

ةينب عم 4-L7 يوتسملا نم راسملا رضانن نويوكتلا رمم - لقنلا

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المقدمة

يصف هذا المستند حركة مرور التكوين للرسم البياني لخدمة من المستوى L7-4 مع تجميع المسار، حيث يكون كل من المستهلك والمزود خارج بنية البنية الأساسية المرتكزة على التطبيقات (ACI).

تمت المساهمة بواسطة زاهد حسن، مهندس خدمات Cisco المتقدمة.

المتطلبات الأساسية

المتطلبات

توصي Cisco بأن تكون لديك معرفة بالمواضيع التالية:

- تجمعات VLAN الثابتة التي سيتم استخدامها لتضمين شبكة VLAN بين الأجهزة الخارجية ونسيج واجهة التحكم في الوصول (ACI)
- المجالات المادية والموجهة الخارجية التي سترتبط معا موقع (عقدة/مسار طرفية) الأجهزة الخارجية وتجمع VLAN

• اتصال الطبقة 3 بشبكة خارجية (L3Out)
لا يتم تغطية خطوات تكوين L3Out و Fabric Access السابقة في هذا المستند وقد افترض أنها قد اكتملت بالفعل.

المكونات المستخدمة

تستند المعلومات الواردة في هذا المستند إلى إصدارات البرامج التالية:

- وحدة التحكم الخاصة بتطبيق سياسة البنية الأساسية (1m) - (Cisco APIC)
- حزمة أجهزة أجهزة الأمان المعدلة (1.2.4.8) - (ASA)

(ASA 5585 - 9.5(1) •
(Nexus 3064 - 6.0(2)U3(7) •

تم إنشاء المعلومات الواردة في هذا المستند من الأجهزة الموجودة في بيئة معملية خاصة. بدأت جميع الأجهزة المستخدمة في هذا المستند بتكوين ممسوح (افتراضي). إذا كانت شبكتك مباشرة، فتأكد من فهمك للتأثير المحتمل لأي أمر.

معلومات أساسية

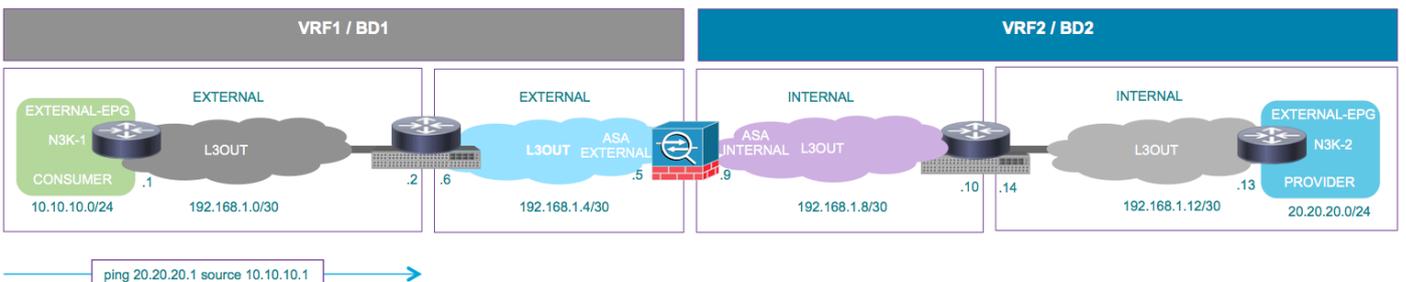
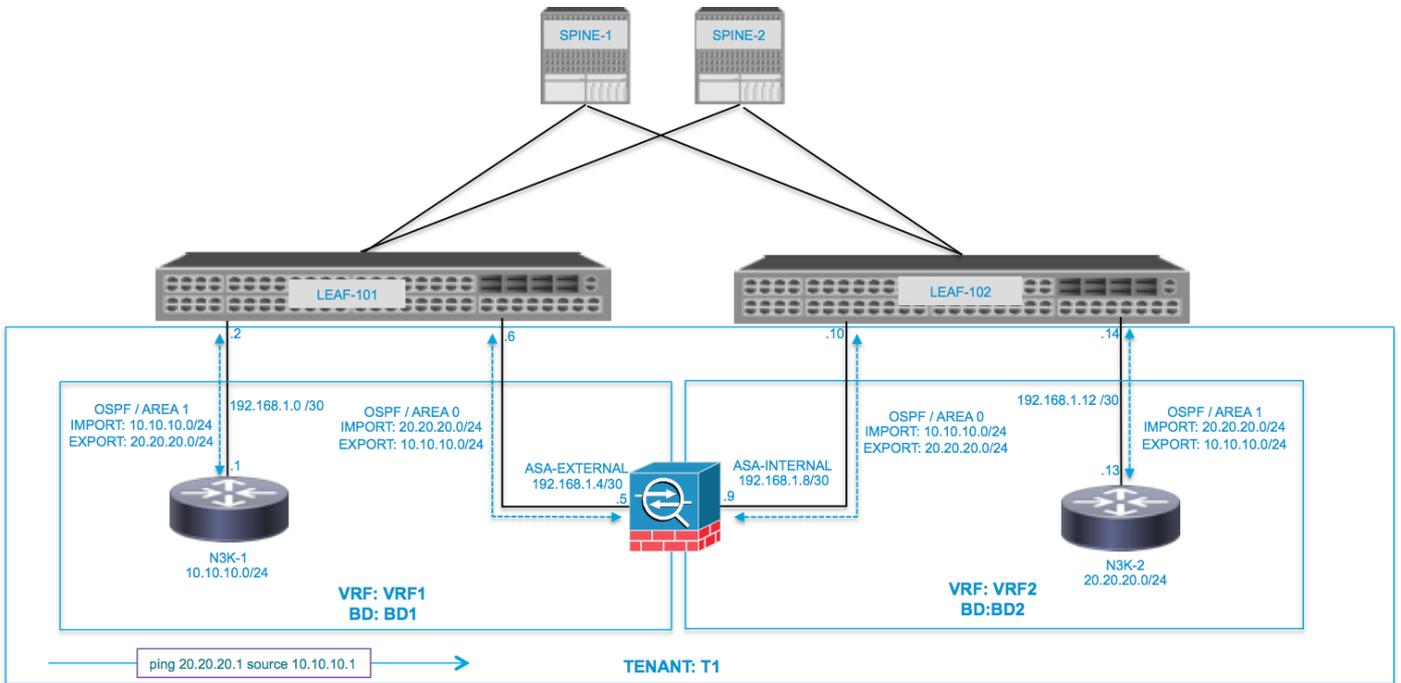
تجنب المسارات المتفرعة هي ميزة تمكن جهاز خدمة مثل موازن التحميل أو جدار حماية من الإعلان عن إمكانية الوصول إليه من خلال بنية واجهة التحكم في الوصول (ACI) إلى جميع الطرق إلى شبكة خارجية.

