Implemente o roteamento de trânsito da ACI (multipod)

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Introdução

Este documento descreve como configurar o roteamento de trânsito em um ambiente multipod da Application Centric Infrastructure (ACI).

Pré-requisitos

Requisitos

A Cisco recomenda que você tenha conhecimento destes tópicos:

- 1. ACI multipod
- 2. L3Saída
- 3. Contratos
- 4. Protocolos de Roteamento

Componentes Utilizados

As informações neste documento são baseadas nestas versões de software e hardware:

- 1. 2 switches N5K-C5548UP, ambos no NXOS versão 7.3(8) (usados como roteadores externos)
- 1 switch leaf N9K-C9332PQ e 1 switch leaf N9K-C93108TC-EX, ambos na versão 14.2(7f) do ACI
- 3. 2 switches spine N9K-C9336PQ, ambos na versão 14.2(7f) da ACI
- 4. 1 switch N9K-C9232C (usado como dispositivo IPN) no NXOS versão 10.3(3)

As informações neste documento foram criadas usando os dispositivos acima em um ambiente de

laboratório específico. Todos os dispositivos utilizados neste documento foram iniciados com uma configuração (padrão) inicial. Se a rede estiver ativa, certifique-se de que você entenda o impacto potencial de qualquer comando.

Informações de Apoio

No roteamento em trânsito, a estrutura da Cisco ACI anuncia as rotas aprendidas de uma conexão L3Out (L3Out) de Camada 3 para outra conexão L3Out. Os domínios externos de Camada 3 correspondem à estrutura nos switches leaf de borda. A estrutura é um domínio de protocolo de gateway de borda multiprotocolo (MP-BGP) de trânsito entre os correspondentes.

Configurar

Diagrama de Rede



Diagrama de Rede

Configurações

Um perfil de nó lógico é usado para identificar o switch leaf que está conectado a redes externas e que pode implantar o protocolo de roteamento ou rotas estáticas para ele. Para exibir o perfil do nó lógico na L3Out, navegue até o Tenant > Networking > L3Outs > L3Out > Logical Node Profiles > Logical Node Profile conforme mostrado na imagem.



Perfil de nó lógico para LEAF102

MR () ()	Logical Node Profile - MR	R-OSPF_nodeProfile					(
> C► Quick Start					Policy	Faults	His	tory
Application Profiles	8 👽 🛆 🕚					Ő	<u>+</u>	**-
V 🚞 Networking	Properties							
> 🧱 Bridge Domains	Name:	MR-OSPF_nodeProfile						
> 🧮 VRFs	Description:	optional						
> 🚞 External Bridged Networks								
✓	Alias:							
> 🚯 MR-BGP	Target DSCP:	Unspecified 🗸						
> 🚯 MR-EIGRP	Nodes:							+
V 🔿 MR-OSPF		 Node ID 	Router ID	Loopback Address				
Logical Node Profiles		topology/pod-2/node-202	1.1.1.111	1.1.1.111				
V F MR-OSPF_nodeProfile								
V 🔚 Logical Interface Profiles								
> # MR-OSPF_interfaceProfile								
Configured Nodes								
✓								
ARP for VRF-MR:MR-VRF	Create BGP Protocol Profile:							
BGP for VRF-MR:MR-VRF								
> 📮 ND for VRF- MR:MR-VRF								
> = OSPF for VRF-MR:MR-VRF								
V 🚞 External EPGs								
MR-OSPF-EXT-EPG								

Perfil de nó lógico para LEAF202

Um perfil de interface lógica é usado para identificar a interface L3Out que se conecta ao dispositivo externo. Você vê vários elementos de função que são definidos para roteamento e encaminhamento virtual (VRF): Address Resolution Protocol (ARP), Border Gateway Protocol (BGP), Neighbor Discovery e Open Shortest Path First (OSPF) como consequência de ambos os perfis. Para exibir o perfil da interface lógica na L3Out, navegue até o Tenant > Networking > L3Outs > L3Out > Logical Node Profile > Logical Interface Profile > Logical Interface Profile. Nesses exemplos, um SVI é configurado no perfil de interface lógica.

