# Peering de rota L4-L7 com estrutura de trânsito -Introdução à configuração

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### Introduction

Este documento descreve a configuração do Service Graph L4-L7 com Route Peering, em que o consumidor e o provedor são externos à estrutura da Application Centric Infrastructure (ACI).

Contribuído por Zahid Hassan, engenheiro de serviços avançados da Cisco.

### Prerequisites

#### Requirements

A Cisco recomenda que você tenha conhecimento destes tópicos:

- Grupos estáticos de VLAN que serão usados para a VLAN de encapsulamento entre os dispositivos externos e a estrutura ACI
- Domínios físicos e roteados externos que unirão o local (nó/caminho de folha) dos dispositivos externos e o pool de VLANs
- Conexão da camada 3 a uma rede externa (L3Out)

As etapas anteriores das configurações **de acesso à estrutura** e **L3Out** não são abordadas neste documento e foram presumidas que elas já foram concluídas.

#### **Componentes Utilizados**

As informações neste documento são baseadas nestas versões de software:

Cisco Application Policy Infrastructure Controller (Cisco APIC) - 1.2(1m)

- Pacote de dispositivos do Adaptive Security Appliance (ASA) 1.2.4.8
- ASA 5585 9,5(1)
- Nexus 3064 6.0(2)U3(7)

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, make sure that you understand the potential impact of any command.

### Informações de Apoio

O Route Peering é um recurso que permite que um dispositivo de serviço, como um balanceador de carga ou um firewall, anuncie sua acessibilidade por meio da estrutura da ACI até uma rede externa.

O caso de uso apresentado aqui é um firewall físico que é implantado como um Gráfico de serviços de dois braços, entre dois L3Outs ou Grupos de terminais externos (EPGs). O Service Graph está associado a um contrato entre o EPG externo no Leaf 101 (N3K-1) e o EPG externo no Leaf 102 (N3K-2). A estrutura da ACI está fornecendo um serviço de trânsito para os roteadores (N3K-1 e N3K-2) e a Peering de Rota é usada, com o OSPF (Open Shortest Path First) como protocolo de roteamento, para trocar rotas entre o firewall e a estrutura da ACI.

### Configurar

#### Diagrama de Rede

A imagem a seguir mostra como o Route Peering funciona de ponta a ponta:



VRF1 / BD1		VRF2 / BD2					
EXTERNAL-EPG	EXTERNAL	INTERNAL	INTERNAL EXTERNAL-EPG				
		ASA INTERNAL L3OUT	L3OUT N3K-2				
10.10.10.0/24 192.168.1.0/30	192.168.1.4/30	.10 192.168.1.8/30	.14 .13 PROVIDER 192.168.1.12/30 20.20.20.0/24				
ping 20.20.20.1 source 10.10.10.1							

#### Configurar

Etapa 1. Configure o Virtual Routing and Forwarding1 (VRF1), VRF2, Bridge Domain1 (BD1) e BD2. Associe BD1 a VRF1 e BD2 a VRF2, como mostrado na imagem:



Etapa 2. Carregue o pacote de dispositivos ASA em Dispositivo L4-L7, conforme mostrado na imagem, :



Configure o dispositivo L4-L7 para o ASA 5585 físico (roteado), como mostrado na imagem:

alialia cisco									ρ		W
		enter name, descr	common   T1   infra								
Tenant T1		0 N	14-17 Devices	- 4545595							
🔲 Quick Start			LT-L7 Devices	- AOA0000							
🔺 🐣 Tenant T1										Policy Parameters	s Fa
🕨 🖿 Applicat	lion Profiles		<b>DU</b>								
🔺 🚞 Networ	king										
🕨 🚞 Brid	ge Domains		General		r i i i i i i i i i i i i i i i i i i i	)evice 1					
🕨 🚞 VRF	s		Manag	ied: 🗹	N	lanagement IP Address:	172.23.97.1	Management Port: 443	÷		
🕨 🖿 Exte	rnal Bridged Networks		Na	me: ASA5585		Chassis:	select a value	<b>−</b> (0			
🕨 🛄 Exte	mal Routed Networks		Device Packa	ge: CISCO-ASA-1.2		Interfaces:					
🕨 🚞 Rou	te Profiles		Service Ty	pe: Firewall							
🕨 🖿 Prot	ocol Policies		Device Ty	pe: PHYSICAL			▲ Name		Path		
🖿 L4-L7 S	ervice Parameters		Physical Dome	ain: T1_PHY	<u> </u>		GigabitEthernet0/0		Node-105/eth1/2		
🔺 🖿 Security	/ Policies		Context Awa	are: Single			GigabitEthernet0/1		Node-106/eth1/2		
🕨 🖿 Con	tracts		Function Ty	pe: GoThrough GoTo							
🕨 🖿 Tabi	oo Contracts		Cluster Mr	de: Single Node	-						
🕨 🖿 Impi	orted Contracts			and angle theme	C	Cluster					
🕨 🚞 Filte	rs		Credentials		N	anagement IP Address:	172.23.96.228	Management Port: 443	•		
🕨 🚞 Trouble	shoot Policies		Usernar	ne: admin	_	Device Manager:	172.23.97.1	<b>-</b> @			
🕨 🚞 Monitor	ing Policies		Passwo	ord:		Cluster Interfaces:					
🔺 🖿 L4-L7 S	lervices		Confirm Passwo	ord:	_						
▶ 🚞 L4-L	7 Service Graph Templates				_		Туре	<ul> <li>Name</li> </ul>	Concrete Interfaces		
🕨 🖿 Rou	ter configurations		Configuration	State			provider	inside	ASA5585_Device_1/[Gig	jabitEthernet0/1]	
🕨 🚞 Funi	tion Profiles		Configuration Issu	ies:			concumer	outeide	ASA5585_Device_1/[Gig	gabitEthernet0/0]	
🔺 🛄 L4-L	7 Devices		Devices St	ate: stable			Consumer	outside			
▶ 🗒 ≠	ISA5585										
🕨 🖿 Impi	orted Devices										
🕨 🖿 Devi	ces Selection Policies										

Etapa 3. Configure L3Out para N3K-1 e associe com BD1 e VRF1.

A rede roteada externa é usada para especificar a configuração de roteamento na estrutura da ACI para o Route Peering, como mostrado na imagem:

ululu cisco				VM Networking	L4-L7 Serv	ices Admin	Operations
		earch: enter name, descr	common   infra   mgmt   T1				
Tenant T1		<ul> <li>O</li> </ul>					
🔲 Quick Start			L3 Outside - N3K-1	L3001			
🔺 🚢 Tenant T1							
🕨 🖿 Applicatio	on Profiles						
🔺 🖿 Networki	ing						
🕨 🖿 Bridgi	e Domains		<b>⊖ ±</b>				Δ Δ Ο Ο
🕨 🖿 VRFs	1		Bronartian				
🕨 🗖 Extern	nal Bridged Networks		Properties	N3K 4 L SOUT			
🔺 💼 Exteri	nal Routed Networks		Description	optional			
🕨 🖿 Se	et Action Rule Profiles		Description				
► 🛑 Ma	atch Action Rule Profiles		τ.				
► 🕾 A5	BA_IN_L3OUT		lags:	enter taga separate	əd by comma		
► 🕾 A8	SA_OUT_L3OUT		Label:				
▶ @ N:	3K-1_L3OUT		Target DSCP:	unspecified			
▶ 😂 N.	3K-2_L3OUT		Route Control Enforcement	Imnort	V Evnort		
Route	e mutiles			Tabloc	C Export		
	nuice Parameters		VRF:	. TI∕VRE1	<u> </u>		
E4-L7 St	Policies		Resolved VRF.	T1/RF1			
Transles	hoot Policies		Device Device Domain:		Ľ		
Monitorin	ng Policies		Route Profile for Interleak:	select a value	ゼ		
▶ 🖿 L4-L7 Se	arvices		Route Control For Dampening	:			
				Address Fam	піју Туре		
							No item
							Select Actio
			Enable BGP/EIGRP/OSPF.	BGP	LI EIGRP		
			OSPF Area ID	0.0.0.1			
			OSPE Area Cantral	Sond radiate	huted L S&c into NOCA	22	
			Corr Alea Control	<ul> <li>Originate sur</li> </ul>	mmary LSA	cu	
				Suppress for	warding address in trans	lated LSA	
			OSPF Area Type:	: NSSA area	Regular area Stub	area	
			OSPF Area Cost:	: 1	¢		

**Note**: Todas as interfaces L3Out que são usadas para o Peering de Rota, precisam ser configuradas como uma Interface Virtual de Switch (SVI) com encapsulamento de VLAN de acordo.

