# トランジット ファブリックと L4-L7 ルート ピア リング - 設定ウォークスルー

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## 概要

このドキュメントでは、ルート ピアリングを使用した L4-L7 サービス グラフの設定の段階的検 証について説明します。この設定では、コンシューマとプロバイダの両方が、アプリケーション セントリック インフラストラクチャ(ACI)ファブリック外部にあります。

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# 前提条件

#### 要件

次の項目に関する知識があることが推奨されます。

- 外部デバイスと ACI ファブリック間のカプセル化 VLAN に使用されるスタティック VLAN プ ール
- 外部デバイスのロケーション(リーフ ノード/パス)と VLAN プールを結合する外部物理ド
   メインおよび外部ルーテッド ドメイン

・外部ネットワークへのレイヤ3接続(L3Out)
 前述のファブリックアクセスおよびL3Outの設定手順は、このドキュメントでは説明しません。
 これらの設定手順はすでに完了していることを前提としています。

#### 使用するコンポーネント

このドキュメントの情報は、次のソフトウェアのバージョンに基づいています。

- Cisco Application Policy Infrastructure Controller (Cisco APIC) 1.2(1m)
- 適応型セキュリティアプライアンス(ASA)デバイスパッケージ: 1.2.4.8
- ASA 5585 9.5(1)
- Nexus 3064 6.0(2)U3(7)

このドキュメントの情報は、特定のラボ環境にあるデバイスに基づいて作成されました。このド キュメントで使用するすべてのデバイスは、初期(デフォルト)設定の状態から起動しています 。対象のネットワークが実稼働中である場合には、どのようなコマンドについても、その潜在的 な影響について確実に理解しておく必要があります。

# 背景説明

ルート ピアリングは、ファイアウォールやロード バランサなどのサービス アプライアンスが、 ACI ファブリック経由で外部ネットワークに到達できることをアドバタイズできるようにする機 能です。

ここに示す使用例は、2 つの L3Out または外部エンド ポイント グループ(EPG)間に 2 アーム サービス グラフとして導入された物理ファイアウォールです。 サービス グラフは、リーフ 101(N3K-1)の外部 EPG とリーフ 102(N3K-2)の外部 EPG 間のコントラクトに関連付けら れています。 ACI ファブリックがルータ(N3K-1 および N3K-2)に転送サービスを提供し、ルー ト ピアリングが使用され、ルーティング プロトコルとして Open Shortest Path First (OSPF)が 使用され、ファイアウォールと ACI ファブリックの間でルートが交換されます。

# 設定

#### ネットワーク図

次に、エンドツーエンドでのルート ピアリングの仕組みを示します。



VRF1 / BD1		VRF2 / BD2					
EXTERNAL-EPG	EXTERNAL	INTERNAL	INTERNAL				
		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							

## 設定

手順1:図に示すように、Virtual Routing and Forwarding1(VRF1)、VRF2、ブリッジドメイン 1(BD1)、およびBD2を設定します。BD1をVRF1に、BD2をVRF2に関連付けます。



ステップ 2 : 図に示すように、L4-L7 デバイスの下で ASA デバイス パッケージをアップロードします。



## 図に示すように、物理 ASA 5585(ルーテッド)に対して L4-L7 デバイスを設定します。

alialia cisco									ρ	
		enter name, descr	common   T1   infra   r	ngmt						
Tenant T1		0 🖻	14-17 Devices	ASA5585						
🔲 Quick Start			LALY DEVICES.	ACROSCO -						_
🔺 🐣 Tenant T1										Policy Parameters F
🕨 🖿 Applicati	on Profiles		Ð₽							
🔺 🚞 Network	ing									
🕨 🖿 Bridg	1e Domains		General			Device 1				
🕨 🖿 VRFs	3		Manager	d: 🗹		Management IP Address:	172.23.97.1	Management Port: 443	•	
🕨 🖿 Exten	nal Bridged Networks		Name	9: ASA5585		Chassis:	select a value	- @		
🕨 🚞 Exten	nal Routed Networks		Device Package	9: CISCO-ASA-1.2		Interfaces:				
🕨 🚞 Route	e Profiles		Service Type	e: Firewall						
🕨 🖿 Proto	tol Policies		Device Type	B: PHYSICAL			▲ Name		Path	
🖿 L4-L7 St	ervice Parameters		Physical Domain	n: T1_PHY	<u> </u>		GigabitEthernet0/0		Node-105/eth1/2	
🔺 🖿 Security	Policies		Context Aware	e: Single			GigabitEthernet0/1		Node-106/eth1/2	
🕨 🖿 Conti	racts		Function Type	3: GoThrough GoTo						
🕨 🖿 Tabo	o Contracts		Cluster Mode	: Single Node						
🕨 🖿 Impo	rted Contracts		Cidotel Mod			Cluster				
🕨 🖿 Filter	'S		Credentials			Management IP Address:	172.23.96.228	Management Port: 443	\$	
🕨 🖿 Troubles	shoot Policies		Username	admin	_	Device Manager:	172.23.97.1	<b>-</b> ₽		
🕨 💼 Monitorir	ng Policies		Password	4:		Cluster Interfaces:				
🔺 🖿 L4-L7 Si	envices		Confirm Password	ł:						
🕨 🖿 L4-Li	7 Service Graph Templates						Туре	<ul> <li>Name</li> </ul>	Concrete Interfaces	
🕨 🖿 Route	er configurations		Configuration S	tate			provider	inside	ASA5585_Device_1/[C	9igabitEthernet0/1]
🕨 🖿 Func	tion Profiles		Configuration Issues	5:				outoido	ASA5585_Device_1/[G	igabitEthernet0/0]
🔺 🛄 L4-L	7 Devices		Devices State	9: stable			consumer	outside		
▶ 🗒 A	SA5585									
🕨 🖿 Impo	rted Devices									
🕨 🖿 Devid	tes Selection Policies									