MR (*) 🕄 🔘	Logical Interface Prof	le - MR-BGP_	nterfaceProfile						0 0
Quick Start								Policy	Faults History
∼ 🗒 MR									,
> Application Profiles					General R	outed Sub-Interface:	s Routed Int	erfaces	SVI Floating SVI
V Networking	0000								O +
> 🚞 Bridge Domains									0 -
> 🚞 VRFs									☆ +
External Bridged Networks	 Path 	Side A IP	Side B IP	Secondary IP Address	IP Address	MAC Address	MTU (bytes)	Encap	Encap Scope
V 🚞 L3Outs	Pod=1/Node=102/eth1/1				50 50 50 51/24	00-22-RD-E8-19-FE	inherit	vlan-499	Local
V 🚯 MR-BGP	POG- 1/10000- 102/0011/1				50.50.50.51724	00.22.00.10.13.11	I I I I I I I	1011-400	2000
Logical Node Profiles									
V = MR-BGP_nodeProfile									
Cogical Interface Profiles									
> 🖶 MR-BGP_interfaceProfile									
Configured Nodes									
✓									
ARP for VRF-MR:MR-VRF									
BGP for VRF-MR:MR-VRF									
> 🗧 ND for VRF- MR:MR-VRF									
> 🗧 OSPF for VRF-MR:MR-VRF									
V 🚞 External EPGs									
MR-BGP-EXT-EPG									
The second se									

Perfil de interface lógica para LEAF102, eth1/1

MR	\bigcirc	Logical Interface Profile	- MR-OSPF_interfaceF	Profile				0.0
> C+ Quick Start							Policy Faults	History
∼ III MR								
> E Application Profiles				Gen	eral Routed Sub-In	terfaces Routed Inter	rfaces SVI	Floating SVI
V 🖿 Networking								0 +
> Endge Domains								0 -
> 🖿 VRFs								1 +
External Bridged Networks		 Path 	IP Address	Secondary IP Address	MAC Address	MTU (bytes)	PTP	
V 🔚 L3Outs		Pod-2/Node-202/eth1/2	10.101.101.101/24		00:22:BD:F8:19:FF	9000	Disabled	
> 🚯 MR-BGP								
> 🚹 MR-EIGRP								
V 📤 MR-OSPF								
Logical Node Profiles								
V = MR-OSPF_nodeProfile								
V 🖿 Logical Interface Profile	s							
> # MR-OSPF_interface	Profile							
Configured Nodes								
✓	le-202							
ARP for VRF-MR	:MR-VRF							
> 📕 BGP for VRF-MR	MR-VRF							
> 🗧 ND for VRF- MR:	MR-VRF							
> 🗧 OSPF for VRF-MI	R:MR-VRF							
External EPGs								
MR-OSPF-EXT-EPG								
> 🚞 Route map for import and expe	ort route control							

Perfil de interface lógica para LEAF202, eth1/2

Um perfil de instância de EPG externo (EPG externo, EPG L3Out) representa um grupo de subredes externas que têm o mesmo comportamento de segurança. Outras sub-redes também podem se associar a outros escopos, que definem o comportamento de roteamento para essa sub-rede. Para exibir o EPG externo na L3Out, navegue até o Tenant > Networking > L3Outs > L3Out > External EPGs > External EPG conforme mostrado na imagem.