alialia cisco		Tenants	Fabric V							i vel
		arch: enter name, descr	common   infra   mgmt   T1							
Tenant T1		S 🔊	Logical Interface Pro	filo - N3K-1 I	D					
💼 Quick Start			Logical Interface Fro	ille - Nore I_I	F					_
🔺 🐣 Tenant T1										Policy Fault
Application	n Profiles		Ð₩							
🔺 🚞 Networkin	g									
🕨 🚞 Bridge	Domains		Properties							
VRFs			N	lame: N3K-1_IP						
Externa	al Bridged Networks		Descri	ption: optional						
4 Extern	al Routed Networks									
Set	Action Rule Profiles		L	abel:						
Mat	ch Action Rule Profiles		ND p	olicy: select a value	*					
▶ 😁 ASA	LIN_L3OUT		Egress Data Plane Policing P	olicy: select a value	<b>•</b>					
A CP NO	(1.1.2007		Ingress Data Plane Policing P	olicy: select a value	*					
	<1_L3001		Routed Inter	aces:						
41	N3K-1 NP									
	Logical Interface Profiles			A Path		IP Address	MA	AC Address	MTU (Byte:	s)
	▲ 📃 N3K-1 IP						No items have bee Select Actions to creat	en Found.		
	USPF Interface Profile		1				Succession of the	a a norr total.		
	🕻 🖿 Configured Nodes		4							
	Isopology/pod-1/node-105			SVI:						
> <b>m</b>	Networks									
-	Route Profiles			A Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
🕨 🕾 N3	<2_L30UT			Node-105/eth1/	3 192.168.1.2/3	30		00:22:BD:F8:19:FF	1500	vlan-100
Route	Profiles									
Protoc	ol Policies									
L4-L7 Ser	vice Parameters		Routed Sub-Inter	aces:						
Security P	plicies		Trouted out miter							
Troublesh	oot Policies			A Path	1	IP Address	MAC Address	MTU (Bytes)		Encap
Monitoring	Policies						No items have bee	en Found.		
Image: P Image: L4-L7 Ser	VICES						Select Actions to creat	te a new item.		

Configure o controle de rota de importação/exportação em sub-redes para N3K-1 L3Out External

#### EPG, como mostrado na imagem:

ahaha cisco	System	Tenants	Fabric	VM Networking	L4-L7 Services	Admin	Operations	Q
		arch: enter name, descr	common   infra   mgmt					
Tenant T1		Sec. 10	External Network	Instance Drofile		-		
💼 Quick Start			External Network	instance Prome	- NSK-I_EXI_NEI			
🔺 🐣 Tenant T1								Policy Operatic
🕨 🖿 Applicatio	n Profiles							
🔺 🖿 Networkin	g							General
🕨 🚞 Bridge	Domains		<b>⊖ ±</b>				🛆 🛕 🕕 🕕 🚺 100	
🕨 🖿 VRFs			Droportion					
🕨 🖿 Externa	al Bridged Networks		Properties	NOV 4 EVT NET				
🔺 🚞 Extern:	al Routed Networks		Tags					
🕨 🖿 Set	Action Rule Profiles			enter taga separated by comr	na			
🕨 🖿 Mat	tch Action Rule Profiles		Description	optional				
▶ 🕾 AS/	LIN_L3OUT							
► 🖽 ASA	L30UT_L30UT		Configued VRF name	VRF1				
A GB N31	K-1_L30UT		Resolved VRF	uni/tn-T1/ctx-VRF1				
	Logical Node Profiles		QoS Class	Unspecified .				
41	N3K-1_NP		Target DSCP:	unspecified				
	Logical Interface Profiles		Configuration Status	applied				
	N3K-1_IP		Configuration Issues					
	<ul> <li>Configured Nodes</li> <li>Length and Alegada 405</li> </ul>		Subnets					
	Networks			<ul> <li>IB éddrone</li> </ul>	Score		Aggregate	Poute Control Profile
4	AN3K-1 EXT NET			40.40.40.0/24	Scope	nata facilita Estamal EDO	Aggregate	Rolle Control Pione
	L4-L7 Service Parameters			10.10.10.0/24	External Sub	nets for the External EPG		
	Route Profiles			20.20.20.0/24	Export Route	Control Subnet		
▶ 🕾 N3	K-2_L30UT							
🕨 🖿 Route	Profiles		Dauta Castral Drafia					
🕨 🖿 Protoc	ol Policies		Route Control Profile					
🖿 L4-L7 Ser	vice Parameters			<ul> <li>Name</li> </ul>			1	Direction
🕨 🖿 Security P	olicies						No items have b	peen found.
🕨 🖿 Troublesh	loot Policies						Select Actions to cre	eate a new item.
🕨 🖿 Monitoring	Policies							

Configure L3Out para a interface ASA-External e associe-se a BD1 e VRF1, como mostrado na imagem:

ululu cisco		Tenants					Q
		arch: enter name, descr	common   T1   infra   n				
Tenant T1		S 0					
💼 Quick Start			L3 Outside - AS	A_001_L3001			
🔺 🐣 Tenant T1							
🕨 🖿 Applicatio	n Profiles						
🔺 🖿 Networkin	1g						
🕨 🖿 Bridge	Domains		⊖₹				
VRFs			Properties				
🕨 🖿 Externa	al Bridged Networks		Fibernes	lame: 454 OUT 13OUT			
🔺 🖿 Extern	al Routed Networks		Descri	iption: optional			
Set	Action Rule Profiles						
Mat	tch Action Rule Profiles			Tags:			
AS/	A_IN_L3OUT			enter tags separated by c	iomma		
AS/	A_001_L3001		L	abel:			
	Networks		Target D	SCP: unspecified			
) h 💼	Route Profiles		Route Control Enforce	ment: 🔲 Import	🗹 Export		
🕨 🕾 N3	K-1_L30UT			VRF: T1/VRF1	- d2		
▶ 🕾 N3	K-2_L30UT		Pacabag	WDE: TAMPEA			
🕨 🖿 Route	Profiles		External Routed Do	main: T1 L3OUT	<b>–</b> 12		
🕨 🖿 Protoc	ol Policies		Route Profile for Inte	rleak: select a value	C		
🖿 L4-L7 Ser	vice Parameters		Route Control For Domn	aning	<u> </u>		
🕨 🖿 Security P	olicies		rioute control to bampe	sning.			
Troublesh	noot Policies			<ul> <li>Address Family Type</li> </ul>	ре	Route	Dampening Policy
Monitoring	a Policies					No items have been fi	ound.
L4-L7 Ser	vices					Select Actions to create a	a new item.
			Enable BOP(EIORP(	SPF: BOP			
				OSPF	E LIGHT		
			OSPF Are	sa ID: 0			
			OSPE Area Cr	antrol: 🔽 Send redistributed	I São into NSSA area		
			00.1740400	Originate summary	/LSA		
				Suppress forwardin	ng address in translated LSA		
			OSPF Area	Type: NSSA area Reg	gular area Stub area		
			OSPF Area	Cost: 0	\$		

ahaha cisco	System	Tenants	Fabric VN	Networking	L4-L7 Services	Admin	Operations	Q	i	Adv welcor
		arch: enter name, descr	common   T1   infra   mgmt							
Tenant T1		S 🔊	Logical Interface Drei		IT ID					
💼 Quick Start			Logical Interface Pro	IIE - ASA_OO						
🔺 🐣 Tenant T1										Policy Faults
🕨 🖿 Application	Profiles		<b>NH</b>							
🔺 🚞 Networking										
🕨 🖿 Bridge D	omains		Properties							
🕨 🖿 VRFs			Na	me: ASA_OUT_IP						
🕨 🚞 External	Bridged Networks		Descrip	tion: optional						
🔺 🚞 External	Routed Networks									
🕨 🚞 Set A	ction Rule Profiles		Le	bel:						
🕨 🚞 Matel	Action Rule Profiles		ND no	licy select a value						
🕨 🕾 ASA_	IN_L3OUT		Farmer Date Diese Delising De	line						
🖌 🕾 ASA	OUT_L3OUT		lagress Data Place Palising Pa	New ablect a value						
🔺 📖 L	ogical Node Profiles		ingress Data Plane Policing Po	icy: select a value	• •					
4 🗉	ASA_OUT_NP		Routed Interfa	ces:						
	🖿 Logical Interface Profiles			A Path		IP Address	M	AC Address	MTU (Bytes)	
	ASA_OUT_IP									
	📃 OSPF Interface Profile						No items have be Select Actions to crea	en found. te a new item.		
4	Configured Nodes									
	🔺 📜 topology/pod-1/node-105		•							
	BGP for VRF-T1:VRF1			SVI:						
	OSPE for VRF-T1:VRF1									
🕨 🖬 N	etworks			A Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
▶ 🚞 R	oute Profiles			Node-105/eth1	/2 192.168.1.6/3	30		00:22:BD:F8:19:FF	1500	vlan-101
🕨 🕾 N3K-	1_L30UT									
🕨 🖾 N3K	2_L3OUT									
🕨 🖿 Route P	ofiles									
🕨 🖿 Protocol	Policies		Routed Sub-Interta	ces:						
🔲 L4-L7 Servi	ce Parameters			A Path	1	P Address	MAC Address	MTU (Bytes)	Enc	ap
🕨 🖿 Security Pol	icies						No terrs have be	en found		
🕨 🖿 Troublesho	ot Policies						Select Actions to crea	te a new item.		
🕨 🖿 Monitoring F	Policies									
I 4.17 Servi	- oc									