### ステップ 3:N3K-1 に対して L3Out を設定し、BD1 および VRF1 を関連付けます。

図に示すように、外部ルーテッド ネットワークを使用して ACI ファブリック内でルート ピアリ ングのためのルーティング設定が指定されます。

ululu cisco				VM Networking	L4-L7 Services	Admin	Operations
		earch: enter name, descr	common   infra   mgmt   T1				
Tenant T1		S 0	L3 Outside - N3K-1	I_L3OUT			
🔺 🐣 Tenant T1							
🕨 🖿 Applicati	on Profiles						
🔺 💼 Network	ing						
🕨 🚞 Bridg	e Domains		⊖±				Δ \Lambda 🕕 🕕
VRFs			Properties				
Exterior	nal Bridged Networks		Name	N3K-1_L3OUT			
A Exter	nal Routed Networks		Description	c optional			
	et Action Rule Profiles						
► 🐴 AS	ALCH ACLION RULE FIOHIES		Tags	:	•		
► 🕀 AS	BA_IN_ESCOT			enter tags separated by	comma		
▶ 🕮 N	3K-1 L30UT		Labe	:			
▶ 🕾 N	3K-2_L3OUT		Target DSCP	: unspecified			
🕨 🕨 Route	e Profiles		Route Control Enforcemen	t 🔲 Import	🗹 Export		
🕨 🖿 Proto	col Policies		VRF	: T1/VRF1	<b>-</b> @		
🖿 L4-L7 Se	ervice Parameters		Resolved VRF	T1ARE1			
🕨 🖿 Security	Policies		External Routed Domain	: T1_L3OUT	<b>-</b> ⊕		
Troubles	shoot Policies		Route Profile for Interleak	select a value	<b>~</b> @		
🕨 💻 Monitorir	ng Policies		Route Control For Dampening				
L4-L7 Se	ervices						
				<ul> <li>Address Family Ty</li> </ul>	ype		
							No item Select Actio
							Soloce Heato
			Enable BGP/EIGRP/OSPF	: 🗖 BGP	EIGRP		
				🗹 OSPF			
			OSPF Area ID	: 0.0.0.1			
			OSPF Area Contro	E Send redistributed	d LSAs into NSSA area		
				🗹 Originate summai	ry LSA		
				Suppress forward	ing address in translated LSA		
			OSPF Area Type	NSSA area Re	gular area Stub area		
			OSPF Area Cost	: 1	\$		

#### **注**:ルート ピアリングに使用されるすべての L3Out インターフェイスを、VLAN カプセル 化が設定されたスイッチ仮想インターフェイス(SVI)として設定する必要があります。

alialia cisco	System		Fabric VM		L4-L7 Services	Admin			i	A
		arch: enter name, descr	common   infra   mgmt   T1							
Tenant T1 Quick Start Quick Start Annicatio	n Pmfiles	2 0	Logical Interface Prof	le - N3K-1_IF	P					Policy Fault
🔺 🖿 Networki	19									
🕨 🖿 Bridge	Domains		Properties							
VRFs			Na	me: N3K-1_IP						
Extern	al Bridged Networks		Descript	on: optional						
► = EABI	Action Rule Profiles		la l	vel:						
▶ 🖿 Ma	tch Action Rule Profiles		ND pol	cv: select a value						
🕨 🌰 AS	A_IN_L3OUT		Egress Data Plane Policing Pol	cv: select a value						
► 🕾 AS	A_OUT_L3OUT		Ingress Data Plane Policing Pol	cy: select a value						
▲ C⊕ N3	K-1_L3OUT		Routed Interfac	es:						
	N3K-1_NP			. Date		15 Adda		0.444		
	🔺 💼 Logical Interface Profiles			Path		IP Address	ма	C Address	MITO (Bytes)	·
	4 📃 N3K-1_IP						No items have beer Select Actions to create	h found. e a new item.		
	OSPF Interface Profile									
	<ul> <li>Configured Nodes</li> <li>topplogy/pad-1/pade-105</li> </ul>									
> <b>m</b>	Networks			SVI.						
	Route Profiles			A Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
▶ 🕮 N3	K-2_L30UT			Node-105/eth1/3	8 192.168.1.2/3	30		00:22:BD:F8:19:FF	1500	vlan-100
Route	Profiles									
P Proto	ol Policies									
<ul> <li>Equity F</li> </ul>	olicies		Routed Sub-Interfac	es:						
🕨 🖿 Troubles	noot Policies			A Path		P Address	MAC Address	MTU (Bytes)	E	incap
🕨 🖿 Monitorin	g Policies						No items have been	found		
▶ 🖿 L4-L7 Se	rvices						Select Actions to create	a new item.		
1										

図に示すように、N3K-1 L3Out 外部 EPG に対しサブネットでインポート/エクスポート ルート制 御を設定します。

alialia cisco								٩
ALL TENANTS		arch: enter name, descr	common   infra   mgmt					
Tenant T1		<ul> <li>O</li> </ul>	External Network	Instance Profile	- NSK-1 EXT NET			
💼 Quick Start			External NetWORK	motance motile	NOR-LEATINET			
🔺 🐣 Tenant T1								Policy Operati
Application Profiles								General
🔺 🚞 Networking								General
🕨 🔲 Bridge Domains			ੇਂ≠				🛦 🚺 🕕 100	
VRFs			Properties					
External Bridged Netwo	rks		Name	N3K-1 EXT NET				
A External Routed Network	ks		Tags:	1 8				
Set Action Rule Profi	les			enter taga separated by comma	a			
Match Action Rule Pr	ofiles		Description:	optional				
ASA_IN_L3OUT								
ASA_UUI_L3OUT			Configued VRF name:	VRF1				
A D Logical Node Br	filos		Resolved VRF:	uni/tn-T1/ctx-VRF1				
	Jilles		QoS Class:	Unspecified 🗸				
mak-1_NP	erface Profiles		Target DSCP:	unspecified				
Ebgicarini	IP		Configuration Status:	applied				
	-" 1 Nodes		Configuration Issues:					
<ul> <li>Equipment of the second second</li></ul>	w/pod-1/node-105		Subnets:					
Networks				<ul> <li>IP Address</li> </ul>	Scope		Aggregate	Route Control Profile
🔺 📜 N3K-1_EXT_I	NET			10.10.10.0/24	External Subn	ets for the External FPG		
L4-L7 Sen	rice Parameters			20.20.20.0/24	Exect Posts	Control Rubnot		
💼 Route Profiles				20.20.20.0024	Export Route C	Control Subnet		
▶ 🕾 N3K-2_L3OUT								
🕨 🖿 Route Profiles			Route Control Profile:					
🕨 🖿 Protocol Policies			rious contorrione.					
L4-L7 Service Parameters				<ul> <li>Name</li> </ul>			C	Direction
Security Policies							No items have b	een found.
Troubleshoot Policies							Select Actions to cre	ate a new item.
Monitoring Policies								

