	Release 2.0	Master 2017-09-08	Release 3.0	Master 2017-11-07	Release 2.0.2	Release 3.0.2
Type	FRR	FRR	FRR	FRR	FRR	FRR
Commit ID	3e71b5d	5cf0c43	f633dc2	6289215	36a7e78	30283fd
Commit Date	2017-04-02	2017-09-08	2017-10-14	2017-11-08	2017-11-08	2017-11-08
ANVL-BGP-AS4-1.1 **MUST**	Setup Verification					
	`Setup Verification Tests` `Bring up BGP4 Connection using 4-Octet AS capapbiility`					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-2.1 **MUST**	RFC4893 Section 3 Page 2 "Protocol Extensions"					
	`Protocol Extensions` `The Capability that is used by a BGP speaker to convey to its BGP peer the 4-octet Autonomous System number capability, also carries the 4-octet Autonomous System number of the speaker in the Capability Value field of the Capability Optional Parameter.`					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-2.2 **MUST**	RFC4893 Section 3 Page 2 "Protocol Extensions"					
	`Protocol Extensions` `The Capability  Length field of the Capability is set to 4.`					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-2.3 **MUST**	RFC4893 Section 3 Page 2 "Protocol Extensions"					
	`Protocol Extensions` `NEW BGP speakers carry AS path information expressed in terms of 4-octet Autonomous Systems numbers by using the existing AS_PATH attribute, except that each AS number in this attribute is encoded not as a 2-octet, but as a 4-octet entity.`					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass

	Release 2.0	Master 2017-09-08	Release 3.0	Master 2017-11-07	Release 2.0.2	Release 3.0.2
ANVL-BGP-AS4-2.4 **MUST**	RFC4893 Section 3 Page 2 "Protocol Extensions"					

	`Protocol Extensions`
	`The same applies to the AGGREGATOR attribute - NEW BGP speakers`
	`use the same attribute, except that the AS carried in this attribute`
	`is encoded as a 4-octet entity.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-2.5 **MUST**	RFC4893 Section 3 Page 2 "Protocol Extensions" Note: Here we check for the flags only					

	`Protocol Extensions`
	`To preserve AS path information with 4-octet AS numbers across OLD`
	`BGP speakers, this document defines a new AS path attribute, called`
	`AS4_PATH.This is an optional transitive attribute that contains the`
	`AS path encoded with 4-octet AS numbers.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-2.6 **MUST**	RFC4893 Section 3 Page 2 "Protocol Extensions" Note: Here we check for the value in the field					

	`Protocol Extensions`
	`To preserve AS path information with 4-octet AS numbers across OLD`
	`BGP speakers, this document defines a new AS path attribute, called`
	`AS4_PATH.This is an optional transitive attribute that contains the`
	`AS path encoded with 4-octet AS numbers.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-2.7 **MUST**	RFC4893 Section 3 Page 3 "Protocol Extensions" Note: Here we check the attribute flags					

	`Protocol Extensions`
	`Similarly, this document defines a new aggregator attribute called`
	`AS4_AGGREGATOR, which is optional transitive.`					

	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL
	FreeBSD 10.3: FAIL	FreeBSD 10.3: FAIL	FreeBSD 10.3: FAIL	FreeBSD 10.3: untested	FreeBSD 10.3: FAIL	FreeBSD 10.3: FAIL

	Release 2.0	Master 2017-09-08	Release 3.0	Master 2017-11-07	Release 2.0.2	Release 3.0.2
ANVL-BGP-AS4-2.8 **MUST**	RFC4893 Section 3 Page 3 "Protocol Extensions" Note: Here we check the attribute value					

	`Protocol Extensions`
	`Similarly, this document defines a new aggregator attribute called`
	`AS4_AGGREGATOR, which is optional transitive.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-2.9 **MUST**	RFC4893 Section 3 Page 3 "Protocol Extensions"					