Configure o controle de rota de importação/exportação em sub-redes para ASA-External L3Out External EPG, como mostrado na imagem:

cisco								Q	i
		Tearch: enter name, descr	common   T1   infra   mg	mt					
Tenant T1		0 12	External Notwork	Instance Profile		NET			
🔲 Quick Start				module Fromes	- AGA_001_EX1_	THE L			-
🔺 🐣 Tenant T1								Polici	Operational Stats
🕨 🖿 Application	1 Profiles								Contracto
🔺 🖿 Networkin <u>s</u>	g								Contracts
🕨 🖿 Bridge i	Domains		⊖±				\land 🛕 🕕 🛑 100		
🕨 🖿 VRFs			Properties						
🕨 🚞 Externa	1 Bridged Networks		Froperties	ASA OUT EXT NET					
🔺 🚞 Externa	al Routed Networks		Tags:	NOR_OUT_ENT_NET					
🕨 🖿 Seti	Action Rule Profiles		regu.	enter taga separated by comma					
🕨 🚞 Matu	ch Action Rule Profiles		Description:	optional					
🕨 🕾 ASA	\_IN_L3OUT								
🔺 🕾 ASA	1_OUT_L3OUT		Configued VRF name: N	VRF1					
) 🕨 🖿 L	Logical Node Profiles		Resolved VRF: 1	uni/tn-T1/ctx-VRF1					
A 🖬 1	Networks		QoS Class:	Unspecified 🗸					
	ASA_OUT_EXT_NET		Target DSCP:	unspecified					
_	L4-L7 Service Parameters		Configuration Statue:	applied					
) 🕨 🛄 (	Route Profiles		Configuration Issues						
▶ 🕾 N3k	K-1_L30UT		Subnets:						
▶ 🕮 N3ł	K-2_L30UT		1						
Route F	Profiles			<ul> <li>IP Address</li> </ul>	Scope		Aggregate	Route Control Profile	Route Summa
🕨 💻 Protocu	of Policies			10.10.10.0/24	Export Rou Shared Rou	te Control Subnet te Control Subnet			
L4-L7 Sen	vice Harameters			20.20.20.0/24	External Sul	bnets for the External EPG			
Security Public	olicies				snared Rou	ute control subhet			
Troublesh	Dot Policies								
Monitoring	1 Monicles		Route Control Profile:						
L4-L7 Ser.	vices			. Norma				_	
				<ul> <li>Name</li> </ul>			Directic		
							No items have been fou. Select Actions to create a ne	und. ew item.	

Configure L3out para ASA-Internal e associe com BD2 e VRF2, como mostrado na imagem:

ululu cisco							Q
		arch: enter name, descr	common   T1   infra   mgn				
Tenant T1		O N	13 Outcide - ASA				
🔲 Quick Start			Lo Outside - Hori				
🔺 🚢 Tenant T1							
🕨 🖿 Applicatio	in Profiles						
🔺 🚞 Networki	ng						
🕨 🖿 Bridge	Domains					⚠ ▲ 🕛 🕕	
🕨 🖿 VRFs			Branartian				
🕨 🖿 Extern	al Bridged Networks		Figherities	O ASA IN LOUIT			
🔺 🚞 Extern	al Routed Networks		Descriptio	n: ontional			
🕨 🖿 Se	t Action Rule Profiles		Descriptio	. opnoridi			
🕨 🖿 Ma	tch Action Rule Profiles						
🔺 🕾 AS	A_IN_L3OUT		lag	enter taga apparated by			
4	Logical Node Profiles		Labe	el:			
Þ	📃 ASA_IN_NP		Target DSC	P: unspecified			
	Networks		Route Control Enforceme	of Discount	- Current		
	Route Profiles		Node Control Enlorcemen	inc 🛄 Import			
► GB AS	A_OUT_L3OUT		VR	F: T1/VRF2	<u> </u>		
▶ 🕮 N3	K-1_L30UT		Resolved VR	F: T1/VRF2			
▶ 🗠 N3	IK-2_L30UT		External Routed Domai	in: T1_L3OUT	<u> </u>		
Route	Profiles		Route Profile for Interlea	k: select a value	<b>-</b> ₽		
P Proto	col Policies		Route Control For Dampenin	ig:			
L4-L7 Se	ivice Parameters						
Security F	runcies			<ul> <li>Address Family Ty</li> </ul>	pe		Route Dampening Policy
Monitorin	n Bolicios					No items have b Select Actions to cre	een found.
Morntonn	y Folicies					Solder Medialis to er	Sate a new really
F L4+L7 88	THLES						
			Enable BGP/EIGRP/OSP	F: BOP			
				OSPF			
			OSPF Area I	D: 0			
			ORE Area Contr	ol: 🔽 Cond radiatributed	L Pås into NPPA area		
			COLL VISA COLL	<ul> <li>Originate summar</li> </ul>	y LSA		
				Suppress forwardi	ng address in translated LSA		
			OSPF Area Typ	ie: NSSA area Reg	gular area Stub area		
			OSPF Area Cos	st: 0	÷		

uluiju cisco	System	Tenants	Fabric V	M Networking	L4-L7 Services	Admin	Operations	P	i		Advanced Mo welcome, admir
		earch: enter name, descr	common   T1   infra   mgmt								
Tenant T1		<ul> <li>O</li> </ul>	Logical Interface Bro		ID						
🔲 Quick Start			Logical Interface Pro	ille - ASA_IN_	IP.						
🔺 🚢 Tenant T1										Policy	Faults Histor
🕨 💼 Applicatio	on Profiles										
🔺 🚞 Networki	ing										ACTIONS *
🕨 💼 Bridg	e Domains		Properties								
🕨 🖿 VRFs				ame: ASA_IN_IP							
🕨 🖿 Eiden	nal Bridged Networks		Descri	ption: optional							
🔺 🚞 Extern	nal Routed Networks										
🕨 🚞 Se	at Action Rule Profiles		L	abel:							
🕨 💼 Mi	atch Action Rule Profiles		ND p	plicy: select a value							
🔺 🙆 AS	BA_IN_L3OUT		Egress Data Place Policing P	plice select a value							
4	Logical Node Profiles			Shog. Select a value							
	ASA_IN_NP		ingress Data Plane Policing P	plicy: select a value	•						
	🔺 🚞 Logical Interface Profiles		Routed Inter	aces:							× +
	🔺 📜 ASA_IN_IP			<ul> <li>Path</li> </ul>		IP Address	MAG	Address	MTU (Bytes)		
	📃 OSPF Interface Profile										
	4 💼 Configured Nodes						Select Actions to create a	round. a new item.			
	topology/pod-1/node-106										
► <b>=</b>	Networks		4								
▶ 💼	Route Profiles			SVI:							× ±
🕨 🕾 AS	SA_OUT_L3OUT										
▶ 🕮 N:	3K-1_L30UT			A Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap	
🕨 😂 N	3K-2_L3OUT			Node-106/eth1/2	192.168.1.10/	30		00:22:BD:F8:19:FF	1500	vlan-102	
🕨 🖿 Route	e Profiles										
🕨 🖿 Proto	col Policies										
🖿 L4-L7 Se	ervice Parameters		Deuted Out-Intend								
🕨 🖿 Security I	Policies		Rouled Sub-Inten	aces.							× +
Troubles	hoot Policies			<ul> <li>Path</li> </ul>	IF	Address	MAC Address	MTU (Bytea)	Encap		
🕨 🛄 Monitorin	ng Policies						No items have been f	ound.			
🕨 🖿 L4-L7 Se	arvices						Select Actions to create a	a new item.			

Configure o controle de rota de importação/exportação em sub-redes para ASA-Internal L3Out External EPG, como mostrado na imagem:

uluiu cisco			Fabric	VM Networking	L4-L7 Services	Admin	Operations	٩	
		arch: enter name, descr	common   T1   infra   mg						
Tenant T1 Quick Start Cenant T1		40	External Network	Instance Profile	- ASA_IN_EXT_NE	ET		Policy	Ope
<ul> <li>Application</li> <li>Application</li> <li>Retworking</li> </ul>	n Profiles ng Domains		DF						Genera
			Properties Name: Taga: Description: Configued VRF name: Resolved VRF: QoS Class: Target DSCP: Configuration Issues: Configuration Issues:	ASA_IN_EXT_NET enter tags separated by comm optional VRE2 unspecified applied	0 -				
A Collection     A	ry Profiles 20 Policies Volicies Volicies noot Policies Policies		Subnets:	<ul> <li>▲ IP Address</li> <li>10.10.0/24</li> <li>20.20.0/24</li> <li>▲ Name</li> </ul>	Scope External Sut Shared Rout Shared Rout	onets for the External EPG te Control Subnet à Control Subnet te Control Subnet te Control Subnet	Aggregate	Route Control Profile	

