



	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x				
Туре	FRR	FRR	FRR	FRR								
Commit ID	ge1b0c9399	a87315e	gff905c6c3	9931db7								
Commit Date	2020-02-06	2020-06-14	2021-05-27	2021-07-29								
PIM-SM-1.1	RFC 4601 s3 p7 PIM-SM Protocol Overview											
MUST	Regardless of how it is created, the primary role of the MRIB in the PIM protocol is to provide the next hop router along a multicast-capable path to each destination subnet. The MRIB is used to determine the next hop neighbor to which any PIM Join/Prune message is sent Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 Free BSD 10.3											
	untested	untested	untested	untested								
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-1.2	NEGATIVE R	FC 4601 s3 p7	PIM-SM Proto	ocol Overview								
MUST	PIM protocol path to each	l is to provi n destination	ide the next n subnet. The	e primary rol hop router a make MRIB is use Prune message Free BSD 10.3 untested	along a multi ed to determi	cast-capable						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-1.3	RFC 4601 s3.	.1 p8 Phase Or	ne: RP Tree	•				•				
MAY	traffic destIGMP[6] or I	Tined for a rMLD[4], but of Free BSD 10.3	nulticast groother mechan: Free BSD 10.3	expresses its oup. Typical isms might al	ly it does t	his using						
	Ubuntu 16.04: unpredict	Ubuntu 16.04:	Ubuntu 18.04:	Ubuntu 18.04:								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-1.4	RFC 4601 s3.	.1 p8 Phase Or	ne: RP Tree									
MUST	Join message	es are resent	periodical	ly so long as	the receive	er remains in	1					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-1.5	NEGATIVE: B	RFC 4601 s3.1	n8 Phase One				1			
MUST	The RP receives these encapsulated data packets, decapsulates them,									
INIOST		s them onto	-	-	-	,				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-1.6	RFC 4601 s3.2 p9 Phase Two: Register-Stop									
MUST	reasons, the To do this, from source	e RP will now	rmally choose receives a m G, it will no	continue ind e to switch t register-enca ormally initi	to native for	rwarding. ta packet				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-1.7	RFC 4601 s3	.2 p9 Phase Tv	vo: Register-St	ор						
MUST	When packets from S also start to arrive natively at the RP, the RP will be receiving two copies of each of these packets. At this point, the RP starts to discard the encapsulated copy of these packets, and it sends a RegisterStop message back to S's DR to prevent the DR unnecessarily encapsulating the packets.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-1.8	RFC 4601 s3	.3 p10 Phase T	hree: Shortest	-Path Tree						
MUST	the DR, may	optionally : ific shortest	initiate a t	on the receiransfer from	the shared t	tree to a				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





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	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-1.9	RFC 4601 s3.	.3 p10 Phase T	hree: Shortest	-Path Tree						
MUST	will be rece one from the the SPT, the	eiving two co e RPT. When t	opies of the the first tra ream router s	data - one faffic starts starts to drottree.	rom the SPT to arrive fr	and				
	untested	untested	untested	untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-1.10	RFC 4601 s3.	3 p10 Phase T	hree: Shortest	-Path Tree						
MUST	be receiving RPT. When the upstream routhe RP tree RP. This is (Note: Here	g two copies ne first tran uter starts t . In addition s known as an DUT is cons:	of the data ffic starts to co drop the pon, it sends n (S,G,rpt) I idered as an	- one from to arrive from the control of the contro	the SPT and on the SPT, the from S that the message the state. The vertical the second state is the second state.	one from the the DR or arrive via towards the				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-1.11	RFC 4601 s3.	4 p10 Source-	Specific Joins							
MAY	IGMPv3 permits a receiver to join a group and specify that it only wants to receive traffic for a group if that traffic comes from a particular source.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-1.12	NEGATIVE R	FC 4601 s3.4 _l	o10 Source-Sp	ecific Joins						
MAY	wants to rec	ceive traffic source.	c for a group	group and spoif that tra	ffic comes f					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-1.13	RFC 4601 s3.	4 p10 Source-	Specific Joins						
MAY	is currently groups in the IGMPv3 joins	y set aside in side in	for source-sp eceivers shou	om 232.0.0.0 pecific multi ald only issu ves a non-sou d ignore it.	.cast in IPv4 le source-spe	1. For ecific			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-1.14	NEGATIVE R	FC 4601 s3.4 _l	p10 Source-Sp	ecific Joins			•		
MAY	The range of multicast addresses from 232.0.0.0 to 232.255.255.255 is currently set aside for source-specific multicast in IPv4. For groups in this range, receivers should only issue source-specific IGMPv3 joins. If a PIM router receives a non-source-specific join for a group in this range, it should ignore it. (Note: Send IGMPv3 Membership Report with empty source list)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-1.15	RFC 4601 s3.	5 p10 Source-	Specific Prune	S					
MAY	only wants tome from a perform a (co receive to specific son (*,G) join as	raffic for a arce or source normal,	oin a group a group if tha ces. In this	at traffic do	oes not	T		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-1.16	RFC 4601 s3.	7 p12 RP Disc	overy						
MAY	Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 Free BSD 12.0								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-1.17	RFC 4601 s3.	.7 p12 RP Disc	covery							
MAY	PIM-SM routers need to know the address of the RP for each group for which they have (*,G) state. This address is obtained either automatically (e.g., embedded-RP), through a bootstrap mechanism or through static configuration. (Note: through static configuration)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-1.18	ANVL Setup \	Verification								
MUST	Quick test to	to verify the	at DUT sends	Assert messa	ge with meti	ric value				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-1.19	ANVL Setup \	Verification								
MUST	1	to verify the		Assert messa	ge with meta	ric				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-1.20	ANVL Setup \	/erification								
MUST		_	at DUT sends it come from	Register mes	sage with II	Source set				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-2.1	RFC 4601 s4.	.1.2 p15 (*,*,RF	P) State						
MUST	The upstream (*,*,RP) Join/Prune Timer is used to send out periodic Join(*,*,RP) messages, and to override Prune(*,*,RP) messages from peers on an upstream LAN interface.								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-2.2	RFC 4601 s4.	.1.2 p15 (*,*,RF	P) State						
MUST	changes ther	n the RPF ne:	ighbor toward	P is stored but is stored but is stored but is stored by its stored but is stored by its stored but is stored but in stored but is stored but in stored but is stored but in stored but is stored but is stored but in stored but	change. If	it does			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-2.3	RFC 4601 s4.	.1.2 p15 (*,*,RF	P) State						
MUST	The last RPF neighbor towards the RP is stored because if the MRIB changes then the RPF neighbor towards the RP may change. If it does so, then we need to trigger a Prune(*,*,RP) to the old upstream neighbor.								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-3.1	RFC 4601 s4.	1.3 p17 (*,G) \$	State			•	•	•	
MUST	Join(*,G) me			is used to s	_		1		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-3.2	RFC 4601 s4.	.1.3 p17 (*,G) \$	L State							
MUST	The last RPF neighbor towards the RP is stored because if the MRIB changes then the RPF neighbor towards the RP may change. If it does so, then we need to trigger a new Join (*,G) to the new upstream neighbor									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-3.3	RFC 4601 s4.	.1.3 p17 (*,G) \$	State							
MUST	changes then	n the RPF ne:	ighbor toward	P is stored has the RP may	change. If	it does				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-4.1	RFC 4601 s4.	1.4 p19 (S,G)	State							
MUST	The upstream (S,G) Join/Prune Timer is used to send out periodic Join(S,G) messages, and to override Prune(S,G) messages from peers on an upstream LAN interface.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-4.2	RFC 4601 s4.	1.4 p19 (S,G)	State							
MUST	changes then	n the RPF ne:	ighbor toward	is stored be ds the S may oin (S,G) to	change. If i	lt does				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Delegee	Dologo	Dologoo	Dologoo	Dologo	Delegee	Delegee	Dologoo			
	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x			
PIM-SM-4.3	RFC 4601 s4.	.1.4 p19 (S,G)	State			•	•				
MUST	changes then	F neighbor to n the RPF nei need to trig	ighbor toward	ds the S may	change. If	it does					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-4.4	RFC 4601 s4.	.1.4 p19 (S,G)	State								
MUST	that the ups	er detects th stream neighb ate state by	oor towards S sending a Jo	S has reboote pin(S,G).							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-4.5	NEGATIVE R	NEGATIVE RFC 4601 s4.1.4 p19 (S,G) State									
MUST	(S,G) Shorte (S,G) state when the sou FALSE, only G. When SP	is used to in est Path Tree and still be urce-specific (*,G) forwar Thit is TRUE, SPTbit is FA	e (SPT) or or e forwarding c tree is beinding state in ding state in both (*,G)	n the (*,G) to on (*,G) sta ing construct is used to fo and (S,G) fo	ree. A rout te during thed. When SI rward packet rwarding sta	ter can have ne interval PTbit is as from S to ate are used.					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-4.6	NEGATIVE R	FC 4601 s4.1.4	4 p19 (S,G) Sta	ate							
MUST	(S,G) Shorte (S,G) state when the sou FALSE, only G. When SPT	is used to in est Path Tree and still be urce-specific (*,G) forwar oit is TRUE, SPTbit is FA	e (SPT) or or e forwarding tree is being state in both (*,G) a	n the (*,G) to on (*,G) standing construct as used to found (S,G) for	ree. A rout te during thed. When SI rward packet warding stat	ter can have ne interval PTbit is as from S to te are used.					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-4.7	RFC 4601 s4.	1.4 p19 (S,G)	State			•		•		
MUST	(S,G) Shorte (S,G) state when the sou FALSE, only G. When SP	est Path Tree and still be arce-specific (*,G) forwar	e (SPT) or or e forwarding c tree is be rding state : , both (*,G)	n the (*,G) to on (*,G) standing construction is used to for	ree. A rout ate during the ed. When SE orward packet	ne interval PTbit is				
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3						
	untested	untested	untested	untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-4.8	RFC 4601 s4.	1.4 p20 (S,G)	State			•		1		
MUST	RFC 4601 s4.1.4 p20 (S,G) State Amongst other things, this is necessary for the so-called "turnaround rules" - when the RP uses (S,G) joins to stop encapsulation, and then (S,G) prunes to prevent traffic from unnecessarily reaching the RP. Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 Free BSD 10.3									
	untested	untested	untested	untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-5.1	RFC 4601 s4.	RFC 4601 s4.2 p27 Data Packet Forwarding Rules								
MUST	<pre>if(iif == RPF_interface(S) AND SPTbit(S,G) == TRUE) { oiflist = inherited_olist(S,G) } else if(iif == RPF_interface(RP(G)) AND SPTbit(S,G) == FALSE) { oiflist = inherited_olist(S,G,rpt) CheckSwitchToSpt(S,G) } else { # Note: RPF check failed # A transition in an Assert FSM, may cause an Assert(S,G) # or Assert(*,G) message to be sent out interface iif. # See section 4.6 for details. if (SPTbit(S,G) == TRUE AND iif is in inherited_olist(S,G)) { send Assert(S,G) on iif } else if (SPTbit(S,G) == FALSE AND</pre>									
	interface is forwarded to	s the same as the oif-lis	s a matching st of (S,G))	ntry is set, (S,G) ifaceI				1		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





Release Release Release Release Release Release Release Release 7.2.1 7.3 7.5.1 8.0 X.X.X x.x.x X.X.X X.X.X PIM-SM-5.2 NEGATIVE RFC 4601 s4.2 p27 Data Packet Forwarding Rules if(iif == RPF_interface(S) AND SPTbit(S,G) == TRUE) { MUST oiflist = inherited_olist(S,G) } else if(iif == RPF_interface(RP(G)) AND SPTbit(S,G) == FALSE) { oiflist = inherited_olist(S,G,rpt) CheckSwitchToSpt(S,G) else { # Note: RPF check failed # A transition in an Assert FSM, may cause an Assert(S,G) # or Assert(*,G) message to be sent out interface iif. # See section 4.6 for details. if ($SPTbit(S,G) == TRUE \ AND \ iif is in inherited_olist(S,G)$) { send Assert(S,G) on iif } else if (SPTbit(S,G) == FALSE AND iif is in inherited_olist(S,G,rpt) { send Assert(*,G) on iif oiflist = oiflist (-) iif forward packet on all interfaces in oiflist (Note: If the SPT-bit of an (S,G) entry is set, and if incoming interface is same as RPF_interface(s), the packet is forwarded to the oif-list of (S,G)) Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 untested untested untested untested Ubuntu 16.04: Ubuntu 16.04: Ubuntu 18.04: Ubuntu 18.04: **FAIL** FAII FAII FAII Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 untested untested untested untested



PIM Results



Release Release Release Release Release Release Release Release 7.2.1 7.3 7.5.1 8.0 X.X.X x.x.x X.X.X X.X.X PIM-SM-5.3 RFC 4601 s4.2 p27 Data Packet Forwarding Rules if(iif == RPF_interface(S) AND SPTbit(S,G) == TRUE) { MUST oiflist = inherited_olist(S,G) } else if(iif == RPF_interface(RP(G)) AND SPTbit(S,G) == FALSE) { oiflist = inherited_olist(S,G,rpt) CheckSwitchToSpt(S,G) else { # Note: RPF check failed # A transition in an Assert FSM, may cause an Assert(S,G) # or Assert(*,G) message to be sent out interface iif. # See section 4.6 for details. if ($SPTbit(S,G) == TRUE \ AND \ iif is in inherited_olist(S,G)$) { send Assert(S,G) on iif } else if (SPTbit(S,G) == FALSE AND iif is in inherited_olist(S,G,rpt) { send Assert(*,G) on iif oiflist = oiflist (-) iif forward packet on all interfaces in oiflist (Note: On receiving multicast data packet if SPT-bit of an (S,G) entry is cleared, and ifaceIn differs than a matching (S,G) ifaceIn but matches with a (*,G) ifaceIn, packet is forwarded to the oif-list of (*,G)) Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 untested untested untested untested Ubuntu 16.04: Ubuntu 16.04: Ubuntu 18.04: Ubuntu 18.04: pass pass pass pass Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 untested untested untested untested





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-5.4	RFC 4601 s4.	.2 p27 Data Pa	cket Forwardir	ng Rules					
MUST	<pre>if(iif == RPF_interface(S) AND SPTbit(S,G) == TRUE) { oiflist = inherited_olist(S,G) } else if(iif == RPF_interface(RP(G)) AND SPTbit(S,G) == FALSE) { oiflist = inherited_olist(S,G,rpt) CheckSwitchToSpt(S,G) } else { # Note: RPF check failed # A transition in an Assert FSM, may cause an Assert(S,G) # or Assert(*,G) message to be sent out interface iif. # See section 4.6 for details. if (SPTbit(S,G) == TRUE AND iif is in inherited_olist(S,G)) { send Assert(S,G) on iif } else if (SPTbit(S,G) == FALSE AND</pre>								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