	`Protocol Extensions`
	`We denote this special AS number as AS_TRANS for ease of description`
	`in the rest of this specification. This AS number is also placed`
	`in the "My Autonomous System" field of the OPEN message originated`
	`by a NEW BGP speaker, if the speaker does not have a (globally unique)`
	`2-octet AS number.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-3.1 **SHOULD**	RFC4893 Section 4.1 Page 3 "Interaction Between NEW BGP Speakers" Note: For AS4_PATH attribute					

	`Interaction Between NEW BGP Speakers`
	`The new attributes, AS4_PATH and AS4_AGGREGATOR SHOULD NOT be carried`
	`in the UPDATE messages between NEW BGP peers.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-3.2 **SHOULD**	RFC4893, Sect. 4.1, Page 3, Interaction Between NEW BGP Speakers Note: For AS4_AGGREGATOR attribute					

	`Interaction Between NEW BGP Speakers`
	`The new attributes, AS4_PATH and AS4_AGGREGATOR SHOULD NOT be carried`
	`in the UPDATE messages between NEW BGP peers.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass

	Release 2.0	Master 2017-09-08	Release 3.0	Master 2017-11-07	Release 2.0.2	Release 3.0.2
ANVL-BGP-AS4-3.3 **SHOULD**	NEGATIVE RFC4893, Sect. 4.1, Page 3, Interaction Between NEW BGP Speakers Note: This is for AS4_PATH attribute					

	`Interaction Between NEW BGP Speakers`
	`A NEW BGP speaker that receives the AS4_PATH and AS4_AGGREGATOR`
	`path attributes in an UPDATE message from a NEW BGP speaker SHOULD`
	`discard these path attributes and continue processing`
	`the UPDATE message.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-3.4 **SHOULD**	NEGATIVE RFC4893, Sect. 4.1, Page 3, Interaction Between NEW BGP Speakers Note: This is for AS4_AGGREGATOR attribute					

	`Interaction Between NEW BGP Speakers`
	`A NEW BGP speaker that receives the AS4_PATH and AS4_AGGREGATOR`
	`path attributes in an UPDATE message from a NEW BGP speaker SHOULD`
	`discard these path attributes and continue processing`
	`the UPDATE message.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-4.1 **MUST**	RFC4893 Section 4.2.2 Page 4 "Generating Updates"					

	`Generating Updates (NEW-OLD BGP Speaker)`
	`When communicating with an OLD BGP speaker, a NEW speaker MUST send`
	`the AS path information in the AS_PATH attribute encoded with 2-octet`
	`AS numbers.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-4.2 **MUST**	RFC4893 Section 4.2.2 Page 4 "Generating Updates" Note: For AS4_PATH attribute					

	`Generating Updates (NEW-OLD BGP Speaker)`
	`The NEW speaker MUST also send the AS path information in the`
	`AS4_PATH attribute (encoded with 4-octet AS numbers), except`
	`for the case where the entire AS path information is composed of`
	`2-octet AS numbers only.  In this case, the NEW speaker SHOULD NOT`
	`send the AS4_PATH attribute.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass

