Konfigurieren der IP SLA-Funktion mit L3out zur Verfolgung der statischen Route

Inhalt

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Einleitung

In diesem Dokument wird beschrieben, wie das Internet Protocol Service Level Agreement (IPSLA) in der Cisco Application Centric Infrastructure (ACI) so konfiguriert wird, dass statische Routen nachverfolgt werden, die von einem L3out gelernt werden und nur dann an ein anderes L3out weitergegeben werden, wenn das Subnetz vom ersten L3out aus erreichbar ist.

Voraussetzungen

Anforderungen

Cisco empfiehlt, dass Sie über Kenntnisse in folgenden Bereichen verfügen:

- ACI-Software Version 4.1 oder höher
- L3out für externes Gerät oder Server
- EX- und -FX-Chassis
- Verfolgen Sie die Route, um das Internet Control Message Protocol (ICMP) und TCP-Tests zu verwenden (in diesem Beispiel wird die ICMP-Prüfung verwendet).

Hinweis: ACI-Image-IP SLA wird von allen Cisco Nexus Switches der zweiten Generation unterstützt, die Chassis der Serien -EX und -FX enthalten. Lesen Sie <u>Richtlinien und</u> <u>Einschränkungen für IP SLA.</u>

Verwendete Komponenten

Die Informationen in diesem Dokument basierend auf folgenden Software- und Hardware-Versionen:

- ACI Version 5.2(2f)
- N9K-C93180YC-FX

Die Informationen in diesem Dokument beziehen sich auf Geräte in einer speziell eingerichteten Testumgebung. Alle Geräte, die in diesem Dokument benutzt wurden, begannen mit einer gelöschten (Nichterfüllungs) Konfiguration. Wenn Ihr Netzwerk in Betrieb ist, stellen Sie sicher, dass Sie die potenziellen Auswirkungen eines Befehls verstehen.

Hintergrundinformationen

Einige Server haben mehrere Schnittstellen (wie ein Loopback), die über die ACI über die physische IP-Adresse des Servers erreichbar sind. In diesem Fall können Sie eine Anforderung haben, eine statische Route hinzuzufügen und extern anzukündigen, jedoch nur, wenn die physische IP-Adresse des Servers erreichbar ist. Daher ist die IP SLA-Trackfunktion eine unvermeidliche Konfiguration, die nur durch die L3Out-Konfiguration für diese Server erreicht werden kann. Derzeit werden die IP SLA-Trackfunktionen für die <u>statische Route in einer Bridge-Domäne</u> nicht unterstützt. In diesem Dokument werden nach Serverbeispielen und Konfigurationen für Transit-Routen gesucht, die IP SLA verwenden.

Konfigurieren

- L3out in Richtung Server und zu N3K-Geräten.
- Konfigurieren Sie die IP SLA-Spur für die physische IP-Adresse des Servers.
- Konfigurieren Sie die statische Route unter L3Out für Server, die IP SLA-Spur verwenden und von einem anderen L3Out an N3K weitergeben.

Netzwerkdiagramm



ACI Lab-Topologie

Konfigurationen

Übersichtsschritte:

ACI-Fabric-Richtlinien:

- Erstellen eines Vertrags (in diesem Beispiel ein gemeinsamer Standardfilter, der die Verwendung des gesamten Datenverkehrs ermöglicht, Sie können jedoch einen bestimmten, lokal im selben Tenant erstellten Filter verwenden, um bestimmten Datenverkehr zuzulassen. in einem solchen Fall sollten Sie sicherstellen, dass Sie das Protokoll zulassen, das wir für IP SLA Track verwenden).
- Erstellen Sie ein neues L3out für Server 10.100.0.100/24 (ACI-seitiges SVI 550 mit IP-Adresse 10.100.0.254).
- Erstellen von IP SLA Track Policies (IP SLA-Überwachungsrichtlinie, Track Members Policy, Track List Policy)
- Hinzufügen einer statischen Route unter L3out zum Server mit IP SLA-Tracklist.
- Erstellen Sie ein neues L3out in Richtung des N3K-Geräts, das BGP verwendet. (EBGP) ACI AS 65535 und N3K AS 65536
- Statische Route von L3Out in Richtung N3K exportieren.
- Überprüfen der Konfiguration und Erreichbarkeit

 Erstellen eines Vertrags (in diesem Beispiel verwenden Sie einen gemeinsamen Standardfilter, der den gesamten Datenverkehr zulässt. Sie können jedoch einen bestimmten, lokal im selben Tenant erstellten Filter verwenden, um bestimmten Datenverkehr zuzulassen. In diesem Fall müssen Sie jedoch sicherstellen, dass Sie Protokoll zulassen, das wir für den IP SLA-Programmzweig verwenden).

| TN_D (C)() | Contract - Contract_L3out_BGP | 0.0 |
|-----------------------------------|---|----------------------|
| → | Summary Topology Policy Peer Entities Contract Exce | ption Faults History |
| > En Networking | 0000 | 0 ± %- |
| v ⊒ Sandard | Properties Name: Contract_L3out_BGP | ^ |
| Wei Contract_L3out_BGP Taboos | Global Alae: | |
| > 🖬 Imported > 🖿 Filters | Scope: VRF v QeS Class: Unspecified v | |
|) 🔤 Policies) 🔤 Services | Target DSCP: Utspecified Target CBCP Maxing works only if the QoS Class is set | |
| Security (Beta) | Description: option at | |
| | Annotations: 😝 Cilcit to add a new innotation | |
| | Subjects | ± + |
| | Alas Fibers Description | |
| | Allow_Any common/default | _ |