## 図に示すように、ASA 外部インターフェイスに対して L3Out を設定し、BD1 および VRF1 を関 連付けます。

ululu cisco							Q
		arch: enter name, descr	common   T1   infra   mg				
Tenant T1		S 0	L3 Outside - ASA	OUT L3OUT			
Quick Start							
Tenant T1							
Applicatio	in Profiles						
Bridge	Domains						
VRFs	- Domaina						
🕨 🚞 Extern	al Bridged Networks		Properties				
🔺 💼 Extern	al Routed Networks		Na	me: ASA_OUT_L3OUT			
🕨 🖿 Se	t Action Rule Profiles		Descript	tion: optional			
🕨 🖿 Ma	tch Action Rule Profiles						
🕨 🕾 AS	A_IN_L3OUT		Te	enter tern senerated by:			
🔺 🕾 AS	A_OUT_L3OUT		Lai	bel:			
	Logical Node Profiles		Target DS	CP: unspecified			
	Networks		Route Control Enforcem	ent mnort	- Export		
N2	Koule Prollies		5	IDE- TAB/DEA			
▶ 🕾 N3	K-1_E3001		Ľ	RF. 11/VRF1	<u>▼</u> C <sup>2</sup>		
🕨 🖿 Route	Profiles		Resolved v External Routed Dom	RF: I1/VRF1 ain: T1 L3OUT			
🕨 🖿 Protoc	col Policies		Route Profile for Interle	ak select a value			
🖿 L4-L7 Sei	rvice Parameters		Bouto Control For Domnon	ing:	<u> </u>		
🕨 🚞 Security F	Policies		Route Control For Dampen	ing.			
Troublesi	hoot Policies			<ul> <li>Address Family Ty</li> </ul>	rpe	Rout	e Dampening Policy
Monitoring	g Policies					No items have been	found.
L4-L7 Se	rvices					Select Actions to create	a new item.
			Enable BGP/EIGRP/OS	SPF: BGP	EIGRP		
				OSPF			
			OSPF Area	ID: 0			
			OSPF Area Con	trol: 🗹 Send redistributed	LSAs into NSSA area		
				Originate summar	y LSA		
				ouppress iofward	ng augress in ransialed LSA		
			OSPF Area Ty	ype: NSSA area Reg	gular aréa Stub area		
			USPE Area G	OST: U	<del>•</del>		

uluih cisco	System	Tenants	Fabric VM Ne	stworking L4	4-L7 Services	Admin	Operations	P	i	Adv. welcor
		arch: enter name, descr	common   T1   infra   mgmt							
Tenant T1		O	Logical Interface Profile		D					
💼 Quick Start			Logical Interface Frome	- 101_001_1	F					
🔺 🚢 Tenant T1										Policy Faults
🕨 🖿 Application	I Profiles									A
🔺 🚞 Networkin	g									
🕨 🖿 Bridge	Domains		Properties							
🕨 🖿 VRFs			Name	ASA_OUT_IP						
🕨 💼 Externa	l Bridged Networks		Description	; optional						
🔺 🛄 Externa	I Routed Networks									
Set	Action Rule Profiles		Label							
Mat	ch Action Rule Profiles		ND policy	select a value	<b>•</b>					
AS/	_IN_L3OUT		Egress Data Plane Policing Policy	select a value	-					
AS/			Ingress Data Plane Policing Policy	select a value	•					
	Logical Node Profiles		Routed interfaces							
-	ADA_001_NF									
-				A Path		IP Address	MAC	Address	MTU (Bytes)	
	OSPE Interface Profile						No items have been fo	ound.		
	Configured Nodes						Select Actions to create a	new item.		
	Interpology/pod-1/node-105									
	BGP for VRF-T1.VRF1		9.1							
	Isoto Content in the second									
► <b>m</b>	Vetworks			A Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
> 🖿	Route Profiles			Node-105/eth1/2	192.168.1.6/30			00:22:BD:F8:19:FF	1500	vlan-101
🕨 🕾 N3I	01_L30UT									
🕨 🖽 N3I	~2_L30UT									
🕨 🖿 Route	Profiles									
🕨 🖿 Protoc	ol Policies		Routed Sub-Interfaces							
🔲 L4-L7 Ser	ice Parameters			A Path	IP Add	reaa	MAC Address	MTU (Bytes)	E	лсар
🕨 🚞 Security P	blicles						No tems have been fr	hund		
🕨 🚞 Troublesh	oot Policies						Select Actions to create a	new item.		
🕨 🥅 Monitoring	Policies									
🕨 🖿 L4-L7 Ser	rices									

#### 図に示すように、ASA 外部 L3Out 外部 EPG に対しサブネットでインポート/エクスポート ルー ト制御を設定します。

uluiu cisco								م ا	i
		arch: enter name, descr	common   T1   infra   mg	mt					
Tenant T1		S 2	External Network	Instance Profile		NET			
💼 Quick Start			External NetWORK	module Fromes	- AGA_001_EXT				_
🔺 🚢 Tenant T1								Poli	Y Operational Stats
🕨 🖿 Applicatio	n Profiles								General Contracto
🔺 🚞 Networkin	ng								Contracts
🕨 🚞 Bridge	Domains		€±				Δ 🚺 🕕 100		
VRFs			Properties						
🕨 🛄 Externi	al Bridged Networks		Name	ASA OUT EXT NET					
4 🔜 Extern	al Routed Networks		Tags:		-				
Set	t Action Rule Profiles			enter taga separated by comma					
P 📫 Ma.	iton Action Rule Profiles		Description:	optional					
P 🖘 ASi	A_IN_L3001								
A8.	Logical Node Profiles		Configued VRF name:	VRF1					
	Natural Node Fromes		Resolved VRF:	uni/tn-T1/ctx-VRF1					
	ASA OLIT EXT NET		QoS Class:	Unspecified 🗸					
	L4-L7 Service Parameters		Target DSCP:	unspecified					
> <b>m</b>	Route Profiles		Configuration Status:	applied					
▶ 🙆 N3	K-1_L30UT		Configuration Issues:						
▶ 🕾 N3	- K-2_L30UT	ļ	Subnets:						
🕨 🖿 Route	Profiles			<ul> <li>IP Address</li> </ul>	Scope		Aggregate	Route Control Profile	Route Summa
🕨 💼 Protoc	ol Policies			10.10.10.0/24	Export Rout	e Control Subnet			
🚞 L4-L7 Ser	vice Parameters				Shared Ro.	ute Control Subnet			
🕨 🖿 Security P	'olicies			20.20.20.0/24	Shared Rou	ute Control Subnet			
🕨 🖿 Troublesh	hoot Policies								
🕨 🖿 Monitoring	g Policies		Route Control Profile:						
🕨 🖿 L4-L7 Ser	rvices		Control - Tome.						
				<ul> <li>Name</li> </ul>			Direction		
							No items have been found. Select Actions to create a new ite	m.	

図に示すように、ASA 内部に対して L3out を設定し、BD2 および VRF2 を関連付けます。

ululu cisco							د	ρ
		rch: enter name, descr	common   T1   infra   mgmt					
Tenant T1		80	L3 Outside - ASA_	IN_L3OUT				
🔺 🐣 Tenant T1								
🕨 🖿 Applicatio	on Profiles							
🔺 🚞 Networki	ng							
🕨 🗖 Bridge	e Domains		⊖ ₹					
VRFs			Properties					
Extern	nal Bridged Networks		Name	ASA_IN_L3OUT				
	tal Routed Networks		Description	i: optional				
► 🗖 Se	atch Action Rule Profiles							
🔺 🕾 AS	SA IN L3OUT		Tags	. 1 .	•			
4	Logical Node Profiles			enter taga separated by c	omma			
Þ	asa_in_nP		Label					
► <b>m</b>	Networks		Target DSCP	: unspecified	-			
▶ 🖬	Route Profiles		Route Control Enforcement	t 🔲 Import	🗹 Export			
🕨 🕾 AS	A_OUT_L3OUT		VRF	: T1/VRF2	- @			
🕨 🕾 N3	3K-1_L30UT		Resolved VRF	T1//RF2				
▶ 🕾 N3	3K-2_L3OUT		External Routed Domain	: T1_L3OUT	<u>-</u> C			
Route	Profiles		Route Profile for Interleak	select a value	<u>▼</u> @			
Proto	col Policies		Route Control For Dampening	1				
L4-L7 Se	Prvice Parameters Relision			Address Franks To	_		D D	
Troubles	hant Policies						Roate bampening Policy	
Monitorin	a Policies					No items have b Select Actions to cre	seen found. sate a new item.	
🕨 🕨 L4-L7 Se	rvices							
			Enable BGP/EIGRP/OSPF	BGP	EIGRP			
			OSPF Area ID	: 0				
			OSPF Area Control	I: 🗹 Send redistributed I	.SAs into NSSA area			
				Originate summary	LSA			
				Suppress forwardin	g address in translated LSA			
			OSPF Area Type	E NSSA area Reg	ular area Stub area			
			OSPF Area Cost	: 0	\$			