MR (r) (R) (R)	External EPG Insta	nce Profile - MR-BG	P-EXT-EPG								
O Quick Start					Dellass	Onesting	Charles	1. In a lab	Faults	4	
∼ ∰ MR					Policy	Operational	Stats	Health	Faults	Hist	bry
> E Application Profiles						Ge	neral C	ontracts	Inherited (Contra	cts
V 🖿 Networking	0000					_			¢.	1	44
> 🧰 Bridge Domains									0	÷	X.
> 🥅 VRFs	Properties	ND DOD 517 500									
> 🚞 External Bridged Networks	Name: Alias:	MR-BGP-EXT-EPG									- î
🗸 🚞 L3Outs	Tage:										
V 🚯 MR-BGP	Tayla.	enter tags separated by comma									
Logical Node Profiles	Global Alias:										
V 📮 MR-BGP_nodeProfile	Description:	optional									
Logical Interface Profiles											
> 🗧 MR-BGP_interfaceProfile	pcTag:	49159									
Configured Nodes	Contract Exception Tag:										
topology/pod-1/node-102	Configured VRF Name:	MR-VRF									
ARP for VRF-MR:MR-VRF	Resolved VRF:	uni/tn-MR/ctx-MR-VRF									
BGP for VRF-MR:MR-VRF	QoS Class:	Unspecified	×								
> D for VRF- MR:MR-VRF	Target DSCP:	Unspecified	\sim								
> OSPF for VRF-MR:MR-VRF	Configuration Status:	applied									
External EPGs	Configuration Issues:		\ \								
MR-BGP-EXT-EPG	Preferred Group Member:	Exclude)								. I
Route map for import and export route control	Subnets:									F +	
> A MR-EIGRP		 IP Address 	Scope	Name	Aggregate	e R	oute Control Pr	rofile F	toute Summariza	tion	
> 🚯 MR-OSPF		49.49.49.49/32	External Subnets for th.								

Perfil de instância de EPG externo para MR-BGP L3Out

MR DISO	External EPG Insta	nce Profile - MR-OS	SPF-EXT-EPG							0.0
O Quick Start					Dellass	Operational	Chate	Line lith	Faults	
· ∨ ∰ MR					Policy	Operational	Stats	nealth	Faults	history
> E Application Profiles						G	eneral Co	ntracts	Inherited C	>ontracts
V 🚞 Networking	0000					_			<i>A</i> .	1 44
> 🔤 Bridge Domains									0	- X*
> 🚞 VRFs	Properties	ND OODE EVE EDO								
> 🚞 External Bridged Networks	Alias:	MR-USPF-EXT-EPG								- î
✓	Taos									
> 🚯 MR-BGP	1095.	enter tags separated by comm	Ϋ́.							
> 合 MR-EIGRP	Global Alias:									
✓	Description:	optional								
🗸 🚞 Logical Node Profiles										
V 📕 MR-OSPF_nodeProfile	pcTag:	49156								
Logical Interface Profiles	Contract Exception Tag:									
> 🗧 MR-OSPF_interfaceProfile	Configured VRF Name:	MR-VRF								
Configured Nodes	Resolved VRF:	uni/tn-MR/ctx-MR-VRF								
✓	QoS Class:	Unspecified								
ARP for VRF-MR:MR-VRF	larget DSCP:	Unspecified	\sim							
BGP for VRF-MR:MR-VRF	Configuration Status:	applied								
> 🗧 ND for VRF- MR:MR-VRF	Dreferred Group Member	Exclusion Includes								
> = OSPF for VRF-MR:MR-VRF	Preferred Group Member.	Exclude)							
✓	Subnets:									+
MR-OSPF-EXT-EPG		 IP Address 	Scope	Name	Aggregate	e f	Route Control Pro	file Routi Polic	e Summariza' Y	tion
> E Route map for import and export route control		101.101.101.101/32	External Subnets for th	L						

Perfil de instância de EPG externo para MR-OSPF L3Out

Nesses exemplos, o MR-PERMIT-ICMPcontrato é aplicado como um contrato fornecido e consumido em ambos os EPGs externos.

MR	00	External EPG	Instance Prof	ile - MR-BGP-EX	T-EPG						00
> C+ Quick Start							Policy	Operational State	Health	Coulte	History
∼ III MR							Toncy	operational out	- Hound	rudita	Thatary
> Application Profiles								General	Contracts	Inherited C	Contracts
V 🖿 Networking		THealthy O								0	+ 46
> 🧮 Bridge Domains		Name	Tenant	Tenant Alias	Contract Type	Provided /	OoS Class	State	Lobel	Subia	- ^*
> 🧮 VRFs		Name	* renam	Tenant Alias	contract type	Consumed	Q03 Glass	State	Laber	Subje	Ct Laber
External Bridged Networks		G Contract Type: Con	tract								
V 🚞 L3Outs		MR-PERMIT-ICMP	MR		Contract	Provided	Unspecified	formed			
V 🛧 MR-BGP		MR-PERMIT-ICMP	MR		Contract	Consumed	Unspecified	formed			
Logical Node Profiles		inter Ethilt Tom	inter-		Contract	Consumou	Chapterined	North Co			
V 🗧 MR-BGP_nodeProfile											
Logical Interface Profile:	s										
> E MR-BGP_interfacePr	rofile										
Configured Nodes											
topology/pod-1/nod	le-102										
F ARP for VRF-MR	MR-VRF										
> 🗧 BGP for VRF-MR	:MR-VRF										
> P ND for VRF- MR	MR-VRF										
> 🗧 OSPF for VRF-MI	R:MR-VRF										
V 🚞 External EPGs											
MR-BGP-EXT-EPG											
Route map for import and expension	ort route control										