Release Release Release Release Release Release Release Release 7.2.1 7.3 7.5.1 8.0 X.X.X x.x.x X.X.X X.X.X PIM-SM-5.5 RFC 4601 s4.2 p27 Data Packet Forwarding Rules if(iif == RPF_interface(S) AND SPTbit(S,G) == TRUE) { MUST oiflist = inherited_olist(S,G) } else if(iif == RPF_interface(RP(G)) AND SPTbit(S,G) == FALSE) { oiflist = inherited_olist(S,G,rpt) CheckSwitchToSpt(S,G) else { # Note: RPF check failed # A transition in an Assert FSM, may cause an Assert(S,G) # or Assert(*,G) message to be sent out interface iif. # See section 4.6 for details. if ($SPTbit(S,G) == TRUE \ AND \ iif is in inherited_olist(S,G)$) { send Assert(S,G) on iif } else if (SPTbit(S,G) == FALSE AND iif is in inherited_olist(S,G,rpt) { send Assert(*,G) on iif oiflist = oiflist (-) iif forward packet on all interfaces in oiflist (Note: If the SPT-bit of an (S,G) entry is not set, and if incoming interface is the same as a matching $RPF_interface(RP(G))$, the packet is forwarded to the oif-list of (S,G,rpt)) Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 untested untested untested untested Ubuntu 16.04: Ubuntu 16.04: Ubuntu 18.04: **Ubuntu 18.04** unpredict unpredict unpredict unpredict Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 untested untested untested untested PIM-SM-5.6 RFC 4601 s4.2 p27 Data Packet Forwarding Rules if (SPTbit(S,G) == TRUE AND iif is in inherited_olist(S,G)) { MUST send Assert(S,G) on iif } else if (SPTbit(S,G) == FALSE AND iif is in inherited_olist(S,G,rpt) { send Assert(*,G) on iif (Note: On receipt a data from S to G on interface iif, if SPT-bit is TRUE, it will send an Assert(S,G) on iif.) Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 untested untested untested untested Ubuntu 16.04: Ubuntu 16.04: Ubuntu 18.04: Ubuntu 18.04: unpredict unpredict unpredict unpredict Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 untested untested untested untested





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-5.7	RFC 4601 s4.	2 p27 Data Pa	cket Forwardin	g Rules						
MUST	<pre>if (SPTbit(S,G) == TRUE AND iif is in inherited_olist(S,G)) { send Assert(S,G) on iif } else if (SPTbit(S,G) == FALSE AND</pre>									
	Ubuntu 16.04: Ubuntu 16.04: Ubuntu 18.04: Ubuntu 18.04: unpredict unpredict unpredict									
	Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 untested untested untested									
PIM-SM-6.1	RFC 4601 s4.	RFC 4601 s4.2.2 p29 Setting and Clearing the (S,G) SPTbit								
MUST	<pre>Thus, when a packet arrives, the (S,G) SPTbit is updated as follows: void Update_SPTbit(S,G,iif) { if (iif == RPF_interface(S) AND JoinDesired(S,G) == TRUE AND (DirectlyConnected(S) == TRUE OR RPF_interface(S) != RPF_interface(RP(G)) OR inherited_olist(S,G,rpt) == NULL OR ((RPF'(S,G) == RPF'(*,G)) AND</pre>									
			_	(*,G) Join m	nessage					
	Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 untested untested untested untested									
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 untested untested untested untested									





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x
PIM-SM-6.2	RFC 4601 s4.	2.2 p29 Setting	g and Clearing	the (S,G) SPT	bit	•		•
MUST	void Update_SPTb: if (iif :	it(S,G,iif) == RPF_inter; JoinDesired (DirectlyCo OR RPF_int OR inherit OR ((RPI	{ cace(S) cace(S) connected(S) cerface(S) ced_olist(S,C) c'(S,G) == RF c'(S,G) != NC Assert_Loser TRUE cace(S)	== TRUE = RPF_interfa G,rpt) == NUI PF'(*,G)) AN	ace(RP(G)) LL ID			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-6.3	RFC 4601 s4.	2.2 p29 Setting	g and Clearing	the (S,G) SPT	bit			
MUST	<pre>Thus, when a packet arrives, the (S,G) SPTbit is updated as follows: void Update_SPTbit(S,G,iif) { if (iif == RPF_interface(S) AND JoinDesired(S,G) == TRUE AND (DirectlyConnected(S) == TRUE OR RPF_interface(S) != RPF_interface(RP(G)) OR inherited_olist(S,G,rpt) == NULL OR (RPF'(S,G) == RPF'(*,G)) AND</pre>							
	is not NULL	, the RPF int	terface to S	TRUE because is different (*,*,RP) Joi	from the RI		Γ	
	untested	untested	untested	untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x			
PIM-SM-6.4	RFC 4601 s4.	2.2 p29 Setting	g and Clearing	the (S,G) SPT	bit						
MUST	if (iif : AND AND Set SP: } Here the Jo:	<pre>Void Update_SPTbit(S,G,iif) { if (iif == RPF_interface(S) AND JoinDesired(S,G) == TRUE AND (DirectlyConnected(S) == TRUE OR RPF_interface(S) != RPF_interface(RP(G)) OR inherited_olist(S,G,rpt) == NULL OR ((RPF'(S,G) == RPF'(*,G)) AND</pre>									
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	,						
	untested	untested	untested	untested							
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-6.5	RFC 4601 s4.	2.2 p29 Setting	g and Clearing	the (S,G) SPT	bit						
MUST	<pre>Thus, when a packet arrives, the (S,G) SPTbit is updated as follows: void Update_SPTbit(S,G,iif) { if (iif == RPF_interface(S) AND JoinDesired(S,G) == TRUE AND (DirectlyConnected(S) == TRUE OR RPF_interface(S) != RPF_interface(RP(G)) OR inherited_olist(S,G,rpt) == NULL OR ((RPF'(S,G) == RPF'(*,G)) AND</pre>										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-6.6	RFC 4601 s4.	2.2 p29 Setting	g and Clearing	the (S,G) SPT	bit				
MUST	void Update_SPTb: if (iif = AND	it(S,G,iif) { == RPF_inter; JoinDesired { OR RPF_int OR inherit OR (RPF	{ cace(S) cace(S) cace(S) cerface(S) cerface(S) ced_olist(S,G) cace(S) cace(S)	== TRUE = RPF_interfa G,rpt) == NUI PF (*,G)) AN JLL)) c(S,G,iif)) TRUE, Direct s same as RPF L through (*,	ace(RP(G)) LL ND { :lyConnected(F_interface(F	S)			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: Ubuntu 16.04: Ubuntu 18.04: Ubuntu 18.04: FAIL FAIL FAIL								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-6.7	RFC 4601 s4.	.2.2 p29 Setting	g and Clearing	the (S,G) SPT	bit				
MUST	<pre>Thus, when a packet arrives, the (S,G) SPTbit is updated as follows: void Update_SPTbit(S,G,iif) { if (iif == RPF_interface(S) AND JoinDesired(S,G) == TRUE AND (DirectlyConnected(S) == TRUE OR RPF_interface(S) != RPF_interface(RP(G)) OR inherited_olist(S,G,rpt) == NULL OR (RPF'(S,G) == RPF'(*,G)) AND</pre>								
	Free BSD 10.3 untested Ubuntu 16.04:	Free BSD 10.3 untested	Free BSD 10.3 untested Ubuntu 18.04:	Free BSD 10.3 untested Ubuntu 18.04:					
	rree BSD 12.0 untested	unpredict Free BSD 12.0 untested	unpredict Free BSD 12.0 untested	unpredict Free BSD 12.0 untested					
PIM-SM-7.1	RFC 4601 s4.	.3.1 p30 Sendi	l ng Hello Messa	i					
MUST	RFC 4601 s4.3.1 p30 Sending Hello Messages PIM Hello messages are sent periodically on each PIM-enabled interface. Hello messages must be sent every <hello-period> seconds.</hello-period>								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-7.2	RFC 4601 s4.	3.1 p30 Sendi	ng Hello Messa	ages					
MUST	point-to-po	int links, a	nd are multic	active interfoast to the Stast	ALL-PIM-ROUT				
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					



FRROUTING RFC Compliance Test Report PIM Results



	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-7.3	RFC 4601 s4.	.3.1 p31 Sendi	ng Hello Messa	ages					
MUST		at interface		or a router random value					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-7.4	NEGATIVE R	FC 4601 s4.3.	1 p31 Sending	Hello Message	es				
MAY	a router uni	_	ve first hear	Join/Prune ord a Hello me					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-7.5	NEGATIVE R	FC 4601 s4.3.	1 p31 Sending	Hello Message	es				
MAY	Note that neighbors will not accept Join/Prune or Assert messages from a router unless they have first heard a Hello message from that router. (Note: This test is for (*,G) join state)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-7.6	NEGATIVE R	FC 4601 s4.3.	1 p31 Sending	Hello Message	es				
MAY	a router uni	_	ve first hear	Join/Prune ord a Hello me state)					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-7.7	RFC 4601 s4	.3.1 p31 Sendi	ng Hello Messa	ages RFC 460	s4.6 p83 PIM	Assert Messa	ges	•	
MUST	a router uni	receives an	ve first hear Assert messa IM Hello mesa	Join/Prune ord a Hello me age from a pa sage from tha without furth	essage from t articular IP at source add	chat router. source addre			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-7.8	RFC 4601 s4	.3.1 p31 Sendi	ng Hello Messa	ages					
SHOULD	included in	rity Option S every Hello on that inter	message, eve	en if no DR I	Priority is 6	explicitly			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-7.9	RFC 4601 s4.	.3.1 p31 Sendi	ng Hello Messa	ages					
SHOULD	The DR_Priority Option SHOULD be included in every Hello message, even if no DR Priority is explicitly configured on that interface. This is necessary because priority-based DR election is only enabled when all neighbors on an interface advertise that they are capable of using the DR_Priority Option. The default priority is 1.								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-7.10	RFC 4601 s4	.3.1 p31 Sendi	ng Hello Messa	ages		•	•	•	
SHOULD	The Generat:		er (GenID) Op	ption SHOULD	be included	in all			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-7.11	RFC 4601 s4.	3.1 p31 Sendi	ng Hello Messa	ages					
MUST	The GenID option contains a randomly generated 32-bit value that is regenerated each time PIM forwarding is started or restarted on the interface, including when the router itself restarts.								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-7.12	RFC 4601 s4.3.1 p31 Sending Hello Messages								
SHOULD		ne Delay Opti ti-access LAN		e included in	ı all Hello m	nessages			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-8.1	RFC 4601 s4.	.3.2 p33 DR EI	ection						
MUST	Bool dr_is_b if(there is fai return } else	petter(a,b,I is a neighbolse) { n a.primary_; } n (a.dr_prio	or n on I for ip_address &g ority > b ority == b.da	metrics on which n.dr_gt; b.primary dr_priority AN > b.prima	priority_pre ip_address) OR ID	esent			
		th the higher	st IP address	pecified in a s is elected		age, the			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-8.2	RFC 4601 s4.	.3.2 p33 DR El	ection							
MUST	<pre>Bool dr_is_better(a,b,I) { if(there is a neighbor n on I for which n.dr_priority_present is false) { return a.primary_ip_address > b.primary_ip_address } else { return (a.dr_priority > b.dr_priority) OR</pre>									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-8.3	RFC 4601 s4.	.3.2 p33 DR El	ection							
MUST	Bool dr_is_l if(there is fa: return } else return } Note: If DR- DR Priority larger prior	better(a,b,I) is a neighbours lse) { n a.primary_: { n (a.dr_prid a.primarypriority opt is a 32-bit rity is alway	or n on I for ip_address &g prity > b prity == b.dn y_ip_address tion is speci- unsigned nur ys preferred.	'metrics" on which n.dr_ gt; b.primary dr_priority AN > b.prima ified in a He aber and the	priority_pre	esent ss)				
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-8.4	RFC 4601 s4.	.3.2 p33 DR El	ection						
MUST	The function used for comparing DR "metrics" on interface I is: Bool dr_is_better(a,b,I) { if(there is a neighbor n on I for which n.dr_priority_present is false) { return a.primary_ip_address > b.primary_ip_address } else { return (a.dr_priority > b.dr_priority) OR								
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3					
	untested	untested	untested	untested					
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
DIM 0M 0.5				uniesieu					
PIM-SM-8.5	RFC 4601 s4.3.2 p33 DR Election The function used for comparing DR "metrics" on interface I is:								
	<pre>Bool dr_is_better(a,b,I) { if(there is a neighbor n on I for which n.dr_priority_present is false) { return a.primary_ip_address > b.primary_ip_address } else { return (a.dr_priority > b.dr_priority) OR</pre>								
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3					
	Ubuntu 16.04:	Ubuntu 16.04:	Ubuntu 18.04:	Ubuntu 18.04:					
	pass	pass	pass	pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-8.6	RFC 4601 s4.	.3.2 p33 DR El	ection						
MUST	Hello_Holdt:	r Liveness Time (from the ge is receive lo_Holdtime : e option.	e Hello Holdt ed containing	time option) g a Holdtime	whenever a option, or t				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release	Release 7.5.1	Release	Release	Release	Release	Release	
PIM-SM-8.7		7.3		8.0	X.X.X	X.X.X	X.X.X	X.X.X	
MUST	RFC 4601 s4.3.2 p33 DR Election The Neighbor Liveness Timer (NLT(N,I)) is reset to Hello_Holdtime (from the Hello Holdtime option) whenever a Hello message is received containing a Holdtime option, or to Default_Hello_Holdtime if the Hello message does not contain the Holdtime option. (Note: ANVL sends Hello message that contains Holdtime option, from <mcast-router-b>, NLT is set to Hello_Holdtime)</mcast-router-b>								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-8.8	RFC 4601 s4.	3.2 p34 DR El	ection						
MAY	a PIM Hello a router's (message is a own DR Priori nbor time out	received, whe	n an interfac en a neighbor	_				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-8.9	RFC 4601 s4.	3.2 p34 DR El	ection						
MUST	A router's idea of the current DR on an interface can change when a PIM Hello message is received, when a neighbor times out, or when a router's own DR Priority changes. (Note: router's own DR Priority changes)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-8.10	RFC 4601 s4.	3.2 p34 DR El	ection						
MAY	PIM Hello me router's own to be the DI change state	essage is red n DR priority R, this will e.	ceived, when y changes. If normally cau	n an interfact a neighbor to the router use the DR Re one with the	imes out, or becomes the egister state	when a DR or ceases e-machine to	5		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-9.1	RFC 4601 s4.	3.3 p34 Reduc	cing Prune Pro	pagation Delay	on LANs	•	•	•	
MUST	Just like the DR_Priority option, the information provided in the LAN Prune Delay option is not used unless all neighbors on a link advertise the option. (Note: when lan_delay_enabled is FALSE, both Effective_Propagation_Delay(I), & Effective_Override_Interval(I) return Propagation_delay_default & t_override_default respectively)								
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3					
	untested	untested	untested	untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-9.2	RFC 4601 s4.	3.3 p35 Reduc	cing Prune Pro	pagation Delay	on LANs		•		
MUST	different the from those a (Note: for h	nan default I advertised by	Propagation I y each neighl	position to Delay, the la por is chosen Lay(I) & (*,*	rgest value			ı	
	Free BSD 10.3 untested	untested	untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-9.3	RFC 4601 s4.	3.3 p35 Reduc	cing Prune Pro	pagation Delay	on LANs				
MUST	When all routers on a link are in a position to negotiate a Propagation Delay different from the default, the largest value from those advertised by each neighbor is chosen. (Note: for Effective_Propagation_Delay(I) & (*,G) state)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-9.4	RFC 4601 s4.	3.3 p36 Reduc	cing Prune Pro	pagation Delay	on LANs				
MUST	different the from those a	nan default (advertised by	Override Inte y each neighl	position to erval, the la por is chosen val(I) & (*,*	rgest value				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release	Release	Release	Release	Release	Release	Release	Release		
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	X.X.X	X.X.X		
PIM-SM-9.5	RFC 4601 s4.	.3.3 p36 Reduc	cing Prune Pro	pagation Delay	on LANs		1			
MUST	When all routers on a link are in a position to negotiate an Override Interval different from the default, the largest value from those advertised by each neighbor is chosen. (Note: for Effective_Override_Interval(I) & (*,G) state)									
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3						
	untested	untested	untested	untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-10.1	RFC 4601 s4.	4 p38 PIM Re	gister Message	es						
MUST	encapsulates the relevant	ted Router (Is multicast per group unles that (S,G) of								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-10.2	NEGATIVE R	FC 4601 s4.4	o38 PIM Regis	ter Messages			•	•		
MUST	The Designated Router (DR) on a LAN or point-to-point link encapsulates multicast packets from local sources to the RP for the relevant group unless it recently received a Register Stop message for that (S,G) or (*,G) from the RP.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-10.3	RFC 4601 s4.	4 p38 PIM Re	gister Message	es						
MUST	multicast pa	ackets from lecently reces	local sources	or point-to- s to the RP f ter-Stop mess	or the relev	ant group				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x				
PIM-SM-10.4	RFC 4601 s4.	4 p38 PIM Re	gister Message	es								
MUST	a Register S Stop timer	Stop timer to expires, the	maintain th DR sends a N	o message from the state. Justine state. Justine state state state in form free BSD 10.3 untested	st before th Message to	ne Register the RP to						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-11.1	RFC 4601 s4.4.1 p39 Sending Register Messages from the DR In Join(J) state if DR receives RegisterStop Message, then it will go to											
MUST				isterStop Mes tunnel and s)					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-11.2	RFC 4601 s4.	RFC 4601 s4.4.1 p39 Sending Register Messages from the DR										
MUST	In Join(J) state if CouldRegister(S,G) becomes false then it will go to NoInfo(NI) State & remove reg tunnel Here CouldRegister(S,G) -> FALSE is achieved by making I_am_DR(RPF_interface(S))-> FALSE											
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-11.3	RFC 4601 s4.	4.1 p39 Sendi	ng Register Me	essages from th	ne DR							
MUST	In Join(J)	state if RP(G) changes, t	then the DR u	pdates Regis	ster tunnel						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								