ahaha cisco	System	Tenants	Fabric	VM Networking	L4-L7 Services	Admin	Operations	٩	i	v	Advanced Mo welcome, admir
		earch: enter name, descr	common   T1   infra   mgmt								
Tenant T1		<ul> <li>O</li> </ul>	Logical Interface R								
💼 Quick Start			Logical Interface P	Tollie - ASA_II	<u>_</u>						
🔺 🚢 Tenant T1										Policy Fa	aults Histo
🕨 🚞 Applicat	ion Profiles										ACTIONS -
🔺 🚞 Network	ing										ACTIONS *
🕨 🚞 Bridg	e Domains		Properties								
🕨 🖿 VRFs	5			Name: ASA_IN_IP							
🕨 🖿 Exter	nal Bridged Networks		Des	scription: optional							
🔺 🚞 Exter	nal Routed Networks										
🕨 🖿 s	et Action Rule Profiles			Label:							
▶ 💼 M	atch Action Rule Profiles		NE	policy: select a value							
🔺 🕾 A	SA_IN_L3OUT		Erress Data Plane Policin	Policy relact a value	<u> </u>						
4	Logical Node Profiles		Ingress Data Plana Paliain	Policy: acted a value	· · ·						
	ASA_IN_NP		ingless bata Halle Policin,	g Policy. select a value	• •						
	🔺 🚞 Logical Interface Profiles		Routed In	terfaces:							× +
	🔺 📜 ASALINLIP			<ul> <li>Path</li> </ul>		IP Address	MAC A	ddreas	MTU (Bytes)		
	📃 OSPF Interface Profile										
	🔺 🚞 Configured Nodes						Select Actions to create a n	and. iew item.			
	topology/pod-1/node-106										
▶ 💼	Networks		4								
► <b></b>	Route Profiles			SVI:							× +
▶ 🕾 A	SA_OUT_L3OUT										
▶ 🕾 N	3K-1_L3OUT			A Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap	
► 🕾 N	13K-2_L3OUT			Node-106/eth	1/2 192.168.1.1	0/30		00:22:BD:F8:19:FF	1500	vlan-102	
🕨 🛄 Rout	e Profiles										
🕨 🚞 Prote	acol Policies										
🖿 L4-L7 S	ervice Parameters		Bautad Public	torfacea:							
Security	Policies		Rouled Sub-In	lenaces.							× +
Trouble:	shoot Policies			- Path		IP Address	MAC Address	MTU (Bytes)	Encap		
🕨 💻 Monitori	ng Policies						No items have been for	ind.			
🕨 🔲 L4-L7 S	envices						Select Actions to create a n	iew item.			

図に示すように、ASA 内部 L3Out 外部 EPG に対しサブネットでインポート/エクスポート ルー ト制御を設定します。

uluilu cisco					L4-L7 Services	Admin	Operations	٩
		irch: enter name, descr	common   T1   infra   mg					
Tenant T1		S 🛛	External Network	Instance Profile	- ASA IN EXT NE	FT		
💼 Quick Start			External Network	instance Frome				
🔺 🐣 Tenant T1								Policy Ope
🕨 🖿 Applicatio	on Profiles							
🔺 🖿 Networki	ng							Genera
🕨 🖿 Bridge	e Domains		₽₹				Δ 🕼 🕕 100	
VRFs			Properties					
🕨 🖿 Extern	al Bridged Networks		Figherities	ASA IN EVT NET				
🔺 🚞 Extern	nal Routed Networks		Taos:	NON_IN_EAT_NET				
🕨 🖿 Se	t Action Rule Profiles		- agai	enter tags separated by comma	9			
🕨 🖿 Ma	atch Action Rule Profiles		Description:	optional				
🔺 🕾 AS	BA_IN_L3OUT							
> <b></b>	Logical Node Profiles		Configued VRF name:	VRF2				
4	Networks		Resolved VRF:	uni/tn-T1/ctx-VRF2				
	ASA_IN_EXT_NET		QoS Class:	Unspecified 🗸 🗸				
	Route Profiles		Target DSCP:	unspecified				
▶ 🖽 AS	A_OUT_L3OUT		Configuration Status:	applied				
▶ @3 N3	3K-1_L3OUT		Configuration Issues:					
▶ @B N3	3K-2_L3OUT		Subnets:					
Route	Profiles		4					
Proto	col Policies			<ul> <li>IP Address</li> </ul>	Scope		Aggregate	Route Control Profile
L4-L7 Se	rvice Parameters			10.10.10.0/24	External Sub Shared Rout	onets for the External EPG te Control Subnet		
<ul> <li>Security F</li> <li>Translation</li> </ul>	Yolicles			20.20.20.0/24	Export Route Shared Rout	e Control Subnet		
F I Iroubles	a Dellaise				onaleu Rou			
monitonin	y Funcies							
F 🖬 L4-L7 Se	nnices		Route Control Profile:					
				<ul> <li>Name</li> </ul>			,	liection
				- 160000				oneonon
							No items have b Select Actions to cre	been found. sate a new item.

