agent		
and IUT	having no binding with specific Correspondent_Node		
and IUT	<pre>not configured to support Route_Optimization</pre>		
}			
ensure that			
$\{ when \{ \}$	IUT <b>is requested to send an</b> IPv6Packet <b>to</b> Correspondent_Node }		
then { ]	IUT <b>sends</b> IPv6Packet <b>in</b> tunneled_mode		
	containing source_address		
	<pre>set to the primary_care_of_address of the Mobile_Node</pre>		
ā	and containing destination_address		
	set to the address of the Home_Agent		
ā	and containing an inner_IPv6Packet		
	<pre>containing source_address</pre>		
	<pre>set to home_address of Mobile_Node</pre>		
	and containing destination_address		
	<pre>set to Correspondent_Node_address }</pre>		
}			

		Test Purpose		
dentifier:	TP MOB 1820 01			
Summary:	Test processing of reve	erse tunnelled IPv6 packets		
References:	RQ 001 1820			
UT Role:	Home_Agent	Test case:	TC_MOB_1820_01	
with { IUT ha }	ving a binding to M	obile_Node	<u>+</u>	
ensure that				
$\{ \text{ when } \}$	IUT receives IPv6P	acket <b>in</b> tunneled mode <b>fr</b>	om Mobile Node	
	containing sou	rce address	—	
	set to the	primary_care_of_address of	of the Mobile Node	
	and containing destination address			
	set to add	ress <b>of</b> Home Agent		
	and containing an	inner IPv6Packet		
		taining source address		
		set to home address of Mo	obile Node	
	and con	taining destination addres	SS	
		set to Correspondent Node	e address }	
then {	IUT sends IPv6Pack	et <b>to</b> Correspondent Node	_ ,	
,	containing sou			
	-	e address <b>of</b> Mobile Node		
	and containing des			
		respondent Node address }		
}		,		

		Test Purpose	
Identifier:	TP_MOB_1619_01		
Summary:	Test generation of IPv6 packets when binding to Correspondent_Node exists		
References:	RQ_001_1619, RQ_00	1_1614, RQ_001_1622	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1619_01
with { IUT	away_from_home		
and IUT	having a binding t	o Home_Agent	
and IUT	having a binding t	o specific Correspondent	Node
}			
ensure that			
$\{ \text{ when } \{ I \}$	UT is requested to	<b>send an</b> IPv6Packet to C	orrespondent_Node}
then $\{ I \}$	UT <b>sends</b> IPv6Packe	et to Correspondent_Node	
	containing source_address		
	set to care	e_of_address	
a	and containing Home_Address_option		
	indicating home_address }		
}			

		Test Purpose	
Identifier:	TP_MOB_1625_01		
Summary:	Test generation of IPv6 packets with outbound IPSec processing		
References:	RQ_001_1625, RQ_00	1_1626, RQ_001_1627	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1625_01
with { IUT	away_from_home		
and IUT	'using route opti	misation'	
and IUT	having a binding	to specific Corresponden	t Node
and IUT	'is communicating	with' Correspondent Nod	e 'using IPsec in transport mode'
}	-		
ensure that			
$\{ when \{ I \}$	UT is requested t	o send an IPv6Packet to	Correspondent Node}
then { I	UT sends IPv6Packet to Home Agent		
	containing Des	tination_Options_Header	
		er the Routing Header	
	and before the IPsec Header		
a	and containing home address destination option		
	and containing IPsec header		
	-	taining 'correctly coded	Authentication Data' }
}			,

#### A.1.6.1.2 Interaction with outbound ipsec processing

A.1.6.1.3 Receiving packets while away from home

		Fest Purpose	
Identifier:	TP_MOB_1631_01		
Summary:	Test processing of reverse tunnell	ed IPv6 packets	
References:	RQ_001_1631, RQ_001_1632		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1631_01
with { IUT	away_from_home		
and IUT	having a binding to Home	Agent	
and IUT	having no binding to spece	ific Corresponder	nt_Node
}			
ensure that			
{ when { ]	IUT receives IPv6Packet in		com Home_Agent
	containing source_addr	ess	
	set to address of Home_Agent		
a	and containing destination		
	set to address of l	_	
a	and containing an inner_IP		
		source_address	
	set to Correspondent_Node_address		
	and containing destination_address		
		address <b>of</b> Mobile	
then { ]	IUT 'decapsulates and proc	esses' inner_IPv6	5Packet }
}			

		Test Purpose		
Identifier:	TP_MOB_1633_01	TP MOB 1633 01		
Summary:	Test processing of IPv6	packets received via route optim	nization	
References:	RQ_001_1633			
UT Role:	Mobile_Node	Test case:	TC_MOB_1633_01	
with { IU	T away_from_home	· · · · · · · · · · · · · · · · · · ·	·	
and IU	T having binding to	specific Correspondent N	Iode	
}				
ensure that				
{ when {	IUT receives IPv6Pa	acket <b>from</b> Correspondent	Node	
	containing sour	rce_address	-	
	set to home	e_address <b>of</b> Corresponder	nt_Node	
	and containing destination address			
	set to care	e of address <b>of</b> Mobile No	ode	
	and containing type	e 2 routing header		
	cont	taining length field set	to 2	
	and cont	<b>taining</b> segments_left_fie	eld set to 1	
		taining home address fiel		
		set to unicast home addr	-	
then {	IUT 'processes' IP	, – –	_ ,	
}	-	,		

	1	lest Purpose	
Identifier:	TP_MOB_1633_02		
Summary:	Test processing of IPv6 packets re	eceived via route optimization	
References:	RQ_001_1633		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1633_02
with { IUT	away_from_home		
and IUT	having a binding to a spec	cific Correspondent_Node	
}			
ensure that			
$\{ \text{ when } \{ I \}$	UT receives IPv6Packet fro	om Correspondent_Node	
	containing source_address		
	<b>set to</b> home_address <b>of</b> Correspondent_Node		
a	and containing destination_address		
		ress <b>of</b> Mobile_Node	
a	<pre>nd containing type_2_rout:</pre>	ing_header	
	containing	length_field not set to 2	
		segments_left_field <b>set t</b>	o 1
	and containing	nome_address_field	
	set to	unicast_home_address <b>of</b> M	obile_Node }
then { I	UT <b>discards</b> IPv6Packet }		
}			

		Test Purpose			
Identifier:	TP_MOB_1633_03				
Summary:	Test processing o	f IPv6 packets received via route opt	timization		
References:	RQ_001_1633				
IUT Role:	Mobile_Node	Test case:	TC_MOB_1633_03		
with { IUT	away_from_home	2			
and IUT	having a bind:	ing <b>to a specific</b> Correspon	dent_Node		
}ensure t	hat				
$\{$ when $\{$	IUT receives I	Pv6Packet <b>from</b> Corresponden	lt_Node		
	containing	source_address			
	set to	home_address of Correspond	lent_Node		
	and containing destination address				
	set to	care_of_address <b>of</b> Mobile_	Node		
	and containing	type_2_routing_header			
		containing length_field se	t to 2		
and containing segments_left_field not set to 1					
	and containing home address field				
		set to unicast_home_ad	ldress <b>of</b> Mobile_Node }		
then {	IUT discards I	Pv6Packet }			
}					