FRROUTING RFC Compliance Test Report PIM Results



	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-11.4	RFC 4601 s4.	.4.1 p39 Sendii	ng Register Me	essages from th	ne DR					
MUST	In Join Pending(JP) state if RegStop timer expires then the DR will go to Join(J) state by adding the register tunnel									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-11.5	RFC 4601 s4.	.4.1 p39 Sendii	ng Register Me	essages from th	ne DR					
MUST				nged then the and cancel t						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-11.6	RFC 4601 s4.	.4.1 p39 Sendii	ng Register Me	essages from th	ne DR					
MUST	<pre>In Join Pending(JP) state if CouldRegister(S,G) becomes false then it will go to NoInfo(NI) State Here CouldRegister(S,G) -> FALSE is achieved by making I_am_DR(RPF_interface(S))-> FALSE</pre>									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-11.7	RFC 4601 s4.	.4.1 p39 Sendii	ng Register Me	essages from th	ne DR					
MUST		_		o is received to randomis		_				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release	Release	Release	Release	Release	Release	Release	Release		
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	x.x.x	x.x.x		
PIM-SM-11.8	RFC 4601 s4.	4.1 p39 Sendii	ng Register Me	essages from th	ne DR					
MUST	In Prune(P) state if Register-Stop timer expires then the DR will send Null-Register message									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-11.9	RFC 4601 s4.	4.1 p39 Sendii	ng Register Me	ssages from th	ne DR					
MUST	go to NoInfo Here CouldRe	o(NI) State	-> FALSE	is achieved		t will				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-11.10	RFC 4601 s4.	4.1 p39 Sendi	ng Register Me	ssages from th	ne DR					
MUST				then the DR gister-Stop T		ı(J) state				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-11.11	RFC 4601 s4.	4.1 p39 Sendi	ng Register Me	essages from th	ne DR					
MUST	go to Join() Here CouldRe I_am_DR(RPF	J) State, add egister(S,G) _interface(S	ling register -> TRUE i	s achieved b		1				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-11.12	RFC 4601 s4.	RFC 4601 s4.4.1 p42 Sending Register Messages from the DR								
мизт	A Register-Stop(*,G) should be treated as a Register-Stop(S,G) for all (S,G) Register state machines									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-12.1	RFC 4601 s4.	.4.2 p43 Recei	ving Register M	lessages at the	e RP					
MUST	decided accepacket_arriv if(SPTb: (Swit) (inl) send sent! } else { } } (Note: A "switchToSpt! received for If ((inheriv	receives a Recording to the ves_on_rp_ture it(S,G) OR tchToSptDesinerited_olist Register-Stop witch on first period of the source ted_olist(S,G) a Register-Stop desired(S,G) a Register-Stop	e following panel(pkt) { red(S,G) AND c(S,G) == NUI pp(S,G) to ou = TRUE; st packet" pour return true and group. G) == NULL) A	olicy can be once a singl	implemented e packet has SptDesired(S	by making s been 5,G) == TRUE))			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-12.2	NEGATIVE R	FC 4601 s4.4.2	2 p43 Receivin	g Register Mes	sages at the F	RP				
MUST	When an RP receives a Register message, the course of action is decided according to the following pseudocode: packet_arrives_on_rp_tunnel(pkt) { if(I_am_RP(G) AND outer.dst == RP(G)) {									
	if(<pre>if(!SPTbit(S,G) AND !pkt.NullRegisterBit) { decapsulate and forward the inner packet to inherited_olist(S,G,rpt) # Note (+) } }</pre>								
	with Null-Re	S,G) entry wi egister-Bit s ner packet to	set to FALSE	then RP don'	t decapsulat					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-12.3	NEGATIVE R	FC 4601 s4.4.2	2 p43 Receivin	g Register Mes	sages at the F	RP				
MUST	decided accordance	receives a Representation of the ves_on_rp_ture RP(G) AND out	e following p nnel(pkt) {	seudocode:	se of action	is				
	<pre>if(!SPTbit(S,G) AND !pkt.NullRegisterBit) { decapsulate and forward the inner packet to inherited_olist(S,G,rpt) # Note (+) }</pre>									
	} (Note: If (Second in the Null-Reference)	} { (Note: If (S,G) entry with SPT bit set to TRUE, and received Register with Null-Register-Bit set to TRUE then RP don't decapsulate and bass the inner packet to the normal forwarding path.)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-12.4	RFC 4601 s4.	4.2 p43 Recei	ving Register M	lessages at the	e RP					
MUST	When an RP receives a Register message, the course of action is decided according to the following pseudocode: packet_arrives_on_rp_tunnel(pkt) { if(I_am_RP(G) AND outer.dst == RP(G)) {									
	if(<pre>if(!SPTbit(S,G) AND !pkt.NullRegisterBit) { decapsulate and forward the inner packet to inherited_olist(S,G,rpt) # Note (+) } </pre>								
	and received	d Register ha	as Null-Regis the inner pa	Tbit set to F ster-Bit set acket to the ne (*,G) tree	to FALSE the	en				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-12.5	RFC 4601 s4.	4.2 p43 Recei	ving Register M	lessages at the	e RP					
MUST	<pre>When an RP receives a Register message, the course of action is decided according to the following pseudocode: packet_arrives_on_rp_tunnel(pkt) { if(I_am_RP(G) && outer.dst == RP(G)) { } else { send Register-Stop(S,G) to outer.src # Note (*) }</pre>									
	Here it is to Message	tested if (I_	_am_RP(G) -	-> FALSE)	RP sent a Re	egister-Stop				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-12.6	RFC 4601 s4.	FC 4601 s4.4.2 p43 Receiving Register Messages at the RP								
MUST	decided accompacket_arriv	Then an RP receives a Register message, the course of action is decided according to the following pseudocode: Deacket_arrives_on_rp_tunnel(pkt) { if (Lam RP(G) the outer dst == RP(G)) {								
	} else send # No }	<pre>if(I_am_RP(G) && outer.dst == RP(G)) { } else { send Register-Stop(S,G) to outer.src # Note (*) } re it is tested if (I_am_RP(G) -> FALSE) RP does not forward the data</pre>								
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3						
	untested	untested	untested	untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-12.7	RFC 4601 s4.	4.2 p43 Recei	ving Register M	lessages at the	e RP					
MUST	<pre>RFC 4601 s4.4.2 p43 Receiving Register Messages at the RP When an RP receives a Register message, the course of action is decided according to the following pseudocode: packet_arrives_on_rp_tunnel(pkt) { if (I_am_RP(G) && outer.dst == RP(G)) { } else { send Register-Stop(S,G) to outer.src # Note (*) } }</pre>									
	Free BSD 10.3	.dst == RP(G) Free BSD 10.3	Free BSD 10.3	Free BSD 10.3						
	untested	untested	untested	untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-12.8	RFC 4601 s4	4.2 p43 Recei	ving Register N	lessages at the	e RP					
MUST	When an RP receives a Register message, the course of action is decided according to the following pseudocode: packet_arrives_on_rp_tunnel(pkt) { if(I_am_RP(G) AND outer.dst == RP(G)) {									
	<pre>if(!SPTbit(S,G) AND !pkt.NullRegisterBit) { decapsulate and forward the inner packet to inherited_olist(S,G,rpt) # Note (+) } }</pre>									
	If there is no (S,G) entry, i.e. SPTbit set to FALSE and received Register has Null-Register-Bit set to TRUE then RP doesn't decapsulate and pass the inner packet to the normal forwarding path for forwarding on the (*,G) tree.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-12.9	RFC 4601 s4	4.2 p44 Recei	ving Register N	lessages at the	e RP					
MUST	When forwarding a packet from the Register Tunnel, the TTL of the original data packet is decremented after it is decapsulated.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-12.10	NEGATIVE R	FC 4601 s4.4.2	2 p44 Receivin	g Register Mes	sages at the F	RP				
MUST				egister Tunne after it is						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-12.11	RFC 4601 s4	4.2 p44 Recei	ving Register N	lessages at the	e RP					
MUST		oits should b		om the IP hea	der of the F	Register				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-13.1	RFC 4601 s4.	5.1 p46 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages					
MUST	In NoInfo(NI) state by receiving Prune(*,*,RP) message the (*,*,RP) downstream state machine on interface I remains in the NoInfo state.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-13.2	RFC 4601 s4.	5.1 p46 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages					
MUST		_	receiving Joi							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-13.3	NEGATIVE R	FC 4601 s4.5.	1 p46 Receivin	g (*,*,RP) Join/	Prune Messag	jes				
MAY	In NoInfo(NI) state by receiving Join(*,*,RP) message the (*,*,RP) downstream state machine on interface I transitions to the Join state.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-13.4	RFC 4601 s4.	5.1 p46 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages	•				
MUST		-	eiving Join(* e on interfac		-					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x			
PIM-SM-13.5	RFC 4601 s4.	5.1 p46 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages						
MUST	In Join(J) state by receiving Join(*,*,RP) message the (*,*,RP) downstream state machine on interface I remains in Join state, and the Expiry Timer (ET) is restarted, set to maximum of its current value and the HoldTime from the triggering Join/Prune message. (Note: When Current value is less than HoldTime from Join/Prune message.)										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-13.6	RFC 4601 s4.	5.1 p46 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages	•	•	•			
MUST	downstream s Prune-Pendir set to the c neighbor on expire immed	In Join(J) state by receiving Prune(*,*,RP) message the (*,*,RP) downstream state machine on interface I transitions to the Prune-Pending state. The Prune-Pending Timer is started; it is set to the J/P_Override_Interval(I) if the router has more than one neighbor on that interface; otherwise it is set to zero causing it to expire immediately. (Note: the Prune-Pending timer expires immediately)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-13.7	RFC 4601 s4.	5.1 p46 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages						
MUST	In Join(J) state by receiving Prune(*,*,RP) message the (*,*,RP) downstream state machine on interface I transitions to the Prune-Pending state. The Prune-Pending timer is started; it is set to the J/P_Override_Interval(I) if the router has more than one neighbor on that interface;										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-13.8	RFC 4601 s4.	5.1 p46 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages						
MUST	state machin	ne on interfa	ace I expires	f for the (*, s. The (*,*,F to the NoInfo	RP) downstrea						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