حالة الاستخدام المعروضة هنا هي جدار حماية فعلي يتم نشره كرسم بياني خدمة ثنائي الأذرع، بين اثنين من L3out أو مجموعات نقاط نهاية خارجية (EPG). يرتبط الرسم البياني للخدمة بعقد بين EPG الخارجي على ورقة 101 (N3K-1) و EPG الخارجي على ورقة 102 (N3K-2). توفر بنية قائمة التحكم في الوصول (ACI) خدمة عبور للموجّهات (N3K-1 و N3K-2) ويتم استخدام تناظر المسار، مع استخدام أقصر مسار أولاً (OSPF) المفتوح كبروتوكول توجيه، لتبادل المسارات بين جدار الحماية ونسيج واجهة التحكم في الوصول (ACI).

التكوين

الرسم التخطيطي للشبكة

تظهر الصورة التالية كيفية عمل نظرة المسار من نهاية إلى نهاية:



الخطوة 1. قم بتكوين التوجيه الظاهري وإعادة التوجيه 1 (VRF1) و VRF2 و (Bridge Domain1 (BD1 و BD2. أربط BD1 ب VRF1 و BD2 ب VRF2، كما هو موضح في الصورة:

The screenshot shows the Cisco SD-WAN configuration interface for Tenant T1. The left sidebar displays a tree view of the configuration hierarchy, with 'Networking' expanded to show 'Bridge Domains' and 'VRFs'. 'BD1', 'BD2', 'VRF1', and 'VRF2' are highlighted with green boxes. The main area shows a 'Networks' configuration page with a 'Drag and drop to configure:' section. Below this, there are two VRF configurations: VRF2 and VRF1. VRF2 is connected to three Bridge Domains: ASA_IN_L3OUT, N3K-2_L3OUT, and BD2. VRF1 is connected to three Bridge Domains: N3K-1_L3OUT, ASA_OUT_L3OUT, and BD1. The 'Common:' section shows VRF and BD icons.

الخطوة 2. قم بتحميل حزمة جهاز ASA ضمن جهاز L4-L7، كما هو موضح في الصورة، :

The screenshot shows the Cisco SD-WAN configuration interface for L4-L7 Services. The left sidebar displays a tree view of the configuration hierarchy, with 'L4-L7 Service Device Types' expanded to show 'CISCO-ASA-1.2'. The main area shows a 'Quick Start' page with a 'HELP' section. Below the help text, there is a 'Quick Start' section with a button labeled 'Import a Device Package' highlighted with a green box. The 'See Also' section lists 'L4-L7 Service Device Types'.

تكوين جهاز L4-L7 ل ASA الفعلي 5585 (موجه)، كما هو موضح في الصورة:

The screenshot displays the configuration for L4-L7 Devices - ASA5585. The left sidebar shows the navigation menu with 'L4-L7 Services' and 'L4-L7 Devices' highlighted. The main content area is divided into several sections:

- General:** Managed: ; Name: ASA5585; Device Package: CISCO-ASA-1.2; Service Type: Firewall; Device Type: PHYSICAL; Physical Domain: T1_PHY; Context Aware: Single; Function Type: GoThrough; Cluster Mode: Single Node.
- Credentials:** Username: admin; Password: [redacted]; Confirm Password: [redacted].
- Configuration State:** Configuration Issues: [none]; Devices State: **stable**.
- Device 1:** Management IP Address: 172.23.97.1; Management Port: 443; Chassis: select a value; Interfaces: GigabitEthernet0/0 (Node-105/eth1/2), GigabitEthernet0/1 (Node-106/eth1/2).
- Cluster:** Management IP Address: 172.23.96.228; Management Port: 443; Device Manager: 172.23.97.1; Cluster interfaces: provider (inside, ASA5585_Device_1[GigabitEthernet0/1]), consumer (outside, ASA5585_Device_1[GigabitEthernet0/0]).

الخطوة 3. شكلت L3Out ل N3K-1 وربطت مع BD1 و VRF1.

يتم استخدام الشبكة الخارجية الموجهة لتحديد تكوين التوجيه في بنية واجهة التحكم في الوصول (ACI) لتناسب المسار، كما هو موضح في الصورة:

The screenshot displays the configuration for L3 Outside - N3K-1_L3OUT. The left sidebar shows the navigation menu with 'L4-L7 Services' and 'L3 Outside' highlighted. The main content area shows the properties of the L3OUT:

- Name:** N3K-1_L3OUT
- Description:** optional
- Tags:** [empty]
- Label:** [empty]
- Target DSCP:** unspecified
- Route Control Enforcement:** Import, Export
- VRF:** T1/VRF1
- Resolved VRF:** T1/VRF1
- External Routed Domain:** T1_L3OUT
- Route Profile for Interleaf:** select a value
- Route Control For Dampening:** [empty]
- Address Family Type:** [empty]
- Enable BGP/EIGRP/OSPF:** BGP, OSPF, EIGRP
- OSPF Area ID:** 0.0.0.1
- OSPF Area Control:** Send redistributed LSAs into NSSA area, Originate summary LSA, Suppress forwarding address in translated LSA
- OSPF Area Type:** NSSA area, **Regular area**, Stub area
- OSPF Area Cost:** 1

ملاحظة: يلزم تكوين جميع واجهات L3Out التي يتم استخدامها لتقسيم المسار، كواجهة ظاهرية للمحول (SVI) مع تضمين شبكة VLAN وفقا لذلك.

Logical Interface Profile - N3K-1_IP

Properties

Name: **N3K-1_IP**

Description: optional

Label:

ND policy: select a value

Egress Data Plane Policing Policy: select a value

Ingress Data Plane Policing Policy: select a value

Routed Interfaces:

Path	IP Address	MAC Address	MTU (Bytes)
No items have been found. Select Actions to create a new item.			

SVI:

Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
Node-105/eth1/3	192.168.1.2/30			00:22:BD:F8:19:FF	1500	vlan-100

Routed Sub-Interfaces:

Path	IP Address	MAC Address	MTU (Bytes)	Encap
No items have been found. Select Actions to create a new item.				

تكوين التحكم في مسار الاستيراد/التصدير على الشبكات الفرعية ل N3K-1 L3Out External EPG، كما هو موضح في الصورة:

External Network Instance Profile - N3K-1_EXT_NET

Properties

Name: **N3K-1_EXT_NET**

Tags: 1

Description: optional

Configured VRF name: **VRF1**

Resolved VRF: **uni4tn-T1ctx-VRF1**

QoS Class: **Unspecified**

Target DSCP: **unspecified**

Configuration Status: **applied**

Configuration Issues:

Subnets:

IP Address	Scope	Aggregate	Route Control Profile
10.10.10.0/24	External Subnets for the External EPG		
20.20.20.0/24	Export Route Control Subnet		

Route Control Profile:

Name	Direction
No items have been found. Select Actions to create a new item.	

قم بتكوين L3Out للواجهة ASA-External واقرانه ب BD1 و VRF1، كما هو موضح في الصورة:

L3 Outside - ASA_OUT_L3OUT

Properties

Name: **ASA_OUT_L3OUT**

Description: optional

Tags:

Label:

Target DSCP: unspecified

Route Control Enforcement: Import Export

VRF: **T1/VRF1**

Resolved VRF: **T1/VRF1**

External Routed Domain: **T1_L3OUT**

Route Profile for Interleak:

Route Control For Dampening:

Address Family Type:

Route Dampening Policy:

No items have been found. Select Actions to create a new item.