		Test Purpose			
Identifier:	TP_MOB_1633_04				
Summary:	Test processing o	f IPv6 packets received via route optimiza	ition		
References:	RQ_001_1633				
IUT Role:	Mobile_Node	Test case:	TC_MOB_1633_04		
with { IUT	away_from_home				
and IUT	having a bind:	ng to a specific Correspondent	Node		
}					
ensure that					
$\{ \text{ when } \{ I \}$	UT receives I	Pv6Packet <b>from</b> Correspondent_No	de		
	containing	source_address			
	set to	home_address of Correspondent_	Node		
a	nd containing	destination_address			
		<pre>care_of_address of Mobile_Node</pre>			
a	nd containing	type_2_routing_header			
		containing length_field set to	2		
	and	containing segments_left_field	set to 1		
	and	<pre>containing home_address_field</pre>			
	<b>not set to</b> unicast home address <b>of</b> Mobile Node }				
then { I	UT discards I	Pv6Packet }			
}					

#### A.1.6.1.4 Routing multicast packets

		Test Purpose	
Identifier:	TP_MOB_1634_01		
Summary:	Test generation of MLD Report message		
References:	RQ_001_1634, RQ_00	1_1635	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1634_01
) ensure that { when { then {	IUT is requeste IUT sends MLD_F containing set to	ed to send MLD_Report } Report source_address care_of_address home_address_destination	

		Test Purpose	
Identifier:	TP_MOB_1636_01	-	
Summary:	Test generation of MLD R	eport message	
References:	RQ_001_1636		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1636_01
<pre>} ensure that { when { ] </pre>	IUT receives MLD_Que: containing multic set to 'liste and containing Maximu	cific multicast address ry in tunneled_mode from cast_address ened-to' address um_Response_Delay set t in tunneled_mode to Ho	<pre>m Home_Agent o 0 }</pre>

	Test Purpose		
Identifier:	TP_MOB_1638_01		
Summary:	Test generation of multicast packets		
References:	RQ_001_1638		
IUT Role:	Mobile_Node Test case: TC_MOB_1638_01		
) ensure that { when { then {	<pre>dy to send packets to multicast group on visited link' IUT is requested to send an IPv6Packet to a multicast_group } IUT sends IPv6Packet     containing source_address     set to care_of_address nd not containing home_address_destination_option }</pre>		

		Test Purpose	
Identifier:	TP_MOB_1639_01		
Summary:	Test generation of multicast packets		
References:	RQ_001_1639		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1639_01
with { IUT	having a binding t	o Home_Agent	
and IUT	'ready to send page	ckets to multicast group	via Home_Agent'
}			
ensure that			
$\{ \texttt{when } \{$	IUT is requested to	<b>send an</b> IPv6Packet <b>in</b> t	unneled_mode
		<b>to a</b> multicast_group	) }
then { IUT sends IPv6Packet to Home Agent			
	containing an i	inner_IPv6Packet	
	cont	caining source_address	
		<pre>set to home address }</pre>	
}			

A.1.6.1.5 Receiving binding error messages

		Test Purpose		
Identifier:	TP_MOB_1645_01			
Summary:	Test reaction on Binding Error	Test reaction on Binding Error message		
References:	RQ_001_1645			
IUT Role:	Mobile_Node	Test case:	TC_MOB_1645_01	
and IUT } ensure that { when { ]	away_from_home having no binding to a UUT receives Binding_Ern UUT discards Binding_Ern	cor <b>from</b> Corresponde	_	

		Test Purpose	
Identifier:	TP_MOB_1648_01		
Summary:	Test reaction on Bindin	g Error message	
References:	RQ_001_1648, RQ_00	1_1649	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1648_01
with { IUT	away_from_home		
and IUT	having a binding	co a specific Corresponder	nt_Node
and IUT	'having no upper 1	layer progress information	n on packet exchange
	with Corresponder		
}	L	—	
ensure that			
{ <b>when</b> { ]	IUT receives Bindin	ng Error <b>from</b> Corresponder	nt Node
	containing stat	us	—
	set to 1 unknow	vn binding for Home Addres	ss destination option }
then { ]	UT stops packet exchange to Correspondent Node		
	and optionally	J I _	
		Irn Routability procedure)	) }
}		,	

## A.1.6.2 Home agent and prefix management

#### A.1.6.2.1 Dynamic home agent address discovery

		Test Purpose	
Identifier:	TP_MOB_1655_01		
Summary:	Test generation of binding update message to register new care-of address		new care-of address
References:	RQ_001_1655		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1655_01
ensure that { when {	<pre>ing a binding to a specifi IUT is requested to send B IUT sends Binding_Update containing destination</pre>	 inding_Update 't c	co register new care-of address' }
}	set to address of	Home_Agent }	

#### A.1.6.2.2 Sending mobile prefix solicitations

		Test Purpose	
Identifier:	TP_MOB_1661_01		
Summary:	Test generation of Mobile Prefix Solicitations message		
References:	RQ_001_1661, RQ_001_1662, R	Q_001_1665	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1661_01
with { IUT	having a binding with a s	pecific Home_Agen	t
and IUT	<pre>ready to send Mobile_Pref</pre>	ix_Solicitation	
}			
ensure that			
$\{$ when $\{$ I	<pre>UT is requested to send Mobile_Prefix_Solicitation }</pre>		
then $\{ I \}$	T sends Mobile_Prefix_Solicitation to Home_Agent		
	containing home_address_destination_option		
	<pre>indicating home_address of Mobile_Node</pre>		
a	nd containing identifier		
	<b>set to a</b> random_va	lue }	
}			

		Test Purpose	
Identifier:	TP_MOB_1669_01		
Summary:	Test reaction to unsolicited Mobile Prefix Advertisement message		
References:	RQ_001_1669, RQ_00	1_1672, RQ_001_1677, RQ_001_	2016
IUT Role:	Mobile_Node	Test case:	TC_MOB_1669_01
 ensure that { when {	IUT receives Mobil	e Prefix Advertisement <b>frc</b>	om Home Agent
		ress <b>of</b> Home_Agent e_2_routing_header	
	-	_neader } _Prefix_Advertisement }	