	Release	Release	Release	Release	Release	Release	Release	Release
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	X.X.X	X.X.X
PIM-SM-13.9	RFC 4601 s4.	5.1 p46 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages			
MUST	(*,*,RP) dov		ce machine or	ring Prune(*, n interface I				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-13.10	RFC 4601 s4.	5.1 p47 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages			
SHOULD	an RP that we RP. In the to the RP, to	we do not hav	re information (,RP) state, c cause a pro	a Join(*,*,R on telling us so long as w bblem, and th	that it is e have a rou	an ıte	,	
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-13.11	RFC 4601 s4.	5.1 p48 Recei	/ing (*,*,RP) Jo	oin/Prune Mess	ages			
MUST	(*,*,RP) down the Join sta	vnstream stat	te machine or ne-Pending ti	ving Join(*,* n interface I lmer is cance	transitions	s to		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-13.12	NEGATIVE R	FC 4601 s4.5.	1 p48 Receivin	g (*,*,RP) Join/	Prune Messag	jes		
MUST	(*,*,RP) down the Join sta	vnstream stat	te machine or ne-Pending ti	ving Join(*,* n interface I mer is cance	transitions	s to		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x			
PIM-SM-13.13	NEGATIVER		p48 Receiving	g (*,*,RP) Join/	Prune Messag	es	•	•			
MUST	(*,*,RP) down the Join sta	wnstream state. The Exp	te machine or iry Timer is	ving Join(*,* n interface l restarted, s from the trig	transitions set to maximu	s to ım of					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-13.14	RFC 4601 s4.	5.1 p48 Recei	ving (*,*,RP) Jo	oin/Prune Mess	ages						
MUST	downstream s	state machine state machine	e on interfac	xpiry Timer f ce I expires. ce I transiti	The (*,*,RF						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-13.15	RFC 4601 s4.5.1 p48 Receiving (*,*,RP) Join/Prune Messages										
MUST	In Prune-Pending(PP) state if the Prune-Pending Timer for the (*,*,RP) downstream state machine on interface I expires. The (*,*,RP) downstream state machine on interface I transitions to the NoInfo state. A PruneEcho(*,*,RP) is sent onto the subnet connected to interface I.										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-14.1	RFC 4601 s4.	5.2 p49 Recei	ving (*,G) Join/	Prune Messag	es		•				
MAY	If the RP in be silently		e does not ma	atch RP(G) th	ne Join(*,G)	should					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-14.2	RFC 4601 s4.	.5.2 p49 Recei	l vina (*.G) Join/	I Prune Messag	es					
MAY	If a router has no RP information (e.g. has not recently received a BSR message) then it may choose to accept Join(*,G) and treat the RP in the message as RP(G).									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.3	RFC 4601 s4	.5.2 p49 Recei	ving (*,G) Join/	Prune Messag	es					
миѕт		une(*,G) mess s not match I	_	cessed even	if the RP ir	n the				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.4	RFC 4601 s4	.5.2 p49 Recei	ving (*,G) Join/	Prune Messag	es					
MAY	If a router has no RP information (e.g. has not recently received a BSR message) then it may choose to accept Prune(*,G) and treat the RP in the message as RP(G).									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.5	RFC 4601 s4	.5.2 p50 Recei	ving (*,G) Join/	Prune Messag	es					
MUST		_		une(*,G) mess ce I remains	_					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-14.6	RFC 4601 s4.	5.2 p50 Recei	ving (*,G) Join/	Prune Messag	es		•	•		
MUST		_		in(*,G) messa ce I transiti						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.7	NEGATIVE R	FC 4601 s4.5.2	2 p50 Receivin	g (*,G) Join/Pr	une Messages					
MUST		_								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.8	RFC 4601 s4.	RFC 4601 s4.5.2 p50 Receiving (*,G) Join/Prune Messages								
MUST	In NoInfo(NI) state by receiving Prune(*,G) message the (*,G) downstream state machine on interface I remains in the NoInfo(NI) state.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.9	RFC 4601 s4.	5.2 p50 Recei	ving (*,G) Join/	Prune Messag	es					
MUST	Free BSD 10.3 untested unteste									





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-14.10	RFC 4601 s4.	5.2 p50 Recei	ving (*,G) Join/	Prune Messag	es					
MUST	downstream s the Expiry T value and th	state machine Fimer (ET) is ne HoldTime f current valu	e on interfaces restarted, From the trig	*,G) message ce I remains set to maxin ggering Join/ t than HoldTi	in Join stat num of its cu Prune messag	ırrent ge.				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.11	RFC 4601 s4.5.2 p50 Receiving (*,G) Join/Prune Messages									
MUST		_	_	',G) message ce I remains		ce.				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.12	RFC 4601 s4.5.2 p50 Receiving (*,G) Join/Prune Messages									
MUST	In Join(J) state by receiving Prune(*,G) message The (*,G) downstream state machine on interface I transitions to the Prune-Pending state. The Prune-Pending Timer is started; it is set to the J/P_Override_Interval(I) if the router has more than one neighbor on that interface; otherwise it is set to zero causing it to expire immediately. (Note: Prune-Pending Timer expires immediately)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.13	RFC 4601 s4.	5.2 p50 Recei	ving (*,G) Join/	Prune Messag	es					
MUST	downstream s Prune-Pendin set to the d	state machine	e on interface Prune-Pendi Interval(I)	(*,G) message ce I transiti ing timer is if the route	ons to the started; it	is				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-14.14	RFC 4601 s4.	5.2 p50 Recei	ving (*,G) Join/	Prune Messag	es		•			
MUST	state machin	ne on interfa	ace I expires	for the (*,s. The (*,G)	downstream s					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.15	RFC 4601 s4.	RFC 4601 s4.5.2 p50 Receiving (*,G) Join/Prune Messages								
MUST	(*,G) downst		machine on ir	ring Prune(*, nterface I re		he				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.16	RFC 4601 s4.	5.2 p50 Recei	ving (*,G) Join/	Prune Messag	es					
MUST	(*,G) downst	tream state r	machine on ir ne-Pending ti	ving Join(*,G nterface I tr lmer is cance	ansitions to)				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.17	NEGATIVE R	FC 4601 s4.5.2	2 p50 Receivin	g (*,G) Join/Pro	une Messages					
MUST	(*,G) downst	tream state r	nachine on ir ne-Pending ti	ring Join(*,G nterface I tr mer is cance	ansitions to					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Pologoo	Pologoo	Pologo	Pologog	Pologo	Pologgo	Pologog	Pologos		
	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-14.18	RFC 4601 s4.	5.2 p50 Recei	una (*.G) Join/	Prune Messag	es					
MUST	In Prune-Pending(PP) state by receiving Join(*,G) message the (*,G) downstream state machine on interface I transitions to the Join state. The Expiry Timer is restarted, set to maximum of its current value and the HoldTime from the triggering Join/Prune message. (Note: When current value is greater than HoldTime from the triggering Join/Prune message)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.19	RFC 4601 s4.5.2 p50 Receiving (*,G) Join/Prune Messages									
MUST	In Prune-Per downstream s downstream s NoInfo state	nding(PP) state machine state machine	ate if the Execution on interface on interface	xpiry Timer for I expires.	for the (*,G) The (*,G)) I	I			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.20	RFC 4601 s4.	5.2 p50 Recei	ving (*,G) Join/	Prune Messag	es	l	l	I.		
MUST	In Prune-Pending(PP) state if the Prune-Pending Timer for the (*,G) downstream state machine on interface I expires. The (*,G) downstream state machine on interface I transitions to the NoInfo state. A PruneEcho(*,G) is sent onto the subnet connected to interface I.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-14.21	RFC 4601 s4.	5.2 p52 Recei	ving (*,G) Join/	Prune Messag	es					
MUST	(*,G) downst the Join sta its current message.	tream state rate. The Expo value and the current value	machine on in iry Timer is ne HoldTime f	ring Join(*,Gnterface I trestarted, serom the trigon than HoldTi	ransitions to set to maximu gering Join,	o um of Prune				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0	Free BSD 12.0	Free BSD 12.0	Free BSD 12.0						



FRROUTING RFC Compliance Test Report PIM Results



	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-15.1	RFC 4601 s4.	5.3 p54 Recei	ving (S,G) Join	/Prune Messag	jes					
MUST	In $NoInfo(NI)$ state by receiving $Prune(S,G)$ message the (S,G) downstream state machine on interface I remains in the $NoInfo$ state.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-15.2	RFC 4601 s4.	5.3 p54 Recei	ving (S,G) Join	/Prune Messag	jes					
MUST		_		n(S,G) messa ce I transiti						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-15.3	NEGATIVE R	FC 4601 s4.5.	3 p54 Receivin	g (S,G) Join/Pr	une Messages	3				
MUST	In NoInfo(NI) state by receiving $Join(S,G)$ message the (S,G) downstream state machine on interface I transitions to the Join state.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-15.4	RFC 4601 s4.	5.3 p54 Recei	ving (S,G) Join	/Prune Messag	jes					
MUST				G,G) message ce I remains		e.				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x
PIM-SM-15.5	RFC 4601 s4.	.5.3 p54 Recei	ving (S,G) Join	/Prune Messag	jes			
MUST	downstream s the Expiry T value and th	state machine Fimer (ET) is ne HoldTime f nt value is o	e on interfaces restarted, From the trig	S,G) message ce I remains set to maxim ggering Join/ HoldTime fro	in Join stat num of its cu Prune messag	ırrent ge.		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-15.6	RFC 4601 s4.	.5.3 p54 Recei	ving (S,G) Join	/Prune Messag	jes			
MUST	downstream s the Expiry T value and th (When current Join/Prune n	state machine Fimer (ET) is ne HoldTime f nt value is s message)	e on interfacts restarted, from the trigonaller than	E.G. message of I remains set to maxim ggering Join/HoldTime fro	in Join stat num of its cu Prune messag	ırrent ge.	I	
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-15.7	RFC 4601 s4.	5.3 p54 Recei	ving (S,G) Join	/Prune Messag	jes			
MUST	In Join(J) state by receiving Prune(S,G) message the (S,G) downstream state machine on interface I transitions to the Prune-Pending state. The Prune-Pending Timer is started; it is set to the J/P_Override_Interval(I) if the router has more than one neighbor on that interface; otherwise it is set to zero causing it to expire immediately. (Note: Prune-Pending timer expires immediately)							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				





	Release	Release	Release	Release	Release	Release	Release	Release				
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	X.X.X	X.X.X				
PIM-SM-15.8	RFC 4601 s4.	5.3 p54 Receiv	ving (S,G) Join	/Prune Messag	jes							
MUST	In Join(J) state by receiving Prune(S,G) message the (S,G) downstream state machine on interface I transitions to the Prune-Pending state. The Prune-Pending timer is started; it is set to the J/P_Override_Interval(I) if the router has more than one neighbor on that interface; (Note: router has more than one neighbor on that interface)											
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-15.9	RFC 4601 s4.5.3 p54 Receiving (S,G) Join/Prune Messages											
MUST	state machin	ne on interfa interface I t	ace I expires	for the (S,s. The (S,G)	downstream s							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-15.10	RFC 4601 s4.	5.3 p54 Recei	ving (S,G) Join	/Prune Messag	jes							
MUST	(S,G) downst		machine on ir	ring Prune(S,		he						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-15.11	RFC 4601 s4.	5.3 p54 Recei	ving (S,G) Join	/Prune Messaç	jes							
MUST	(S,G) downst	ream state r	nachine on in ne-Pending ti	ving Join(S,G nterface I tr imer is cance	ansitions to							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-15.12	NEGATIVE R	FC 4601 s4.5.3	3 p54 Receivin	g (S,G) Join/Pi	rune Messages	S			
MUST	In Prune-Pending(PP) state by receiving Join(S,G) message the (S,G) downstream state machine on interface I transitions to the Join state. The Prune-Pending timer is canceled (without triggering an expiry event).								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-15.13	RFC 4601 s4.	.5.3 p54 Recei	ving (S,G) Join	/Prune Messaç	jes				
MUST	(S,G) downst the Join sta its current message. (Note: When	tream state rateThe I	machine on in Expiry Timer ne HoldTime f ne is greater	ring Join(S,G nterface I tr is restarted From the trig than HoldTi	ransitions to l, set to max ggering Join/	o kimum of			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-15.14	RFC 4601 s4.	5.3 p54 Recei	ving (S,G) Join	/Prune Messa	jes				
MUST	In Prune-Pending(PP) state by receiving Join(S,G) message the (S,G) downstream state machine on interface I transitions to the Join state The Expiry Timer is restarted, set to maximum of its current value and the HoldTime from the triggering Join/Prune message. (Note: When current value is smaller than HoldTime from the triggering Join/Prune message)								
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3					
	untested	untested	untested	untested					
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-15.15	RFC 4601 s4.	.5.3 p54 Recei	ving (S,G) Join	/Prune Messaç	jes				
MUST	downstream s	state machine state machine	e on interfac	xpiry Timer f ce I expires. ce I transiti	The (S,G)				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
				-					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-15.16	RFC 4601 s4.	5.3 p54 Recei	ving (S,G) Join	/Prune Messa	jes					
MUST	downstream s	state machine state machine uneEcho(S,G)	e on interface e on interface	rune-Pending ce I expires. ce I transiti	The (S,G) ons to the N	VoInfo				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-16.1	RFC 4601 s4.	5.4 p58 Recei	ving (S,G,rpt)	loin/Prune Mes	sages					
MUST		_		in(S,G,rpt) m ce I remains		_				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-16.2	RFC 4601 s4.5.4 p58 Receiving (S,G,rpt) Join/Prune Messages									
MUST	In NoInfo(NI) state by receiving Prune(S,G,rpt) message the (S,G,rpt) downstream state machine on interface I transitions to Prune-Pending(PP) state The Prune-Pending timer is started; it is set to the J/P_Override_Interval(I) if the router has more than one neighbor on that interface; otherwise it is set to causing it to expire immediately (Note: Here DUT has only one downstream neighbor) Free BSD 10.3									
	untested	untested	untested	untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-16.3	RFC 4601 s4.	.5.4 p58 Recei	ving (S,G,rpt) J	loin/Prune Mes	sages					
MUST	RFC 4601 s4.5.4 p58 Receiving (S,G,rpt) Join/Prune Messages In NoInfo(NI) state by receiving Prune(S,G,rpt) message the (S,G,rpt) downstream state machine on interface I transitions to Prune-Pending(PP) state. The Prune-Pending timer is started; it is set to the J/P_Override_Interval(I) if the router has more than one neighbor on that interface (Note: Here DUT has more than one downstream neighbor)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x				
PIM-SM-16.4	RFC 4601 s4.	5.4 p58 Recei	ving (S,G,rpt) J	oin/Prune Mes	sages							
MUST	(S,G,rpt) do	ownstream sta	ate machine o	_	_							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-16.5	RFC 4601 s4.	5.4 p58 Recei	ving (S,G,rpt) J	oin/Prune Mes	sages							
MUST	(S,G,rpt) do the Prune-Pe contain (S,G	ownstream sta ending-Tmp(PF G,rpt) Join/F	ate machine o P') state. If Prune informa	on interface the (*,G) mation the down	I transition message does	ns to not						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-16.6	RFC 4601 s4.	RFC 4601 s4.5.4 p58 Receiving (S,G,rpt) Join/Prune Messages										
MUST	In Prune-Pending (PP) state by receiving Join(S,G,rpt) message the (S,G,rpt) downstream state machine on interface I transitions to NoInfo state. ET and PPT are canceled.											
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested								
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict								
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested								
PIM-SM-16.7	RFC 4601 s4.	5.4 p58 Recei	ving (S,G,rpt) J	oin/Prune Mes	sages							
MUST	RFC 4601 s4.5.4 p58 Receiving (S,G,rpt) Join/Prune Messages In Prune-Pending (PP) state by receiving Prune(S,G,rpt) message the (S,G,rpt) downstream state machine on interface I remains in the Prune-Pending(PP) state. Free BSD 10.3											





