Configure Advanced Options for BGP on FTD

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Introduction

This document describes the options of Border Gateway Protocol (BGP) to manipulate the Path Selection when multiple paths lead to the same destination.

Components Used

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Configure BGP AS Path Prepend

You can use AS Path Prepend to manipulate the path selection. Review the next documentation for further information regarding the BGP path selection:

• BGP Path Selection

Procedure

Step 1. Click Objects, then click Route Map.

Step 2. Select the Route Map you have assigned to the BGP peer where you need to apply the AS Path Prepend or add a new Route Map by clicking **Add Route Map**.

Step 3. Configure the name of the Route Map, then click Add under the Entries section.

New Route Map Object			0
Name AS_Path_Prepend_RM			
▼ Entries (0)			
			Add
Sequence No 🔺	Redistribution		
No records to display			
Allow Overrides			
		Cancel	Save

Step 4. Configure at least the next basic settings:

- Sequence No. Select the number of the sequenceRedistribution. Select Allow

Add Route Map	o Entry					0
Sequence No:						
10						
Redistribution:						
C Allow	•					
Match Clauses	Set Clauses					
Security Zones	Address (0)	Next Hop (0)	Route Sourc	ce (0)		
IPv4	Select addresse	s to match as acce	ss list or prefix	list addresses of n	oute	_
IPv6	Access List		as not or prony	not boorcooco or r	oute.	
BGP	O Prefix List					
Others	Available Access	Lists :				
	Standard					
	Available Standa	rd Access List C		Selected Stand	ard Access List	
	Q, Search					
			Add			

Step 5. (Optional) You can specify multiple variables like Prefix-List and Access lists in the **Match Classes** section.

Step 6. Click Set Clauses, then BGP Clauses, then AS Path. Configure the Prepend option based on the next options:

- Prepend AS Path. Add the AS you want to add to the Path separated by commas.
- **Prepend last AS to the AS Path.** Select the number of times you want to add the last AS to the AS path (you can add the AS up to 10 times).

Add Route Map Entry

Sequence No:				
10				
Redistribution:				
Allow	*			
Match Clauses	Set Clauses			
Metric Values	AS Path	Community List	Others	
BGP Clauses	Select AS Pa	th options:		
	Prepend AS	Path :		
	Use comma to	separate multiple values		
	Prepend last	AS to the AS Path:		
	Convert	Route Tag into AS Pal	h	
				Cancel Add

Step 7. Click Add, then Save.

Step 8. Click **Device**, then **Device Management**, and select the Device you want to apply the AS Path Prepend.

Step 9. Click Routing, then IPv4 in the BGP section, then Neighbor.

Step 10. Click the edit icon for the Neighbor where you want to apply the AS Path Prepend, then on the **Filtering Routes** section, select the Route Map from the dropdown menu in the **Incoming** or **Outgoing** traffic in the **Route Map** section.

PT				
Edit	Ni	ela	hbo	١Ľ
		0		

IP Address*		Enabled address	
10.10.156.3		Shutdown administratively	
Remote AS*		Configure graceful restart	
65000		Graceful restart(failover/spanned mode)	
(1-4294967295 or 1.0-65535.65535)		
BFD Fallover	D	scription	
none •		Primary	
Filtering Routes Routes Ti	mers	Advanced Migration	
Incoming		Outgoing	
Access List		Access List	
•	+	• +	-
Route Map		Route Map	7
AS_Path_Prepend_RM *	+	· +	t i i i i i i i i i i i i i i i i i i i
Prefix List		Prefix List	-
	+	• +	-
AS path filter		AS path filter	
	+	· · · +	-
Limit the number of prefixes allow	red fro	m the neighbor	
Maximum Prefixes*			
(1-2147483647)			
Threshold Level			
75	%		

Step 11. Click OK, then Save.

Configure BGP Local Preference

You can use Local Preference to manipulate locally the path selection. Review the next documentation for further information regarding the BGP path selection:

• BGP Path Selection

Procedure

Step 1. Click Objects, then click Route Map.