Contrato MR-PERMIT-ICMP aplicado ao MR-BGP-EXT-EPG

MR	🗈 🕄 🔘 💿 External El	PG Instance Pro	file - MR-OSPF-EX	T-EPG					0.0
→ C+ Quick Start → 田 MR						Policy	Operational S	tats Health	Faults History
> E Application Profiles							General	Contracts	Inherited Contracts
V 🖿 Networking	China Marakhar 📿							-	A 1 40
> 🚞 Bridge Domains	Vielantity 🕑		Transfer Miles	Contrast Tora	Devided (0.0	C1-1-	l ab al	
> 🚞 VRFs	Name	 Tenant 	Tenant Alias	Contract Type	Consumed	QoS Class	s State	Label	Subject Label
> 🧱 External Bridged Networks	G Contract Type: 0	Contract							
V 🚞 L3Outs	MR-PERMIT-ICM	P MR		Contract	Provided	Unspecified	formed		
> 🚯 MR-BGP	MD. DEDMIT. JOM	0 MD		Contract	Consumed	Unconsified	formed		
> 合 MR-EIGRP	MR-PERMIT-IGM	PINE		Contract	Consumed	Unspecified	Tormed		
V 🛧 MR-OSPF									
Logical Node Profiles									
V MR-OSPF_nodeProfile									
Logical Interface Profiles									
> 🗧 MR-OSPF_interfaceP	rofile								
Configured Nodes									
✓	-202								
ARP for VRF-MR1	/IR-VRF								
BGP for VRF-MR:	MR-VRF								
> 🚽 ND for VRF- MR:N	IR-VRF								
> 🚽 OSPF for VRF-MR	:MR-VRF								
🗸 🚞 External EPGs									
MR-OSPF-EXT-EPG									
Route map for import and expo	rt route control								

Contrato MR-PERMIT-ICMP aplicado ao MR-OSPF-EXT-EPG

Ligado LEAF102, o BGP é estabelecido com o vizinho 50.50.50 e está recebendo a rede externa 49.49.49/32.