## A.1.6.2.3 Receiving mobile prefix advertisements

		Test Purpose		
Identifier:	TP_MOB_1670_01			
Summary:	Test reaction to unsolid	Test reaction to unsolicited Mobile Prefix Advertisement message		
References:	RQ_001_1670, RQ_00	01_1672, RQ_001_1677		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1670_01	
with { IUT	having no binding	to a specific Home_Agent		
and IUT	having stored hom	e_address of specific Home	e_Agent	
}				
ensure that				
$\{$ when $\{$	IUT receives Mobil	e_Prefix_Advertisement fro	om Home_Agent	
	containing sou	rce_address		
	set to add	ress <b>of</b> Home_Agent		
i	and containing typ	e_2_routing_header }		
then $\{$	IUT accepts Mobile	_Prefix_Advertisement }		
}				

		Test Purpose	
Identifier:	TP_MOB_1671_01		
Summary:	Test reaction to unsolicited Mobile Prefix Advertisement message		
References:	RQ_001_1671		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1671_01
with { IUT	having no binding	to a specific Home_Agent	
and IUT } ensure that	not having stored	home_address of specific He	ome_Agent
$\{ \text{ when } \{$	containing sou set to add and containing typ	ress <b>of</b> Home_Agent e_2_routing_header }	Home_Agent
then { }	IUT discards Mobil	e_Prefix_Advertisement }	

		Test Purpose	
Identifier:	TP_MOB_1672_01	TP MOB 1672 01	
Summary:	Test reaction to unsolicited Mobile Prefix Advertisement message		
References:	RQ_001_1672		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1672_01
ensure that			

	Test Purpose		
Identifier:	TP_MOB_1674_01		
Summary:	Test reaction to solicited Mobile Prefix Advertisement message		
References:	RQ_001_1674		
IUT Role:	Mobile_Node Test case: TC_MOB_1674_01		
with { IUT	having a binding to a specific Home_Agent		
and IUT	sent Mobile_Prefix_Solicitation		
}			
ensure that			
{ when { ]	UT receives Mobile_Prefix_Advertisement from Home_Agent		
	containing source_address		
	<pre>set to address of Home_Agent</pre>		
	and containing type_2_routing_header		
ā	and containing identifier		
	<b>set to</b> identifier <b>in sent</b> Mobile_Prefix_Solicitation }		
then { ]	<pre>IUT accepts Mobile_Prefix_Advertisement }</pre>		
}			

		Test Purpose	
Identifier:	TP_MOB_1674_02		
Summary:	Test reaction to solicited Mobile Prefix Advertisement message		
References:	RQ_001_1674		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1674_02
with { IU	F having a binding to	a specific Home_Agent	
and IU	F having sent Mobile	Prefix_Solicitation	
}		_	
ensure that			
$\{ \texttt{when } \{$	IUT receives Mobile	Prefix_Advertisement fro	om Home_Agent
	containing sourc	e_address	
	<b>set to</b> addre	ss <b>of</b> Home_Agent	
	and containing type_	2_routing_header	
	and containing ident	ifier	
	<b>set to</b> ident	ifier <b>in sent</b> Mobile Pre	efix Solicitation }
then {		Prefix Advertisement }	_ ,
}	_	_ ,	

## A.1.6.3 Movement

A.1.6.3.1	Using multiple care-of addresses	3

		Test Purpose	
Identifier:	TP_MOB_1690_01		
Summary:	Test of binding update sent by mobile node		
References:	RQ_001_1690, RQ_00	01_1689, RQ_001_1691, RQ_001_	1727
IUT Role:	Mobile_Node	Test case:	TC_MOB_1690_01
with { IUT	away_from_home	·	·
and IUT	having new primar	y_care_of_address	
}			
ensure that			
$\{$ when $\{$	IUT is requested t	<b>o send</b> Binding_Update }	
then $\{$	IUT sends Binding_	Update <b>to</b> Home_Agent	
	containing sou	rce_address	
	set to new	primary_care_of_address	
	and containing H_E	it set to 1	
	and containing A_E	it set to 1 }	
}	_		

## A.1.6.3.2 Returning home

	Test Purpose			
Identifier:	TP_MOB_1695_01			
Summary:	Test of binding update sent by mobile node			
References:	RQ_001_1695, RQ_001_1696, RQ_001_2003, RQ_001_2013			
IUT Role:	Mobile_Node Test case:	TC_MOB_1695_01		
with { IUT	'detects home subnet prefix is on-link'			
and IUT	<pre>ready to send Binding_Update 'on returning home'</pre>			
}				
ensure that				
$\{ \text{ when } \{ \} \}$	UT <b>is requested to send</b> Binding_Update }			
then { ]	UT <b>sends</b> Binding_Update <b>to</b> Home_Agent			
	containing source_address			
	set to home_address			
ā	and containing destination_address			
	<b>set to</b> address <b>of</b> Home_Agent			
ā	and containing ESP_header			
ā	and containing H_Bit set to 1			
ā	and containing A_Bit set to 1			
ā	and containing lifetime set to 0 }			
}				

	1	Fest Purpose	
Identifier:	TP_MOB_1698_01		
Summary:	Test of binding update sent by mobile node		
References:	RQ_001_1698, RQ_001_1697		
IUT Role:	Home_Agent	Test case:	TC_MOB_1698_01
<pre>with { IUT havi</pre>	<b>ng a</b> binding_cache_entry :	for a specific Mobile_Node	9
}			
ensure that			
$\{$ when $\{$ I	UT receives Neighbor_Solid	citation <b>from</b> Mobile_Node	
	containing source_addre	ess	
	set to unspecified	_address	
a	nd containing destination	address	
	set to multicast ad	ddress <b>of</b> Mobile Node	
a	and containing target address		
	set to home address	s <b>of</b> Mobile Node }	
then { I	UT sends Neighbor Advertis	sement <b>to</b> Mobile Node	
	containing destination		
	set to multicast ad	ddress	
a	nd containing S Flag set		
}	5 _ 5		

		Test Purpose		
Identifier:	TP_MOB_1702_01			
Summary:	Test reaction on Neighbor Solicitation after coming home			
References:	RQ_001_1702, RQ_00	1_1703		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1702_01	
with { IUT	' 'having detected	home subnet prefix is on-l	link'	
and IUT	' having sent Bindi	ng_Update 'on returning ho	ome'	
}				
ensure that				
$\{ \texttt{when } \{$	IUT receives Neigh	<pre>bor_Solicitation }</pre>		
then {	IUT sends Neighbor	UT sends Neighbor_Advertisement		
	containing des	tination_address		
	set to uni	<pre>cast_link_layer_address }</pre>		
}				

	Test Purpose				
Identifier:	TP_MOB_1704_01				
Summary:	Test of Neighbor Advertisement after coming home				
References:	RQ_001_1704, RQ_001_1705, RQ_001_1706				
IUT Role:	Mobile_Node Test case: TC_MOB_1704_01				
with { IUT	'having detected home subnet prefix is on-link'				
and IUT	having sent Binding_Update 'on returning home'				
}					
ensure that					
$\{ \text{ when } \{ \} \}$	IUT <b>receives</b> Binding_Acknowledgement }				
then { ]	IUT <b>sends</b> 1 Neighbor_Advertisement <b>for each</b> home_address				
	containing destination_address				
	set to all_nodes_multicast_address				
ä	and containing target_address				
	set to home_address of Mobile_Node				
ä	and containing Target_Link_layer_Address_option				
	<pre>indicating link_layer_address of Mobile_Node</pre>				
ä	and containing S_Flag set to 0				
ä	and containing O_Flag set to 1 }				
}					