Configure L3Out para N3K-2 e associe com BD2 e VRF2, como mostrado na imagem:

ululu cisco							Q
		h: enter name, descr	common   T1   infra   mgmf				
Tenant T1		S 20	L2 Outside N2K				
💼 Quick Start			Lo Outside - Nor-2	2_13001			
🔺 🚢 Tenant T1							
🕨 🖿 Applicatio	n Profiles						
🔺 🚞 Networkin	Ig						
🕨 🖿 Bridge	Domains		⊖±			⚠ 🔺 🕕 🕕	
🕨 🖿 VRFs			Dranartian				
🕨 🖿 Externa	al Bridged Networks		Properties	NOK 2 1 20117			
🔺 🚞 Extern	al Routed Networks		Description	. NSK-2_L3UUI			
🕨 🖿 Set	Action Rule Profiles		Description	. optonal			
🕨 🖿 Mat	tch Action Rule Profiles						
🕨 🕾 AS/	A_IN_L3OUT		Tags		<b>*</b>		
🕨 🕾 AS/	A_OUT_L3OUT		Label	enter tags separated by c	omma		
🕨 🙆 N3I	K-1_L30UT		Tamet DSCP	unspecified			
🔺 🕾 N3	K-2_L30UT						
> <b>•</b>	Logical Node Profiles		Route Control Enforcemen	Import	M Expert		
▶ 🖿	Networks		VRF	: T1/VRF2	<u>▼</u> 🗗		
► <b>m</b>	Route Profiles		Resolved VRF	T1/VRF2			
🕨 🖿 Route	Profiles		External Routed Domain	: T1_L3OUT	<b>- @</b>		
🕨 🖿 Protoc	ol Policies		Route Profile for Interleak	select a value			
L4-L7 Ser	vice Parameters		Route Control For Dampening	:			
🕨 🖿 Security P	olicies						
Troublesh	noot Policies			<ul> <li>Address Family Type</li> </ul>	pe	Route	Dampening Policy
Monitoring	g Policies					No items have been f	ound.
L4-L7 Ser	vices					Select Actions to create a	new item.
			Ellable Bor/Elore/08Fr	ORPE	EIGHP		
			OSPE Area ID	0.001			
			OSIT Addib	. 0.0.0.1			
			OSPF Area Contro	Send redistributed Originate summan	LSAs into NSSA area (LSA		
				Suppress forwarding	ng address in translated LSA		
			OSPF Area Type	NSSA area	ular area Stub area		
			OSPE Area Cost	. 0			
			00111100 0001		<u> </u>		
1							

ululu cisco	System	Tenants	Fabric VM	Networking	L4-L7 Services	Admin	Operations	Q	i	
		sarch: enter name, descr	common   T1   infra   mgmt							
Tenant T1		0 N	Logical Interface Profi	la - N3K-2 ID						
🔲 Quick Start			Logical Interface From	ic - Noic 2_ii						_
🔺 🚢 Tenant T1										Policy Fau
🕨 🖿 Application	n Profiles		Ð₩							
🔺 🚞 Networkin	g									
🕨 🚞 Bridge	Domains		Properties							
🕨 🖿 VRFs			Nar	ne: N3K-2_IP						
🕨 💼 Externa	al Bridged Networks		Descripti	on: optional						
🔺 🚞 Externa	al Routed Networks									
🕨 🖿 Set	Action Rule Profiles		Lat	el:						
🕨 🛄 Mat	ch Action Rule Profiles		ND poli	cy: select a value	•					
► 🖽 ASA	_IN_L3OUT		Egress Data Plane Policing Poli	cy: select a value	-					
► 🖽 ASA	_OUT_L3OUT		Ingress Data Plane Policing Poli	cy: select a value	•					
▶ 🖽 N3F	(-1_L3OUT		Douted Interfee		<u> </u>					
A GP N31	<-2_L3OUT		Rouled Internac	85.						
4	Logical Node Profiles			A Path		IP Address	MAC A	ddress	MTU (Bytes)	
4.1	N3K-2_NP						No items have been fou	ind.		
-	Logical Interface Profiles						Select Actions to create a n	iew item.		
	▲ N3K-2_IP									
	USPF Interface Profile		•							
	<ul> <li>Contigured Nodes</li> </ul>		5	WI:						
	Networks Route Profiles			A Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
k 🗖 Routo I	Profile Filines			Node-106/eth1/4	192 168 1 14/30			00:22:BD:E8:19:EE	1500	vian-103
Protoco	1 Policies							and an end of the second		
L4-L7 Sen	vice Parameters									
En En Security Pr	nlicies									
Troublesh	not Policies		Routed Sub-Interfac	es:						
🕨 🚞 Monitoring	Policies			. Doth	ID Addee		MAC Address	MTU (Dates)	Feed	
L4-L7 Ser	vices			- Faul	IP Addre	55 55	WAG AUGIESS	wito (bytes)	Enca	P
							No items have been for Select Actions to create a n	und. Jew item.		

Configure o controle de rota de importação/exportação em sub-redes para N3K-2 L3Out para EPG externo, como mostrado na imagem:

uluih cisco								ρ
		arch: enter name, descr	common   T1   infra   mg					
Tenant T1		<ul> <li>Ø</li> </ul>	Extornal Notwork	Instance Profile	N2K 2 EVT NET			
💼 Quick Start			External Network	Instance Frome	- NOR-2_EXT_NET			
🔺 🚢 Tenant T1								Policy Operational
🕨 🖿 Application	Profiles							Convert C
🔺 💼 Networkinj	3							General Co
🕨 🖿 Bridge i	Domains		⊖±				Δ 🚺 🕕 100	
🕨 🛄 VRFs			Properties					
🕨 🖿 Externa	I Bridged Networks		Name	N3K-2 EXT NET				
🔺 🖿 Externa	I Routed Networks		Tags:	howe_ext_het				
🕨 🖿 Set.	Action Rule Profiles		-	enter tags separated by comm	8			
🕨 🔲 Mate	h Action Rule Profiles		Description:	optional				
► 🖾 ASA	_IN_L3OUT							
► 😂 ASA	_OUT_L3OUT		Configued VRF name:	VRF2				
M3k	-1_L3OUT		Resolved VRF:	uni/tn-T1/ctx-VRF2				
🔺 😁 N3k	-2_L3OUT		QoS Class:	Unspecified 🗸				
	ogical Node Profiles		Target DSCP:	unspecified				
4	Vetworks		Configuration Status:	applied				
<b>4</b> 6	N3K-Z_EXI_NET		Configuration Issues:					
N 💼 1	L4-L7 Service Parameters		Subnets:					
Route E	Profiles			<ul> <li>IR Address</li> </ul>	Score		Aggregate	Poute Control Profile
🕨 🖿 Protoco	I Policies			10 10 10 0/24	Event Deute (	Control Culturet	Agrogato	
🔲 L4-L7 Serv	ice Parameters			10.10.10.0/24	Export Rode	contaior outpriet		
🕨 🖿 Security Po	licies			20.20.20.0/24	External Subn	iets for the External	IEPG	
🕨 🖿 Troublesh	oot Policies							
🕨 🖿 Monitoring	Policies		Doute Control Brofile:					
🕨 🖿 L4-L7 Serv	ices		Route Control Prolite.					
				<ul> <li>Name</li> </ul>			D	rection
							No items have be Select Actions to crea	en found. te a new item.

Etapa 4. Crie um grupo de perfis de função e configure o perfil de função a partir do modelo existente, como mostrado na imagem:

uluih cisco	System	Tenants	Fabric	VM Networking	L4-L7 Services	Admin	Operations	٩	i	Adv welco
		earch: enter name, descr	common   T1   infra							
Tenant T1		0 10	1417 Sonico	Eurotion Profile	ACASSOS ED					
🔲 Quick Start			L4-L7 Services	s Function Frome	- ASA5565_FF					
🔺 🐣 Tenant T1										General Faults
🕨 💼 Applicati	on Profiles									
Network	ing									
🖿 L4-L7 S	ervice Parameters		Properties							
🕨 🖿 Security	Policies		Nar	me: ASA5585_FP						
Trouble:	hoot Policies		Descripti	ion:						
🕨 🖿 Monitorii	ng Policies		Associated Functi	ion: CISCO-ASA-1.2/Firewall						
4 🖿 L4-L7 S	ervices									
▶ 🖿 L4-L	7 Service Graph Templates									
🕨 🗖 Rout	er configurations									
Func	tion Profiles									
<b>⊿</b> (⊒ A	BA5585_FPG									
	ASA5585_FP		FEATURES AN	ID PARAMETERS						
P L4-L	Devices		Features:	Basic Pa	rameters All Parameters					
h David	ned Devices		i cataros.	Nete Folde	er/Perem šev		Name	Value Mandaton/	Locked	Shared
b Devi	and Graph Instances		Interfaces		vice Config		Device	inter interactiony	200,403	onarea
Depi	wed Devices		AccessLists		Accessilist		access-list-inhound		false	false
Inbar	nd Management Configuration for L4-L	7 devices	NAT		Interface Related Configuration		externalif		false	false
Device	e Managers		TrafficSelectionO	blects	Interface Related Configuration		internallf		false	false
🕨 🖿 Chai	sis		All	🔺 🖼 Fur	- nction Config		Function			
				• • • • •	External Interface Configuration		ExtConfig		false	false
					Internal Interface Configuration		IntConfig		faise	false
				11						

i

#### L4-L7 Services Function Profile - ASA5585\_FP

						General Faults Histo
		Δ \Lambda 🕕 🕕				ACTIONS *
Properties Name: ASA558 Description: Associated Function: CISCO-A	5_FP ISA-1.2Firewall					
EATURES AND PAR	AMETERS					
Features:	Hasic Parameters All Parameters	blomm.	Malue	Mandatoni	Lookad	Charact
		Dovico	value	Mandatory	Locked	Shared
	Device coming     Access List	access-list-inbound			false	false
	✓ Interface Related Configuration	externalif			false	false
TrafficSelectionObjects	Access Group	ExtAccessGroup			false	
011	Inbound Access List	name	access-list-inbound	false	false	
01	Interface Specific Configuration	externallfCfg			false	
	IPv4 Address Configuration	IPv4Address			false	
	IPv4 Address	ipv4_address	192.168.1.5/30	true	false	
	🔤 🗐 Security Level	external_security_level	50	false	false	
	Interface Related Configuration	internallf			false	false
	🔺 😅 Interface Specific Configuration	internallfCfg			false	
	IPv4 Address Configuration	IPv4Address			false	
	IPv4 Address	ipv4_address	192.168.1.9/30	true	false	
	🔤 Security Level	internal_security_level	100	false	false	
	🔺 😅 Function Config	Function				
	External Interface Configuration	ExtConfig			false	false
	<ul> <li>Interface Configuration</li> </ul>	ExtConfigrel	externallf	false	false	
	Internal Interface Configuration	IntConfig			false	false
	- 🗐 Interface Configuration	InConfigrel	internallf	false	false	

Etapa 5. Crie um Contrato e modifique o campo Escopo para Espaço, conforme mostrado na imagem:



Etapa 6. Como mostrado na imagem, crie o Modelo de Gráfico de Serviços L4-L7 no qual a associação do Gráfico de Serviços envolve a associação de uma política de rede roteada externa e a configuração do roteador com uma Política de Seleção de Dispositivos.