MR () ()	BGP Peer Entry	y - 50.50.50.	50								0	0
O Quick Start											w	
∼ III MR							General	Address	Health	Faults	History	
> E Application Profiles											0	ŧ.
V I Networking	Properties											1
> 🧮 Bridge Domains	1	/rf Name: MR:MF	R-VRF			Last Dasat By Lis	1070-01-01	T00-00-00 000+	00-00			I
> 🧮 VRFs	BG	P Version: BGP V	ersion 4			Major Error Reset By Us	: None	100.00.00.000	00.00			I
> 🧱 External Bridged Networks	Remote	Router Id: 50.50.	50.50			Minor Error Reset By Us	None					I
✓	В	GP State: Establi	shed 07-27T17-17-22 #	93+00:00		Last Error Value By Us	: 0					I
V 🚯 MR-BGP	Re	mote As: 65001	07-27117-17-22-4	30-00.00		Last Error Len By Us	: 0					I
V 🔚 Logical Node Profiles	Updat	e Source: vlan14				Last Error Data By Us	: - 1970-01-01	T00-00-00 000+	00:00			I
V R MR-BGP nodeProfile	Restart Time A	dvertised Default	t			Aajor Error Reset By Peer	: None	100.00.00.000	00.00			I
V E Logical Interface Profiles	н	old Time: 180			P.	Ainor Error Reset By Peer	: None					I
✓	Keepaliv	e Interval: 60				Last Error Value By Peer	: 0					
BGP Peer Connectivity Profile 5		Neighbor: 50.50.	50.50			Last Error Len By Peer	: 0					I
V E Configured Nodes	D	Link: eBGP				Capabilities Advertised	: AS4 capable	.Dynamic.Dynam	ic graceful res	tart.Dynamic		I
Standary/and-1/node-102	Shutdow	n Reason: Unspe	cified				multiprotocol helper IPv4 u	Dynamic old, Dynamic old, Dynamic ast, Refresh, R	namic refresh, efresh	Graceful restar	t	I
ARP for VRF-MR-MR-VRF	State	e Reason: none				Capabilities Received	AS4 capable	Capability param	eter, Dynamic,	Dynamic grace	eful	I
	Directly	Attached vian14					restart,Dynar restart,IPv4 u	nic multiprotocol inicast,Refresh,R	,Dynamic old,[efresh	Dynamic refres	h,Graceful	I
	Tcp Md5 Authe	internace. intication: disable	br									I
	Connection Es	tablished: 1										I
50 50 50 50	Connection	Dropped: 0										I
	Connection	Attempts: na										I
												I
	Message Stat	tistics										I
MD-R/2D-EVT-ED2		Sent	Rcvd									I
mix-bdr-ext-erd	Opens	1	1									I
	Notifications	0	0									I
	Lindates	0	2									I
MR-OSPF-BGP	opulates		4 1000									ı
Dot10 Turonelit	Keepalives	1692	1689									I
	Route Refresh	0	0									1
	Capability	1	1									I
> En Services	Total	1702	1693									1
	Total bytes	32485	32186									
	Bytes in queue	0	0									
	Next Hop		-									
	and they are											
		Refcount:										w

Entrada de par BGP em LEAF102



Resumo do BGP para VRF MR:MR-VRF no LEAF102



Rota BGP para VRF MR:MR-VRF em LEAF102

Ligado LEAF202, o OSPF é estabelecido com o vizinho 1.1.1.222 e está recebendo a rede externa 101.101.101.101/32.

MR () () () ()	OSPF - MR:MR-VRF						0.0
⇒ O+ Quick Start < ⊞ MR				G	ieneral Health	n Faults	History
> E Application Profiles	8 👽 🛆 🕦						0 +
🗸 🚞 Networking	PROPERTIES		STATS				
> 🚞 Bridge Domains	Name: MR:M	R-VRF	Int	erface Count: 2			
> 🧮 VRFs	Route ID: 1.1.1.	111	A	ctiveareacnt: 1			
> 🧮 External Bridged Networks	Distance: 110		Active M	Issa Areacnt: 0			
✓ ➡ L3Outs	Bandwidth Reference		Active	Ext Areacht: 1			
> 🚯 MR-BGP	(Mbps): 40000	^D		Extareacnt: 1			
> 🚯 MR-EIGRP	Operational State: Up		,	Issa Areacnt: 0			
V 🚯 MR-OSPF				Stubareacnt: 0			
V 🖿 Logical Node Profiles				Areacht: 1 Ext Lsacht: 1			
✓ ■ MR-OSPF_nodeProfile			Op	aqas Lsacnt: 0			
→ → Logical Interface Profiles							
	Neighbors						
✓	 Neighbor Id 	State	Peer Ip		Interface		
topology/pod-2/node-202	1.1.1.222	Full	10.101.101	100	eth1/2		
ARP for VRF-MR:MR-VRF	C C Page 1 Of 1 S		Objects Per Page: 15			Displaying Obje	cts 1 - 1 Of 1
> 😸 BGP for VRF-MR:MR-VRF	Inter Protocol Route Leak	Into OSPE					
> 📄 ND for VRF- MR:MR-VRF							
✓	 Name 	Redistribution Protocol	Route Map	Scope	Asn		
> 🚞 Areas	MR:MR-VRF	BGP	exp-ctx-proto-2555906	Inter protocol leak	6553	5	
Interfaces	MR:MR-VRF	COOP	exp-ctx-st-2555906	Inter protocol leak	1		
Finterface eth1/2	MR:MR-VRF	Direct	exp-ctx-st-2555906	Inter protocol leak	1		
E Interface Io1	MR:MR-VRF	EIGRP	exp-ctx-proto-2555906	Inter protocol leak	1		
🔚 Routes	MR-MR-VRF	Static	exp-ctx-st-2555906	Inter protocol leak	1		
✓ ➡ External EPGs		01010	onp on at 2000000				
MR-OSPF-EXT-EPG							
> 🚞 Route map for import and export route control							