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-16.8						Α.Α.Α	A.A.A	, A.A.A	
				loin/Prune Mes		nt)			
MUST	downstream s state. The e (S,G,rpt) do NoInfo state	state machine end of the co ownstream sta e. ET is car	e on interface ompound Join, ate machine on acceled.	ce I transiti /Prune messag on interface ream neighbor	ons to Prune e is reached I transition	Tmp l. The			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-16.9	RFC 4601 s4.	5.4 p58 Recei	ving (S,G,rpt) J	loin/Prune Mes	sages				
MUST		_		n(S,G,rpt) me ce I transiti		_			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-16.10	RFC 4601 s4.	5.4 p58 Recei	ving (S,G,rpt) J	loin/Prune Mes	sages				
MUST	In Pruned(P) state by receiving Prune(S,G,rpt) message the (S,G,rpt) downstream state machine on interface I remains in Pruned state. Free BSD 10.3								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-16.11	RFC 4601 s4.	5.4 p58 Recei	ving (S,G,rpt) J	loin/Prune Mes	sages				
MUST	downstream s Expiry Times and the Hold (Note: When	state machine r (ET) is res dTime from th	e on interfact started, set ne triggering ne is larger	ne(S,G,rpt) mode I remains to maximum of Join/Prune than HoldTim	in Pruned st f its currer message.	ate. The			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
•	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
DIM SM 16 12						, , , , , , , , , , , , , , , , , , ,	, AIAIA	, AIAIA	
PIM-SM-16.12						· · · · · · · · · · · · · · · · · · ·			
MUST	In Pruned(P) state by receiving Prune(S,G,rpt) message the (S,G,rpt) downstream state machine on interface I remains in Pruned state. The Expiry Timer (ET) is restarted, set to maximum of its current value and the HoldTime from the triggering Join/Prune message. (Note: When current value is smaller than HoldTime from the triggering Join/Prune message)								
	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3	Free BSD 10.3					
	untested	untested	untested	untested					
	Ubuntu 16.04:	Ubuntu 16.04:	Ubuntu 18.04:	Ubuntu 18.04:					
	unpredict	unpredict	unpredict	unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-16.13	RFC 4601 s4.	5.4 p58 Recei	ving (S,G,rpt) J	oin/Prune Mes	sages		•		
MUST	state machin	ne on interfa interface I t	ace I expires transitions t	ner for the (s. The (S,G,r	pt) downstre				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-17.1	RFC 4601 s4.	5.5 p63 Sendii	ng (*,*,RP) Joir	n/Prune Messa	ges				
MUST	RFC 4601 s4.5.5 p63 Sending (*,*,RP) Join/Prune Messages When the upstream (*,*,RP) state-machine is in NotJoined state, if JoinDesired(*,*,RP) becomes True then the upstream (*,*,RP) state machine transitions to Joined state. Send Join(*,*,RP) to the appropriate upstream neighbor, which is MRIB.next_hop(RP). (Here Join List verified)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-17.2	RFC 4601 s4.	5.5 p63 Sendii	ng (*,*,RP) Joir	n/Prune Messa	ges	•	•		
MUST	JoinDesired(*,*,RP) becomes True then the upstream (*,*,RP) state machine transitions to Joined state. Send Join(*,*,RP) to the appropriate upstream neighbor, which is MRIB.next_hop(RP). (Here Join List verified) Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 untested untested untested untested untested Ubuntu 16.04: Ubuntu 16.04: Ubuntu 18.04: unpredict unpredict unpredict Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 untested untested untested untested untested untested								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release	Release	Release	Release	Release	Release	Release	Release
	7.2.1	7.3	7.5.1	8.0	x.x.x	X.X.X	X.X.X	X.X.X
PIM-SM-17.3	RFC 4601 s4.	5.5 p63 Sendi	ng (*,*,RP) Joir	n/Prune Messa	ges			
MUST	The downstre immediate_o: upstream (* Prune(*,*,R] MRIB.next_ho	list(*,*,RP), ,*,RP) state P) to the app	r (*,*,RP) ha , making Join machine tran propriate ups	as changed son Desired(*,*, nsitions to Natream neighk	RP) become B NotJoined sta	False. The ate. Send		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-17.4	RFC 4601 s4.	5.5 p63 Sendii	ng (*,*,RP) Joir	n/Prune Messa	ges			
MUST	The downstre immediate_o: upstream (* Prune(*,*,R] MRIB.next_ho	list(*,*,RP), ,*,RP) state P) to the app	r (*,*,RP) ha , making Join machine tran propriate ups	as changed sonDesired(*,*,nsitions to Nestream neighk	RP) become I NotJoined sta	False. The ate. Send		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-17.5	RFC 4601 s4.	5.5 p63 Sendiı	ng (*,*,RP) Joir	n/Prune Messa	ges			
MUST	Join Timer Join(*,*,RP	(JT) expires) to the appr op(RP). Resta	, indicating ropriate upst	chine is in 5 time to send tream neighbor Timer (JT) t	d a Join(*,*, or, which is	,RP). Send		
	untested	untested	untested	untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-17.6	RFC 4601 s4.	5.5 p64 Sendiı	ng (*,*,RP) Joir	n/Prune Messa	ges			
MUST	MRIB.next_h		changes ther	chine is in a				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-18.1	RFC 4601 s4.	5.6 p66 Sendi	ng (*,G) Join/P	rune Message:	3					
MUST	changes this	s router's id to ensure th	s on the upst dea of the up nat the Assen ending a Joir	ostream neigh ct winner is	nbor, it show aware of	ıld				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-18.2	RFC 4601 s4.	5.6 p67 Sendi	ng (*,G) Join/P	rune Message:	3					
MUST	The downstre interface is True. The up Join(*,G) to	s in immediat pstream (*,G	c (*,G) has c te_olist(*,G)) state machi riate upstrea), making Joi ine transitio	nDesired(*,0	G) become d state. Send	1			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-18.3	RFC 4601 s4.5.6 p67 Sending (*,G) Join/Prune Messages									
MUST	The downstre interface is True. The up Join(*,G) to	s in immediatestream (*,G o the approp	s True r (*,G) has c te_olist(*,G) state machi riate upstrea Bit are check Free BSD 10.3), making Joi ine transitio am neighbor,	nDesired(*,0	G) become d state. Send	1			
	untested	untested	untested	untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-18.4	RFC 4601 s4.	5.6 p67 Sendi	ng (*,G) Join/P	rune Message:	3					
MUST	The downstre immediate_oi (*,G) state the appropri	list(*,G), ma machine tran	r (*,G) has o aking JoinDes nsitions to N m neighbor, w	sired(*,G) be NotJoined sta	ecome False. ite. Send Pri	The upstream	n			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x
PIM-SM-18.5	RFC 4601 s4.	5.6 p67 Sendi	ng (*,G) Join/P	rune Messages	3			
MUST	The downstre immediate_oi (*,G) state the appropri	list(*,G), ma machine tran late upstrean	c (*,G) has o aking JoinDes nsitions to N	NotJoined sta which is RPF'	come False. te. Send Pru	The upstream	1	
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-18.6	RFC 4601 s4.	5.6 p67 Sendii	ng (*,G) Join/P	rune Messages	3			
MUST	Join Timer Join(*,G) to	(JT) expires the appropriate the C	, indicating riate upstrea	ree is in Join time to send am neighbor, IT) to expire Free BSD 10.3 untested Ubuntu 18.04: pass Free BSD 12.0 untested	l a Join(*,G) which is			
PIM-SM-18.7	RFC 4601 s4.	5.6 p67 Sendii	ng (*,G) Join/P	rune Messages	<u> </u>			<u> </u>
MUST	RFC 4601 s4.5.6 p67 Sending (*,G) Join/Prune Messages When the upstream (*,G) state-machine is in Joined state, if the Join Timer (JT) expires, indicating time to send a Join(*,G). Send Join(*,G) to the appropriate upstream neighbor, which is RPF'(*,G). Restart the Join Timer (JT) to expire after t_periodic seconds. (Note: See Join(*,G) to RPF'(*,G), Increase Join Timer to t_joinsuppress)							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-18.8	RFC 4601 s4.	.5.6 p67 Sendii	ng (*,G) Join/P	rune Message:	S	•	•	•		
MUST	When the upstream (*,G) state-machine is in Joined state, if the Join Timer (JT) expires, indicating time to send a Join(*,G). Send Join(*,G) to the appropriate upstream neighbor, which is RPF'(*,G). Restart the Join Timer (JT) to expire after t_periodic seconds. (Note: See Prune(*,G) to RPF'(*,G), Decrease Join Timer to t_override) Free RSD 10.3 Free RSD 10.3 Free RSD 10.3 Free RSD 10.3									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-18.9	RFC 4601 s4.	5.6 p67 Sendi	ng (*,G) Join/P	rune Message:	5					
MUST	_	enID changes		ne is in Joir stream (*,G)						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-19.1	RFC 4601 s4.	5.7 p71 Sendii	ng (S,G) Join/F	Prune Message	es					
MUST	If a (S,G) Assert occurs on the upstream interface, and this changes this router's idea of the upstream neighbor, it should be prepared to ensure that the Assert winner is aware of downstream routers by sending a Join(S,G) almost immediately.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-19.2	RFC 4601 s4.	5.7 p72 Sendiı	ng (S,G) Join/F	Prune Message	s					
MUST	Ubuntu 16.04: unpredict un									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						



FRROUTING RFC Compliance Test Report PIM Results



	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-19.3	RFC 4601 s4.	5.7 p72 Sendii	ng (S,G) Join/F	rune Message	s RFC 4601 s	4.9.5.1 p124 G	roup Set Source	ce List Rules	
MUST	address of the full ler of the Enco (Note: Here	the source S ngth of the I ded-Source-Ac WC and RPT I	, the Source- IP address, a ddress cleare Bit are check	ced)	-Len set to		ı	ı	
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-19.4	RFC 4601 s4.	5.7 p72 Sendii	ng (S,G) Join/F	Prune Message	s				
MUST	The downstre inherited_ol upstream (S Prune(S,G) t (Here Prune	list(S,G), ma ,G) state mad to the approp List verifie	r (S,G) has on the case of the	changed so no sired(S,G) be tions to Noto eam neighbor,	come False. Toined state.	The . Send			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-19.5	RFC 4601 s4.	5.7 p72 Sendii	ng (S,G) Join/F	Prune Message	s				
MUST	JoinDesired(S,G) becomes False The downstream state for (S,G) has changed so no interface is in inherited_olist(S,G), making JoinDesired(S,G) become False. The upstream (S,G) state machine transitions to NotJoined state. Send Prune(S,G) to the appropriate upstream neighbor, which is RPF'(S,G) (Note: Here WC and RPT Bit are checked) Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 Free BSD 10.3								
	untested	untested	untested	untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-19.6	RFC 4601 s4.	5.7 p72 Sendi	ng (S,G) Join/F	rune Message	s				
MUST	Join Timer Join(S,G) to	(JT) expires the approp Restart the C	, indicating riate upstrea	ne is in Joir time to send am neighbor, JT) to expire	l a Join(S,G) which is				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release	Release	Release	Release	Release	Release	Release	Release		
	7.2.1	7.3	7.5.1	8.0	X.X.X	x.x.x	x.x.x	x.x.x		
PIM-SM-19.7	RFC 4601 s4.	5.7 p72 Sendi	ng (S,G) Join/F	Prune Message	s					
MUST	Join Timer Join(S,G) to RPF'(S,G). I t_periodic s	(JT) expires of the appropriate the appropriat	, indicating riate upstrea Join Timer (3	ne is in Joir time to send meighbor, IT) to expire	l a Join(S,G) which is after					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-19.8	RFC 4601 s4.	5.7 p72 Sendi	ng (S,G) Join/F	Prune Message	S					
MUST	Join Timer Join(S,G) to RPF'(S,G). I t_periodic s	(JT) expires of the appropriate the appropriat	, indicating riate upstrea Join Timer (3	ne is in Join time to send am neighbor, JT) to expire Decrease Joi	l a Join(S,G) which is after					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-19.9	RFC 4601 s4.	5.7 p75 Sendi	ng (S,G) Join/F	Prune Message	s					
MUST	When the upstream (S,G) state-machine is in Joined state, if it sees Prune(*,G) to RPF'(S,G), If the Join Timer is set to expire in more than t_override seconds, reset it so that it expires after t_override seconds.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-19.10	RFC 4601 s4.	5.7 p76 Sendi	ng (S,G) Join/F	rune Message	s					
MUST	_	enID changes		ne is in Joir stream (S,G)						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release	Release	Release	Release	Release	Release	Release	Release
	7.2.1	7.3	7.5.1	8.0	x.x.x	x.x.x	x.x.x	x.x.x
PIM-SM-20.1	RFC 4601 s4.	5.9 p78 State	Machine for (S	,G,rpt) Triggere	ed Messages			
MUST	1	ed" State, if a Prune(S,G,1		ed(S,G,rpt)-& (S,G,rpt)	gt;TRUE the	action		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-20.2	RFC 4601 s4.	5.9 p78 State	Machine for (S	,G,rpt) Triggere	ed Messages		•	•
MUST	changes to I RPTJoinDesin again. If it to RPF'(S,G	FALSE, this ored(G) true, t is not the ,rpt)	could be beca or it now wi former the a	rpt) state, a muse the rout shes to rece action is to	er no longer ive traffic	has from S		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-20.3	RFC 4601 s4.	5.9 p78 State	Machine for (S	,G,rpt) Triggere	ed Messages			
MUST	RFC 4601 s4.5.9 p78 State Machine for (S,G,rpt) Triggered Messages In "NotPruned" State, When the Override Timer expires, we must send a Join(S,G,rpt) to RPF'(S,G,rpt) to override the Prune message that caused the timer to be running.							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-20.4	RFC 4601 s4.	5.10 p82 Back	ground: (*,*,RF	P) and (S,G,rpt	Interaction			
MUST	cancel (S,G Join(*,G) by interface.	rpt) prune s	state on that s cancel (S,0	pin(*,*,RP) k interface, G,rpt) prune	whereas rece	eiving a		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				





	Dalassa	Dalagas	Dalagas	Dalassa	Dalagas	Dalassa	Deleges	Delease			
	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x			
PIM-SM-20.5	RFC 4601 s4.	5.10 p82 Back	ground: (*,*,RF	P) and (S,G,rpt) Interaction						
MUST	cancel (S,G	rpt) prune s y itself does	state on that	pin(*,*,RP) k interface, G,rpt) prune	whereas rece	eiving a					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-20.6	RFC 4601 s4.5.10 p82 Background: (*,*,RP) and (S,G,rpt) Interaction Similarly, reception of a Prune(*,G) on an interface with (*,*,RP)										
MUST	join state of	does not by a	itself prever	on an internt forwarding	of G using	the					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-21.1	RFC 4601 s4.	6.1 p84 (S,G)	Assert Messag	je State Machir	ne		•				
MUST	This router has lost an (S,G) assert on interface I. It must not forward packets for G onto interface I.										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-21.2	NEGATIVE: F	RFC 4601 s4.6	1 p84 (S,G) As	ssert Message	State Machine						
MUST		has lost an G onto inter		on interfac	e I. It must	not forward	1				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x			
PIM-SM-21.3	RFC 4601 s4	.6.1 p84 (S,G)	Assert Messag	je State Machir	ne						
MUST	In NoInfo state, if an Inferior Assert is received with RPT bit set CouldAssert(S,G,I) is TRUE, then Send Assert(S,G) Set Assert Timer to (Assert_Time - Assert_Override_Interval) Store self as AssertWinner(S,G,I) Store spt_assert_metric(S,I) as AssertWinnerMetric(S,G,I) (Note: The winning router sends an Assert message containing its own metric to that outgoing interface(State machine)) Free BSD 10.3 Free BSD 10.3 Free BSD 10.3 Free BSD 10.3										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-21.4	RFC 4601 s4	.6.1 p84 (S,G)	Assert Messag	je State Machir	ne						
MUST	with the RP'	T bit cleared	d and CouldAs	ssert(S,G,I)							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-21.5	RFC 4601 s4	.6.1 p84 (S,G)	Assert Messag	je State Machir	ne						
MUST	RFC 4601 s4.6.1 p84 (S,G) Assert Message State Machine When in NoInfo state, if an assert is received for (S,G) with the RPT bit set(it's a (*,G) assert) and CouldAssert(S,G,I) == TRUE, We Send Assert(S,G).										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-21.6	RFC 4601 s4	.6.1 p84 (S,G)	Assert Messag	je State Machir	ne			•			
MUST	Ubuntu 16.04: unpredict untested unpredict unpredict unpredict unpredict untested unte										