	Release 2.0	Master 2017-09-08	Release 3.0	Master 2017-11-07	Release 2.0.2	Release 3.0.2
ANVL-BGP-AS4-4.3 **MUST**	RFC4893 Section 4.2.2 Page 4 "Generating Updates"					
	Generating Updates (NEW-OLD BGP Speaker) In the AS_PATH attribute encoded with 2-octet AS numbers, non-mappable 4-octet AS numbers are represented by the well-known 2-octet AS number, AS_TRANS.					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-4.4 **MUST**	RFC4893 Section 4.2.2 Page 4 "Generating Updates"					
	Generating Updates (NEW-OLD BGP Speaker) Similarly, if the NEW speaker has to send the AGGREGATOR attribute, and if the aggregating Autonomous System"s AS number is truly 4-octets, then the speaker constructs the AS4_AGGREGATOR attributes by taking the attribute length and attribute value from the AGGREGATOR attribute and placing them into the attribute length and attribute value of the AS4_AGGREGATOR attribute, and sets the AS number field in the existing AGGREGATOR attribute to the reserved AS number, AS_TRANS.					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-4.5 **SHOULD**	RFC4893 Section 4.2.2 Page 4 "Generating Updates"					
	Generating Updates (NEW-OLD BGP Speaker) Note that if the AS number is 2-octets only, then the AS4_AGGREGATOR attribute SHOULD NOT be sent.					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-5.1 **MUST**	RFC4893 Section 4.2.3 Page 4 "Processing Received Updates"					
	Processing Received Updates (OLD-NEW BGP Speakers) If the AS4_PATH attribute is also received, both the attributes will be used to construct the exact AS path information, and therefore the information carried by both the attributes will be considered for AS path loop detection.					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass

	Release 2.0	Master 2017-09-08	Release 3.0	Master 2017-11-07	Release 2.0.2	Release 3.0.2
ANVL-BGP-AS4-5.2 **MUST**	RFC4893, Section 4.2.3 Page 5 "Processing Received Updates" Note: This is for testing ignored AS4_PATH attribute					

	`Processing Received Updates (OLD-NEW BGP Speakers)`
	`When both the attributes are received, if the AS number in the AGGREGATOR attribute is not AS_TRANS, then:`
	`- the AS4_AGGREGATOR attribute and the AS4_PATH attribute SHALL be ignored`
	`- the AS_PATH attribute SHALL be taken as the AS path information.`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-5.3 **MUST**	RFC4893, Section 4.2.3 Page 5 "Processing Received Updates"					
	`Processing Received Updates (OLD-NEW BGP Speakers)` `- the AGGREGATOR attribute SHALL be taken as the information about the aggregating node`					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-5.4 **MUST**	RFC4893 Section 4.2.3 Page 5 "Processing Received Updates"					

	`Processing Received Updates (OLD-NEW BGP Speakers)`
	`Otherwise,`
	`- the AGGREGATOR attribute SHALL be ignored,`
	`- the AS4_AGGREGATOR attribute SHALL be taken as the information about the aggregating node`					

	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass
ANVL-BGP-AS4-5.5 **MUST**	RFC4893 Section 4.2.3 Page 6 "Processing Received Updates"					
	`Processing Received Updates (OLD-NEW BGP Speakers)` `If the number of AS numbers in the AS_PATH attribute is less than the number of AS numbers in the AS4_PATH attribute, then the AS4_PATH attribute SHALL be ignored, and the AS_PATH attribute SHALL be taken as the AS path information.`					
	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL	Ubuntu 16.04: FAIL
	FreeBSD 10.3: FAIL	FreeBSD 10.3: FAIL	FreeBSD 10.3: FAIL	FreeBSD 10.3: untested	FreeBSD 10.3: FAIL	FreeBSD 10.3: FAIL

	Release 2.0	Master 2017-09-08	Release 3.0	Master 2017-11-07	Release 2.0.2	Release 3.0.2
ANVL-BGP-AS4-5.6	RFC4893 Section 4.2.3 Page 6 "Processing Received Updates"					
MUST	`Processing Received Updates (OLD-NEW BGP Speakers)` `If the number of AS numbers in the AS_PATH attribute is larger than or equal to the number of AS numbers in the AS4_PATH attribute, then the AS path information SHALL be constructed by taking as many AS numbers and path segments as necessary from the leading part of the AS_PATH attribute, and then prepending them to the AS4_PATH attribute so that the AS path information has an identical number of AS numbers as the AS_PATH attribute.`					
	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass	Ubuntu 16.04: pass
	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: pass	FreeBSD 10.3: untested	FreeBSD 10.3: pass	FreeBSD 10.3: pass