Enable BGP/EIGRP/OSPF: BGP OSPF EIGRP

OSPF Area ID: **0**

OSPF Area Control: Send redistributed LSAs into NSSA area Originate summary LSA Suppress forwarding address in translated LSA

OSPF Area Type: **NSSA area** **Regular area** Stub area

OSPF Area Cost: **0**

Logical Interface Profile - ASA_OUT_IP

Properties

Name: **ASA_OUT_IP**

Description: optional

Label:

ND policy:

Egress Data Plane Policing Policy:

Ingress Data Plane Policing Policy:

Routed interfaces:

Path	IP Address	MAC Address	MTU (Bytes)
No items have been found. Select Actions to create a new item.			

SVI:

Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
Node-105eth1/2	192.168.1.8/30			00:22:BD:F8:19:FF	1500	Vlan-101

Routed Sub-Interfaces:

Path	IP Address	MAC Address	MTU (Bytes)	Encap
No items have been found. Select Actions to create a new item.				

تكوين التحكم في مسار الاستيراد/التصدير على الشبكات الفرعية لـ ASA-External L3Out EPG، كما هو موضح في الصورة:

System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search enter name, descr | common | T1 | infra | mgmt

Tenant T1

- Quick Start
- Tenant T1
 - Application Profiles
 - Networking
 - Bridge Domains
 - VRFs
 - External Bridged Networks
 - External Routed Networks
 - Set Action Rule Profiles
 - Match Action Rule Profiles
 - ASA_IN_L3OUT
 - ASA_OUT_L3OUT
 - Logical Node Profiles
 - Networks
 - ASA_OUT_EXT_NET
 - L4-L7 Service Parameters
 - Route Profiles
 - N3K-1_L3OUT
 - N3K-2_L3OUT
 - Route Profiles
 - Protocol Policies
 - L4-L7 Service Parameters
 - Security Policies
 - Troubleshoot Policies
 - Monitoring Policies
 - L4-L7 Services

External Network Instance Profile - ASA_OUT_EXT_NET

Policy Operational Stats

General Contracts

100

Properties

Name: ASA_OUT_EXT_NET

Tags: enter tags separated by comma

Description: optional

Configured VRF name: VRF1

Resolved VRF: unitn-T1/ctx-VRF1

QoS Class: Unspecified

Target DSCP: unspecified

Configuration Status: applied

Configuration Issues:

Subnets:	IP Address	Scope	Aggregate	Route Control Profile	Route Summa
	10.10.10.0/24	Export Route Control Subnet			
	20.20.20.0/24	External Subnets for the External EPoS Shared Route Control Subnet			

Route Control Profile:

Name	Direction
No items have been found. Select Actions to create a new item.	

قم بتكوين L3out ل ASA-Internal واقترب ب BD2 و VRF2، كما هو موضح في الصورة:

System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search enter name, descr | common | T1 | infra | mgmt

Tenant T1

- Quick Start
- Tenant T1
 - Application Profiles
 - Networking
 - Bridge Domains
 - VRFs
 - External Bridged Networks
 - External Routed Networks
 - Set Action Rule Profiles
 - Match Action Rule Profiles
 - ASA_IN_L3OUT
 - Logical Node Profiles
 - ASA_IN_NP
 - Networks
 - Route Profiles
 - ASA_OUT_L3OUT
 - N3K-1_L3OUT
 - N3K-2_L3OUT
 - Route Profiles
 - Protocol Policies
 - L4-L7 Service Parameters
 - Security Policies
 - Troubleshoot Policies
 - Monitoring Policies
 - L4-L7 Services

L3 Outside - ASA_IN_L3OUT

Policy Operational Stats

General Contracts

Properties

Name: ASA_IN_L3OUT

Description: optional

Tags: 1 enter tags separated by comma

Label:

Target DSCP: unspecified

Route Control Enforcement: Import Export

VRF: T1/VRF2

Resolved VRF: T1/VRF2

External Routed Domain: T1_L3OUT

Route Profile for Interleaf: select a value

Route Control For Dampening:

Address Family Type	Route Dampening Policy
No items have been found. Select Actions to create a new item.	

Enable BGP/EIGRP/OSPF: BGP OSPF EIGRP

OSPF Area ID: 0

OSPF Area Control: Send redistributed LSAs into NSSA area Originate summary LSA Suppress forwarding address in translated LSA

OSPF Area Type: NSSA area Regular area Stub area

OSPF Area Cost: 0

The screenshot displays the configuration page for the Logical Interface Profile named **ASA_IN_IP**. The left sidebar shows the navigation tree with **ASA_IN_IP** selected under **Logical Interface Profiles**. The main panel shows the following configuration details:

- Name:** ASA_IN_IP
- Description:** optional
- Label:** (empty)
- ND policy:** select a value
- Egress Data Plane Policing Policy:** select a value
- Ingress Data Plane Policing Policy:** select a value

The **Routed Interfaces** table is currently empty. The **SVI** table contains one entry:

Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
Node-106/eth1/2	192.168.1.10/30			00:22:BD:F8:19:FF	1500	vlan-102

The **Routed Sub-Interfaces** table is also empty.

تكوين التحكم في مسار الاستيراد/التصدير على الشبكات الفرعية ل ASA-Internal L3Out External EPG، كما هو موضح في الصورة:

The screenshot displays the configuration page for the External Network Instance Profile named **ASA_IN_EXT_NET**. The left sidebar shows the navigation tree with **ASA_IN_EXT_NET** selected under **External Network Instance Profiles**. The main panel shows the following configuration details:

- Name:** ASA_IN_EXT_NET
- Tags:** enter tags separated by comma
- Description:** optional
- Configured VRF name:** VRF2
- Resolved VRF:** umltn-T1/ctx-VRF2
- QoS Class:** Unspecified
- Target DSCP:** unspecified
- Configuration Status:** applied

The **Subnets** table contains two entries:

IP Address	Scope	Aggregate	Route Control Profile
10.10.10.0/24	External Subnets for the External EPG Shared Route Control Subnet		
20.20.20.0/24	Export Route Control Subnet Shared Route Control Subnet		

The **Route Control Profile** table is empty.

قم بتكوين L3Out ل N3K-2 واقرانه ب BD2 و VRF2، كما هو موضح في الصورة:

System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | infra | mgmt

Tenant T1

Quick Start

Tenant T1

- Application Profiles
- Networking
 - Bridge Domains
 - VRFs
 - External Bridged Networks
 - External Routed Networks
 - Set Action Rule Profiles
 - Match Action Rule Profiles
 - ASA_IN_L3OUT
 - ASA_OUT_L3OUT
 - N3K-1_L3OUT
 - N3K-2_L3OUT**
- Logical Node Profiles
- Networks
- Route Profiles
- Route Profiles
- Protocol Policies
- L4-L7 Service Parameters
- Security Policies
- Troubleshoot Policies
- Monitoring Policies
- L4-L7 Services

L3 Outside - N3K-2_L3OUT

Properties

Name: **N3K-2_L3OUT**

Description: optional

Tags:

Label:

Target DSCP: unspecified

Route Control Enforcement: Import Export

VRF: **T1/VRF2**

Resolved VRF: **T1/VRF2**

External Routed Domain: T1_L3OUT

Route Profile for Interleaf: select a value

Route Control For Dampening:

Address Family Type:

Route Dampening Policy:

No items have been found. Select Actions to create a new item.