Entrada de vizinho OSPF em LEAF202

LEAF202# show i	p ospf neighbors vrf M	IR:MR-VRF			
OSPF Process I	D default VRF MR:MR-VR	RF			
Total number o	f neighbors: 1				
Neighbor ID	Pri State	Up Time	Address	Interface	
1.1.1.222	1 FULL/ -	2d04h	10.101.101.100	Eth1/2	

Vizinho OSPF para VRF MR:MR-VRF no LEAF202



Rota OSPF para VRF MR:MR-VRF em LEAF202

Em ambos LEAF102 e LEAF202, a tabela MP-BGP para o VRF mostra a rede BGP externa, 49.49.49.49/32, mas aparece como externo em LEAF102 e interno em LEAF202. A rede externa OSPF, 101.101.101.101/32, também aparece nas tabelas BGP em ambos os switches leaf; em LEAF202 ele aparece como redistribuído do OSPF e em LEAF102 é mostrado como interno.

LEAF102# show bgp vpr BGP routing table inf BGP table version is Status: s-suppressed, Path type: i-internal Origin codes: i - IGF	v4 unicast vrf MR:N formation for VRF ov 119, local router 1 x-deleted, S-stale , e-external, c-cor c, e - EGP, ? - inco	MR-VRF verlay-1, add ID is 10.0.23 e, d-dampened offed, l-local omplete, -	ress family 2.68 , h-history , a-aggrega multipath,	/ VPNv4 Unicast /, *-valid, >-best nte, r-redist, I-injected & - backup
Network Route Distinguisher:	Next Hop 102:2555906 (VRF	Metric MR:MR-VRF)	LocPrf	Weight Path
*>e49.49.49.49/32	50.50.50.50			0 65010 65001 i
*>i101.101.101.101/32	20.0.248.0	41	100	9 ?

Tabela MP-BGP para VRF MR:MR-VRF no LEAF102

LEAF202# show bgp vp BGP routing table in BGP table version is Status: s-suppressed Path type: i-interna Origin codes: i - IG	nv4 unicast vrf formation for VM 95, local routd , x-deleted, S- 1, e-external, c P, e - EGP, ? -	MR:MR-VRF RF overlay-1, add er ID is 20.0.248 stale, d-dampened c-confed, l-local incomplete, -	ress famil .0 , h-histor , a-aggreg multipath,	ly VPNv4 Unicast ry, *-valid, >-best gate, r-redist, I-injected , & - backup	
Network Pouto Distinguishon:	Next Hop	Metric	LocPrf	Weight Path	
*>i49.49.49.49/32	10.0.232.68	(VKF PIK:PIK-VKF)	100	0 65010 65001 i	
*>r101.101.101.101/3	2 0.0.0.0	41	100	32768 ?	

Tabela MP-BGP para VRF MR:MR-VRF no LEAF202

A tabela BGP IPv4 contém informações equivalentes.



Tabela BGP IPv4 para VRF MR:MR-VRF no LEAF102

LEAF202# show bgp ipv BGP routing table info BGP table version is 3	4 unicast vrf MR:MR- prmation for VRF MR: 31 local router TD	VRF MR-VRF, addu	ress family	IPv4 U	nicast		
Bar cabie version is .	i, iocai roacci ib		• • • • •				
Status: s-suppressed,	x-deleted, S-stale,	d-dampened	, h-history,	, *-val:	id, ≻-l	best	
Path type: i-internal	e-external c-conf	ed. 1-local	a-aggregat	e, r-re	dist.	T-injected	
raen eyper i incernai	, e excernary e com				curse,	1 Injected	
Origin codes: i - IGP	, e - EGP, ? - incom	plete, - r	nultipath, 8	k - bacl	kup		
Network	Next Hop	Metric	LocPrf	Weight	Path		
*>i49.49.49.49/32	10.0.232.68		100	0	65010	65001 i	
*>r101.101.101.101/32	0.0.0.0	41	100	32768	?		