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-21.7	RFC 4601 s4.	.6.1 p84 (S,G)	Assert Messag	e State Machir	ne				
MUST		nfo state, if		ata packet co Assert(S,G)	mes on Inter	face I and			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-21.8	RFC 4601 s4.	6.1 p84 (S,G)	Assert Messag	e State Machir	ne				
MUST	or (*,G) ass Whoever sent "I am Assert	sert mention:	ing S that ha is in error, ate	if we receiv as a worse me and so we r	tric than ou				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-21.9	RFC 4601 s4.	.6.1 p84 (S,G)	Assert Messag	e State Machir	ne				
MUST	RFC 4601 s4.6.1 p84 (S,G) Assert Message State Machine When in "I am Assert Winner" State, if we receive an (S,G) assert or (*,G) assert mentioning S that has a worse metric than our own. Whoever sent the assert is in error, and so we re-send an (S,G) Assert, and restart the Assert Timer (Action A3 below). (Note: for (S,G) assert)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-21.10	RFC 4601 s4.	.6.1 p84 (S,G)	Assert Messag	e State Machir	ne		•	•	
MUST	When in "I a or (*,G) ass Whoever sent and restart (Assert_Time	am Assert Win sert mention: t the assert	nner" State, ing S that ha is in error, Timer (Action Verride_Inter	if we received as a worse meand so we read and so we read a so we read and so we	e an (S,G) a tric than ou e-send an (S	ır own. S,G) Assert,			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-21.11	RFC 4601 s4.	6.1 p84 (S,G)	Assert Messag	e State Machir	ne				
MUST	or (*,G) ass Whoever sent "I am Assert	sert mention:		as a worse me	etric than ou				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-21.12	RFC 4601 s4.	6.1 p84 (S,G)	Assert Messag	je State Machir	ne				
MUST	or (*,G) ass Whoever sent and restart	sert mention: t the assert	nner" State, ing S that ha is in error, Timer (Action	as a worse me , and so we r	etric than ou	ır own.			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-21.13	RFC 4601 s4.	6.1 p84 (S,G)	Assert Messag	je State Machir	ne				
MUST	When in "I am Assert Winner" State, if we receive an (S,G) assert or (*,G) assert mentioning S that has a worse metric than our own. Whoever sent the assert is in error, and so we re-send an (S,G) Assert, and restart the Assert Timer (Action A3 below). Set Assert Timer to (Assert_Time - Assert_Override_Interval) (Note: for (*,G) assert)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-21.14	RFC 4601 s4.	6.1 p84 (S,G)	Assert Messag	je State Machir	ne				
MUST	that has a b		nner" State, c than our ow			assert			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-21.15	RFC 4601 s4.	6.1 p88 (S,G)	Assert Messac	ı ıe State Machir	ne				
MUST	When in "I am Assert Winner" State, if CouldAssert(S,G,I) become FALSE, we can no longer perform the actions of the assert winner, and so we transition to NoInfo state and perform actions A4 (below). This includes sending a "canceling assert" with an infinite metric Send AssertCancel(S,G) Delete assert info (AssertWinner(S,G,I) and AssertWinnerMetric(S,G,I) will then return their default values).								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-21.16	RFC 4601 s4.	6.1 p88 (S,G)	Assert Messag	e State Machir	ne				
MUST	than that of perform act: AssertWinner	the current tons A2 below $C(S,G,I)$ and	assert winr w Store assert winne	we receive and and a service we stay new assert wer metric as and the service received to the service when the service as a service when the service we have a service when the service when the service when the service we have a service when the service we will be service when the service we will be serviced by the service when the service we will be serviced by the service when the service we will be serviced by the service when the service we will be serviced by the service when the service we will be serviced by the se	r in Loser st vinner as				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-21.17	RFC 4601 s4.	6.1 p88 (S,G)	Assert Messag	je State Machir	ne				
MUST	When in "I am Assert Loser" State, we receive an assert from the current assert winner that is better than our own metric for this (S,G) (although the metric may be worse than the winner's previous metric). We stay in Loser state, and perform actions A2 below Store new assert winner as AssertWinner(S,G,I) and assert winner metric as AssertWinnerMetric(S,G,I). Set Assert Timer to Assert_Time								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-21.18	RFC 4601 s4.	6.1 p89 (S,G)	Assert Messag	je State Machir	ne				
MUST	expires. We assert info	e transition rmation (acti	to NoInfo st	The (S,G) Ass tate, deletin). ime according	ng the (S,G)				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
DIM ON 04 40			_			X.X.X	X.X.X	X.X.X		
PIM-SM-21.19	RFC 4601 s4.6.1 p89 (S,G) Assert Message State Machine When in "I am Assert Loser" State, if we receive an assert from the current assert winner that is worse than our own metric for this group (typically the winner's metric became worse or because it is an assert cancel). We transition to NoInfo state, deleting the (S,G) assert information and allowing the normal PIM Join/Prune mechanisms to operate.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
IM-SM-21.20	RFC 4601 s4.	6.1 p89 (S,G)	Assert Messag	je State Machir	ne					
MUST	We transition (action A5)	on to NoInfo pelow) I	state, delet Delete assert	the (S,G) Ass sing the (S,G info (Asser return their Free BSD 10.3) assert inf tWinner(S,G,	ormation I) and				
	Ubuntu 16.04:	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	unpredict		1							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-21.21	Free BSD 12.0 untested	Free BSD 12.0 untested	untested		ne					
	Free BSD 12.0 untested RFC 4601 s4. When in "I a from the cur previously ror router ha assume it no	Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los rrent winner reported. These gone down to longer know	untested Assert Messager State, reporting and indicates (and may have it was the	untested	re a Hello me nID from the rrent winner up), and so transition t	one it 's interface we must o the NoInfo				
-	Free BSD 12.0 untested RFC 4601 s4. When in "I a from the cur previously ror router ha assume it no	Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los rrent winner reported. These gone down to longer know	untested Assert Messager State, reporting and indicates (and may have it was the	untested ge State Machin we receiv different Ge s that the cu ye come back winner. We	re a Hello me nID from the rrent winner up), and so transition t	one it 's interface we must o the NoInfo				
-	Free BSD 12.0 untested RFC 4601 s4. When in "I a from the cur previously ror router hassume it no state, deleted free BSD 10.3	Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los rrent winner reported. These gone down to longer know ting this (S, Free BSD 10.3	untested Assert Messager" State, reporting a nis indicates (and may have it was the Good of the Good	untested De State Machin we receive different Gest hat the curve come back winner. We aformation (a Free BSD 10.3	re a Hello me nID from the rrent winner up), and so transition t	one it 's interface we must o the NoInfo				
	Free BSD 12.0 untested RFC 4601 s4. When in "I a from the cur previously ror router hassume it no state, deleted assume it no state, deleted to the state of th	Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los rrent winner reported. Th as gone down o longer know ting this (S, Free BSD 10.3 untested Ubuntu 16.04:	untested Assert Messager" State, reporting a nis indicates (and may have it was the G) assert in Free BSD 10.3 untested Ubuntu 18.04:	untested ge State Machin we receiv different Ge s that the cu ye come back e winner. We nformation (a Free BSD 10.3 untested Ubuntu 18.04:	re a Hello me nID from the rrent winner up), and so transition t	one it 's interface we must o the NoInfo				
PIM-SM-21.21 MUST	Free BSD 12.0 untested RFC 4601 s4. When in "I a from the cur previously ror router hassume it no state, delet Free BSD 10.3 untested Ubuntu 16.04: unpredict Free BSD 12.0 untested	Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los rrent winner reported. The as gone down o longer know ting this (S, Free BSD 10.3 untested Ubuntu 16.04: unpredict Free BSD 12.0 untested	untested Assert Messageser" State, reporting a nis indicates (and may haves it was the Good of the Go	untested ge State Machin we receive different Get of that the curve come back the winner. We deformation (and the state of the st	re a Hello me mID from the mrent winner up), and so transition t ction A5 bel	one it 's interface we must o the NoInfo				
MUST	Free BSD 12.0 untested RFC 4601 s4. When in "I a from the cur previously ror router hassume it no state, delet Free BSD 10.3 untested Ubuntu 16.04: unpredict Free BSD 12.0 untested RFC 4601 s4. When in "I a so that now stored for crouting metrexample, who delete this PIM Join/Pro	Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los rrent winner reported. Th as gone down o longer know ting this (S, Free BSD 10.3 untested Ubuntu 16.04: unpredict Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los my assert me current asser ric changes, en SPTbit(S,G)	untested Assert Messageser" State, reporting a nis indicates (and may have it was the Good of the control of t	untested The State Machine of that the curve come back is winner. We information (a present of the state of	ne a Hello me inID from the initial fr	as changed tric we have rlying rue; for nfo state,				
PIM-SM-21.22	Free BSD 12.0 untested RFC 4601 s4. When in "I a from the cur previously ror router hassume it no state, delet Free BSD 10.3 untested Ubuntu 16.04: unpredict Free BSD 12.0 untested RFC 4601 s4. When in "I a so that now stored for crouting metrexample, who delete this PIM Join/Pro	Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los rrent winner reported. Th as gone down o longer know ting this (S, Free BSD 10.3 untested Ubuntu 16.04: unpredict Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los my assert me current asser ric changes, en SPTbit(S,G) (S,G) assert une mechanism	untested Assert Messageser" State, reporting a nis indicates (and may have it was the Good of the control of t	untested The State Machine of that the curve come back is winner. We information (a present of the state of	ne a Hello me inID from the initial fr	as changed tric we have rlying rue; for nfo state,				
PIM-SM-21.22	Free BSD 12.0 untested RFC 4601 s4. When in "I a from the cur previously ror router hassume it no state, deleted assume it not state, deleted as the state of the	Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los rent winner reported. The as gone down o longer know ting this (S, Free BSD 10.3 untested Ubuntu 16.04: unpredict Free BSD 12.0 untested 6.1 p89 (S,G) am Assert Los my assert me current asser ric changes, en SPTbit(S,C) (S,G) assert une mechanism rlying routin Free BSD 10.3	untested Assert Messageser" State, reporting a nis indicates (and may have it was the Good of the state of t	untested Je State Machin we receive different Get see that the curve come back to winner. We information (and intested see winner we information (and intested see winner with the curve come back to winner with the curve come back to winnested see the company of the company of the curve with the curv	ne a Hello me inID from the initial fr	as changed tric we have rlying rue; for nfo state,				





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	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-21.23	RFC 4601 s4.	6.1 p89 (S,G)	Assert Messag	e State Machir	ne					
MUST	When in "I am Assert Loser" State, interface I used to be the RPF interface for S, and now it is not. We transition to NoInfo state, deleting this (S,G) assert state (action A5 below) Delete assert info (AssertWinner(S,G,I) and AssertWinnerMetric(S,G,I) will then return their default values).									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-21.24	RFC 4601 s4.	6.1 p89 (S,G)	Assert Messag	e State Machir	ne					
MUST	the Upstream interface I this (S,G) a	n Neighbor Ad . The action	ddress field is to transi (action A5 k	we receive a set to my printion to NoIndellow), and a	imary IP add	dress on nd delete				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-22.1	RFC 4601 s4.	6.2 p91 (*,G) A	Assert Messag	e State Machin	e					
MUST	RFC 4601 s4.6.2 p91 (*,G) Assert Message State Machine This router has lost an (*,G) assert on interface I. It must not forward packets for G onto interface I.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-22.2	NEGATIVE: F	RFC 4601 s4.6.	2 p91 (*,G) As	sert Message	State Machine					
MUST		has lost an G onto inter		on interfac	e I. It must	not forward	1			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-22.3	RFC 4601 s4.	.6.2 p92 (*,G) A	Assert Messag	e State Machin	e					
MUST	1	router send e - Assert_Ov			imer to					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 untested untested untested									
PIM-SM-22.4	RFC 4601 s4.	.6.2 p94 (*,G) A	Assert Messag	e State Machin	е					
MUST	I, AND Could state, and p to (Assert_S Store rpt_as	nfo state, if dAssert(*,G,I perform Actio Time - Assert ssert_metric state trans	I)==TRUE ons A1 (below c_Override_Ir (G,I) as Asse	we transition v) Send nterval) StorertWinnerMetr	on to the "I Assert(*,G) e self as As	am Assert Wi Set Assert T	nner" Timer			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-22.5	RFC 4601 s4.	.6.2 p94 (*,G) A	Assert Messag	e State Machin	е					
MUST	I, AND Could state, and p to (Assert_S Store rpt_as	nfo state, if dAssert(*,G,I perform Actic Time - Assert ssert_metric s Assert (*,C	I)==TRUE ons Al (below c_Override_Ir (G,I) as Asse	we transition v) Send nterval) Stor	on to the "I Assert(*,G) e self as As	am Assert Wi Set Assert T	nner" Timer			
	Ubuntu 16.04:	Ubuntu 16.04:	Ubuntu 18.04:	Ubuntu 18.04:						
	Free BSD 12.0 untested	Free BSD 12.0 untested	unpredict Free BSD 12.0 untested	unpredict Free BSD 12.0 untested						
PIM-SM-22.6	RFC 4601 s4.	.6.2 p95 (*,G) <i>F</i>	Assert Messag	e State Machin	e	L	L	L		
MUST	As we're in state that thrashing of we resend the (Actions A3)	Assert Timer	state, then we being kept alder and perioder and restant	we must still live. To pre odic flooding art the Asser	have (*,G) event unneces of duplicat t Timer	forwarding ssary ce packets,				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x
PIM-SM-22.7	RFC 4601 s4.	6.2 p95 (*,G) A	Assert Messag	e State Machin	е			
MUST	expires. The state, then actively be the forwards re-send the (Action A3 h	e (*,G) Assert we must still ing kept aliver and period (*,G) Assert pelow).	rt Timer expi ll have (*,G) ve. To preve dic flooding t, and restar	The (*,G) As ires. As we') forwarding ent unnecessa of duplicate of the Assert warding state	re in the Wi state that i ry thrashing packets, we Timer	is g of		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-22.8	RFC 4601 s4.	6.2 p95 (*,G)	Assert Messag	e State Machin	e			
MUST	has a worse so we re-ser A3 below). (Assert_Time	metric than nd a (*,G) As Send Asse e - Assert_O	our own. Wh ssert, and re ert(*,G) Set verride_Inter	We receive a noever sent t estart the As Assert Timer cval) et for the As Free BSD 10.3 untested	he assert hassert Timer (as lost, and (Action	ner)	
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-22.9	RFC 4601 s4.	6.2 p95 (*,G) A	Assert Messag	e State Machin	e			
MUST	a better met	tric than our		we receive a ansition to "				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-22.10	RFC 4601 s4.	6.2 p95 (*,G) A	Assert Messag	e State Machin	e			
MUST	RPF interface We can no lost transition to Send Assert@Assert@Assert@Inner	ce changed so onger perform to NoInfo sta Cancel(*,G) I	o as to make m the actions ate and perfo Delete assert I) will then	of our (*,G) CouldAssert(s of the assert commactions A t info (Assert return their	*,G,I) becoment winner, and (below)	ne false. and so we ,I) and		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				