Enable BGP/EIGRP/OSPF: BGP OSPF EIGRP

OSPF Area ID: **0.0.0.1**

OSPF Area Control: Send redistributed LSAs into NSSA area Originate summary LSA Suppress forwarding address in translated LSA

OSPF Area Type: NSSA area **Regular area** Stub area

OSPF Area Cost: 0

System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | infra | mgmt

Tenant T1

Quick Start

Tenant T1

- Application Profiles
- Networking
 - Bridge Domains
 - VRFs
 - External Bridged Networks
 - External Routed Networks
 - Set Action Rule Profiles
 - Match Action Rule Profiles
 - ASA_IN_L3OUT
 - ASA_OUT_L3OUT
 - N3K-1_L3OUT
 - N3K-2_L3OUT**
- Logical Node Profiles
 - N3K-2_NP**
 - Logical Interface Profiles
 - N3K-2_IP**
 - OSPF Interface Profile
 - Configured Nodes
 - Networks
 - Route Profiles
 - Route Profiles
 - Protocol Policies
 - L4-L7 Service Parameters
 - Security Policies
 - Troubleshoot Policies
 - Monitoring Policies
 - L4-L7 Services

Logical Interface Profile - N3K-2_IP

Properties

Name: **N3K-2_IP**

Description: optional

Label:

ND policy: select a value

Egress Data Plane Policing Policy: select a value

Ingress Data Plane Policing Policy: select a value

Routed Interfaces:

Path	IP Address	MAC Address	MTU (Bytes)
No items have been found. Select Actions to create a new item.			

SVI:

Path	IP Address	Side A IP	Side B IP	MAC Address	MTU (Bytes)	Encap
Node-1066eth1/4	192.168.1.14/30			00:22:BD:F8:19:FF	1500	vlan-103

Routed Sub-Interfaces:

Path	IP Address	MAC Address	MTU (Bytes)	Encap
No items have been found. Select Actions to create a new item.				

تكوين التحكم في مسار الاستيراد/التصدير على الشبكات الفرعية ل N3K-2 L3Out ل EPG الخارجي، كما هو موضح في الصورة:

External Network Instance Profile - N3K-2_EXT_NET

Properties

Name: **N3K-2_EXT_NET**

Tags:

Description: optional

Configured VRF name: **VRF2**

Resolved VRF: **uniftn-T1ctx-VRF2**

QoS Class: **Unspecified**

Target DSCP: **unspecified**

Configuration Status: **applied**

Configuration Issues:

Subnets:

IP Address	Scope	Aggregate	Route Control Profile
10.10.10.0/24	Export Route Control Subnet		
20.20.20.0/24	External Subnets for the External EPG		

Route Control Profile:

Name	Direction
No items have been found. Select Actions to create a new item.	

الخطوة 4. قم بإنشاء مجموعة ملفات تعريف الدالة وتكوين ملف تعريف الوظيفة من القالب الموجود، كما هو موضح في الصورة:

L4-L7 Services Function Profile - ASA585_FP

Properties

Name: **ASA585_FP**

Description:

Associated Function: **CISCO-ASA-1.2Firewall**

FEATURES AND PARAMETERS

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	externalif			false	false
Interface Related Configuration	internalif			false	false
Function Config	Function				
External Interface Configuration	ExtConfig			false	false
Internal Interface Configuration	IntConfig			false	false



Properties

Name: ASA5585_FP

Description:

Associated Function: CISCO-ASA-1.2Firewall

FEATURES AND PARAMETERS

Features:

Interfaces
AccessLists
NAT
TrafficSelectionObjects
All

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	externalif			false	false
Access Group	ExtAccessGroup			false	
Inbound Access List	name	access-list-inbound	false	false	
Interface Specific Configuration	externalIfCfg			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	internalif			false	false
Interface Specific Configuration	internalIfCfg			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
Interface Configuration	ExtConfigrel	externalif	false	false	
Internal Interface Configuration	IntConfig			false	false
Interface Configuration	IntConfigrel	internalif	false	false	

الخطوة 5. قم بإنشاء عقد وتعديل حقل النطاق للمستأجر، كما هو موضح في الصورة:

The screenshot shows the Cisco ICM configuration interface for a contract named 'PERMIT_ALL'. The 'Scope' is set to 'Tenant'. The 'QoS Class' is 'Unspecified' and the 'Target DSCP' is 'unspecified'. The 'Description' is 'optional'. The 'Subjects' table shows a single entry: 'PERMIT_ALL' with filters 'T1/PERMIT_ALL'.

Name	Filters
PERMIT_ALL	T1/PERMIT_ALL

الخطوة 6. كما هو موضح في الصورة، قم بإنشاء قالب الرسم البياني L4-L7 Service Graph حيث يتضمن اقتران الرسم البياني للخدمة اقتران نهج شبكة موجه خارجي وتكوين موجه باستخدام نهج تحديد جهاز.

:

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | info | mgmt

Tenant T1

Quick Start

- Tenant T1
 - Application Profiles
 - Networking
 - L4-L7 Service Parameters
 - Security Policies
 - Troubleshoot Policies
 - Monitoring Policies
 - L4-L7 Services
 - L4-L7 Service Graph Templates
 - ASA5585_SGT
 - Function Node - N1
 - Router configurations
 - 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

L4-L7 Service Graph Template - ASA5585_SGT

Topology Policy

ASA5585 Information

Firewall: Routed

Profile: ASA5585_FP

Create L4-L7 Service Graph Template

Drag device clusters to create graph nodes.

Device Clusters

- T1 /ASA5585 (Managed Firewall)

Graph Name: ASA5585_SGT

Graph Type:
 Create A New One
 Clone An Existing One

Please drag a device from devices table and drop it here to create a service node.

ASA5585 Information

Firewall: Routed Transparent

Profile: T1/ASA5585_FPG/ASA5585_FP

SUBMIT CANCEL

تكوين الموجه لتحديد معرف الموجه الذي سيتم استخدامه على جهاز الخدمة (ASA 5585)، كما هو موضح في الصورة:

System Tenants Fabric VM Networking L4-L7 Services Admin

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | infra | mgmt

Tenant T1

- Quick Start
- Tenant T1
 - Application Profiles
 - Networking
 - L4-L7 Service Parameters
 - Security Policies
 - Troubleshoot Policies
 - Monitoring Policies
 - L4-L7 Services
 - L4-L7 Service Graph Templates
 - Router configurations**
 - ASA5585
 - 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

Router configuration - ASA5585

Properties

Name: **ASA5585**

Router ID: **3.3.3.3**

Description: optional

تغيير نوع التجاور من L2 إلى L3، كما هو موضح في الصورة:

System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | infra | mgmt

Tenant T1

- Quick Start
- Tenant T1
 - Application Profiles
 - Networking
 - L4-L7 Service Parameters
 - Security Policies
 - Troubleshoot Policies
 - Monitoring Policies
 - L4-L7 Services
 - L4-L7 Service Graph Templates
 - ASA5585_SGT**
 - Function Node - N1
 - consumer
 - provider
 - Router configurations
 - 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