## A.1.6.4 Return routability procedure

#### A.1.6.4.1 Receiving test messages

		Test Purpose	
Identifier:	TP_MOB_1716_01		
Summary:	Test reaction on invalid Home Test message		
References:	RQ_001_1716, RQ_001_1715		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1716_01
with { IUT	away_from_home		
and IUT	having sent Home_Test_In	it <b>and</b> Care_of_	Test_Init
}			
ensure that			
$\{ \text{ when } \{ I \}$	IUT receives home_test in	tunneled_mode	from Home_Agent
	containing source_add	ress	
	set to 'address with which no Return Routability Procedure		
	is in pro	gress' }	
then { I	IUT <b>discards</b> home_test }	- ,	
}			

		Test Purpose		
dentifier:	TP_MOB_1716_02	TP_MOB_1716_02		
Summary:	Test reaction on invalid	Test reaction on invalid Home Test message		
References:	RQ_001_1716, RQ_00	1_1715		
UT Role:	Mobile_Node	Test case:	TC_MOB_1716_02	
with { IUI	away_from_home			
} ensure that	<b>2</b> _	Test_Init <b>and</b> Care_of_Test	-	
		_ , ,	<b>m</b> Home_Agent	

	Test Purpose			
Identifier:	TP_MOB_1716_03			
Summary:	Test reaction on inval	est reaction on invalid Home Test message		
References:	RQ_001_1716, RQ_0	RQ_001_1716, RQ_001_1715		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1716_03	
-	away_from_home having sent Home_	_Test_Init <b>and</b> Care_of_Test	t_Init	
	IUT receives home IUT discards home	_test <b>not in</b> tunneled_mode _test }	<pre>from Home_Agent }</pre>	

		Test Purpose		
Identifier:	TP_MOB_1716_04			
Summary:	Test reaction on invalid Home Test message			
References:	RQ_001_1716, RQ_007	RQ_001_1716, RQ_001_1715		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1716_04	
with { IUT	away_from_home			
and IUT	having sent Home_7	est_Init <b>and</b> Care_of_Test	_Init	
}				
ensure that				
$\{ \texttt{when} \{ \}$	IUT receives home_test in tunneled mode from Home Agent			
	containing inva	<pre>lid home_init_cookie }</pre>		
then $\{ \ \}$	IUT <b>discards</b> home_t	est }		
}				

		Test Purpose		
Identifier:	TP_MOB_1720_01			
Summary:	Test reaction on invalid	Test reaction on invalid care-of test message		
References:	RQ_001_1720, RQ_00	1_1719		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1720_01	
with { IU	T away_from_home		·	
and IU	T having sent Home_T	Cest_Init <b>and</b> Care_of_Test	t_Init	
}				
ensure that				
$\{$ when $\{$	containing sour set to 'add	of_Test <b>from</b> Correspondent cce_address dress with which no Returr in progress' }	_	
then $\{$	IUT <b>discards</b> Care_c	1 3, ,		

		Test Purpose	
Identifier:	TP_MOB_1720_02		
Summary:	Test reaction on invalid care-of test message		
References:	RQ_001_1720, RQ_00	1_1719	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1720_02
ensure that	having sent nome_	Test_Init <b>and</b> Care_of_Tes	
$\{$ when $\{$ ]		of_Test <b>from</b> Corresponden tination address	nt_Node

		Test Purpose		
Identifier:	TP_MOB_1720_03	TP_MOB_1720_03		
Summary:	Test reaction on invalid	Test reaction on invalid care-of test message		
References:	RQ_001_1720, RQ_00	1_1719		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1720_03	
with { IU	T away_from_home			
<b>and</b> IU	T <b>having sent</b> Home_	<pre>Fest_Init and Care_of_Test</pre>	t_Init	
} ensure that				
$\{ \ \texttt{when} \ \{$		of_Test <b>from</b> Corresponden <sup>.</sup> alid care_of_init_cookie		
then $\{$	IUT discards Care_	of_Test }		

## A.1.6.5 Processing bindings

#### A.1.6.5.1 Sending binding updates to the home agent

		Test Purpose				
Identifier:	TP_MOB_1730_01	TP_MOB_1730_01				
Summary:	Test of binding update sent by mobile node					
References:	RQ_001_1730, RQ_00	RQ_001_1730, RQ_001_1736, RQ_001_2001, RQ_001_2013, RQ_001_2028				
IUT Role:	Mobile_Node	Test case:	TC_MOB_1730_01			
	away_from_home					
and IUT	'ready to registe	er or refresh Care-of addres	ss'			
}						
ensure that						
$\{ \text{ when } \{ \} \}$	UT is requested t	o <b>send</b> Binding_Update }				
then { ]	UT <b>sends</b> Binding_					
	containing sou	rce_address				
	set to car	e_of_address				
á	nd containing des	tination_address				
	set to add	lress <b>of</b> Home_Agent				
á	nd containing hom	<pre>me_address_destination_optic</pre>	on			
	indicating hom	ne_address <b>of</b> Mobile_Node				
ā	nd containing ESP	_header				
ā	nd containing lif	etime not set to 0				
ā	nd containing H_B	Bit set to 1				
ā	nd containing A_E	Bit set to 1				
ā	and containing alt	ernate_Care_of_Address_mob	ility_option			
to Home_Ag	gent }					
}						

		Test Purpose			
dentifier:	TP_MOB_1739_01				
Summary:	Test of binding update s	Test of binding update sent by mobile node			
References:	RQ_001_1739, RQ_00 <sup>2</sup>	RQ_001_1739, RQ_001_1760			
IUT Role:	Mobile_Node	Test case:	TC_MOB_1739_01		
with { IU	T away_from_home	· · · · · · · · · · · · · · · · · · ·			
and IU	T <b>having sent</b> Bindir	g_Update 'messages to re	egister or refresh		
		Care-of addres	ss'		
}					
ensure that					
$\{ \texttt{when } \{$	IUT receives Bindin	g_Acknowledgement			
	containing status				
	<b>set to</b> 135	Sequence_number_out_of_v	vindow		
	and containing sequ	and containing sequence number			
	set to the	previous accepted sequer	<pre>nce_number }</pre>		
then {	IUT sends more than	LUT sends more than 1 Binding_Update to Home_Agent			
	containing sequ	ence_number			
	set to 1 pl	us the sequence_number i	Erom		
		the received Binding	_Acknowledgement }		
}					