:	
ALL TENANTS   Add Tenant   Search: enter name, des	st i common i Ti i infra i mgmt
Tenant T1	O 1417 Service Create Templete ASAEE95 SCT
🛤 Quick Start	L4-L7 Service Graph Template - ASA5565_5GT
🖌 🐣 Tenant T1	Topology Policy
Application Profiles	
🕨 💼 Networking	
🖿 L4-L7 Service Parameters	Consumer
🕨 💼 Security Policies	
🕨 💼 Troubleshoot Policies	ASA5585
🕨 💼 Monitoring Policies	
L4-L7 Services	NI
🗾 🛄 L4-L7 Service Graph Templates	
🔺 🌱 ASA5585_SGT	ASA6596 Information
Function Node - N1	Firewall Routed
Router configurations	Profile: ASA5585_FP
Function Profiles	
L4-L7 Devices	
Imported Devices	
Devices Selection Policies	
Deployed Graph Instances	
Deployed Devices	
Inband Management Configuration for L4-L7 devices	
Device Managers	
🕨 💼 Chassis	

Create L4-L7 Service Graph Template		<b>i</b> X
Drag device clusters to create graph nodes.  Device Clusters  T /ASA5585 (Managed Firewall)	Graph Name: ASA5585_SGT Graph Type: © Create A New One © Clone An Existing One Consumer	Provider EPG
	SUBM	AIT CANCEL

Configuração do roteador para especificar o ID do roteador que será usado no Service Appliance (ASA 5585), como mostrado na imagem:

ululu cisco		Tenants	Fabric	VM Networking	L4-L7 Services	Admin
	ALL TENANTS   Add Tenant   Se	arch: enter name, descr	common   T1   infra			
Tenant T1		⊴ 0	Router configu	uration - ASA5585		
🔲 Quick Start						
Tenant T1						
🕨 🥅 Applicatio	n Profiles		<b>∂ ↓</b>			
🕨 🖿 Networkir	g					
💻 L4-L7 Se	vice Parameters		Properties			
🕨 🖿 Security F	olicies		N	ame: ASA5585		
🕨 🖿 Troublesi	noot Policies		Route	r ID: 3.3.3.3		
🕨 🖿 Monitorin	) Policies		Descrip	tion: optional		
🔺 🛄 L4-L7 Se	vices					
▶ 🗖 L4-L7	Service Graph Templates					
A Route	rconfigurations					
🗒 AS	45585					
🕨 🖿 Functi	on Profiles					
▶ 🖿 L4-L7	Devices					
🕨 🖿 Impor	ed Devices					
🕨 🖿 Device	s Selection Policies					
🕨 🖿 Deplo	red Graph Instances					
🕨 💻 Deplo	red Devices					
📃 Inbanı	I Management Configuration for L4-L	7 devices	4			
🕨 🖿 Device	Managers					
🕨 🖿 Chas	is					

Altere o tipo de adjacência de L2 para L3, conforme mostrado na imagem:

uluiju cisco										P		
		arch: enter name, descr	common   T1   infra   mg									
Tenant T1		<ul> <li>O</li> </ul>	1.4-1.7 Service G	anh Template -	ASA5585 SCT							
💼 Quick Star	1		L4-L7 Service G	apri rempiate -	A3A3365_3G1							
🔺 🐣 Tenant T1											Т	opology
🕨 🖿 Applica	tion Profiles		Ð₽									
🕨 🖿 Networ	king											
🖿 L4-L7 8	Service Parameters		Properties									
🕨 🖿 Securit	Policies		Name:	ASA5585_SGT								
🕨 🖿 Trouble	eshoot Policies		Template Name:	UNSPECIFIED								
🕨 🖿 Monitor	ing Policies		Configuration Issues:									
4 🖿 L4-L7 :	3ervices		Description:	optional								
▲ L4-	_7 Service Graph Templates											
· · · ·	ASA5585_SGT		Label:									
<b>▲</b> ۱	Function Node - N1		Function Nodes:	<ul> <li>Name</li> </ul>		Function Na	ame		Function Type		Description	
	E consumer			N1		CISCO-AS	A-1.2/Firewall		GoTo			
	🔜 provider											
Rot	iter configurations											
P Hun	7 Devices											
P =	arted Devices											
Dep	ires Selection Policies											
▶ ■ Der	loved Graph Instances											
▶ ■ Der	loved Devices		Terminal Nodes:	<ul> <li>Name</li> </ul>			Provider/Consur	mer		Description		
📃 Inba	ind Management Configuration for L4-L7	7 devices		T1			Consumer					
🕨 🖿 Dev	ice Managers						D					
🕨 🖿 Cha	ISSIS			12			Provider					
			Connections:	<ul> <li>Name</li> </ul>	Connected Nodes			Unicast Route	Adjacency Type	De	scription	
				C1	N1, T1			True	L3			
				C2	N1, T2			True	L3			

Aplicar modelo de gráfico de serviço, como mostrado na imagem:



Anexe o Service Graph ao Contrato, conforme mostrado na imagem:

uluilu cisco										
		Search: enter name, descr	common   T1   infra   r							
Tenant T1		S 0	Apply L4-L7 Service	ce Graph Template	To EPGs					i X
Quick Start  Control  Contro  Control  Control  Control  Control  Control  Control	Profiles		STEP 1 > Contra	ct					1. Contract	2. Graph
<ul> <li>L4-L7 Serv</li> <li>Security Po</li> <li>Troubleshi</li> <li>Monitoring</li> <li>L4-L7 Serv</li> </ul>	ice Parameters Ilicies pot Policies Policies Ices		Config A Contract	EPG / External Network:	I/N3K-1_L3OUT/N3K-1_EXT_N	Prov	vider EPG / External Network:	3K-2_L3OUT/N3K-2_EXT_NI ▾ 🗗	S	
L4-L7 8     C ASA     E Content	enrice Graph Templates 5555_SOT configurations n Profiles evices d Devices s Selection Policies d Graph Instances		Contract Information Contra	Contract:   Contract:  Create A New C Ct Name:  PERMIT_ALL	Contract ©	Choose An Existing Cont	act Subject			
<ul> <li>Deploy</li> <li>Inband</li> <li>Device</li> <li>Chassi</li> </ul>	ad Devices Management Configuration for L4- Managers s	-L7 devices								
									PREVIOUS	CANCEL



Adicione/altere o parâmetro L4-L7, se necessário, conforme mostrado na imagem:

uluilu cisco											
		Search: enter name, descr	common   T1   infra								
Tenant T1		M 🖸	Apply L4-L7 Servi	ce Graph Template	To EPGs						6 X
Ouck Start     Juck Start     Montonia     Networkin     L4-17 gen     Montonia     L4-17 gen     Montonia     U4-17 gen     Montonia     Monto	s Profiles D dice Parameters Nicles ool Policies Policies dices dices dices dices sort profiles Devices dices Solection Policies ed Oraph Instances ed Devices Management Configuration for L4- Managers is	47 devices	STEP 3 > ASA55 config parameters Profile Name: AS Features: Interfacea Accessions NAT TrafficSelections All	See Parameters for the selected device ASS85_IP - div idvns:apply Require	Graph Template 22: sapply Graph d Parameters Clob / Parameters Clo	New:3:sapp),Profile_odf e e figuration figuration figuration be updated and OREEN	ticon' style= "tilsplay; inline block; with Name Device acces=list-inbound externalif internalif Function ExtConfig intConfig	1. Contract	2. Graph	3. ASA5585 Pa	rameters
										PREVIOUS FINISH	CANCEL