L4-L7 Service Graph Template - ASA5585_SGT

Properties

Name: **ASA5585_SGT**

Template Name: **UNSPECIFIED**

Configuration Issues:

Description: optional

Label:

Function Nodes:	Name	Function Name	Function Type	Description
N1		CISCO-ASA-1.2/Firewall	GoTo	

Terminal Nodes:	Name	Provider/Consumer	Description
T1		Consumer	
T2		Provider	

Connections:	Name	Connected Nodes	Unicast Route	Adjacency Type	Description
C1		N1, T1	True	L3	
C2		N1, T2	True	L3	

تطبيق قالب الرسم البياني للخدمة، كما هو موضح في الصورة:

System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | infra | mgmt

Tenant T1

Quick Start

Tenant T1

- Application Profiles
- Networking
- L4-L7 Service Parameters
- Security Policies
- Troubleshoot Policies
- Monitoring Policies
- L4-L7 Services
- L4-L7 Service Graph Templates
 - ASA5585_SGT
 - Apply L4-L7 Service Graph Template
 - Edit L4-L7 Service Graph Template
 - L4-L7 Device Delete
 - Imported Del Remove Related Objects Of Graph Template
 - Devices Sele Save as ...
 - Deployed Gr Post ...
 - Deployed Devices
 - Inband Management Configuration for L4-L7 devices
 - Device Managers
 - Chassis

L4-L7 Service Graph Template - ASA5585_SGT

ASA5585 Information

Firewall: Routed

Profile: ASA5585_FP

قم بإرفاق الرسم البياني للخدمة بالعقد، كما هو موضح في الصورة:

System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | infra | mgmt

Tenant T1

Quick Start

Tenant T1

- Application Profiles
- Networking
- L4-L7 Service Parameters
- Security Policies
- Troubleshoot Policies
- Monitoring Policies
- L4-L7 Services
- L4-L7 Service Graph Templates
 - ASA5585_SGT
 - Apply L4-L7 Service Graph Template
 - Edit L4-L7 Service Graph Template
 - L4-L7 Device Delete
 - Imported Del Remove Related Objects Of Graph Template
 - Devices Sele Save as ...
 - Deployed Gr Post ...
 - Deployed Devices
 - Inband Management Configuration for L4-L7 devices
 - Device Managers
 - Chassis

Apply L4-L7 Service Graph Template To EPGs

STEP 1 > Contract

1. Contract 2. Graph

Config A Contract Between EPGs

EPGs Information

Consumer EPG / External Network: T1/N3K-1_L3OUT/N3K-1_EXT_N1

Provider EPG / External Network: T1/N3K-2_L3OUT/N3K-2_EXT_N1

Contract Information

Contract: Create A New Contract

Contract Name: PERMIT_ALL

No Filter (Allow All Traffic):

PREVIOUS NEXT CANCEL

System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | infra | mgmt

Tenant T1

Quick Start

Tenant T1

- Application Profiles
- Networking
- L4-L7 Service Parameters
- Security Policies
- Troubleshoot Policies
- Monitoring Policies
- L4-L7 Services
- L4-L7 Service Graph Templates
 - ASA5585_SGT
 - Apply L4-L7 Service Graph Template
 - Edit L4-L7 Service Graph Template
 - L4-L7 Device Delete
 - Imported Del Remove Related Objects Of Graph Template
 - Devices Sele Save as ...
 - Deployed Gr Post ...
 - Deployed Devices
 - Inband Management Configuration for L4-L7 devices
 - Device Managers
 - Chassis

Apply L4-L7 Service Graph Template To EPGs

STEP 2 > Graph

1. Contract 2. Graph 3. ASA5585 Parameters

Config A Service Graph

Device Clusters

T1/ASA5585 (Managed Firewall)