# 図に示すように、N3K-2 に対して L3Out を設定し、BD2 および VRF2 を関連付けます。

ululu cisco							Q
		earch: enter name, descr	common   T1   infra   mgm				
Tenant T1		<ul> <li>Ø</li> </ul>	1.2 Outside NI2K (				
💼 Quick Start			Lo Outside - Nor-	2_13001			
🔺 🚢 Tenant T1							
🕨 🖿 Applicatio	n Profiles						
🔺 💼 Networkii	ng						
🕨 🖿 Bridge	Domains		⊖±			⚠ 🔺 🕕 🕕	
🕨 🖿 VRFs			Dranartian				
🕨 🖿 Extern	al Bridged Networks		Properties	NOK 2 LOOUT			
🔺 🚞 Extern	al Routed Networks		Description	ontional			
🕨 🖿 Se	Action Rule Profiles		Description	i. opnoridi			
🕨 🖿 Ma	tch Action Rule Profiles		-				
▶ 🕾 AS.	A_IN_L3OUT		lags	enter tags separated by g			
▶ 🕾 AS	A_OUT_L3OUT		Labe	l:			
▶ 🖽 N3	K-1_L3OUT		Target DSCF	unspecified			
A      A  A     A     A   A	K-2_L3OUT		Route Control Enforcemen	t 🗆 Import	- Export		
	Logical Node Profiles		100				
	Route Profiles		Vicr	- 11/VRP2	<u> </u>		
Route	Profiles		Resolved VRF	T1/VRF2	_		
Protoc	ol Policies		External Routed Domain	. 11_13001	<u> </u>		
L4-L7 Sei	vice Parameters		Route Profile for Interleas	c select a value	<u>_</u> 4		
🕨 🖿 Security F	olicies		Route Control For Dampening	31			
🕨 🖿 Troublest	noot Policies			<ul> <li>Address Family Ty</li> </ul>	pe	Route	Dampening Policy
🕨 🖿 Monitoring	g Policies					No items have been f	ound
🕨 🖿 L4-L7 Se	rvices					Select Actions to create a	new item.
				_			
			Enable BGP/EIGRP/OSPF	BGP			
			OSEE Amo IE	03FF			
			OSPF Alea ID	. 0.0.0.1			
			OSPF Area Contro	I: Send redistributed	LSAs into NSSA area		
				Suppress forwardi	ng address in translated LSA		
			OSPF Area Type	NSSA area	ullar area Stub area		
			OSPE Area Cost		Cido arca		
			00111100000		• •		
1							

uluilu cisco	System	Tenants	Fabric VM N	letworking L	4-L7 Services	Admin	Operations	P	i	~
A		arch: enter name, descr	i common i T1 i infra i mgmt							
Tenant T1		S 0	Logical Interface Profil	A - N3K-2 IP						
🔲 Quick Start			Logical interface i rom	c - Nore 2_II						_
🔺 🚢 Tenant T1										Policy Fau
Application Principal	ofiles		<b>€↓</b>							
A Networking										
🕨 🖿 Bridge Dor	mains		Properties							
VRFs			Nam	e: N3K-2_IP						
🕨 💼 External Br	ridged Networks		Descriptio	n: optional						
4 🔲 External Ro	outed Networks									
🕨 🛄 Set Acti	ion Rule Profiles		Labe	si:						
Match A	Action Rule Profiles		ND polic	y: select a value	*					
▶ CB ASA_IN	I_L3OUT		Egress Data Plane Policing Polic	y: select a value	•					
ASA_01	UT_L3OUT		Ingress Data Plane Policing Polic	y: select a value	•					
Market	L3OUT		Routed Interface	e.						
Market 2	L3OUT		Tobled Intellace	o.						
🔺 🛄 Log	ical Node Profiles			🔺 Path		IP Address	MAG	Address	MTU (Bytes)	
4 😐 1	N3K-2_NP						No items have been	found.		
	Logical Interface Profiles						Select Actions to create	a new item.		
1										
	USPF Interface Profile									
h 🗖 him	Contigured Nodes		51	ZI:						
New	ite Profiles			A Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
Route Prof	files			Node-106/eth1/4	192,168,1,14/30			00:22:8D:F8:19:FF	1500	vlan-103
Protocol P	olicies									
L4-L7 Service	Parameters									
Security Polici	es									
Troubleshoot	Policies		Routed Sub-Interface	s:						
🕨 🚞 Monitoring Pol	licies			<ul> <li>Dath</li> </ul>	ID Arithm		MAC Address	MTLL (Butes)	En	ran
L4-L7 Service	s				IF Addie		inno nadiess	wito (bytea)	Lik	-00
							No items have been Select Actions to create	found. a new item.		

### 図に示すように、外部 EPG の N3K-2 L3Out に対しサブネットでインポート/エクスポート ルー ト制御を設定します。

Operational General Co
Operational Deneral Co
Operational ≎eneral Cc
Operational
General Co
F

ステップ 4:図に示すように、機能プロファイル グループを作成し、既存のテンプレートから機 能プロファイルを設定します。

uluilu cisco		Tenants				Operations			Adv welco
		earch: enter name, descr	common   T1   infra						
Tenant T1		0 10	1417 Sontiag	- Eurotion Brofile	ACASSOS ED				
🔲 Quick Start			L4-L7 Service	s Function Frome	- ASA5565_FF				
🔺 ┸ Tenant T1									General Faults
Application	Profiles		€ ₹ 🗸						А
🕨 🖿 Networking									
L4-L7 Serv	ce Parameters		Properties						
Security Po	licies		Na	me: ASA5585_FP					
Troublesho	ot Policies		Descript	ion:					
Monitoring	Policies		Associated Funct	ion: CISCO-ASA-1.2/Firewall					
4 L4-L7 Serv	ces								
▶ ■ L4-L7 S	ervice Graph Templates								
Router	ontigurations								
Functio	TPromes								
	DAREOR ED		FEATURED AN						
	evices		FEATURES AN	ND PARAMETERS					
Importe	d Devices		Features:	Basic Par	rameters All Parameters				
Devices	Selection Policies			Meta Folde	r/Param Key	Name Va	lue Mandatory	Locked	Shared
🕨 🖿 Deploye	d Graph Instances		Interfaces	🔺 😂 Der	vice Config	Device			
🕨 🖿 Deploye	d Devices		AccessLists	> 🔁 -	Access List	access-list-inbound		false	false
📃 Inband	danagement Configuration for L4-L	.7 devices	NAT		Interface Related Configuration	externallf		false	false
🕨 🖿 Device	lanagers		TrafficSelectionC	Dbiects	Interface Related Configuration	internalif		false	false
🕨 🖿 Chassi	3		All	🔺 🗇 Fur	nction Config	Function			
				- • 😐	External Interface Configuration	ExtConfig		false	false
					Internal Interface Configuration	IntConfig		false	false
1									

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

		General Faults History
	A A O O	ACTIONS *
Properties		
Name: ASA5585_FP		
Description:		
Associated Function: CISCO-ASA-1.2/Firewall		

i

#### FEATURES AND PARAMETERS

Features:	Basic Parameters All Parameters					
	Meta Folder/Param Key	Name	Value	Mandatory	Locked	Shared
	✓ ➡ Device Config	Device				
	Access List	access-list-inbound			false	false
	Interface Related Configuration	externallf			false	false
	🔺 😅 Access Group	ExtAccessGroup			false	
	Inbound Access List	name	access-list-inbound	false	false	
	🔺 😅 Interface Specific Configuration	externallfCfg			false	
	🔺 😅 IPv4 Address Configuration	IPv4Address			false	
	💿 IPv4 Address	ipv4_address	192.168.1.5/30	true	false	
	El 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	
	El Security Level	internal_security_level	100	false	false	
	🔺 😅 Function Config	Function				
	External Interface Configuration	ExtConfig			false	false
	Interface Configuration	ExtConfigrel	externallf	false	false	
	Internal Interface Configuration	IntConfig			false	false
	E Interface Configuration	InConfigrel	internallf	false	false	