		Test Purpose	
Identifier:	TP_MOB_1742_01		
Summary:	Test of binding update sent by mobile node		
References:	RQ_001_1742, RQ_0	01_1770	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1742_01
with { IUI	away_from_home		
and IUT	sent Binding Upda	te 'messages to register o	or refresh
		Care-of address'	
}			
ensure that			
$\{ \text{ when } \}$	IUT receives Bindi	ng Acknowledgement	
	containing sta	itus	
	set to 134	Duplicate Address Detecti	on failed }
then {		l the same binding update m	
}			5 5 ,

## A.1.6.5.2 Receiving binding acknowledgements

		Test Purpose		
Identifier:	TP_MOB_1764_01			
Summary:	Test reaction on Binding Acknowledgement			
References:	RQ_001_1764, RQ_00	RQ_001_1764, RQ_001_1763		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1764_01	
with { IUT	away_from_home			
and IUT	having sent Bindi	ng_Update <b>to</b> Home_Agent		
}				
ensure that				
$\{ \text{ when } \{ I \}$		ng_Acknowledgement from Ho		
		ecognized sequence_number	}	
then { I	UT <b>discards</b> Bindi	ng_Acknowledgement }		
}				

		Test Purpose		
Identifier:	TP_MOB_1764_02			
Summary:	Test reaction on Binding Acknowl	Test reaction on Binding Acknowledgement		
References:	RQ_001_1764, RQ_001_1763	RQ_001_1764, RQ_001_1763		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1764_02	
with { IUT	away_from_home			
and IUT	having sent Binding_Updat	e <b>to</b> Corresponde:	nt_Node	
}				
ensure that				
$\{$ when $\{$ ]	IUT receives Binding_Ackno containing unrecognize	-		
then $\{ :\}$	IUT <b>discards</b> Binding_Ackno	wledgement }		

		Test Purpose		
Identifier:	TP_MOB_1764_03			
Summary:	Test reaction on Bind	ing Acknowledgement		
References:	RQ_001_1764, RQ_0	RQ_001_1764, RQ_001_1763		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1764_03	
with { IUT	away_from_home			
and IUT	having sent Bind	ing_Update <b>to</b> Correspondent	_Node	
}				
ensure that				
$\{ \text{ when } \{ \} \}$	IUT receives Bind	ing_Acknowledgement <b>from</b> Co	prrespondent_Node	
		<b>g</b> binding_authorization_dat	<pre>ta_mobility_option }</pre>	
then $\{ 1$	IUT <b>discards Bind</b>	<pre>ing_Acknowledgement }</pre>		
}				

		Test Purpose	
Identifier:	TP_MOB_1765_01		
Summary:	Test reaction on Bindin	g Acknowledgement	
References:	RQ_001_1765, RQ_00	1_1766	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1765_01
with { IUT	away_from_home		
and IUT	having sent Bindi	ng_Update with A_Bit set	to 1 to Home_Agent
}			
ensure that			
$\{ \ {\tt when} \ \{$	IUT receives B	inding_Acknowledgement <b>fr</b>	<b>com</b> Home_Agent
	containing	status	
	set to	0 Binding Update accepte	d }
then {	IUT accepts Bi	nding Acknowledgement	-
a	and IUT 'does not	send the same binding upd	late message again' }
}			,

		Test Purpose	
Identifier:	TP_MOB_1765_02		
Summary:	Test reaction on Bindi	ng Acknowledgement	
References:	RQ_001_1765, RQ_0	01_1766	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1765_02
with { IUT	away_from_home		
and IUT	having sent Bindi	ng_Update with A_Bit set	to 1 to Correspondent_Node
}			
ensure that			
$\{$ when $\{$		inding_Acknowledgement <b>fr</b>	om Correspondent_Node
	containing	status	
	set to	0 Binding_Update_accepte	d }
then $\{$	IUT accepts Bi	nding_Acknowledgement	
a	and IUT 'does not	send the same	
	binding u	pdate message again' }	
}	-		

		Test Purpose	
Identifier:	TP_MOB_1769_01		
Summary:	Test reaction on Bindir	ng Acknowledgement	
References:	RQ_001_1769, RQ_00	01_1765	
IUT Role:	Mobile_Node	Test case:	TC_MOB_1769_01
with { IUT	away_from_home		
and IUT	' having sent Bindi	ng Update <b>to</b> Home Agent	
}	-		
ensure that			
$\{ \texttt{when } \{$	IUT receives B	inding_Acknowledgement from the second secon	om Home_Agent
	containing	status	
	set to	1 Accepted_but_prefix_dia	scovery necessary }
then {		nding Acknowledgement	
· ·	and optionally	<u> </u>	
	(IUT sends Mobi	<pre>le Prefix Solicitation) }</pre>	
}		,	

		Test Purpose		
Identifier:	TP_MOB_1769_02			
Summary:	Test reaction on Bindi	Test reaction on Binding Acknowledgement		
References:	RQ_001_1769, RQ_0	01_1765		
IUT Role:	Mobile_Node	Test case:	TC_MOB_1769_02	
with { IUT	away_from_home			
and IUT	having sent Bind:	ng_Update <b>to</b> Correspondent	t_Node	
}				
ensure that				
$\{$ when $\{$	IUT receives Bind:	ng_Acknowledgement <b>from</b> Co	orrespondent_Node	
	containing sta	atus		
	set to 1 A	Accepted_but_prefix_discove	ery_necessary }	
then $\{$	IUT <b>accepts</b> Bindin	ng_Acknowledgement		
i	and optionally			
	(IUT sends Mob	<pre>lle_Prefix_Solicitation) }</pre>		
}				

#### A.1.6.5.3 Receiving binding refresh requests

		Test Purpose	
dentifier:	TP_MOB_1776_02		
Summary:	Test reaction on Binding	g Refresh	
References:	RQ_001_1776		
UT Role:	Mobile_Node	Test case:	TC_MOB_1776_02
	away_from_home having a binding t	o a specific Corresponde:	nt_Node
ensure that { when { then {		.nding_Refresh_request <b>fr</b> nding Refresh request	<b>om</b> Correspondent_Node }

# A.2 IPv6 Mobility - RFC 4068

## A.2.1 Protocol operation of network-initiated handover

	1	Fest Purpose	
Identifier:	TP_MOB_3018_01	-	
Summary:	Test reaction on unsolicited Proxy	Router Advertiseme	nt
References:	RQ_001_3018, RQ_001_3019, R0	Q_001_3164, RQ_00	1_3167
IUT Role:	Mobile_Node	Test case:	TC_MOB_3018_01
	away_from_home		
and IUT	ready for handover to New	_Access_Router	
}			
ensure that			
$\{ \text{ when } \{ \exists$	UT receives Proxy_Router_A		
	containing New_Access_1		
	<b>set to</b> link_layer_a	address <b>of</b> New_A	Access_Router
a	nd containing code		
	<b>set to</b> 1 message_se	ent_unsolicited	}
then $\{ 1$	UT <b>sends</b> Fast_Binding_Upda	ate	
	containing destination	_address	
	set to address of 1	Previous_Access_	Router
a	nd containing Home_Address	s_option	
ā	nd containing alternate_Ca	are_of_Address_m	nobility_option }
}			