Passo 7: Política de tag de rota, configurar Política de tag de rota para VRF1 (Tag:100), como mostrado na imagem:

uluilu cisco	System	Tenants	Fabric	VM Networking	L4-L7 Services	Admin	Operations		ρ		i		A web
		arch: enter name, descr	I common I infra I mgn	it   T1									
Tenant T1 Quick Start Quick Start Tenant T1		80	VRF - VRF1						Policy	Operational	Stats	Health	Fault
<ul> <li>Application</li> <li>Application</li> <li>Networkin</li> </ul>	n Profiles Ig		⊖₹				Δ 🛦 🕕 🕕 100						
Bridge	Domains		Properties										
VRI 🖸 VRI	F1		Route Tag Policy	- VRF1_RTP				i X					
0	EPG Collection for Context							Policy History					
<ul> <li>Externa</li> </ul>	F2 al Bridged Networks		Dranartian					ACTIONS *					
<ul> <li>Externa</li> <li>Route</li> </ul>	al Routed Networks Profiles		Nar	ne: VRF1_RTP									
Protoc L4-L7 Ser	ol Policies vice Parameters		Descripti	on: optional									
Becurity P     Becurity P	olicles			ag: 100	<u> </u>								
Monitoring	) Policies												
F L4-L7 081													
				▲ EIGRP	Address Family Type		SHOW USAGE	SUBMIT CLOSE					
							No items have Select Actions to cr	been found. reate a new item.					
				DNS labels: Route Tag Policy: VRF1_RTI	P 🗸 🗗								
										s	HOW USAG	ie sui	BMIT

Configure a política de etiqueta de rota para VRF2 (Tag:200), como mostrado na imagem:

ululu cisco												
		earch: enter name, descr	common   infra   mg									
Tenant T1		S 🛛	VRE-VRE2									
Quick Start								Policy				
Application	n Profiles											
🔺 🚞 Networki	19											
Bridge d En 1995	Domains		Route Tag Policy	- VRF2_RTP			i X					
VRFs	F1						Policy History					
🕨 🗈 VR	F2		ତା∓				ACTIONS +					
<ul> <li>Edem</li> </ul>	al Bridged Networks		Drenerties									
Exertise	Profiles		Properties	ame: VRF2 RTP								
🕨 🖿 Protor	ol Policies		Descrip	tion: optional								
🔲 L4-L7 Se	vice Parameters						-					
<ul> <li>Security F</li> <li>Troublesi</li> </ul>				Tag: 200	2							
🕨 🖿 Monitorin	g Policies											
▶ 💼 L4-L7 Se	rvices											
						SHOW USAGE	SUBMIT CLOSE					
			EIGRP Context 1	Per Address Family.								
				<ul> <li>EIGRP #</li> </ul>	Address Family Type		EIGRP Address Family Context					
						No items have Select Actions to	ve been found. I create a new item.					
				DNS labels:								
				Route Tag Policy: VRF2_RTP	<u>→</u> (2							
									s	HOW USAGE	SUB	IMIT

Passo 8: Verifique o status e verifique a Política de seleção de dispositivo, conforme mostrado na imagem:

uluiu cisco							Operations				
		anch: enter name, descr	common   T1   infra   mg								
Tenant T1		S 🖸	Logical Interface	Context cone	LING OF						
💼 Quick Start			Logical Internace	Context - Cons	umer						
🔺 🐣 Tenant T1											
🕨 🕨 Applicati	on Profiles										
🕨 🖿 Networki	ng										
🖿 L4-L7 Se	rvice Parameters		Properties								
🕨 🖿 Security I	Policies		Connector Name:	consumer							
🕨 🖿 Troubles	hoot Policies		Cluster Interface:	outside	<u>▼</u> 🗗						
🕨 🕨 Monitorin	g Policies		Associated Network:	Associated Network: Bridge Domain L3 External Network							
4 🖿 L4-L7 Se	rvices		L3 External Network:	L3 External Network: T1/ASA OUT L3OUT/Z = r							
▶ 🖿 L4-L7	Service Graph Templates		Redistribute: box w carf w								
Route	r configurations			Copp (Cop) (Cop)							
Funct	ion Profiles										
L4-L7 Devices			Subnets:					×	+		
Imported Devices				ID Monk	Passa	Depterand	Subset Centrel				
	ES Selection Policies			IF JIMBAN	Scope	FICIEITES	Sublict Control		_		
	CONCUMPTION					No items have been found. Select Actions to create a new item.					
	provider										
Denic	wed Granh Instances										
Depic	ved Devices		Virtual IP Addresses:					×	1		
🗐 Inban	d Management Configuration for L4-L7	7 devices						~			
🕨 🖿 Devic	e Managers			<ul> <li>IP Address</li> </ul>					_		
🕨 🖿 Chas	sis					No items have been found. Select Actions to create a new item.					
						and a second sec					

uluih cisco	System	Tenants	Fabric	VM Networking	L4-L7 Services	Admin	Operations				
		earch: enter name, descr	common   T1   infra   mg								
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📖 Quick Start			Cogical Internace	Context - provid							
🔺 🐣 Tenant T1											
Application Profiles			⊡ <b>↓</b>								
🕨 🖿 Networkin	g										
🖿 L4-L7 Ser	vice Parameters		Properties								
🕨 🖿 Security P	olicies		Connector Name:	provider							
🕨 🖿 Troublest	oot Policies		Cluster Interface:	inside	<u>r</u> 🕑						
🕨 🖿 Monitoring	Policies		Associated Network:	Associated Network Bridge Domain 1.3 Enternal Network							
🔺 🛄 L4-L7 Sei	vices		L3 External Network:								
🕨 🖿 L4-L7 Service Graph Templates											
🕨 🖿 Router	configurations			Cogp Coopi Co							
Function Profiles											
L4-L7 Devices			Subnets:					×	+		
Imported Devices											
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4 🖸 PE	RMIT_ALL-ASA5585_SGT-N1					No items have been found. Select Actions to create a new item.					
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b 🗖 Daular	provider										
Deploy	red Graph Instances		Virtual IP Addresses:								
Deproyed Devices     Inhand Management Configuration for L4 L7 devices								×	+		
Device Management Configuration for L4-L7 devices				<ul> <li>IP Address</li> </ul>							
Device	is					No items have been found.					
					Select Actions to create a new item.						

Verifique a instância do gráfico implantado, como mostrado na imagem:

alialia cisco			Fabric							Advanced M welcome, adm
		arch: enter name, deacr	common   T1   infra   mgr							
Tenant T1		Sector 10 (1998)	Eunction Node - N	J1						
💼 Quick Start			- I dilottori i tode - i						_	_
Tenant T1										Policy Faults Hist
Application F	Profiles		<b>⊖ ±</b>				A O O			
Networking			Properties							
L4-L7 Servic	e Parameters		Name	N1						
Troubleshor	nt Policies		Function Type: (	Function Type: CoTo						
Monitoring P	olicies		Devices: A	ASA5585						
🔺 🖿 L4-L7 Servic	es		Cluster Interfaces:	<ul> <li>Name</li> </ul>	lame Concrete Interfaces					Encap
▶ 🚞 L4-L7 Se	ervice Graph Templates			inside		ASA5585_	_Device_1/[GigabitEthernet0/1]			unknown
🕨 🖿 Router ci	onfigurations			outside		ASA5585	Device 1/[GigabitEthernet0/0]			unknown
🕨 🖿 Function	<ul> <li>Function Profiles</li> <li>L4-L7 Devices</li> </ul>									
▶ 🚞 L4-L7 De			Function Connectors:	<ul> <li>Name</li> </ul>		Enci	ap	Class ID		
Imported Devices			consumer		vlar	n-101	32773			
Devices	Devices Selection Policies     EPERMIT_ALL-ASA5585_SGT-N1			nrovidor		vlar	102	40466		
				provider		viai	1102	45130		
1	msumer									
I Denimer	d Granh Instances									
A 🔨 PERM	MT ALL-ASA5585 SGT-T1									
L Fu	inction Node - N1		_							
🕨 🖿 Deployed	d Devices		Folders And Par	ameters						
📃 Inband M	lanagement Configuration for L4-L	7 devices	, orabio, and r an	uniocoro						
🕨 🥅 Device M	lanagers		Features:	Basic F	Parameters All Parameters					
🕨 🖿 Chassis				Meta Fol	der/Param Key		Name	Value	Override Name	Value To
I				II						