Step 2. Select the Route Map you have assigned to the BGP peer where you have to apply the Local Preference or add a new Route Map by clicking **Add Route Map**.

Step 3. Configure the name of the Route Map, then click Add under the Entries section.

Edit Route Map Object	0
Name Local_Preference_RM	
 Entries (0) 	Add
Sequence No 🔺	Redistribution
No records to display	
Allow Overrides	
	Cancel Save

Step 4. Configure at least the next basic settings:

- Sequence No. Select the number of the sequence
 Redistribution. Select Allow

NAMESTAGE INC.				
10				
edistribution:				
C Allow	•			
Match Clauses	Set Clauses			
ecurity Zones	Address (0) Next Ho	p (0) Route Sour	rce (0)	
∿v4	Select addresses to match	ae annaee liet or nrafi	ly list addrassas of muta	
2v6	Access List	as access list or preli	in not douldoods of route.	
GP	O Prefix List			
thers	Available Access Lists :			
	Standard			
	Available Standard Access	List C	Selected Standard Access List	
	Q, Search			
		Add]	

Step 5. (Optional) You can specify multiple variables like Prefix-List and Access lists in the **Match Classes** section.

Cancel Add

Step 6. Click **Set Clauses**, then **BGP Clauses**, then **Others.** Configure the Local Preference you want to apply in the **Local Preference** section.

Add Route Map	Entry	•
equence No:		
10		
edistribution:		
Allow	•	
Match Clauses	Set Clauses	
Metric Values	AS Path Community List Others	
3GP Clauses	Set Automatic Tag	
	Local Preference :	7
	Range: 1-4294967295	
	Set Weight :	
	Range: 0-65535	
	Origin:	
	O Local IGP	
	Incomplete IPv4 settings: Next Hop:	
	· · · · · · · · · · · · · · · · · · ·	
	Specific IP :	
	Use comma to separate multiple values Prefix List:	
	v	
	IPv6 settings:	
	· · · · · · · · · · · · · · · · · · ·	
	Use comma to separate multiple values	
	Use comma to separate multiple values	
	Use comma to separate multiple values	
	Use comma to separate multiple values	
	Use comma to separate multiple values	

Step 7. Click Add, then Save.

Step 8. Click **Device**, then **Device Management**, and select the Device you want to apply the Local Preference.

Step 9. Click Routing, then IPv4 in the BGP section, then Neighbor.

Step 10. Click the edit icon for the Neighbor where you want to apply the AS Local Preference, then on the **Filtering Routes** section, select the Route Map from the dropdown menu in the **Incoming** or **Outgoing** traffic in the **Route Map** section.

Edit Neighbor

IP Address*		Enabled addre	155	
10.10.156.3		Shutdown adm	ninistratively	
Remote AS*		Configure grad	ceful restart	
65000		Graceful restar	rt(failover/spanned mod	de)
(1-4294967295 or 1.0-65535.655	35)			
BFD Fallover		Description		
none	٠	Primary		
Filtering Routes Routes	Time	s Advanced	Migration	
Incoming		Outgoing		
Access List		Access List		
	•	H. [*	+
Route Map		Route Map		
Local_Preference_RM	•	+ [٣	+
Prefix List	_	Prefix List		
	*	F [*	+
AS path filter		AS path filter		
	•	+	٣	+
Limit the number of prefixes all	lowed	from the neighbor		
Maximum Prefixes*				
(1-2147483647)				
Threshold Level				
	2			
75				

Step 11. Click OK, then Save.

Configure BGP Weight

You can use Weight to manipulate locally the path selection. Review the next documentation for further information regarding the BGP path selection:

• BGP Path Selection

Procedure

Step 1. Click Objects, then click Route Map.

Step 2. Select the Route Map you have assigned to the BGP peer where you have to apply the Local Preference or add a new Route Map by clicking **Add Route Map**.

Step 3. Configure the name of the Route Map, then click Add under the Entries section.