Graph Template: T1/ASA5585_SGT

ASA5585 Information

Firewall: routed

Profile: ASA5585_FP

Router Config: T1/ASA5585

Consumer Connector

Type: General Route Peering

L3 Ext Network: T1/ASA_OUT_L3OUT/ASA_OUT_EXT_NET

Cluster Interface: outside

Provider Connector

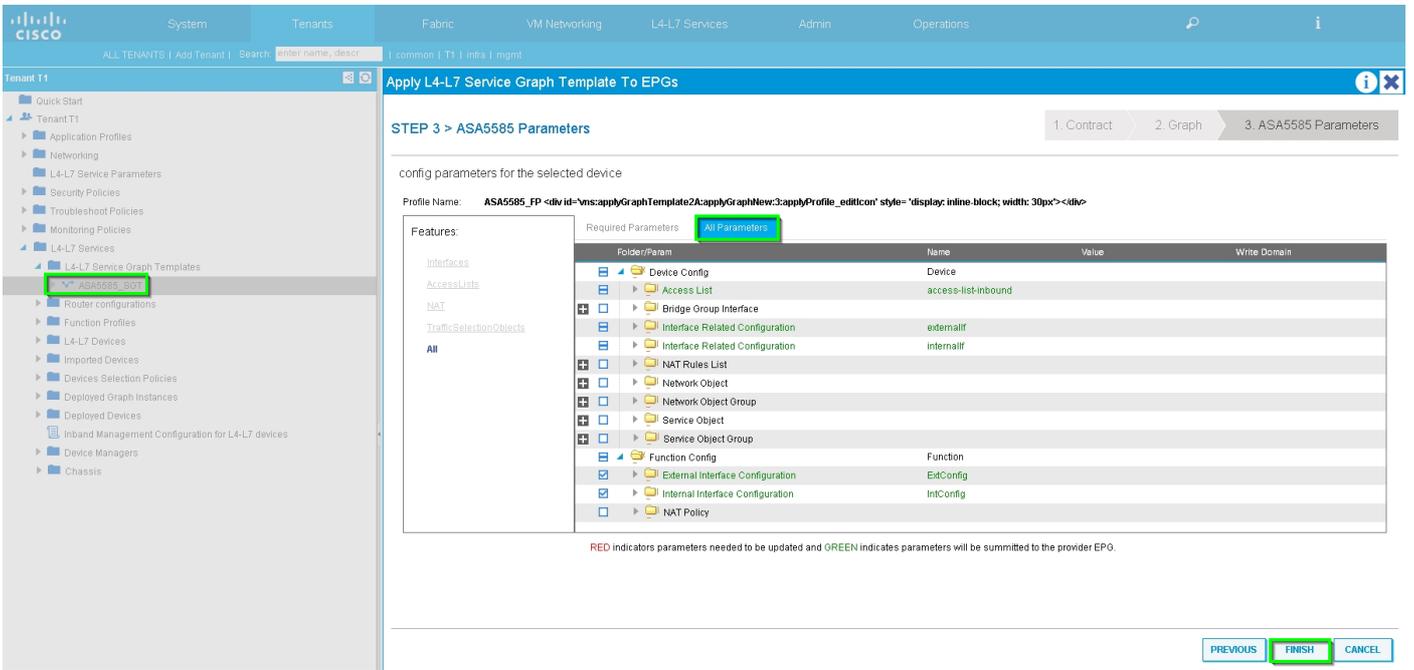
Type: General Route Peering

L3 Ext Network: T1/ASA_IN_L3OUT/ASA_IN_EXT_NET

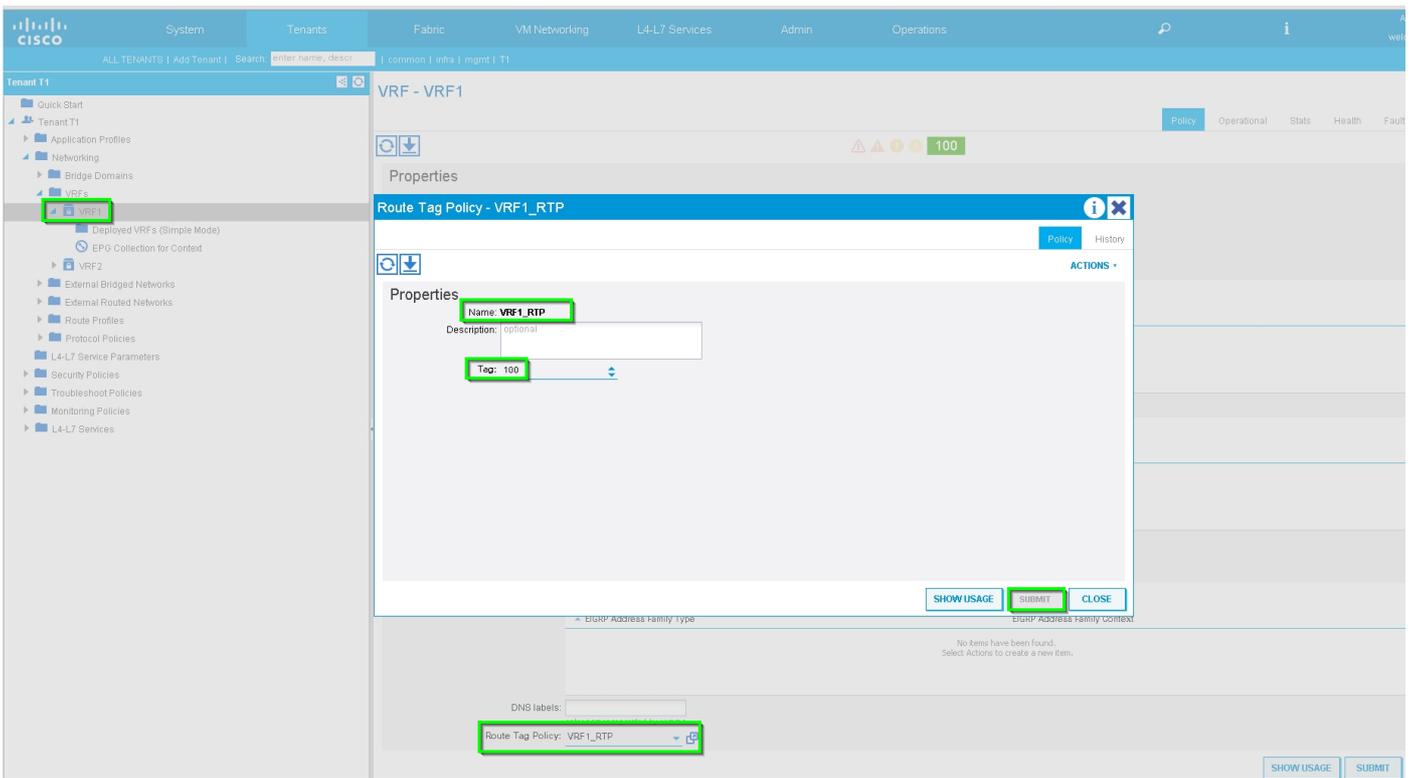
Cluster Interface: inside

PREVIOUS NEXT CANCEL

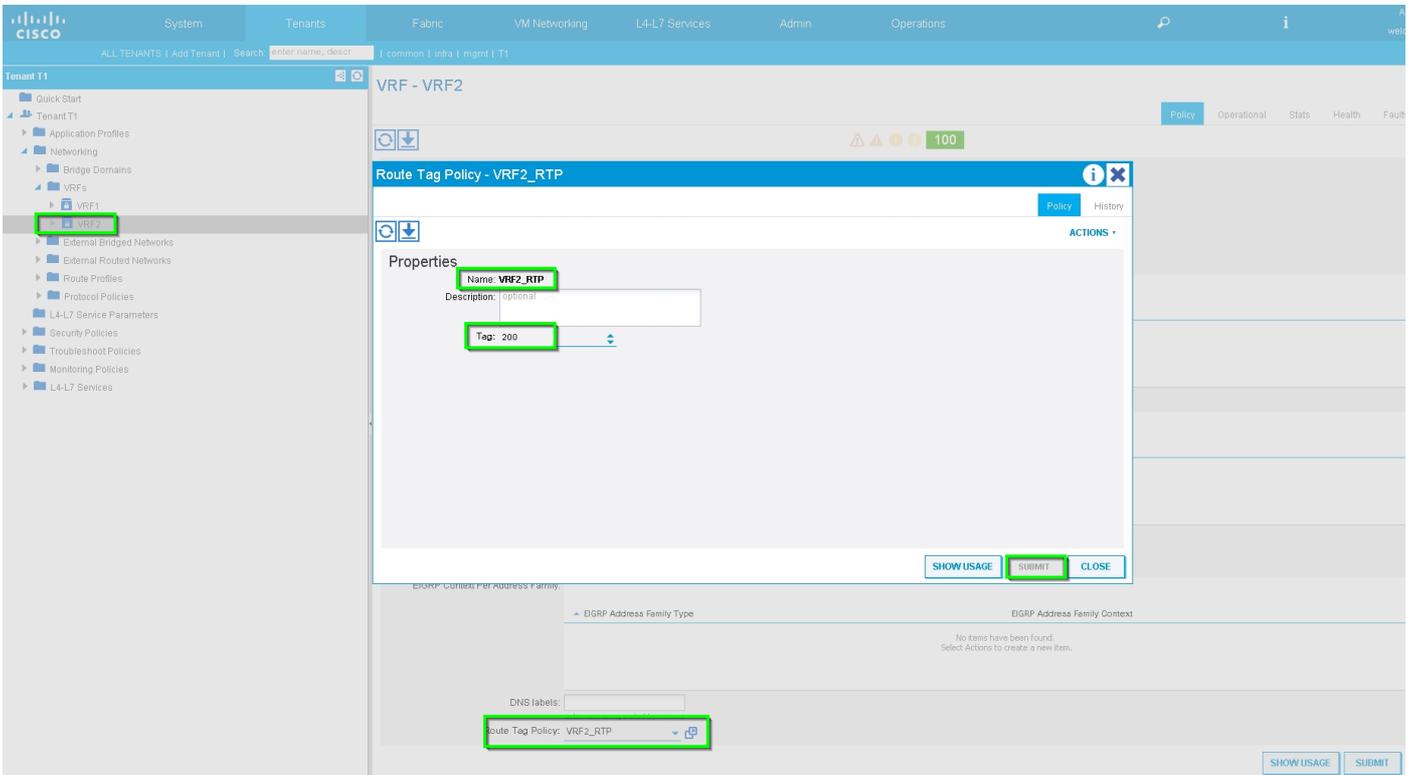
قم بإضافة/تغيير المعلمة L4-L7 إذا لزم الأمر، كما هو موضح في الصورة:



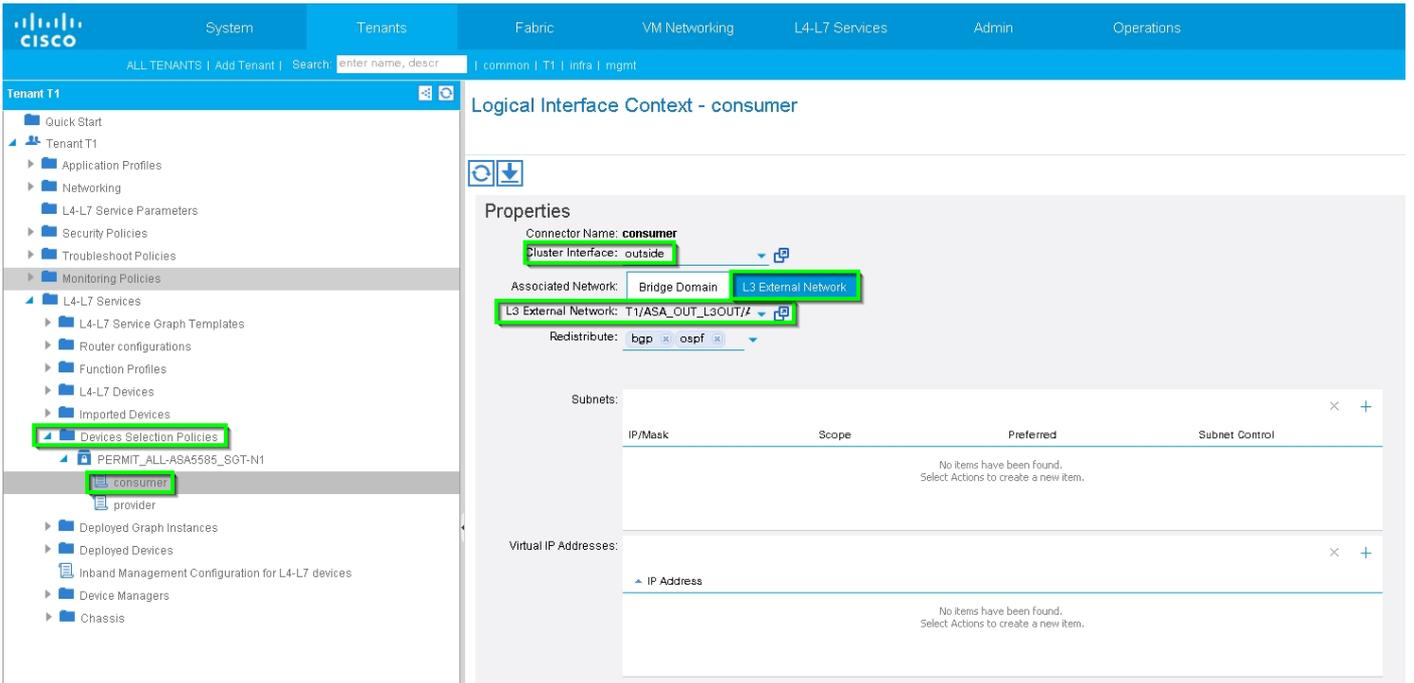
الخطوة 7: سياسة علامة المسار، قم بتكوين سياسة علامة المسار ل (VRF1 Tag:100)، كما هو موضح في الصورة:



تكوين سياسة علامة المسار ل VRF2 (العلامة:200)، كما هو موضح في الصورة:



الخطوة 8: تحقق من الحالة وتحقق من سياسة تحديد الجهاز، كما هو موضح في الصورة:



System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | infra | mgmt

Tenant T1

Logical Interface Context - provider

Properties

Connector Name: provider

Cluster Interface: inside

Associated Network: Bridge Domain L3 External Network

L3 External Network: T1/ASA_IN_L3OUT/AS

Redistribute: bgp ospf

Subnets:

IP/Mask	Scope	Preferred	Subnet Control
No items have been found. Select Actions to create a new item.			

Virtual IP Addresses:

IP Address
No items have been found. Select Actions to create a new item.

تحقق من مثل الرسم البياني الذي تم نشره، كما هو موضح في الصورة:

System Tenants Fabric VM Networking L4-L7 Services Admin Operations

ALL TENANTS | Add Tenant | Search: enter name, descr | common | T1 | infra | mgmt

Tenant T1

Function Node - N1

Policy Faults Hist

Properties

Name: N1

Function Type: GoTo

Devices: ASA5585

Cluster Interfaces	Name	Concrete Interfaces	Encap
inside		ASA5585_Device_1f(0)gabitEthernet0/1	unknown
outside		ASA5585_Device_1f(0)gabitEthernet0/0	unknown

Function Connectors	Name	Encap	Class ID
consumer		vlan-101	32773
provider		vlan-102	49156

Folders And Parameters

Basic Parameters All Parameters

Meta Folder/Param Key	Name	Value	Override Name/Value To
Features:			

Deployed Devices

Device Name	VRF
ASA5585	none

Device OSPF Configurations

Name	Enable	Context Name	Address Family	Area	Area Control	Area Type	Networks
ASA_IN_L3OUT_area_0	True	VRF2	IPv4	Backbone area	Send redistributed LSAs into NSSA area Originate consumer LSA	Regular area	ASA_IN_EXT_NET (10.10.10.0/24)
ASA_OUT_L3OUT_area_0	True	VRF1	IPv4	Backbone area	Send redistributed LSAs into NSSA area Originate summary LSA	Regular area	ASA_OUT_EXT_NET (20.20.20.0/24)

التحقق من الصحة واستكشاف الأخطاء وإصلاحها

تكوين APIC للمستأجر:

```
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
        l3out ASA_IN_L3OUT
            vrf member VRF2
            exit
        l3out ASA_OUT_L3OUT
            vrf member VRF1
            exit
        l3out N3K-1_L3OUT
            vrf member VRF1
            exit
        l3out 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-l3 epg ASA_IN_EXT_NET l3out ASA_IN_L3OUT
        vrf member VRF2
        match ip 10.10.10.0/24
        exit
    external-l3 epg ASA_OUT_EXT_NET l3out ASA_OUT_L3OUT
        vrf member VRF1
        match ip 20.20.20.0/24
        exit
    external-l3 epg N3K-1_EXT_NET l3out N3K-1_L3OUT
        vrf member VRF1
        match ip 10.10.10.0/24
        contract consumer PERMIT_ALL
        exit
    external-l3 epg N3K-2_EXT_NET l3out 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#

```

:التحقق من علاقة OSPF المجاورة وجدول التوجيه على صفحة 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
FULL/BDR        02:07:19 192.168.1.1   Vlan8 1      1.1.1.1
FULL/BDR        00:38:35 192.168.1.5   Vlan9 1      3.3.3.3