ululu cisco				VM Netw				Operations	
cibeo	ALL TENANTS   Add Tenant   Search:	enter name, descr	common   T1   infra						
Tenant T1		<ul> <li>Image: Comparison of the second second</li></ul>							
Quick Start			Deployed De∨i	ces					
🔺 😃 Tenant T1									
🕨 🖿 Applicatio	n Profiles	€¥							
Networking			Device Name			VRE			
L4-L7 Service Parameters			4945585			none			
Security Policies     Troubleshoot Policies			N0/13303			none			
🕨 🖿 Monitoring	g Policies								
🔺 🚞 L4-L7 Ser	rvices								
▶ 🖿 L4-L7	Service Graph Templates								
🕨 🖿 Router	r configurations								
Function	on Profiles								
L4-L7	Devices								
🔺 🖿 Device	es Selection Policies								
🔺 🖻 PE	RMIT_ALL-ASA5585_SGT-N1								
12	consumer								
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4 🔲 Deploy	yed Graph Instances		4						
▲ ∨* PE	RMIT_ALL-ASA5585_SGT-T1 Eurotion Node - N1								
	ved Devices								
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	OSPE Graph Instance Configuration								
4	V* N1								
_	📜 Connector N1/consumer								
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📃 Inbanc	d Management Configuration for L4-L7 devic	es							
Device	) Managers								
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ahaha									
ALL	TENANTS   Add Tenant   Search: enter name, desc	common   T1   infra							
Tenant T1	4		Configurations						
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<ul> <li>Personant Fit</li> <li>Application Profi</li> </ul>	les	⊙₹							
Networking	aramatara	Name	Enable	Context Name	Address Family Area	Area Control	Area 1	Type Networks	
<ul> <li>E4-L7 Service Pa</li> <li>Security Policies</li> </ul>	arameters 3	ASA_IN_L3OUT_are	a_0 True	VRF2	IPv4 Backbone are	a Send redistributed LSAs int Originate summary LSA	o NSSA area Regul	lararea ASA_IN_EXT_NET	(10.10.10.0/24)
Troubleshoot Po Monitoring Dalial	olicies	ASA_OUT_L3OUT_a	rea_0 True	VRF1	IPv4 Backbone are	a Originate summary LSA	o NSSA area Regul	iararea ASA_OUT_EXT_N	ET (20.20.20.0/24)
<ul> <li>Monitoring Point</li> <li>L4-L7 Services</li> </ul>	165								
L4-L7 Service	e Graph Templates								
<ul> <li>Function Prot</li> </ul>	files								
L4-L7 Device	35								
<ul> <li>Imponed Dev</li> <li>Devices Sele</li> </ul>	action Policies								
	ALL-ASA5585_SGT-N1								
💷 consu 📜 provide	er								
🔺 💼 Deployed Gr	aph Instances	4							
✓ PERMIT_ ■ Function	ALL-ASA5585_SGT-T1 on Node - N1								
🔺 🚞 Deployed De	wices								
⊿ 🗸 ASA5585- ■ BGP D	-none Device Configuration								
COSPF	Device Configuration								
PERM	IT_ALL-ASA5585_SGT-T1								
00	PF Graph Instance Configuration								
4 🗸 N1 🗐	Connector N1/consumer								
_ 1	Connector N1/provider								
📜 Inband Mana	igement Configuration for L4-L7 devices								
Chassis									

## Verificar e solucionar problemas

Configuração APIC para o espaço:

```
apic1# sh running-config tenant T1
# Command: show running-config tenant T1
# Time: Thu Feb 25 16:05:14 2016
   tenant T1
```

```
access-list PERMIT_ALL
 match ip
  exit
contract PERMIT_ALL
 scope tenant
  subject PERMIT_ALL
   access-group PERMIT_ALL both
    1417 graph ASA5585_SGT
    exit
  exit
vrf context VRF1
  exit
vrf context VRF2
  exit
13out ASA_IN_L3OUT
 vrf member VRF2
  exit
13out ASA_OUT_L3OUT
 vrf member VRF1
  exit
13out N3K-1_L3OUT
 vrf member VRF1
  exit
13out N3K-2_L3OUT
 vrf member VRF2
  exit
bridge-domain BD1
 vrf member VRF1
  exit
bridge-domain BD2
 vrf member VRF2
  exit
application AP1
  epg EPG1
   bridge-domain member BD1
   exit
  epg EPG2
   bridge-domain member BD2
    exit
  exit
external-13 epg ASA_IN_EXT_NET 13out ASA_IN_L3OUT
  vrf member VRF2
  match ip 10.10.10.0/24
  exit
external-13 epg ASA_OUT_EXT_NET 13out ASA_OUT_L3OUT
 vrf member VRF1
 match ip 20.20.20.0/24
  exit
external-13 epg N3K-1_EXT_NET 13out N3K-1_L3OUT
  vrf member VRF1
  match ip 10.10.10.0/24
  contract consumer PERMIT_ALL
  exit
external-13 epg N3K-2_EXT_NET 13out N3K-2_L3OUT
  vrf member VRF2
  match ip 20.20.20.0/24
 contract provider PERMIT_ALL
  exit
interface bridge-domain BD1
  exit
interface bridge-domain BD2
  exit
1417 cluster name ASA5585 type physical vlan-domain T1_PHY service FW function go-to
  cluster-device ASA5585_Device_1
```

```
cluster-interface inside
        member device ASA5585_Device_1 device-interface GigabitEthernet0/1
          interface ethernet 1/2 leaf 106
          exit
        exit
      cluster-interface outside
        member device ASA5585_Device_1 device-interface GigabitEthernet0/0
          interface ethernet 1/2 leaf 105
          exit
        exit
      exit
    1417 graph ASA5585_SGT contract PERMIT_ALL
      service N1 device-cluster-tenant T1 device-cluster ASA5585 mode FW_ROUTED
        connector consumer cluster-interface outside
          1417-peer tenant T1 out ASA_OUT_L3OUT epg ASA_OUT_EXT_NET redistribute bgp,ospf
          exit
        connector provider cluster-interface inside
         1417-peer tenant T1 out ASA_IN_L3OUT epg ASA_IN_EXT_NET redistribute bgp,ospf
          exit
       rtr-cfg ASA5585
        exit
      connection C1 terminal consumer service N1 connector consumer
      connection C2 terminal provider service N1 connector provider
      exit
   rtr-cfg ASA5585
     router-id 3.3.3.3
      exit
    exit
apic1#
```

Verifique a relação de vizinhança do OSPF e a tabela de roteamento na folha 101:

```
leaf101# show ip ospf neighbors vrf T1:VRF1
OSPF Process ID default VRF T1:VRF1
Total number of neighbors: 2
Neighbor ID Pri State
                                    Up Time Address
                                                            Interface
                                    02:07:19 192.168.1.1
1.1.1.1
                 1 FULL/BDR
                                                             Vlan8
3.3.3.3
                  1 FULL/BDR
                                    00:38:35 192.168.1.5
                                                             Vlan9
leaf101# show ip route vrf T1:VRF1
IP Route Table for VRF "T1:VRF1"
'*' denotes best ucast next-hop
'**' denotes best mcast next-hop
'[x/y]' denotes [preference/metric]
'%<string>' in via output denotes VRF <string>
10.10.10.0/24, ubest/mbest: 1/0
   *via 192.168.1.1, vlan8, [110/8], 01:59:50, ospf-default, intra
20.20.20.0/24, ubest/mbest: 1/0
   *via 192.168.1.5, vlan9, [110/22], 00:30:20, ospf-default, inter
100.100.100.100/32, ubest/mbest: 2/0, attached, direct
   *via 100.100.100.100, lo1, [1/0], 02:21:22, local, local
   *via 100.100.100.100, lo1, [1/0], 02:21:22, direct
192.168.1.0/30, ubest/mbest: 1/0, attached, direct
   *via 192.168.1.2, vlan8, [1/0], 02:35:53, direct
192.168.1.2/32, ubest/mbest: 1/0, attached
   *via 192.168.1.2, vlan8, [1/0], 02:35:53, local, local
192.168.1.4/30, ubest/mbest: 1/0, attached, direct
   *via 192.168.1.6, vlan9, [1/0], 02:20:53, direct
192.168.1.6/32, ubest/mbest: 1/0, attached
   *via 192.168.1.6, vlan9, [1/0], 02:20:53, local, local
```

192.168.1.8/30, ubest/mbest: 1/0
 \*via 192.168.1.5, vlan9, [110/14], 00:30:20, ospf-default, intra
200.200.200/32, ubest/mbest: 1/0
 \*via 192.168.1.5, vlan9, [110/15], 00:30:20, ospf-default, intra
Verifique a relação de vizinhança do OSPF e a tabela de roteamento na folha 102:

```
leaf102# show ip ospf neighbors vrf T1:VRF2
OSPF Process ID default VRF T1:VRF2
Total number of neighbors: 2
                                    ..... Audress Interface
00:37:07 192.168.1.9 Vlan14
02:09:50 100
Neighbor ID Pri State
3.3.3.3
                1 FULL/BDR
2.2.2.2
                 1 FULL/BDR
                                     02:09:59 192.168.1.13 Vlan15
leaf102# show ip route vrf T1:VRF2
IP Route Table for VRF "T1:VRF2"
'*' denotes best ucast next-hop
'**' denotes best mcast next-hop
'[x/y]' denotes [preference/metric]
'%<string>' in via output denotes VRF <string>
10.10.10.0/24, ubest/mbest: 1/0
    *via 192.168.1.9, vlan14, [110/22], 00:35:22, ospf-default, inter
20.20.20.0/24, ubest/mbest: 1/0
    *via 192.168.1.13, vlan15, [110/8], 02:08:13, ospf-default, intra
192.168.1.4/30, ubest/mbest: 1/0
    *via 192.168.1.9, vlan14, [110/14], 00:35:22, ospf-default, intra
192.168.1.8/30, ubest/mbest: 1/0, attached, direct
    *via 192.168.1.10, vlan14, [1/0], 02:14:29, direct
192.168.1.10/32, ubest/mbest: 1/0, attached
    *via 192.168.1.10, vlan14, [1/0], 02:14:29, local, local
192.168.1.12/30, ubest/mbest: 1/0, attached, direct
    *via 192.168.1.14, vlan15, [1/0], 02:09:04, direct
192.168.1.14/32, ubest/mbest: 1/0, attached
    *via 192.168.1.14, vlan15, [1/0], 02:09:04, local, local
200.200.200.200/32, ubest/mbest: 2/0, attached, direct
    *via 200.200.200.200, lo4, [1/0], 02:10:02, local, local
    *via 200.200.200.200, lo4, [1/0], 02:10:02, direct
```