Edit Route Map Object			0
Name			
Weight_RM			
▼ Entries (0)			
			Add
Sequence No 🔺	Redistribution		
No records to display			
Allow Overrides			
		Cancel	Save

Step 4. Configure at least the next basic settings:

- Sequence No. Select the number of the sequence
 Redistribution. Select Allow

Add Route Map	5 Entry			0
Sequence No:				
10				
Redistribution:				
C Allow	•			
Match Clauses	Set Clauses			
Security Zones	Address (0) Next Hop () Route Sourc	ce (0)	
IPv4	Select addresses to match as	access list or prefix	list addresses of route	
IPv6	Access List	access hat or prenx	inst dualesses of foure.	
BGP	O Prefix List			
Others	Available Access Lists :			
	Standard	Ŧ		
	Available Standard Access List	C	Selected Standard Access List	
	Q, Search			
		Add		

Step 5. (Optional) You can specify multiple variables like Prefix-List and Access lists in the **Match Classes** section.

Cancel Add

Step 6. Click Set Clauses, then BGP Clauses, then Others. Configure the Weight you want to apply in the Set Weight section.

Add Route Map Entry

Sequence No:			
10			
edistribution:			
Allow	*		
Match Clauses	Set Clauses		
Metric Values	AS Path Co	ommunity List Others	
BGP Clauses	Set Autom	atic Tag	
	Local Preference :	auc rag	
		Range: 1-4294967295	
	Set Weight :		
		Range: 0-65535	
	Incomplete	¥	
	Use comma to separ Prefix List:	ate multiple values	
	IPv6 settings:	•	
	Use comma to se	parate multiple values	
			Consul

Step 7. Click Add, then Save.

Step 8. Click **Device**, then **Device Management**, and select the Device you want to apply the Local Preference.

Step 9. Click Routing, then IPv4 in the BGP section, then Neighbor.

Step 10. Click the edit icon for the Neighbor where you want to apply the Weight, then on the **Filtering Routes** section, select the Route Map from the dropdown menu in the **Incoming** or **Outgoing** traffic in the **Route Map** section.

ALC: 12.		
Folit	Neic	shhor
Proving land	14015	11001

IP Address*	-	Enabled address
10.10.156.3		Shutdown administratively
Remote AS*		Configure graceful restart
65000		Graceful restart(failover/spanned mode)
(1-4294967295 or 1.0-65535.65535	5)	
BFD Fallover	D	escription
none •		Primary
Filtering Routes T	imers	Advanced Migration
Incoming		Outgoing
Access List		Access List
	+	• +
Route Map		Route Map
Weight_RM *	+	• +
Prefix List		Prefix List
	+	• +
AS path filter		AS path filter
	+	• +
Limit the number of prefixes allow	ved fro	m the neighbor
Maximum Prefixes*		
(1-2147483647)		
Threshold Level		
75	%	
Control conference and and from the		

Step 11. Click OK, then Save.

BGP AS Path Filter

You can Allow or Block prefixes from certain autonomous systems. FTD allows you to filter based on Regular Expressions.

Review the next documentation for further information on Regular Expressions in BGP: <u>https://www.cisco.com/c/en/us/support/docs/ip/border-gateway-protocol-bgp/13754-26.html</u>.

Procedure

Step 1. Click Objects, then click AS Path

- Step 2. Configure at least the next basic settings:
 - Name. Select the number to the AS Path Object
 - Sequence No. Click Add under the Entries section, then Allow or Deny based on the action you want to take. Configure the Regular Expression you want to use, then click Add, then Save.

New AS Path Object

Name				
5		(1-500)		
▼ Entries (0)				
				Add
Sequence No 🔺	Action	Regular Expression		
No records to di	splay			
Allow Override	S			
			Cancel	Save
Now AS Path C	hiect			0
New AS Faulto	bject			•
Name				
5	Add AS Path	Entry	0	
▼ Entries (0)	Antina			
	Action:	•		Add
Sequence No +	Degular Everagel			
osquence no a	Regular Expressio			
No records to d				
Allow Override		Cancel	Add	
			Cancel	Save

Step 3. (Optional) You can configure the AS Path Object directly on the peer or into a Route Map. If you want to configure directly on the peer, click the edit icon for the Neighbor where you want to apply the As Path Filter, then on the **Filtering Routes** section, select the AS Path Object from the dropdown menu in the **Incoming** or **Outgoing** traffic in the **AS Path Filter** section.