ステップ 5:図に示すように、コントラクトを作成し、[Scope] フィールドを [Tenant] に変更し ます。



ステップ 6:図に示すように、L4-L7 サービス グラフ テンプレートを作成します。このテンプレ ートでは、サービス グラフの関連付けで、外部ルーテッド ネットワーク ポリシーおよびルータ 設定とデバイス選択ポリシーの関連付けが行われます。



Create L4-L7 Service Graph Template		() () () () () () () () () () () () () (
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  FPG FPG ASA5585 P ASA5585 P ASA5585 P Frewal:  Rease drag a device from devices table and drop it here to create a servi ASA5585 Information Firewal:  Rease drag a device from devices table and drop it here to create a servi	Provider  EPG Solution
		SUBMIT CANCEL

図に示すように、サービス アプライアンス(ASA 5585)で使用されるルータ ID を [Router configuration] で指定します。

cisco		Tenants	Fabric	VM Networking	L4-L7 Services	Admin
	ALL TENANTS   Add Tenant   Se	arch: <mark>enter name, descr</mark>	common   T1   infra   r			
Tenant T1		<ul> <li>O</li> </ul>	Router configura	ation - ASA5585		
🔲 Quick Start			stearer oornigen			
Tenant T1						
Application	n Profiles		⊖ ₹			
🕨 💻 Networki	ig					
💻 L4-L7 Se	vice Parameters		Properties			
🕨 💻 Security F	olicies		Name	e: ASA5585		
Troubles	noot Policies		Router II	): 3.3.3.3		
🕨 💻 Monitorin	g Policies		Description	n: optional		
4 💻 L4-L7 Se	rvices					
▶ 🗖 L4-L7	Service Graph Templates					
Route	r configurations					
🗒 AS	A5585					
🕨 🖿 Functi	on Profiles					
▶ 🖿 L4-L7	Devices					
🕨 🖿 Impor	ed Devices					
🕨 🖿 Devic	s Selection Policies					
🕨 🖿 Deplo	red Graph Instances					
🕨 💻 Deplo	red Devices					
📃 Inban	I Management Configuration for L4-L7	<sup>7</sup> devices	•			
🕨 🖿 Devic	: Managers					
🕨 🖿 Chas	sis					

図に示すように、[Adjacency Type] を L2 から L3 に変更します。

uluito 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 Start			L-LI Service G	apri rempiate -	VOV0007001						
🔺 🚢 Tenant T1											Topology
🕨 🖿 Applicatio	on Profiles		⊡ ↓								
🕨 🖿 Networki	ng										
🖿 L4-L7 Se	rvice Parameters		Properties								
🕨 🖿 Security F	Policies		Name:	ASA5585_SGT							
🕨 🖿 Troubles	hoot Policies		Template Name:	UNSPECIFIED							
🕨 🖿 Monitorin	ig Policles		Configuration Issues:								
🔺 🚞 L4-L7 Se	rvices		Description:	optional							
🔺 🖿 L4-L7	Service Graph Templates										
AS 🔨 AS	SA5585_SGT		Label:								
▲ 🗏	Function Node - N1		Function Nodes:	<ul> <li>Name</li> </ul>		Function N	lame		Function Type		Description
	📃 consumer			N1		CISCO-AS	SA-1.2/Firewall		GoTo		
	📃 provider										
Route	er configurations										
Funct	ion Profiles										
P L4-L7	Devices										
P Impor	ted Devices										
Devic	es Selection Policies										
Depic	wed Dovingo		Terminal Nodes:	• Name			Provider	Ponsumer		Description	
Inhan	d Management Configuration for L4-L7	7 devices		T4			Concurs			becomption	
Device	e Manageris	4011000					Consum	ei			
E Chas	sis			T2			Provider				
			Connections:	<ul> <li>Name</li> </ul>	Connected Nodes			Unicast Route	Adjacency T	ype D	escription
				C1	N1, T1			True	L3		
				C2	N1, T2			True	L3		

# 図に示すように、サービス グラフ テンプレートを適用します。

ululu cisco							ρ
		arch: enter name, descr	common   T1   infra				
Tenant T1		<ul> <li>O</li> </ul>	14-17 Service	Graph Template -	4545585 SGT		
🔲 Quick Start			EFFER Dervice	Graph Template - I	NON0000_001		
🔺 🐣 Tenant T1							
🕨 🖿 Applicat	tion Profiles		0				
🕨 🖿 Network	king						Breuider
🔲 L4-L7 S	ervice Parameters						Flovider
🕨 🖿 Security	Policies			(	EPG	C 🗰 P	
🕨 🖿 Trouble	shoot Policies			`		ASA5585	
🕨 🖿 Monitori	ing Policies						
🔺 🚞 L4-L7 S	lervices					N1	
🔺 🛄 L4-L	.7 Service Graph Templates						
► <b>**</b> /	ISA5585, 997			- ASA5	585 Information		
🕨 🖿 Rou	ter config Apply L4-L7 Service Graph	Template		1	Firewall: Routed		
🕨 🖿 Funi	tion Prof 🗹 Edit L4-L7 Service Graph To	emplate			Profile: ASA5585_FP		
🕨 🖿 L4-L	7 Device 🔀 Delete						
🕨 🖿 Impi	orted Dev 🔀 Remove Related Objects Of	Graph Template					
🕨 🖿 Devi	ces Sele 👿 Save as						
🕨 🖿 Dep	loyed Gra 📉 Post						
🕨 🖿 Dep	loyed Devices						
📃 Inba	nd Management Configuration for L4-L7	devices	4				
🕨 🖿 Devi	ce Managers						
h 🖿 Oho	aala		1				

# 図に示すように、サービス グラフをコントラクトに接続します。

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
Tenant 1         ■ Quick Start         ■ Application         ■ Networking         ■ L4-L7 Serv         ■ Security PC         ■ Toublesh         ■ Monitoring         ■ L4-L7 Serv         ■ Toublesh         ■ Monitoring         ■ L4-L7 Serv         ■ Toublesh         ■ Monitoring         ■ L4-L7 Serv         ■ Toublesh         ■ Derice         ■ Deploy         ■ Chassi	Profiles b ice Parameters ilicles out Policies Policies Policies Policies Static sorre Policies Static sorre Policies Static sorre Policies Solection Policies ad Graph Instances ad Graph Instances ad Graph Instances S	L7 devices	Apply L4-L7 Service	Ce Graph Template ct Between EPGs EPG / External Network: T Contract: @ Create A New C ott Name: PERMIT_ALL All Traffic): ☑	To EPGs	L Choose An Existing Cont	vider EPG / External Network: T1/N tract Subject	aK-2_L3OUT/N3K-2_EXT_NI ★ @	1. Contract	2. Graph
									PREVIOUS	CANCEL