Verifique a configuração, a relação de vizinhança OSPF e a tabela de roteamento no ASA 5585:

```
ASA5585# sh run interface
interface GigabitEthernet0/0
no nameif
security-level 0
no ip address
!
interface GigabitEthernet0/0.101
nameif externalIf
security-level 50
ip address 192.168.1.5 255.255.255.252
1
interface GigabitEthernet0/1
no nameif
security-level 100
no ip address
interface GigabitEthernet0/1.102
nameif internalIf
```

```
security-level 100
ip address 192.168.1.9 255.255.255.252
1
interface Management0/0
management-only
nameif management
security-level 0
ip address 172.23.97.1 255.255.254.0
ASA5585# sh run router
router ospf 1
router-id 3.3.3.3
network 192.168.1.4 255.255.255.252 area 0
network 192.168.1.8 255.255.255.252 area 0
area O
log-adj-changes
!
ASA5585# sh ospf neighbor
Neighbor ID
              Pri State
                                   Dead Time Address
                                                               Interface
100.100.100.100 1 FULL/DR
                                   0:00:38 192.168.1.6
                                                              externalIf
                                    0:00:33 192.168.1.10 internalIf
200.200.200.200 1 FULL/DR
ASA5585# sh route ospf
Routing Table: T1
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
      D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
      ia - IS-IS inter area, * - candidate default, U - per-user static route
      o - ODR, P - periodic downloaded static route, + - replicated route
Gateway of last resort is not set
       10.10.10.0 255.255.255.0
O IA
          [110/18] via 192.168.1.6, 00:22:57, externalIf
O IA
        20.20.20.0 255.255.255.0
          [110/18] via 192.168.1.10, 00:22:47, internalIf
        200.200.200.200 255.255.255.255
0
          [110/11] via 192.168.1.10, 00:22:47, internalIf
ASA5585# sh access-list
access-list cached ACL log flows: total 0, denied 0 (deny-flow-max 4096)
           alert-interval 300
access-list access-list-inbound; 3 elements; name hash: 0xcb5bd6c7
access-list access-list-inbound line 1 extended permit tcp any any eq www (hitcnt=0) 0xc873a747
access-list access-list-inbound line 2 extended permit tcp any any eq https (hitcnt=0)
0x48bedbdd
```

access-list access-list-inbound line 3 extended permit icmp any any (hitcnt=6) 0xe4b5a75d Verifique a configuração, a relação de vizinhança OSPF e a tabela de roteamento em N3K-1:

```
N3K-1# sh run ospf
!Command: show running-config ospf
!Time: Thu Feb 25 15:40:55 2016
version 6.0(2)U3(7)
feature ospf
router ospf 1
 router-id 1.1.1.1
interface Ethernet1/21
  ip router ospf 1 area 0.0.0.1
interface Ethernet1/47
 ip router ospf 1 area 0.0.0.1
N3K-1# sh ip ospf neighbors
OSPF Process ID 1 VRF default
Total number of neighbors: 1
                                      Up Time Address Interface
01:36:24 192.168.1.2 Eth1/47
Neighbor ID Pri State
100.100.100.100 1 FULL/DR
                                      01:36:24 192.168.1.2
                                                               Eth1/47
N3K-1# sh ip ospf route
OSPF Process ID 1 VRF default, Routing Table
  (D) denotes route is directly attached
                                              (R) denotes route is in RIB
10.10.10.0/24 (intra)(D) area 0.0.0.1
     via 10.10.10.0/Eth1/21* , cost 4
20.20.20.0/24 (inter)(R) area 0.0.0.1
    via 192.168.1.2/Eth1/47 , cost 62
100.100.100.100/32 (intra)(R) area 0.0.0.1
     via 192.168.1.2/Eth1/47 , cost 41
192.168.1.0/30 (intra)(D) area 0.0.0.1
```

Verifique a configuração, a relação de vizinhança OSPF e a tabela de roteamento em N3K-2:

```
N3K-2# sh run ospf
!Command: show running-config ospf
!Time: Thu Feb 25 15:44:47 2016
version 6.0(2)U3(7)
feature ospf
router ospf 1
router-id 2.2.2.2
interface loopback0
ip ospf network point-to-point
ip router ospf 1 area 0.0.0.0
interface Ethernet1/21
ip router ospf 1 area 0.0.0.1
```

via 192.168.1.1/Eth1/47\* , cost 40

```
N3K-2# sh ip ospf neighbors
OSPF Process ID 1 VRF default
Total number of neighbors: 1
Neighbor ID Pri State
                                   Up Time Address
                                                           Interface
                                   01:43:50 192.168.1.14 Eth1/47
200.200.200.200 1 FULL/DR
N3K-2# sh ip ospf route
OSPF Process ID 1 VRF default, Routing Table
  (D) denotes route is directly attached (R) denotes route is in RIB
2.2.2.0/30 (intra)(D) area 0.0.0.0
    via 2.2.2.0/Lo0* , cost 1
10.10.10.0/24 (inter)(R) area 0.0.0.1
    via 192.168.1.14/Eth1/47 , cost 62
20.20.20.0/24 (intra)(D) area 0.0.0.1
    via 20.20.20.0/Eth1/21* , cost 4
192.168.1.12/30 (intra)(D) area 0.0.0.1
    via 192.168.1.13/Eth1/47* , cost 40
```

Verifique as regras de filtro do contrato no leaf e as contagens de ocorrências do pacote:.

leaf101# show system internal policy-mgr stats Requested Rule Statistics [CUT] Rule (4107) DN (sys/actrl/scope-3112964/rule-3112964-s-32773-d-49158-f-33) Ingress: 1316, Egress: 0, Pkts: 0 RevPkts: 0 Rule (4108) DN (sys/actrl/scope-3112964/rule-3112964-s-49158-d-32773-f-33) Ingress: 1317, Egress: 0, Pkts: 0 RevPkts: 0 leaf101# show system internal policy-mgr stats Requested Rule Statistics [CUT] Rule (4107) DN (sys/actrl/scope-3112964/rule-3112964-s-32773-d-49158-f-33) Ingress: 2317, Egress: 0, Pkts: 0 RevPkts: 0 Rule (4108) DN (sys/actrl/scope-3112964/rule-3112964-s-49158-d-32773-f-33) Ingress: 2317, Egress: 0, Pkts: 0 RevPkts: 0

leaf102# show system internal policy-mgr stats Requested Rule Statistics [CUT] Rule (4103) DN (sys/actrl/scope-2752520/rule-2752520-s-49156-d-6019-f-default) Ingress: 3394, Egress: 0, Pkts: 0 RevPkts: 0 Rule (4104) DN (sys/actrl/scope-2752520/rule-2752520-s-6019-d-49156-f-default) Ingress: 3394, Egress: 0, Pkts: 0 RevPkts: 0 [CUT] leaf102# show system internal policy-mgr stats Requested Rule Statistics [CUT] Rule (4103) DN (sys/actrl/scope-2752520/rule-2752520-s-49156-d-6019-f-default) Ingress: 4392, Egress: 0, Pkts: 0 RevPkts: 0 Rule (4104) DN (sys/actrl/scope-2752520/rule-2752520-s-6019-d-49156-f-default) Ingress: 4392, Egress: 0, Pkts: 0 RevPkts: 0 [CUT]

Ensaio de acessibilidade entre N3K-1 e N3K-2:

```
N3K-1# ping 20.20.20.1 source 10.10.10.1
PING 20.20.20.1 (20.20.20.1) from 10.10.10.1: 56 data bytes
64 bytes from 20.20.20.1: icmp_seq=0 ttl=250 time=2.098 ms
64 bytes from 20.20.20.1: icmp_seq=1 ttl=250 time=0.922 ms
64 bytes from 20.20.20.1: icmp_seq=2 ttl=250 time=0.926 ms
64 bytes from 20.20.20.1: icmp_seq=3 ttl=250 time=0.893 ms
64 bytes from 20.20.20.1: icmp_seq=4 ttl=250 time=0.941 ms
```

--- 20.20.20.1 ping statistics ---

5 packets transmitted, 5 packets received, 0.00% packet loss round-trip min/avg/max = 0.893/1.156/2.098 ms

N3K-2# ping 10.10.10.1 source 20.20.20.1 PING 10.10.10.1 (10.10.10.1) from 20.20.20.1: 56 data bytes 64 bytes from 10.10.10.1: icmp\_seq=0 ttl=250 time=2.075 ms 64 bytes from 10.10.10.1: icmp\_seq=1 ttl=250 time=0.915 ms 64 bytes from 10.10.10.1: icmp\_seq=2 ttl=250 time=0.888 ms 64 bytes from 10.10.10.1: icmp\_seq=3 ttl=250 time=1.747 ms 64 bytes from 10.10.10.1: icmp\_seq=4 ttl=250 time=0.828 ms

--- 10.10.10.1 ping statistics ---5 packets transmitted, 5 packets received, 0.00% packet loss round-trip min/avg/max = 0.828/1.29/2.075 ms

O arquivo de configuração XML do Espaço e o perfil de função do ASA, usados para esta demonstração, estão anexados.