Tabela BGP IPv4 para VRF MR:MR-VRF no LEAF202

No entanto, a rede externa OSPF, 101.101.101.101/32, não está na tabela de roteamento de N5K1.



RIB para VRF MR-BGP em N5K1

Da mesma forma, a rede externa de BGP, 49.49.49/32, não está em N5K2 É o RIB.

<pre>NSK2# show ip route vrf MR-OSPF IP Route Table for VRF "MR-OSPF" '**' denotes best ucast next-hop '**' denotes best mcast next-hop '[x/y]' denotes [preference/metric] '%<string>' in via output denotes VRF <string></string></string></pre>	
<pre>1.1.1.111/32, ubest/mbest: 1/0 *via 10.101.101.101, Eth1/5, [110/41], 2d05h, ospf-1, intra 10.101.101.0/24, ubest/mbest: 1/0, attached *via 10.101.101.100, Eth1/5, [0/0], 6d22h, direct 10.101.101.100/32, ubest/mbest: 1/0, attached *via 10.101.101.100, Eth1/5, [0/0], 6d22h, local 101.101.101.101.101, ubest/mbest: 2/0, attached *via 101.101.101.101, Lo101, [0/0], 2d04h, local *via 101.101.101.101.101 + 1001 + 1001</pre>	

RIB para VRF MR-OSPF no N5K2

No BGP L3Out, navegue até External EPGs > External EPG > Subnets e selecione a opção + no canto superior direito da tabela. Insira o endereço IP da sub-rede externa recebida da L3Out do OSPF,

101.101.101/32. Escolher Export Route Control Subnet **no** Route Control **e** desmarque a caixa de seleção External Subnets for the External EPG classificação. Clique em Submit. O Export Route Control Subnet permite que uma rede seja exportada (anunciada) para o peer externo.

V 🚞 External EPGs	KT-EPG	Preferred Group Member:	Exclude Includ	de				
Route map for > MR-EIGRP	import and export route control		 IP Address 	Scope	Name	Aggregate	Route Control Profile	Route Summarization Create
> 🕜 MR-OSPF			49.49.49.49/32	External Subnets for	th			loncy
Criar nova sub-re	de							
Create Subnet								3⊗
IP Address:	101.101.101.101/32 address/mask							
Name:								
Route Control:								
Export	Route Control Subnet	Ag	gregate			Route Summariza	tion Policy	
Shared	Route Control Subnet					BGP Route Summe	Policy: select an opti	on 🗸
Route Control Profile:								1 +
	Name				Direction			
Route control is	used for filtering extern	al routes advertised ou	It of the fabric	allowed into the fab	aric or leaked to ot	her VREs within the fa	bric	
Koule control is	used for littering extern	arroutes advertised of	at of the labite, a	nowed into the fat	inc, of leaked to ou		bit.	
External EPG classificat	ion: I Subnets for External EPG Security Import Subnet							
External EPG cla	assification is used to ide	entify the external netw	vorks associated	d with this external	EPG for policy enfo	orcement (Contracts).		
								\frown
							Can	cel Submit

Ligado N5K1, a rede externa OSPF, 101.101.101.101/32, agora é recebido pelo BGP.



RIB para VRF MR-BGP em N5K1

Na L3Out do OSPF, navegue até External EPGs > External EPG > Subnets e selecione a opção + no canto superior direito da tabela. Insira o endereço IP da sub-rede externa recebida do BGP L3Out, 49.49.49.49.49.2. Escolher Export Route Control Subnet NO Route Control section and clear External Subnets for the External EPG classificação. Clique em Submit.