Edit	Neig	hbor

IP Address*		Enabled address
10.10.156.3		Shutdown administratively
Remote AS*		Configure graceful restart
65000		Graceful restart(fallover/spanned mode)
(1-4294967295 or 1.0-65535.655	35)	
BFD Fallover		Description
none	*	Primary
Filtering Routes Routes	Timera	Advanced Migration
Incoming		Outgoing
Access List		Access List
	* +	• +
Route Map		Route Map
	• +	• • +
Prefix List		Prefix List
	* +	• +
AS path filter		AS path filter
5	* +	• +
Limit the number of prefixes all	owed f	rom the neighbor
Maximum Prefixes*		
(1-2147483647)		
Threshold Level		
75	%	
Control and the second second	the second	

Step 3. Click Objects, then click Route Map.

Step 4. Select the Route Map you have assigned to the BGP peer where you have to apply the Path Filter or add a new Route Map by clicking **Add Route Map**.

Step 5. Configure the name of the Route Map, then click Add under the Entries section.

Edit Route Map Object		0
Name Path_Fitler_RM		
 Entries (0) 		Add
Sequence No 🔺	Redistribution	
No records to display		
Allow Overrides		
	Cancel	Save

Step 6. Configure at least the next basic settings:

- Sequence No. Select the number of the sequence
- Redistribution. Select Allow (the action on the traffic is defined in Sequence No. In Step 2).

Add Route Map	Entry				0
Sequence No: 10 Redistribution: C Allow Match Clauses	▼ Set Clauses				
Security Zones IPv6 BGP Others	Address (0) Select addresses Access List Prefix List Available Access Standard Available Standar Q. Search	Next Hop (0) to match as acce Lists : d Access List C	Route Source	(0) ist addresses of route. Selected Standard Access	List
				Can	cel Add

Step 7. Click Match Clauses then BGP, select the AS Path Object created in Step 1, then Click Add.

Edit Route Map Entry

squence ivo:				
10				
edistribution:				
Allow	•			
Match Clauses	Set Clauses			
Security Zones	AS Path(2) Comm	nunity List (0) Pe	olicy List (0)	
Pv4	Available AS Path	C	Selected AS Pa	ith
Pv6	Q Search		5	Ì
3GP	5			
Others				

â€f

Step 8. Click Save.

Step 9. Click **Device**, then **Device Management**, and select the Device you want to apply the Regular Expression.

Step 10. Click Routing, then IPv4 in the BGP section, then Neighbor.

Step 11. Click the edit icon for the Neighbor where you want to apply the As Path Filter, then on the **Filtering Routes** section, select the Route Map from the dropdown menu in the **Incoming** or **Outgoing** traffic in the **Route Map** section.

Edit Neighbor

IP Address*		Enabled address		
10.10.156.3		Shutdown administratively		
Remote AS*		Configure graceful restart		
65000		Graceful restart(failover/spanned mo	de)	
(1-4294967295 or 1.0-65535.655	(35)			
BFD Fallover	D	escription		
none	•	Primary		
Filtering Routes Routes	Timers	Advanced Migration		
Incoming		Outgoing		
Access List		Access List		
	• +		+	
Route Map		Route Map		1
Path_Fitler_RM	• +		+	
Prefix List		Prefix List		-
	• +		+	
AS path filter		AS path filter		
	• +		+	
Limit the number of prefixes al	lowed fro	m the neighbor		
Maximum Prefixes*				
(1-2147483647)				
Threshold Level				
75	%			
Control neefware encoluard from	the seco			

Step 12. Click OK, then Save.