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>%'

ubest/mbest: 1/0 ,10.10.10.0/24
via 192.168.1.1, vlan8, [110/8], 01:59:50, ospf-default, intra*
ubest/mbest: 1/0 ,20.20.20.0/24
via 192.168.1.5, vlan9, [110/22], 00:30:20, ospf-default, inter*
ubest/mbest: 2/0, attached, direct ,100.100.100.100/32
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*
ubest/mbest: 1/0, attached, direct ,192.168.1.0/30
via 192.168.1.2, vlan8, [1/0], 02:35:53, direct*
ubest/mbest: 1/0, attached ,192.168.1.2/32
via 192.168.1.2, vlan8, [1/0], 02:35:53, local, local*
ubest/mbest: 1/0, attached, direct ,192.168.1.4/30
via 192.168.1.6, vlan9, [1/0], 02:20:53, direct*
ubest/mbest: 1/0, attached ,192.168.1.6/32
via 192.168.1.6, vlan9, [1/0], 02:20:53, local, local*

```

```

ubest/mbest: 1/0 ,192.168.1.8/30
via 192.168.1.5, vlan9, [110/14], 00:30:20, ospf-default, intra*
ubest/mbest: 1/0 ,200.200.200.200/32
via 192.168.1.5, vlan9, [110/15], 00:30:20, ospf-default, intra*
التحقق من علاقة OSPF المجاورة وجدول التوجيه على صفحة 102:

```

```

leaf102# show ip ospf neighbors vrf T1:VRF2
OSPF Process ID default VRF T1:VRF2
Total number of neighbors: 2
Neighbor ID      Pri State           Up Time  Address           Interface
FULL/BDR        00:37:07 192.168.1.9     Vlan14 1           3.3.3.3
FULL/BDR        02:09:59 192.168.1.13   Vlan15 1           2.2.2.2

```

```

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>%'

```

```

ubest/mbest: 1/0 ,10.10.10.0/24
via 192.168.1.9, vlan14, [110/22], 00:35:22, ospf-default, inter*
ubest/mbest: 1/0 ,20.20.20.0/24
via 192.168.1.13, vlan15, [110/8], 02:08:13, ospf-default, intra*
ubest/mbest: 1/0 ,192.168.1.4/30
via 192.168.1.9, vlan14, [110/14], 00:35:22, ospf-default, intra*
ubest/mbest: 1/0, attached, direct ,192.168.1.8/30
via 192.168.1.10, vlan14, [1/0], 02:14:29, direct*
ubest/mbest: 1/0, attached ,192.168.1.10/32
via 192.168.1.10, vlan14, [1/0], 02:14:29, local, local*
ubest/mbest: 1/0, attached, direct ,192.168.1.12/30
via 192.168.1.14, vlan15, [1/0], 02:09:04, direct*
ubest/mbest: 1/0, attached ,192.168.1.14/32
via 192.168.1.14, vlan15, [1/0], 02:09:04, local, local*
ubest/mbest: 2/0, attached, direct ,200.200.200.200/32
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*

```

التحقق من التكوين، وعلاقة جوار OSPF وجدول التوجيه على 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
!
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
!
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 0
log-adj-changes
!

```

```

ASA5585# sh ospf neighbor

```

Neighbor ID	Pri	State	Dead Time	Address	Interface
FULL/DR	0:00:38	192.168.1.6	externalIf	1 100.100.100.100	
FULL/DR	0:00:33	192.168.1.10	internalIf	1 200.200.200.200	

```

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

```

```

O IA 10.10.10.0 255.255.255.0
via 192.168.1.6, 00:22:57, externalIf [110/18]
O IA 20.20.20.0 255.255.255.0
via 192.168.1.10, 00:22:47, internalIf [110/18]
O 200.200.200.200 255.255.255.255
via 192.168.1.10, 00:22:47, internalIf [110/11]

```

```

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
:التحقق من التكوين، وجدول علاقة جوار OSPF والتوجيه على 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
Neighbor ID      Pri State      Up Time  Address      Interface
FULL/DR          01:36:24 192.168.1.2  Eth1/47 1    100.100.100.100

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)
intra)(D) area 0.0.0.1) 10.10.10.0/24
via 10.10.10.0/Eth1/21* , cost 4
inter)(R) area 0.0.0.1) 20.20.20.0/24
via 192.168.1.2/Eth1/47 , cost 62
intra)(R) area 0.0.0.1) 100.100.100.100/32
via 192.168.1.2/Eth1/47 , cost 41
intra)(D) area 0.0.0.1) 192.168.1.0/30
via 192.168.1.1/Eth1/47* , cost 40

```

:N3K-2 التحقق من التكوين، وجدول علاقة جوار OSPF والتوجيه على 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

interface Ethernet1/47
ip router ospf 1 area 0.0.0.1

```

```

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
FULL/DR         01:43:50 192.168.1.14   Eth1/47 1    200.200.200.200

```

```

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)
intra)(D) area 0.0.0.0) 2.2.2.0/30
via 2.2.2.0/Lo0* , cost 1
inter)(R) area 0.0.0.1) 10.10.10.0/24
via 192.168.1.14/Eth1/47 , cost 62
intra)(D) area 0.0.0.1) 20.20.20.0/24
via 20.20.20.0/Eth1/21* , cost 4
intra)(D) area 0.0.0.1) 192.168.1.12/30
via 192.168.1.13/Eth1/47* , cost 40

```

التحقق من قواعد عامل تصفية العقد على الورقة وعدد مرات ضرب الحزمة:.

```

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]

```

إختبار قابلية الوصول بين N3K-2 و N3K-1

```

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
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 64

```

--- ping statistics 20.20.20.1 ---

```
packets transmitted, 5 packets received, 0.00% packet loss 5
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
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 64
```

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

مرفق هو ملف تكوين XML للمستأجر وملف تعريف وظيفة ASA، المستخدم لهذا العرض التوضيحي.

ةمچرتل هذه ل و ح

ةلأل تاي نقتل ن م ة و مچ م ادخت ساب دن تسم ل ا اذ ه Cisco ت مچرت
م ل ا ل ا ا ن ا ع مچ ي ف ن ي م د خ ت س م ل ل م ع د ي و ت ح م م ي د ق ت ل ة ي ر ش ب ل و
ا م ك ة ق ي ق د ن و ك ت ن ل ة ل ا ة مچرت ل ض ف ا ن ا ة ظ ح ا ل م ي ج ر ي . ة ص ا خ ل ا م ه ت غ ل ب
Cisco ي ل خ ت . ف ر ت ح م مچرت م ا ه م د ق ي ي ت ل ا ة ي ف ا ر ت ح ا ل ا ة مچرت ل ا ع م ل ا ح ل ا و ه
ي ل ا م ا د ع و ج ر ل ا ب ي ص و ت و ت ا مچرت ل ا ه ذ ه ة ق د ن ع ا ه ت ي ل و ئ س م Cisco
Systems (ر ف و ت م ط ب ا ر ل ا) ي ل ص ا ل ا ي ز ي ل ج ن ا ل ا دن ت س م ل ا