図に示すように、L4-L7 パラメータを必要に応じて追加または変更します。

uludu cisco											
		Search: enter name, descr	common   T1   infra   i								
Tenant T1		<ul> <li>O</li> </ul>	Apply L4-L7 Servi	ce Graph Template <sup>-</sup>	To EPGs						î X
Innant 1  Cuck Start  Cuck Sta	Yofiles e Parameters (des 4 Policies 6 S 6 S 6 S 6 S 6 S 6 S 6 S 6 S	L7 devices	Apply L4-L7 Servi STEP 3 > ASA55 config parameters Profile Name: AS Features: Interfaces AccessLists NAT TrafficSelectionC All	RECIS	To EPGs Graph Template22:applyGraphW Graph Te	ew.3:applyProfile_editle	Icon' style= 'display: inline-block; width Namo Device access-lisk-inbound externalif infernalif Function ExtConfig IntConfig IntConfig	1. Contract     2. I       x: 30px> <dbc< td="">       Value</dbc<>	Preph	3. ASA5585 Parame Write Domain	ters
									P	REVIOUS FINISH CA	INCEL

手順 7:図に示すように、[Route-tag Policy] で、VRF1 のルート タグ ポリシー([Tag:100])を 設定します。

uluilu cisco	System	Tenants	Fabric	VM Networking	L4-L7 Services	Admin	Operations		P		i		A weld
		h: enter name, descr	common   infra   mgn										
Tenant T1 Quick Start A A Tenant T1		0 12	VRF - VRF1						Policy	Operational	Stats	Health	Fault
Application	n Profiles		⊙₹				🛆 🛦 🕕 🕕 100						
Networkin	g Domains		Properties										
🔺 🖿 VRFs			Tropentes										
🔺 💽 VRI	5 <b>1</b>		Route Tag Policy	- VRF1_RTP				Ú×					
0	Deployed VRFs (Simple Mode) EPG Collection for Context							Policy History					
🕨 🖪 VRI			⊙₹					ACTIONS -					
Externa	al Bridged Networks		Properties										
<ul> <li>Externa</li> <li>Route</li> </ul>	Profiles		Nar	me: VRF1_RTP									
Protoc	ol Policies		Descripti	on: optional									
L4-L7 Ser	vice Parameters		Т	ag: 100	<u> </u>								
<ul> <li>Security P</li> <li>Troublesh</li> </ul>					<u> </u>								
🕨 🖿 Monitoring	Policies												
▶ 🖿 L4-L7 Ser	vices		4										
								_					
							SHOW USAGE	SUBMIT CLOSE					
				▲ EIGRP	Address Family Type			EIGRP Address Family Context					
							No items have Select Actions to c	been found. reate a new item.					
				DNS labels:	P T								
					U							_	
										S	HOW USAG	ie sui	BMIT

図に示すように、VRF2 のルート タグ ポリシー([Tag:200])を設定します。

alialia cisco												
		earch: enter name, descr	common   infra   mgm									
Tenant T1		S 🛛	VRE - VRE2									
Quick Start								Dollar				
Tenant III								Policy				
🔺 🚞 Networking	3					A O O 100						
🕨 🚞 Bridge i	Domains		Route Tag Policy	- VRF2_RTP			i X					
VRFs							Policy History					
VRF	2						actions					
🕨 🗖 Externa	I Bridged Networks						ACTIONS +					
🕨 🧰 Externa	I Routed Networks		Properties									
P Route P			Descriptio	ie: VRF2_RTP								
🖿 L4-L7 Serv	ice Parameters											
🕨 🖿 Security Po	licies		Та	g: 200 😄								
Troubleshi	pot Policies		_		-							
Monitoring												
						SHOW USAGE	SUBMIT CLOSE					
			EIGRP COMEX PE	r Audress Farmiy.								
				▲ EIGRP #	Address Family Type		EIGRP Address Family Context					
						No items have Select Actions to cr	been found. eate a new item.					
				DhiC labele:								
				Divo labels.								
				Route Tag Policy: VRF2_RTP	<u> </u>							
									SI	HOW USAGE	SUBN	ин

# ステップ8:図に示すように、ステータスを調べ、デバイス選択ポリシーを確認します。

ALL TENANTS   Add Tenant   Search enter name, deacr     Tenant 11     Image: Content of the second	
Tenant T1     Image: Context - consumer       Image: Context - consumer     Logical Interface Context - consumer       Image: Context - consumer     Image: Context - consumer    <	
Ouick Start     Duck Start	
Monitoring Policies Associated Network: Bridge Domain L3 External Network L4-L7 Service Graph Templates L4-L7 Service Graph Templates Redistribute: bgp x ospf x	
F = Function Profiles     Subnets:     Subnets:     Preferred Subnet Control	+
<ul> <li>PERMIT_ALL-ASA5585_SGT-N1</li> <li>Consumer</li> <li>provider</li> <li>Deployed Graph Instances</li> <li>Deployed Devices</li> <li>Inband Management Configuration for L4-L7 devices</li> <li>Device Managers</li> <li>Chassis</li> <li>No items have been found. Select Actions to create a new item.</li> </ul>	+

ululu cisco	System	Tenants	Fabric	VM Networking	L4-L7 Services	Admin	Operations				
		Search: enter name, descr	common   T1   infra   mj								
Tenant T1		S 🔊	Logical Interface	Context provid	lor						
💼 Quick Start			Logical Internace	Context - provid							
🔺 🐣 Tenant T1											
🕨 🖿 Applicati	on Profiles										
🕨 🖿 Networki	ng										
🖿 L4-L7 Se	ervice Parameters		Properties								
🕨 🖿 Security	Policies		Connector Name:	provider							
🕨 🖿 Troubles	hoot Policies		Cluster Interface:	inside	<u>r</u> @						
🕨 💼 Monitorir	ng Policies		Associated Network:	Bridge Domain	External Network						
🔺 🖿 L4-L7 Se	ervices		3 External Network:	3 External Network: T1/35 III 3011745.							
🕨 🖿 L4-L7	' Service Graph Templates										
🕨 🖿 Route	er configurations		Redistribute.	ogp 🙁 ospr 🙁 🔻							
🕨 🖿 Funct	ion Profiles										
🕨 🖿 L4-L7	Devices		Subnets:					~~~			
🕨 🚞 Impo	rted Devices							^	+		
🔺 🛄 Devid	es Selection Policies			IP/Mask	Scope	Preferred	Subnet Control				
4 🖸 PI	ERMIT_ALL-ASA5585_SGT-N1					No items have been found.					
12	consumer					Select Actions to create a new item.					
	provider										
🕨 🗖 Deplo	oyed Graph Instances		4 Vinkus LID, Andalas and an								
🕨 💻 Deplo	oyed Devices		Virtual IP Addresses.					$\times$	+		
📃 Inbar	d Management Configuration for L4	-L7 devices		<ul> <li>IP Address</li> </ul>							
🕨 🔲 Devic	e Managers					No items have been found					
🕨 💻 Chas	sis					Select Actions to create a new item.					