Criar nova sub-rede

Create Subnet					?⊗
IP Address:	49.49.49.49/32				
	address/mask				
Name:					
Route Control:					
Z Export	Route Control Subnet	Aggregate		Route Summarization Policy	
				select an option	~
Shared	I Route Control Subnet				
Deute Control Drofile					
Route Control Profile:					🕆 🕆
	Name		Direction		
External EPG classificat	s used for filtering external routes ad tion: al Subnets for External EPG	vertised out of the fabric, allowed into the fa	bric, or leaked to othe	r VRFs within the fabric.	
Shared	I Security Import Subnet				
External EPG cl	assification is used to identify the ex	ternal networks associated with this externa	I EPG for policy enforc	ement (Contracts).	

Cancel Submit

Configurar as opções corretas para a nova sub-rede

Agora em N5K2, a rede externa BGP, 49.49.49.49/32, é recebido através do OSPF.

N5K2# show ip route vrf MR-OSPF
TP Route Table for VRE "MR-OSPE"
'*' denotes best ucast next-hop
'**' denotes best mcast next-hop
'[x/v]' denotes [preference/metric]
[x, y] denotes in via output donotes V/F (string)
Assertings in via output denotes vkr (string)
1.1.1.111/32, ubest/mbest: 1/0
*via 10.101.101.101, Eth1/5, [110/41], 2d05h, ospf-1, intra
10.101.101.0/24, ubest/mbest: 1/0, attached
*via 10.101.101.100, Eth1/5, [0/0], 6d22h, direct
10 101 101 100/22 ubost/mbost. 1/0 attached
10.101.101/100/32, ubest/muest. 1/0, attached
*via 10.101.101.100, Eth1/5, [0/0], 6d22h, local
49.49.49/32, ubest/mbest: 1/0
*via 10.101.101.101, Eth1/5, [110/1], 00:01:59, ospf-1, type-2, tag 4294967295,
101.101.101/32, ubest/mbest: 2/0, attached
*via 101.101.101.101, Lo101, [0/0], 2d05h, local
*via 101.101.101.101, Lo101, [0/0], 2005h, direct

RIB para VRF MR-OSPF no N5K2

O ping funciona entre as duas redes devido à MR-PERMIT-ICMP que foi aplicado a ambos os EPGs externos anteriormente.

```
N5K1# ping 101.101.101 vrf MR-BGP source 49.49.49.49

PING 101.101.101 (101.101.101) from 49.49.49.49: 56 data bytes

64 bytes from 101.101.101: icmp_seq=0 ttl=252 time=3.059 ms

64 bytes from 101.101.101: icmp_seq=1 ttl=252 time=2.963 ms

64 bytes from 101.101.101: icmp_seq=2 ttl=252 time=7.928 ms

64 bytes from 101.101.101: icmp_seq=3 ttl=252 time=2.954 ms

64 bytes from 101.101.101: icmp_seq=4 ttl=252 time=2.982 ms

--- 101.101.101.101 ping statistics ---

5 packets transmitted, 5 packets received, 0.00% packet loss

round-trip min/avg/max = 2.954/3.977/7.928 ms
```

Verificação de comunicação no N5K1

```
N5K2# ping 49.49.49.49 vrf MR-OSPF source 101.101.101.101
PING 49.49.49.49 (49.49.49) from 101.101.101.101: 56 data bytes
64 bytes from 49.49.49.49: icmp_seq=0 ttl=252 time=3.107 ms
64 bytes from 49.49.49.49: icmp_seq=1 ttl=252 time=2.99 ms
64 bytes from 49.49.49.49: icmp_seq=2 ttl=252 time=2.98 ms
64 bytes from 49.49.49.49: icmp_seq=3 ttl=252 time=2.986 ms
64 bytes from 49.49.49.49: icmp_seq=4 ttl=252 time=2.99 ms
--- 49.49.49.49 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 2.98/3.01/3.107 ms
```

Verificação de comunicação no N5K2

Informações Relacionadas

- Guia de configuração de rede da camada 3 do Cisco APIC, versão 6.0(x)
- Fundamentos da Cisco Application Centric Infrastructure, versão 4.2(x)
- Guia de configuração de rede da camada 3 do Cisco APIC, versão 3.x e anterior
- <u>Suporte técnico e downloads da Cisco</u>

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