	Release	Release	Release	Release	Release	Release	Release	Release	
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	X.X.X	X.X.X	
PIM-SM-22.11	RFC 4601 s4.	6.2 p95 (*,G) A	Assert Messag	e State Machin	е				
MUST	is better th		the current a	We receive a Assert winner					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-22.12	2 RFC 4601 s4.6.2 p95 (*,G) Assert Message State Machine When in "I am Assert Loser" State, We receive a (*,G) assert from the								
MUST	current asset	ert winner th ne metric may	nat is better y be worse th	We receive a than our own the winne actions A2 b	n metric for r's previous	this group			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-22.13	RFC 4601 s4.	6.2 p96 (*,G) A	Assert Message	e State Machin	e			•	
MUST	current asse (typically b cancel). We	ert winner the vecause the vecause the vecause the vecause the vecausition to the vecaus to the vecaus the vecau	nat is worse vinner's metr to NoInfo sta	We receive and than our own ric became wo ate, delete to more than the m	metric for rse or is no his (*,G) as	this group ow an assert ssert state			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-22.14	RFC 4601 s4.	6.2 p96 (*,G) A	Assert Messag	e State Machin	e				
MUST	RFC 4601 s4.6.2 p96 (*,G) Assert Message State Machine When in "I am Assert Loser" State, The (*,G) Assert Timer expires. We transition to NoInfo state and delete this (*,G) assert info (action A5) Delete assert info (AssertWinner(*,G,I) and AssertWinnerMetric(*,G,I) will then return their default values). (Note: transition to NoInfo state)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x
PIM-SM-22.15	RFC 4601 s4.	.6.2 p96 (*,G) A	Assert Messag	e State Machin	е			
MUST	current wing reported. Thas gone down	ner reporting This indicate wn (and may h s it was the	g a different es that the c nave come bac winner. We t	we receive a GenID from current winne ck up), and s cransition to on (action A5	the one it per's interfactors of the NoInfo	ereviously e or router sume it no		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-22.16	RFC 4601 s4.	.6.2 p96 (*,G) A	Assert Messag	e State Machin	e			
MUST	<pre>rpt_assert_r for (*,G) is winner. We</pre>	metric(G,I), s better than transition t	has changed n the metric to NoInfo sta	My routing me so that now we have storate, and delemal PIM Join	my assert me ed for curre ete this (*,6	ent assert 3) assert		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-22.17	RFC 4601 s4.	.6.2 p97 (*,G) A	Assert Messag	e State Machin	е			
MUST	interface fo		d now it is r	Interface I unot. We trans (action A5).				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-22.18	RFC 4601 s4.	.6.2 p97 (*,G) A	Assert Messag	e State Machin	e			
MUST	Join(*,*,RP primary IP a NoInfo state the normal I	(G)) that has address on in e, and delete PIM Join/Prun	s the Upstream nterface I. this (*,G) ne mechanisma	Ne receive a am Neighbor A The action i assert states to operate.or Join(*,G))	ddress field s to transit (action A5)	l set to my ion to		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-22.19	RFC 4601 s4.	.6.2 p97 (*,G) <i>F</i>	Assert Messag	e State Machin	e	l				
MUST	When in "I am Assert Loser" State, We receive a Join(*,G) or a Join(*,*,RP(G)) that has the Upstream Neighbor Address field set to my primary IP address on interface I. The action is to transition to NoInfo state, and delete this (*,G) assert state (action A5), and allow the normal PIM Join/Prune mechanisms to operate. (Note: transition to NoInfo state for Join(*,*,RG(G)))									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-23.1	RFC 4601 s4.	6.3 p98 Assert	Metrics			•				
MUST	that sourced highest IP a		message is i	/ IP address used as a tie						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-23.2	RFC 4601 s4.	6.3 p98 Assert	Metrics							
MUST	If all fields are equal, the primary IP address of the router that sourced the Assert message is used as a tie-breaker, with the highest IP address winning. (Note: This is for (S,G) Assert)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-24.1	RFC 4601 s4.	7.1 p105 Grou	p-to-RP Mappi	ng						
MAY	each router This may, fo cause it to	will need to or example, o	check wheth cause a DR or gister encaps	acting DR tulation to t	ing groups a o re-join a	are affected.				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x			
PIM-SM-24.2	RFC 4601 s4	.7.1 p105 Grou	p-to-RP Mappi	ing			•	•			
MAY	each router This may, for cause it to (Note: This	will need to or example, or re-start reg is done for	check wheth cause a DR or gister encaps (*,G) Join)	oup-range-to- ner any exist r acting DR t sulation to t	ing groups a to re-join a	are affected.					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-25.1	RFC 4601 s4	.8 p106 Source	-Specific Multi	cast		•					
MUST	and FF3x::/: semantics is data packets	32 for IPv6, s determined s and PIM mea	is reserved by the mult: ssages.	rently 232.0. for SSM, and icast group a	d the choice address in bo	of					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-25.2	RFC 4601 s4	RFC 4601 s4.8 p106 Source-Specific Multicast									
MUST	A range of multicast addresses, currently 232.0.0.0/8 in IPv4 and FF3x::/32 for IPv6, is reserved for SSM, and the choice of semantics is determined by the multicast group address in both data packets and PIM messages. ((S,G) Join Message with group address is in SSM range)										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-26.1	RFC 4601 s4	.8.1 p106 Proto	ocol Modification	ons for SSM De	stination Addr	esses	l .				
MUST	1	ST NOT send a	-	essage for ar	ny packet tha	at is					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





				1				1		
	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-26.2	RFC 4601 s4.	8.1 p106 Proto	ocol Modification	ons for SSM De	stination Addr	esses				
MUST		ing as an RI has an SSM o		orward any Re address.	egister-encap	psulated				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 Free BSD 12.0 untested untested untested									
PIM-SM-26.3	RFC 4601 s4.	8.1 p107 Proto	ocol Modification	ons for SSM De	stination Addr	esses				
SHOULD	an SSM addre	ess. If so,	it SHOULD re	tise itself a espond with a a packet dest	Register-St	top message				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-27.1	RFC 4601 s4.	8.2 p108 PIM-	SSM-Only Rou	ıters						
MUST	<pre>If (iif == F oiflist = } else if(ii)</pre>	in a PIM-SSM-RPF_interface inherited_olif is in inherit(S,G) on if	e(S) AND Upst list(S,G) erited_olist	reamJPState(S,G) == Join	ned) {	Γ	Γ		
	untested	untested	untested	untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-27.2	RFC 4601 s4.	8.2 p108 PIM-	SSM-Only Rou	ıters						
MUST	Additionally, the Packet forwarding rules of Section 4.2 can be simplified in a PIM-SSM-only router: if (iif == RPF_interface(S) AND UpstreamJPState(S,G) == Joined) { oiflist = inherited_olist(S,G) } else if(iif is in inherited_olist(S,G)) { send Assert(S,G) on iif } oiflist = oiflist (-) iif									
	forward pack Free BSD 10.3	cet on all in	Free BSD 10.3	oiflist Free BSD 10.3						
	untested	untested	untested	untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





		5.	5.1	5.1	5.1			5.		
	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-28.1	DEC 4004 -4		-							
FIIVI-SIVI-26.1		.9 p108 PIM Pa								
MUST		trol messages	_		103.			1		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-28.2	RFC 4601 s4.	.9 p109 PIM Pa	acket Formats							
MUST	Set to zero	on transmiss	sion. Ignore	ed upon recei	pt.					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-28.3	RFC 4601 s4.9 p109 PIM Packet Formats									
MUST	Complement of	m is a standa of the one's ne "Multicast ssage.	complement s	sum of the en	tire PIM mes					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-28.4	RFC 4601 s4.	.9 p110 PIM Pa	acket Formats							
MUST	or a message it MUST be administrate (Note: wrong	e is received e's destinati discarded and or in a rate g Type field	ion does not d an error me limited manr , DUT discard	correspond tessage SHOULD der. ds packet)	o the table	above,	ı			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-29.1	RFC 4601 s4.	9.1 p111 Enco	ded Source an	d Group Addre	ess Formats				
MUST	If the message is sent for a single group then the Mask length must equal the address length in bits for the given Address Family and Encoding Type. (e.g. 32 for IPv4 native encoding, 128 for IPv6 native encoding).								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-29.2	RFC 4601 s4.	9.1 p111 Enco	ded Source ar	nd Group Addre	ess Formats				
MUST		onal PIM ne group rang defined in th							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-29.3	RFC 4601 s4.	9.1 p111 Enco	ded Source ar	nd Group Addre	ess Formats				
MUST	Admin Scope [Z]one indicates the group range is an admin scope zone. This is used in the Bootstrap Router Mechanism [11] only. For all other purposes, this bit is set to zero and ignored on receipt. (Here we are considering Non-BSR message)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-29.4	NEGATIVE R	FC 4601 s4.9.	1 p111 Encode	d Source and	Group Address	s Formats			
MUST	This is used other purpos	[Z]one indic d in the Boot ses, this bit e considering	strap Router is set to z	Mechanism [zero and igno	11] only. F	or all			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release	Release	Release	Release	Release	Release	Release	Release		
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	X.X.X	X.X.X		
PIM-SM-29.5	RFC 4601 s4.	9.1 p112 Enco	ded Source ar	nd Group Addre	ess Formats					
MUST	The Sparse l	oit is a 1 bi	it value, set	to 1 for PI	M-SM.					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-29.6	RFC 4601 s4.	9.1 p112 Enco	ded Source ar	nd Group Addre	ess Formats					
MUST	messages. (Saddress of the length of the Encoded-Sour	S,G) source I the source S,	list entries , the Source- s and have bo cleared.	value for use have the Sou Address Mask th the WC an	rce-Address -Len set to	set to the the full				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-29.7	RFC 4601 s4.	9.1 p112 Enco	ded Source ar	nd Group Addre	ess Formats					
MUST	The RPT (or Rendezvous Point Tree) bit is a 1 bit value for use with PIM Join/Prune messages (see Section 4.9.5.1). If the WC bit is 1, the RPT bit MUST be 1.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-29.8	NEGATIVER	FC 4601 s4.9.1	p112 Encode	d Source and G	Group Address	Formats				
MUST	with PIM Jo:		sages (see Se	oit is a 1 bi ection 4.9.5.						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





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	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-30.1	RFC 4601 s4	.9.2 p114 Hello	Message For	mat					
SHOULD	Hello messages with a Holdtime value set to `0' are also sent by a router on an interface about to go down or changing IP address (see Section 4.3.1). These are effectively goodbye messages and the receiving routers should immediately time out the neighbor information for the sender. (Here the testing is done on whether DUT correctly times out a neighbor)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-30.2	RFC 4601 s4	.9.2 p114 Hello	Message For	mat					
MUST	a router on (see Section the receiving information (Note: change)	an interface n 4.3.1). The ng routers sh for the send ge of IP addi	e about to go ese are effect nould immedia der. ress)	e set to `0' o down or cha ctively goodk ately time ou	nging IP ado ye messages	dress and			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-30.3	RFC 4601 s4	.9.2 p114 Hello	Message For	mat					
MUST	Hello messages with a Holdtime value set to `0' are also sent by a router on an interface about to go down or changing IP address (see Section 4.3.1). These are effectively goodbye messages and the receiving routers should immediately time out the neighbor information for the sender. (Note: interface goes down)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-31.1	RFC 4601 s4	.9.3 p117 Regi	ster Message F	- ormat			•		
MUST	for Registe:	rs is done on he PIM headen	nly on the fi	ulation overh irst 8 bytes kt 4 bytes, e	of the packe	et,			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-31.2	RFC 4601 s4.	.9.3 p117 Regi	ster Message F	ormat					
MUST	If the route it sets the		or a source t	that it is di	rectly conne	ected to,			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-32.1	RFC 4601 s4.	9.4 p119 Regi	ster-Stop Mess	sage Format					
MUST	length * 8	_	IPv4 native	eld contains encoding), i					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-33.1	RFC 4601 s4.9.5 p122 Join/Prune Message Format								
MUST	Within one PIM Join/Prune message, all the Multicast Group Addresses, Joined Source addresses and Pruned Source addresses MUST be of the same address family.								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-34.1	RFC 4601 s4.	9.5.1 p122 Gr	oup Set Source	e List Rules					
MUST	- the beging field and the mask length for IPv4 or	ning of the man	nulticast addingth of the meaning the Multicast (ed by the ent dress range i multicast add Group Address	n the group lress range i	address n the			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release	Release	Release	Release	Release	Release	Release	Release			
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	X.X.X	X.X.X			
PIM-SM-34.2	RFC 4601 s4.	.9.5.1 p123 Gro	oup Set Source	List Rules							
MUST	(*,G) source list entries have the Source-Address set to the address of the RP for group G, the Source-Address Mask-Len set to the full length of the IP address and have both the WC and RPT bits of the Encoded-Source-Address set.										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-34.3	RFC 4601 s4.	9.5.1 p124 Gr	oup Set Source	List Rules							
MUST	address of the length of the	the source S	, the Source- s and have bo	Source-Addres -Address Mask oth the WC ar	-Len set to	the full					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-35.1	RFC 4601 s4.9.6 p127 Assert Message Format										
MUST	RPT-bit is a 1 bit value. The RPT-bit is set to 1 for Assert(*,G) messages and 0 for Assert(S,G) messages. (Note: for (*,G) Asserts)										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-35.2	RFC 4601 s4.	9.6 p128 Asse	rt Message Fo	rmat							
MUST	a specific s	source on the	e shortest-pa	routers forwath tree(SPTs field set tree	bit is TRUE)						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x
PIM-SM-35.3	RFC 4601 s4.	9.6 p128 Asse	rt Message Fo	rmat			•	
MUST	messages and	d 0 for Asser	rt(S,G) messa		1 for Assert	(*,G)		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested				
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict				
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				
PIM-SM-35.4	RFC 4601 s4.	.9.6 p128 Asse	rt Message Fo	rmat				
MUST	RFC 4601 s4.9.6 p128 Assert Message Format RPT-bit is a 1 bit value. The RPT-bit is set to 1 for Assert(*,G) messages and 0 for Assert(S,G) messages. (Note: for (S,G) Assert) Free BSD 10.3							
PIM-SM-35.5	RFC 4601 s4.	9.6 p128 Asse	rt Message Fo	rmat				
MAY	the IP source address of the data packet that triggered the Assert							
PIM-SM-35.6	RFC 4601 s4.	9.6 p128 Asse	rt Message Fo	rmat				
MUST	IP source ac set to zero is set to MI	ddress of the otherwise. RIB.pref(RP(G	e data packet The RPT-bit G)) and the M	that trigge is set to 1, Metric is set	red the Asse the Metric- to MRIB.met	ert and is -Preference		
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested				