# A.2.2 Protocol details

		Test Purpose	
Identifier:	TP_MOB_3021_01		
Summary:	Test generation of Router Solicita	ation for Proxy Advertis	sement
References:	RQ_001_3021, RQ_001_3079		
IUT Role:	Mobile_Node	Test case:	TC_MOB_3021_01
with { IUT	away_from_home		
and IUT	'able to recognize nearby	/ access points'	
}			
ensure that			
$\{ \text{ when } \{ \} \}$	IUT is requested to send		
		ion_for_Proxy_Ad	
then $\{ 1$	IUT <b>sends</b> Router_Solicitat	ion_for_Proxy_Ad	vertisement
	containing New_Access_	Point_link_local	_address_option }
}			

	Test Purpose		
Identifier:	TP_MOB_3022_01		
Summary:	Test reaction on Router Solicitation for Proxy Advertisement		
References:	RQ_001_3022, RQ_001_3102, RQ_001_3103		
IUT Role:	Router Test case:	TC_MOB_3022_01	
with { IUT	established as Previous_Access_Router		
and IUT	'having no entry corresponding to new end	lpoint'	
}			
ensure that			
$\{ \text{ when } \}$	IUT receives Router Solicitation for H	Proxy Advertisement	
	containing an unknown		
	New Access Point lin	nk local address option }	
then {	IUT <b>sends</b> Proxy_Router_Advertisement	,	
	containing code		
	set to 2 no_new_router_informa	ation present	
	and containing (New Access Point link		
	containing option code		
	set to 6 'No prefi	lx information	
	-	le for the access point	
		ied by the LLA') }	
}		· · · · · · · · · · · · · · · · · · ·	

	Test Purpose
Identifier:	TP_MOB_3024_01
Summary:	Test reaction on Router Solicitation for Proxy Advertisement
References:	RQ_001_3024, RQ_001_3102, RQ_001_3103
IUT Role:	Router Test case: TC_MOB_3024_01
with { IUT esta	ablished as Previous_Access_Router
}	
ensure that	
$\{$ when $\{$ $\square$	IUT receives Router_Solicitation_for_Proxy_Advertisement
	<b>containing</b> New_Access_Point_link_local_address_option
	<b>indicating</b> 'an endpoint on the same interface'}
then { I	IUT sends Proxy_Router_Advertisement
	containing code
	set to 2 no new router information present
a	and containing (New Access Point link local address option
	containing option code
	<b>set to</b> 5 'The access point identified by
	the LLA belongs to the current
	interface of the router') }
}	

	Test Purpose
Identifier:	TP_MOB_3025_01
Summary:	Test reaction on Router Solicitation for Proxy Advertisement
References:	RQ_001_3025, RQ_001_3102, RQ_001_3103, RQ_001_3105, RQ_001_3106, RQ_001_3107
IUT Role:	Router Test case: TC_MOB_3025_01
with { IUT	established as Previous_Access_Router
}	
ensure that	
$\{ \texttt{when} \{ \exists$	IUT <b>receives</b> Router_Solicitation_for_Proxy_Advertisement
	<b>containing</b> New_Access_Point_link_local_address_option
	<pre>indicating 'endpoint on different interface'}</pre>
then $\{ \exists$	UUT <b>sends</b> Proxy_Router_Advertisement
	containing code set to 1
ā	and containing (New_Access_Point_link_local_address_option
	containing option_code
	set to 1 'Link-Layer Address of the New
	Access Point'
	and containing link_layer_address of new Router
	and containing IP_address of new Router
	and containing Prefix_Information_Option
	of new Router) }
}	

		Test Purpose	
Identifier:	TP_MOB_3025_02		
Summary:	Test reaction on Router Solicitation for Proxy Advertisement		
References:	RQ_001_3025		
IUT Role:	Router	Test case:	TC_MOB_3025_02
$$ ensure that { when { I	UT receives Route containing New indicating 'en	<pre>bus_Access_Router er_Solicitation_for_Proxy_A v_Access_Point_link_local_a udpoint that does not suppo buter_Advertisement de set to 3 }</pre>	address_option

	٢	Test Purpose		
Identifier:	TP_MOB_3029_01			
Summary:	Test generation of Fast binding up	odate		
References:	RQ_001_3029, RQ_001_3164			
IUT Role:	Mobile_Node	Test case:	TC_MOB_3029_01	
with { IUT	'having successfully comp	leted exchange	of RtSolPr and PrRtAdv'	
and IUT	'aware of the existence of	f an NAR'		
and IUT	connected on Previous_Acc	ess_Router_link		
}				
ensure that				
{ when { IUT is requested to send Fast Binding Update }				
then { I	then { IUT sends Fast_Binding_Update on Previous_Access_Router_link			
	containing destination address			
	set to address of Previous Access Router			
a	and containing Home Address option			
a	and containing alternate Care of Address mobility option			
indicating the new Care of address }				
}				

	Test Purpose				
Identifier:	TP_MOB_3030_01				
Summary:	Test generation of Fast binding update				
References:	RQ_001_3030, RQ_001_3041, RQ_001_3167, RQ_001_3184				
IUT Role:	Mobile_Node Test case: TC_MOB_3030_01				
with { IUT	'having successfully completed exchange of RtSolPr and PrRtAdv'				
and IUT	connected <b>on</b> New_Access_Router_link				
}					
ensure that					
$\{ \text{ when } \{ 1 \}$	<pre>UUT is requested to send Fast_Binding_Update }</pre>				
then $\{ 1$	<pre>then { IUT sends Fast_Neighbor_Advertisement on New_Access_Router_link</pre>				
	containing destination_address				
	set to address of New Access Router				
	and containing Mobility_Header_Link_Layer_Address_Option				
a	and containing (inner_Fast_Binding_Update				
	containing destination_address				
	set to address of Previous_Access_Router				
<pre>and containing Home_Address_option) }</pre>					
}					

	7	Test Purpose		
Identifier:	TP_MOB_3030_02			
Summary:	Test tunnelling of Fast binding update			
References:	RQ_001_3030			
IUT Role:	Router	Test case:	TC_MOB_3030_02	
with { IUT	established as New_Access	_Router <b>of</b> Mobile_Node		
}				
ensure that				
{    when {        IUT receives Fast_Neighbor_Advertisement from Mobile_Node				
<b>containing</b> (inner_Fast_Binding_Update				
containing destination_address				
<pre>set to address of Previous_Access_Router) }</pre>				
then { I	JT <b>sends</b> Fast_Binding_Update <b>to</b> Previous_Access_Router			
	containing destination_address			
	set to address of			
}				