# 図に示すように、導入済みグラフ インスタンスを確認します。

սիսիս cisco	System	Tenants	Fabric	VM Networking	L4-L7 Services	Admin	Operations	Q	i	Advanced M welcome, adm	
AL		arch: enter name, descr	common   T1   infra   mg								
Tenant T1		80	Function Node - N	V1							
<ul> <li>A A Tenant T1</li> </ul>										Policy Faults Hist	
Application Pro	tiles		⊡ ↓								
Networking											
L4-L7 Service I	Parameters		Properties								
Becurity Policie	35		Name: I	N1							
Troubleshoot F	Policies		Function Type:	Goto							
Monitoring Poli	icies		Cluster Interfaces:	4540080							
4 L4-L7 Services	3		Ciuster Interlaces.	▲ Name		Concrete	Interfaces		Encap		
L4-L7 Servi	ce Graph Templates			inside		ASA5585_	_Device_1/[GigabitEthernet0/1]			unknown	
Router cont	ngurations			outside	ASA5585_Device_1/[GigabitEthernet0/0]					unknown	
Function Pr	Function Profiles										
La-L/ Devices			Function Connectors:	A Name	Encap		ap	Class ID			
A Devices Se	Imported Denices     Denices Selection Policies			consumer		vlar	i-101	32773			
PERMIT ALL-ASA5585 SGT-N1				provider	ar		vlan-102				
💷 cons	umer										
📃 provi	der										
🔺 💼 Deployed G	Fraph Instances										
🔺 💙 PERMIT	_ALL-ASA5585_SGT-T1										
📃 Func	tion Node - N1										
Deployed D	Pevices		Folders And Par	ameters							
📃 Inband Mar	agement Configuration for L4-L7	devices									
Device Man	agers		Features:	Basic P	arameters All Parameters						
Chassis				Meta Fold	der/Param Key		Name	Value	Override Name	e/Value To	

ululu cisco				VM Networking				Operations	
	ALL TENANTS   Add Tenant   Search:	enter name, descr	common   T1   infra   r						
Tenant T1		S 2	Deployed Devia						
💼 Quick Start			Deployed Devic	:65					
Tenant T1									
Application	n Profiles		⊖₹						
L4-L7 Se	rvice Parameters		<ul> <li>Device Name</li> </ul>			VRF			
🕨 🖿 Security F	Policies		ASA5585			none			
🕨 🔲 Troublesi	hoot Policies								
Monitorin	g Policies								
► L4-L7 58	Service Graph Templates								
🕨 🖿 Route	r configurations								
🕨 🛑 Functi	on Profiles								
L4-L7	Devices								
🖌 🗖 Devici	es Selection Policies								
🔺 🔟 PE	RMIT_ALL-ASA5585_SGT-N1								
1	consumer								
1	provider								
A Depio	Wed Graph Instances		1						
1	Function Node - N1								
🔺 🚞 Deplo	yed Devices								
🔺 🌱 AS	A5585-none								
	BGP Device Configuration								
<b>A V</b> *	PERMIT ALL-ASA5585 SGT-T1								
_	BGP Graph Instance Configuration								
_	OSPF Graph Instance Configuration								
4	₩ N1								
	Connector N1/consumer								
📃 Inban	d Management Configuration for L4-L7 devic	es							
🖿 Device	e Managers								
🖿 Chass	sis								
սիսիս	System Tenants	Fabric	VM Networking	L4-L7 Services	Admin	Operations		ρ	i
CISCO	L TENANTS   Add Tenant   Search: <mark>enter name, desc</mark>	r   common   T1   infra							
Tenant T1	4		Configurations						
Quick Start  Guick Start  Guick Start									
Application Prof	lles	⊙₹							
Networking L4-L7 Service P	arameters	Name	Enable	Context Name Addres	s Family Area	Area Control Send redistributed LSAs into I	Area Type	Networks	
E Security Policie:	8	ASA_IN_L3OUT_are	a_0 True	VRF2 IPv4	Backbone area	Originate summary LSA Send redistributed LSAs into I	NSSA area Regular area	ASA_IN_EXT_NET (10.10.1	0.20.0(24)
Monitoring Polic	cies					Originate summary LSA			
L4-L7 Services	e Graph Templates								
🕨 🚞 Router confi	gurations								
Function Pro L4-L7 Device	rfiles es								
🕨 🚞 Imported De	vices								
A Devices Sei	ALL-ASA5585_SGT-N1								
💷 consu 💷 provid	umer for								
🔺 🖿 Deployed Gi	raph Instances	4							
✓ PERMIT_ ■ Funct	_ALL-ASA5585_SGT-T1 ion Node - N1								
🔺 🖿 Deployed De	evices								
4 💙 ASA5585	-none Device Configuration								
OSPF	Device Configuration								
	III_ALL-ASA5555_SGI-11								
0	SPF Graph Instance Configuration								
• • N	Connector N1/consumer								
Inhand House	Connector N1/provider								
📥 mbang Mana	agens								
🖿 Chassis									

# 確認とトラブルシューティング

## テナントの APIC 設定:

- 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#

#### リーフ 101 の OSPF ネイバー関係とルーティング テーブルを確認します。

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 1.1.1.1 1 FULL/BDR 02:07:19 192.168.1.1 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 200.200.200.200/32, ubest/mbest: 1/0 \*via 192.168.1.5, vlan9, [110/15], 00:30:20, ospf-default, intra リーフ 102 の OSPF ネイバー関係とルーティング テーブルを確認します。 leaf102# show ip ospf neighbors vrf T1:VRF2 OSPF Process ID default VRF T1:VRF2 Total number of neighbors: 2 Interface Neighbor ID Pri State Up Time Address 3.3.3.3 00:37:07 192.168.1.9 1 FULL/BDR Vlan14 1 FULL/BDR 02:09:59 192.168.1.13 2.2.2.2 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

#### ASA 5585 の設定、OSPF ネイバー関係、およびルーティング テーブルを確認します。

\*via 200.200.200.200, lo4, [1/0], 02:10:02, direct

```
ASA5585# sh run interface
interface GigabitEthernet0/0
no nameif
security-level 0
no ip address
1
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
1
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 N3K-1 の設定、OSPF ネイバー関係、およびルーティング テーブルを確認します。

```
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
                                                            Interface
 Neighbor ID Pri State
                                      Up Time Address
 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
```

#### N3K-2 の設定、OSPF ネイバー関係、およびルーティング テーブルを確認します。

```
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
200.200.200.200 1 FULL/DR	01:43:50 192.168.1.14	Eth1/47
N3K-2# sh ip ospf route		
OSPF Process ID 1 VRF default, Routin	ng Table	
(D) denotes route is directly attach	ned (R) denotes rout	e 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 (	52	
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	

#### リーフのコントラクト フィルタ ルールとパケット ヒット カウントを確認します。

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]

#### N3K-1 および N3K-2 間の到達可能性テスト:

```
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
```

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 (10.10.1) 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

このデモに使用されるテナントおよび ASA 機能プロファイルの XML コンフィギュレーション ファイルを添付します。