	Release	Release	Release	Release	Release	Release	Release	Release		
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	X.X.X	X.X.X		
PIM-SM-35.7	RFC 4601 s4.	9.6 p128 Asse	rt Message Fo	rmat						
MUST	For data-triggered Asserts the Source-Address field MAY be set to the IP source address of the data packet that triggered the Assert and is set to zero otherwise. The RPT-bit is set to 1, the Metric-Preference is set to MRIB.pref(RP(G)) and the Metric is set to MRIB.metric(RP(G)). (Note: for Source-Address field & Metric)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-35.8	RFC 4601 s4.	9.6 p128 Asse	rt Message Fo	rmat				•		
MUST	IP source ac set to zero is set to ME	ddress of the otherwise.	e data packet The RPT-bit G)) and the M	ce-Address fi that trigge is set to 1, Metric is set	ered the Asse the Metric-	ert and is -Preference				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-36.1	RFC 4601 s4.11 p130 Timer Values									
MUST	Hello Timer (HT(I)). Periodic interval for Hello messages.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-36.2	RFC 4601 s4.	.11 p132 Timer	· Values							
MUST				. This timer te is timed o		_				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						



FRROUTING RFC Compliance Test Report PIM Results



	Dalassa	Dalassa	Dalassa	Dalassa	Dalassa	Dalassa	Delegee	Deleges			
	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x			
PIM-SM-36.3	RFC 4601 s4.	.11 p133 Timer	Values				•				
MUST	Upstream Join Timer (JT(*,*,RP), JT(*,G), JT(S,G)). This timer is used for period between Join/Prune messages. Default: 60 seconds										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-36.4	RFC 4601 s4.11 p133 Timer Values										
MUST	period when do so. Value	someone else	sends a J/I t_periodic,	*,G), JT(S,G) message so 1.4 * t_per herwise.	we don't nee						
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-36.5	RFC 4601 s4.	.11 p133 Timer	· Values								
MUST	Upstream Join Timer (JT(*,*,RP), JT(*,G), JT(S,G)). This timer is used for period between Join/Prune messages (Here JT(*,*,RP)) is tested)										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-36.6	RFC 4601 s4.	.11 p133 Timer	· Values								
MUST	used for per	in Timer (JT(riod between G)) is tested	Join/Prune m	(*,G), JT(S,G nessages	3)). This tir	ner is					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





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	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x	
PIM-SM-36.7	RFC 4601 s4.	.11 p134 Timer	· Values						
MUST	Keepalive Timer (KAT(S,G)). This timer is the Period after last (S,G) data packet during which (S,G) Join state will be maintained even in the absence of (S,G) Join messages. Default: 210 seconds.								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: FAIL	Ubuntu 18.04: FAIL					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-41.1	draft-ietf-pim-	sm-bsr-12.txt s	1.2 p7 Protoco	l Overview					
MUST	BSMs are ori	_	iodically to	ensure consi	stency after	<u> </u>			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-41.2	draft-ietf-pim-	sm-bsr-12.txt s	3.1.1 p11 Per-	Scope-Zone C	andidate-BSR	State Machine)		
MUST	If Bootstrap Timer expires, and current state is `P-BSR', the router goes to E-BSR state and after receiving a non-preferred BSM, it remains in the E-BSR state and originates a BSM that contains the BSR priority value of the included BSR & the address of the bootstrap router for the domain.								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-41.3	draft-ietf-pim-	sm-bsr-12.txt s	3.1.1 p11 Per-	Scope-Zone Ca	andidate-BSR	State Machine)		
MUST		& forward BS	_	a preferred E -Set; set Boo	_				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release	Release	Release	Release	Release	Release	Release	Release	
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	X.X.X	X.X.X	
PIM-SM-41.4	draft-ietf-pim-	sm-bsr-12.txt s	3.1.1 p11 Per-	Scope-Zone C	andidate-BSR	State Machine			
MUST		& forward BS	_	a preferred E -Set; set Boo	_				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-41.5	draft-ietf-pim-	sm-bsr-12.txt s	3.1.1 p11 Per-	Scope-Zone C	andidate-BSR	State Machine			
MUST		ate and after R state & for	_	a non-preferr	red BSM, it r	remains			
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-41.6	draft-ietf-pim-sm-bsr-12.txt s3.1.1 p11 Per-Scope-Zone Candidate-BSR State Machine								
MUST	In C-BSR state and after receiving a preferred BSM, it remains in the C-BSR state & forward BSM; store RP-Set; set bootstrap timer to BS_Timeout								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					
PIM-SM-41.7	draft-ietf-pim-	sm-bsr-12.txt s	3.1.1 p11 Per-	Scope-Zone C	andidate-BSR	State Machine			
MUST	draft-ietf-pim-sm-bsr-12.txt s3.1.1 p11 Per-Scope-Zone Candidate-BSR State Machine In C-BSR state and after receiving a preferred BSM, it remains in the C-BSR state & forward BSM; store RP-Set; set bootstrap timer to BS_Timeout (Note: A Bootstrap message is also preferred if it is from the current BSR with a lower weight than the previous BSM it sent, provided that if the router is a Candidate BSR the current BSR still has a weight higher or equal than the router itself.)								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass					
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested					





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x			
PIM-SM-41.8	draft-ietf-pim-	sm-bsr-12.txt s	3.1.1 p11 Per-	Scope-Zone C	andidate-BSR	State Machine					
MUST	In C-BSR state and after receiving a non-preferred BSM, it goes to the P-BSR state & forward BSM; set bootstrap timer to <bs_rand_override> (Note:A Bootstrap message is received from the elected BSR, but the BSR Priority field in the received message has changed, so that now the currently elected BSR has lower weight that the router itself.)</bs_rand_override>										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-41.9	draft-ietf-pim-	ısm-bsr-12.txt s	3.1.1 p11 Per-	L Scope-Zone C	andidate-BSR	L State Machine					
MUST			_	expires, it er to BS_Rand							
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-41.10	draft-ietf-pim-sm-bsr-12.txt s3.1.1 p11 Per-Scope-Zone Candidate-BSR State Machine										
MUST	In E-BSR state if the BS Timer expires the BSR originates BSM and set BS Timer to BS_Period										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-41.11	draft-ietf-pim-	sm-bsr-12.txt s	3.1.2 p13 Per-	Scope-Zone St	tate Machine fo	or Non-Candida	ate-BSR Route	ers			
MUST	currently acrouter is no	ctive BSR If ot a C-BSR, t	the Bootstra	d over, and rap Timer has message is	expired and then forward	the receiving led	ıg				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-41.12										
MUST	draft-ietf-pim-sm-bsr-12.txt s3.1.2 p13 Per-Scope-Zone State Machine for Non-Candidate-BSR Routers The router knows the identity of the current BSR, and is using the RP-Set provided by that BSR. Only bootsrap messages from that BSR or from a C-BSR with higher weight than the current BSR will be accepted									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.13	NEGATIVE di	raft-ietf-pim-sm	-bsr-12.txt s3.	1.2 p13 Per-Sc	ope-Zone State	e Machine for I	Non-Candidate	-BSR Routers		
MUST	The router knows the identity of the current BSR, and is using the RP-Set provided by that BSR. Only bootsrap messages from that BSR or from a C-BSR with higher weight than the current BSR will be accepted									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.14	draft-ietf-pim-	sm-bsr-12.txt s	3.2 p19 Sendiı	ng Candidate-F	RP-Advertisem	ent Messages				
MUST		periodically the unicast			he BSR					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.15	draft-ietf-pim-	sm-bsr-12.txt s	3.2 p19 Sendiı	ng Candidate-F	RP-Advertisem	nt Message				
MUST		periodically the periodic			he BSR					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release	Release	Release	Release	Release	Release	Release	Release			
	7.2.1	7.3	7.5.1	8.0	X.X.X	X.X.X	X.X.X	X.X.X			
PIM-SM-41.16	draft-ietf-pim-	sm-bsr-12.txt s	3.2 p19 Sendir	ng Candidate-F	RP-Advertisem	ent Messages					
SHOULD	C-RPs should	C-RPs should by default send C-RP-Adv messages withthe Priority field set to 192.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-41.17	draft-ietf-pim-	sm-bsr-12.txt s	3.2 p19 Sendir	ng Candidate-F	RP-Advertisem	ent Messages					
MUST	Zone bit MUS zone; otherw		the C-RP-Adv			_					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-41.18	draft-ietf-pim-	sm-bsr-12.txt s	3.3 p21 Creati	ng the RP-Set	at the BSR						
MUST	from the C-I than BS_Peri	RP-Set, subje	ect to the co LD be larger	ne" field is onstraint tha than 2.5 tim lost.	t it MUST be	e larger					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							
PIM-SM-41.19	draft-ietf-pim-	sm-bsr-12.txt s	3.3 p21 Creati	ng the RP-Set	at the BSR						
SHOULD	draft-ietf-pim-sm-bsr-12.txt s3.3 p21 Creating the RP-Set at the BSR For each RP-address, the "RP-Holdtime" field is set to the Holdtime from the C-RP-Set, subject to the constraint that it MUST be larger than BS_Period and SHOULD be larger than 2.5 times BS_Period to allow for some Bootstrap messages getting lost. (Note: Here we test the SHOULD part										
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested							
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict							
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested							





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	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-41.20	draft-ietf-pim-	sm-bsr-12.txt s	3.3 p21 Creati	ng the RP-Set	at the BSR		1			
MUST	draft-ietf-pim-sm-bsr-12.txt s3.3 p21 Creating the RP-Set at the BSR There MUST however be a minimum of BS_Min_Interval between each time a BSM is sent.									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.21	draft-ietf-pim-	sm-bsr-12.txt s	3.4 p23 Forwa	rding Bootstrap	Messages					
MUST	One is that bit is set,	a bootstrap	message is r	not forwarded	if its No-F	orward				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.22	draft-ietf-pim-	sm-bsr-12.txt s	3.4 p23 Forwa	rding Bootstrap	Messages			•		
MUST	multicast-ca	When a Bootstrap message is forwarded, it is forwarded out of every multicast-capable interface which has PIM neighbors (including the one over which the message was received).								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.23	draft-ietf-pim-	sm-bsr-12.txt s	3.5 p24 Bootst	rap Messages	to New and Re	ebooting Route	ers			
MAY	draft-ietf-pim-sm-bsr-12.txt s3.5 p24 Bootstrap Messages to New and Rebooting Routers one router on the LAN sends a stored copy of the Bootstrap message for each admin scope zone to the new or rebooting routerThis message SHOULD be sent as a No-Forward Bootstrap message For backwards compatibility, this message MAY instead or in addition be sent as a Unicast Bootstrap message, (Note: Here ANVL checks that whether the Bootstrap MSG send by DUT has Multicast or Unicast destination. If the destination is Multicast then it should be No-Forward Bootstrap message)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-41.24	NEGATIVE draft-ietf-pim-sm-bsr-12.txt s3.5 p24 Bootstrap Messages to New and Rebooting Routers RFC4601 s4.9, p110 PIM Packet Formats									
MUST	To allow new or rebooting routers to learn the RP-Set quickly, when a Hello message is received from a new neighbor, or a Hello message with a new GenID is received from an existing neighbor, one router on the LAN sends a stored copy of the Bootstrap message for each admin scope zone to the new or rebooting router. NOTE: <case-1> Sending PIM Hello MSG with Unrecognized Version field <case-2> Sending PIM Hello MSG with incorrect checksum</case-2></case-1>									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.26	draft-ietf-pim-	sm-bsr-12.txt s	4 p25 Messag	e Formats						
MUST	Usually, Bootstrap messages are multicast with TTL 1 to the ALL-PIM-ROUTERS group, (Note: Here DUT originates the Bootstrap Message)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.27	draft-ietf-pim-	sm-bsr-12.txt s	4 p25 Messag	e Formats						
MUST	Usually, Bootstrap messages are multicast with TTL 1 to the ALL-PIM-ROUTERS group, (Note: Here DUT forwards the Bootstrap Message)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04:	Ubuntu 16.04:	Ubuntu 18.04:	Ubuntu 18.04:						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.28	draft-ietf-pim-	Lsm-bsr-12.txt s	4 p25 Messag	L e Formats				<u> </u>		
MUST	Usually, Boo	otstrap messa FERS group, we check IP	ages are mult		TTL 1 to the					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-41.29	draft-ietf-pim-	sm-bsr-12.txt s	4 p25 Messag	e Formats						
MUST	Usually, Bootstrap messages are multicast with TTL 1 to the ALL-PIM-ROUTERS group, but in some circumstances (described in section 3.5.2) Bootstrap messages are unicast to a specific PIM neighbor. (Note: here we check IP TTL value for forwarded BSM)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.30	draft-ietf-pim-	sm-bsr-12.txt s	4.1 p28 Bootst	rap Message F	ormat					
MAY	_	The length (in bits) of the mask to use in the hash function. For IPv4 we recommend a value of 30.								
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-41.31	draft-ietf-pim-sm-bsr-12.txt s4.2 p32 Candidate-RP-Advertisement Message Format									
MUST	C-RPs MUST 1	NOT send C-RI	P-Adv message	es with a Pre	fix Count of	`0'.		,		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: unpredict	Ubuntu 16.04: unpredict	Ubuntu 18.04: unpredict	Ubuntu 18.04: unpredict						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-42.1	draft-ietf-pim-	sm-bsr-12.txt s	3.6 p25 Receiv	ing and Using	the RP-Set		•	•		
MUST	If a mapping is not already part of the RP-Set, it is added to the RP-Set and the associated Group-to-RP mapping Expiry Timer (GET) is initialized to the holdtime from the Bootstrap message. Its priority is set to the Priority from the Bootstrap message.							ı		
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						





	Release 7.2.1	Release 7.3	Release 7.5.1	Release 8.0	Release x.x.x	Release x.x.x	Release x.x.x	Release x.x.x		
PIM-SM-42.2	draft-ietf-pim-sm-bsr-12.txt s3.6 p25 Receiving and Using the RP-Set									
MUST	Priority fro	om the Bootst	-	RP-Set, it i and its assomessage.	-					
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-42.3	draft-ietf-pim-	sm-bsr-12.txt s	3.6 p25 Recei	ing and Using	the RP-Set					
MUST	RP-Set and initialized is set to (Note: This	the associat to the holdt the Priority test is for	ted Group-to- time from the from the Boo rp-priority		Expiry Timer nessage. Its	(GET) is				
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						
PIM-SM-42.4	draft-ietf-pim-	sm-bsr-12.txt s	3.6 p25 Recei	ving and Using	the RP-Set	•	•	•		
MUST	If a mapping is already part of the RP-Set, it is updated with the Priority from the Bootstrap message and its associated GET is reset to the holdtime from the Bootstrap message. (Note: This test is for rp-priority)									
	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested	Free BSD 10.3 untested						
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 18.04: pass	Ubuntu 18.04: pass						
	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested	Free BSD 12.0 untested						