	Test Purpose			
Identifier:	TP_MOB_3031_01			
Summary:	Test reaction to Fast binding update			
References:	RQ_001_3031, RQ_001_3054, RQ_001_3132, RQ_001_3117, RQ_001_3129			
IUT Role:	Router Test case: TC_MOB_3031_01			
with { IUT	established as Previous_Access_Router of Mobile_Node			
and IUT	'having successfully completed exchange of RtSolPr and PrRtAdv'			
}				
ensure that				
$\{ \text{ when } \{ I \}$	UT <b>receives</b> Fast_Binding_Update <b>from</b> Mobile_Node			
	containing source_address			
	<b>set to previous</b> Care_of_address			
	<pre>and containing alternate_Care_of_Address_mobility_option</pre>			
	<pre>indicating a new Care_of_address }</pre>			
then { I	UT <b>sends</b> Handover_Initiate <b>to</b> New_Access_Router			
	containing Authentication_Header			
a	nd containing link_layer_address_of_Mobile_Node_option			
	<pre>indicating link_layer_address_of_Mobile_Node</pre>			
а	nd containing code set to 0			
a	nd containing new_Care_of_Address_option			
	<pre>indicating received new Care_of_address }</pre>			
}				

Test Purpose			
Identifier:	TP_MOB_3031_02		
Summary:	Test reaction to Fast binding update		
References:	RQ_001_3031, RQ_001_3133, RQ_001_3117, RQ_001_3124, RQ_001_3129		
IUT Role:	Router Test case: TC_MOB_3031_02		
with { IUT	established as Previous_Access_Router of Mobile_Node		
and IUT	'having successfully completed exchange of RtSolPr and PrRtAdv'		
}			
ensure that			
$\{ \text{ when } \{ I \}$	{ IUT receives Fast_Binding_Update from Mobile_Node		
	containing source_address		
	<pre>not set to previous Care_of_address }</pre>		
then { I	IUT <b>sends</b> Handover_Initiate <b>to</b> New_Access_Router		
	containing Authentication_Header		
a	and containing link_layer_address_of_Mobile_Node_option		
	<pre>indicating link_layer_address_of_Mobile_Node</pre>		
a	nd containing code set to 1		
a	nd containing S_flag set to 0 }		
}			

	Test Purpose			
Identifier:	TP_MOB_3035_01			
Summary:	Test reaction to Handover Initiate			
References:	RQ_001_3035, RQ_001_3135, RQ_001_3139, RQ_001_3148, R0	Q_001_3150		
IUT Role:	Router Test case:	outer Test case: TC_MOB_3035_01		
with { IUT	<pre>established as New_Access_Router of Mobile_Node</pre>			
}				
ensure that				
$\{ \text{ when } \{$	<pre>IUT receives Handover_Initiate from Previous_A containing code set to 0 and containing S flag set to 1 }</pre>	ccess_Router		
then $\{$		nds Handover_Acknowledge to Previous_Access_Router		

(			·······
		containing	Authentication_Header
	and	containing	new_Care_of_Address_option
		indicating	<pre>new Care_of_Address }</pre>

J

		Test Purpose		
Identifier:	TP_MOB_3035_02			
Summary:	Test reaction to Handover Initiate			
References:	RQ_001_3035, RC	_001_3135, RQ_001_3139, RQ_001_3 <sup>2</sup>	150	
UT Role:	Router	Test case:	TC_MOB_3035_02	
with { IUT	established as	New_Access_Router of Mobile_N	ode	
and IUT	'having tunnel	'having tunnelled Fast binding update to PAR'		
}				
ensure that				
$\{ \texttt{when } \{$		ndover_Initiate <b>from</b> Previous_ code <b>set to</b> 1 }	Access_Router	
then $\{$	UT <b>sends</b> Handover_Acknowledge <b>to</b> Previous_Access_Router			
	<b>containing</b> Authentication_Header }			
}				

	Test Purpose			
Identifier:	TP_MOB_3036_01			
Summary:	Test reaction to Handover Acknowledge			
References:	RQ_001_3036, RQ_001_3031, RQ_001_3056, RQ_001_3179			
IUT Role:	Router Test case: TC_MOB_3036_01			
with { IUT	established as Previous_Access_Router of Mobile_Node			
and IUT	having received Fast_Binding_Update from Mobile Node			
and IUT	having sent Handover Initiate to New Access Router			
}				
ensure that				
$\{ \text{ when } \{ I \}$	JT <b>receives</b> Handover_Acknowledge <b>from</b> New_Access_Router			
	<b>containing</b> code <b>set</b> to 3 'Handover Accepted, NCoA assigned' }			
then { I	T sends Fast Binding Acknowledgement to Mobile Node			
	containing status set to 1 'Fast binding update accepted			
	but NCOA is invalid'			
a	nd containing alternate Care of Address }			
}	,			

			Test Purpose		
Identifier	r:	TP_MOB_3036_02			
Summary	y:	Test reaction to Har	est reaction to Handover Acknowledge		
Referenc	es:	RQ_001_3036, RQ	_001_3031		
IUT Role	:	Router	Test case:	TC_MOB_3036_02	
} ensure	and IU that	UT having sent Har	l Fast_Binding_Update from Mol dover_Initiate to New_Access	_Router	
ť	when then	<b>containing</b> c { IUT <b>sends</b> Fast_E	dover_Acknowledge from New_Ac ode indicating 0 'Handover Ac inding_Acknowledgement to Mol tatus set to 0 'Fast binding	ccepted, NCoA valid' } bile_Node	

		Test Purpose		
Identifier:	TP_MOB_3037_01			
Summary:	Test reaction to Fast	Binding Acknowledgement		
References:	RQ_001_3037, RQ_	001_3040, RQ_001_3184		
IUT Role:	Mobile_Node	Test case:	TC_MOB_3037_01	
<pre>with { IUT awa</pre>	y_from_home			
IUT hav	ing sent Fast_Bin	ding_Update		
}				
ensure that				
$\{ \texttt{when } \{$	IUT receives Fast	_Binding_Acknowledgement		
	containing status set to 1 'Fast binding update accepted			
	but NCoA is invalid'			
	<pre>and containing alternate_Care_of_address}</pre>			
then {	IUT accepts Fast Binding Acknowledgement			
	and optionally			
	(IUT sends Fast Neighbor Advertisement			
	containin	g destination address		
	set t	o address of New Access Ro	uter	
	and containin	g Mobility Header Link Lay	er Address Option) }	
}			/	

		Test Purpose	
Identifier:	TP_MOB_3039_01		
Summary:	Test repetition of sending of Fast binding update		
References:	RQ_001_3039		
IUT Role:	Mobile_Node	Test case:	TC_MOB_3039_01
· · · · ·	/_from_home i <b>ng sent</b> Fast_Bindin	g_Update	
		_Binding_Acknowledgemen ng_Update FBU_RETRIES <b>t</b>	

		Test Purpose		
Identifier:	TP_MOB_3043_01			
Summary:	Test reaction to Fast Neighbor Advertisement			
References:	RQ_001_3043, RQ_001_3045, RQ_001_3221			
IUT Role:	Router	Test case:	TC_MOB_3043_01	
with { IUT	established as	New_Access_Router of Mobile_	Node	
and IUT	'having finishe	ed Fast Binding procedure wit	th Mobile_Node'	
}			_	
ensure that				
$\{ \text{ when } \{ \} \}$	IUT receives Fag	st_Neighbor_Advertisement		
	containing 🕯	source_address		
	set to u	<pre>inacceptable Care_of_address</pre>	}	
then { ]	IUT sends Router	_Advertisement		
		lestination_address		
	set to a	received Care_of_address		
a	and containing 1	Jeighbor_Advertisement_Acknow	wledgement_option }	
}				

		Test Purpose		
dentifier:	TP_MOB_3046_01			
Summary:	Test reaction on Route	Test reaction on Router Advertisement in response to Fast Neighbor Advertisement		
References:	RQ_001_3046, RQ_00	1_3049, RQ_001_3222		
IUT Role:	Mobile_Node	Test case:	TC_MOB_3046_01	
with { IUT aw	ay_from_home		· · · · · · · · · · · · · · · · · · ·	
IUT 'h	aving finished Fast	Binding procedure with NA	AR '	
IUT <b>ha</b>	ving sent Fast Neig	hbor_Advertisement		
}				
ensure that				
$\{ \texttt{when } \}$	IUT receives R	outer_Advertisement		
	containing	(Neighbor_Advertisement_A	Acknowledgement_option	
		containing option_code		
		set to 2 'The new Co	DA is invalid;	
		use the su	upplied CoA'	
	and	<b>d containing new</b> Care_of_a	address) }	
then {	IUT sends IPv6	Packet		
	containing	source_address		
	set to	received new Care_of_add	ress	
	and IUT sends no F	ast_Binding_Update }		
}				

		Test Purpose	
Identifier:	TP_MOB_3048_01		
Summary:	Test reaction on Router A	dvertisement in response to Fa	st Neighbor Advertisement
References:	RQ_001_3048, RQ_001_	_3047	
IUT Role:	Mobile_Node	Test case:	TC_MOB_3048_01
<pre>with { IUT away</pre>	/_from_home		
IUT 'hav	ving finished Fast B	inding procedure with N	AR '
IUT havi	<b>ng sent</b> Fast_Neighb	or_Advertisement	
}			
ensure that			
$\{ \text{ when } \{ I \}$	UT receives Router_	Advertisement	
	containing Neigh	bor_Advertisement_Ackno	wledgement_option
	contai	ning option_code set to	1 'The new CoA
			is invalid'
	and not contai	<pre>ning new Care_of_addres</pre>	s }
then { I		Fast_Neighbor_Advertis	
	conta	<b>ining</b> inner_Fast_Bindin	g_Update }
}			

		Test Purpose		
Identifier:	TP_MOB_3223_01			
Summary:	Test reaction on Router Advertise	Test reaction on Router Advertisement in response to Fast Neighbor Advertisement		
References:	RQ_001_3223			
IUT Role:	Mobile_Node	Test case:	TC_MOB_3223_01	
<pre>with { IUT away</pre>	/_from_home			
IUT 'hav	ving finished Fast Binding	procedure with	NAR '	
IUT havi	<b>ng sent</b> Fast_Neighbor_Adv	ertisement		
}				
ensure that				
$\{ \text{ when } \{ I \}$	UT receives Router_Advert	isement		
	containing (Neighbor_A		knowledgement_option	
	-	option_code		
		28 'Link Layer A	Address unrecognized') }	
then $\{ I \}$	UT <b>sends no</b> IPv6Packet			
	containing so			
		evious Care_of_A		
	or set to new	<b>w</b> Care_of_Addres	ss }	
}				

## A.2.3 Miscellaneous

## A.2.3.1 Handover capability exchange

		Test Purpose			
Identifier:	TP_MOB_3053_01				
Summary:	Test repetition of sending of Router Solicitation for Proxy Advertisement				
References:	RQ_001_3053				
IUT Role:	Mobile_Node	Mobile Node Test case: TC MOB 3053 01			
<pre>with { IUT away</pre>	y_from_home				
IUT hav	ing sent Router_So	licitation_for_Proxy_Adver	rtisement		
}					
ensure that					
$\{ \texttt{when } \{$	IUT receives no Pro	<pre>pxy_Router_Advertisement }</pre>			
then {	UT sends Router_Solicitation_for_Proxy_Advertisement				
	for RTSO	LPR_RETRIES times }			
}					

Test Purpose				
Identifier:	TP_MOB_3053_02	TP_MOB_3053_02		
Summary:	Test repetition of sendi	ng of Router Solicitation for Proxy	Advertisement	
References:	RQ_001_3053	RQ_001_3053		
IUT Role:	Mobile_Node	Test case:	TC_MOB_3053_02	
	vay_from_home	ligitation for Drown Adve	rtigomont	
	SOLPR RETRIES times	licitation_for_Proxy_Adve	rusement	
}				
ensure that				
$\{$ when $\}$	[ IUT receives no Pr	oxy_Router_Advertisement	}	
then	IUT <b>sends no</b> Route	r_Solicitation_for_Proxy_2	Advertisement }	
}				

## A.2.3.2 Fast or erroneous movement

		Test Purpose		
Identifier:	TP_MOB_3058_01			
Summary:	Test generation of Fast bir	Test generation of Fast binding update on early return to PAR		
References:	RQ_001_3058			
IUT Role:	Mobile_Node	Test case:	TC_MOB_3058_01	
<pre>with { IUT 'hay</pre>	ving successfully com	pleted exchange of Rts	SolPr and PrRtAdv'	
IUT hav:	<b>ing no</b> binding <b>to</b> New	Access_Router		
}				
ensure that				
$\{ \text{ when } \{ \}$		ted Proxy_Router_Adver		
		cess_Point_link_local_		
	<pre>indicating link_layer_address of Previous_Access_Router</pre>			
	(contai	<b>.ning</b> option_code		
	se	et to 1 'message sent u	unsolicited') }	
this te	ells the Mobile_Node	that it is back on the	e PAR link	
then { [	IUT <b>sends</b> Fast_Bindir	ng_Update		
	containing destin	nation_address		
		ss <b>of</b> Previous_Access_I	Router	
i	and containing Home_A	Address_option		
	indicating previo	ous Care_of_Address		
i	and containing lifeti	me set to 0 }		
}				

- IETF RFC 2473: "Generic Packet Tunnelling in IPv6 Specification".
- IETF RFC 3776: "Using IPsec to Protect Mobile IPv6 Signalling Between Mobile Nodes and Home Agents".

# History

	Document history		
V1.1.1	May 2007	Publication	
V1.2.0	April 2008	Publication	