Vertrag erstellen

2. Erstellen Sie ein neues L3out in Richtung Server 10.100.0.100/24 (ACI-seitiges SVI 550 mit IP-Adresse 10.100.0.254).

| TN_D (*) (*) | L3 Outside - L3out_Static_server |
|---|---|
| ∨ III TN_D | |
| > E Application Profiles | |
| V I Networking | |
| > 🚞 Bridge Domains | 0.0.0 |
| > 🖬 VRFs | |
| > 🚞 L2Outs | Properties |
| L3Outs | Alias |
| > 🛧 L3out_N3K_BGP | Description: ontional |
| Carl L3out_Static_server | |
| > 🚞 Logical Node Profiles | |
| > 🚞 External EPGs | Annotations: Click to add a new annotation |
| Route map for import and export route control | Global Alias: |
| > 🔤 SR-MPLS VRF L3Outs | Provider Label: |
| > 🔚 Dot1Q Tunnels | Consumer Label: select an option |
| V 🖿 Contracts | Target DSCP: Unspecified |
| ✓ | |
| > 🔁 Contract_L3out_BGP | PIMv6: |
| > 🧮 Taboos | Route Control Enforcement: Import |
| > 🚞 Imported | VRF: VRF_S |
| Filters | Resolved VRF: TN_D/VRF_S |
| > 🚞 Policies | L3 Domain: TN_D_L3Dom |
| > 🚍 Services | Route Profile for Interleak: select a value |
| E Security (Beta) | Route Profile for Redistribution: |
| | ▲ Source |
| | |
| | |
| | |
| | Address Family Type |
| | Address Family Type |
| | |
| | |
| | |

L3out erstellen



Anfügen von Knoten an L3out

| TN_D D | O Logical | gical Interface Profile - L3out_Static_server_interfaceProfile | | | | | | | | | 00 |
|--------------------------------------|-----------|--|-----------|-----------|-------------------------|-----------------|-------------------|----------------|-------------------|-----------|-----------|
| ~ Щ TN_D | | | | | | | | | Dolice | Enulte | History |
| > 🚞 Application Profiles | _ | | | | | | | | Policy | Paulis | mistory |
| Wetworking | | | | | | | General Routed S | oub-Interfaces | Routed Interfaces | SVI Flor | ating SVI |
| > 🚞 Bridge Domains | | | | | | | | | | | |
| > 🚞 VRFs | 000 | | | | | | | | | | 0 ± |
| > 🚍 L2Outs | | | | | | | | | | | 11 + |
| ~ 🖿 L30us | - Pa | th | Side A IP | Side B IP | Secondary IP Address | IP Address | MAC Address | MTU (bytes) | Encap | Encap Sco | ope |
| L3out_N3K_BGP | Doctor | 101/wb1/2 | | | | 10 100 0 254/24 | 00-22-00-59-10-55 | inharit | ulse_507 | Local | |
| V 🚯 L3out_Static_server | | r/node-101/earl/3 | | | | 10.100.0.254/24 | 00.22.00.10.19.11 | ET PETIC | 4911-207 | LUCA | |
| Logical Node Profiles | | | | | | | | | | | |
| V 😸 L3out_Static_server_nodeProfile | | | | | | | | | | | |
| > 🧮 Configured Nodes | | | | | | | | | | | |
| Logical Interface Profiles | | | | | | | | | | | |
| L3out_Static_server_interfaceProfile | - | | | | | | | | | | |
| V 🚞 External EPGs | | | | | | | | | | | |
| EXT_static_EPG | | | | | | | | | | | |

Anschluss der Schnittstelle an L3out

| TN_D © . | External EPG - D | KT_static_EPG | | | | | | 0.0 |
|---|--------------------------|--------------------------------|---------------------------------|------|-------------|---------------------------|-----------------------|---------------|
| ~ ∰ TN_D | | | | | | Define Orientical | Harden Paules | |
| > Carl Application Profiles | | | | | | Policy Operational | Health Faults | History |
| V 🖬 Networking | | | | | General Con | racts Inherited Contracts | Subject Labels | EPG Labels |
| > 📰 Bridge Domains | 0000 | | | | | | | |
| > 🖬 VRFs | | | | | | | (|) <u>*</u> X* |
| > 🖬 L2Outs | Properties | EXT static EPG | | | | | | |
| V 🖿 L3Outs | Alias | E | | | | | | |
| > 🚯 L3out_N3K_BGP | Annotations | Click to add a new annotation | 0 | | | | | |
| | Global Alias | | | | | | | |
| Logical Node Profiles | Description | c loptional | | | | | | |
| El L3out_Static_server_nodeProfile | | | | | | | | |
| > E Configured Nodes | | | | | | | | |
| Logical Interface Profiles | Contract Excention Ten | r 32771 | | | | | | |
| L3out_Static_server_interfaceProfile | Configured VIDE Name | - 10E P | | | | | | |
| V 🚞 External EPGs | Resolved VRF | : uni/tn-TN_D/ctx-VRF_S | | | | | | |
| EXT_static_EPG | QoS Class | Unspecified | | | | | | |
| Route map for import and export route control | Target DSCP | C Unspecified | | | | | | |
| > 🔤 SR-MPLS VRF L3Outs | Configuration Status | : applied | | | | | | |
| > 🔤 Dot1Q Tunnels | Configuration Issues | E | | | | | | |
| > 🔤 Contracts | Preferred Group Member | Exclude Include | | | | | | |
| > E Policies | Jates Ext. EDO Inclution | Entrand Ibreatoward | | | | | | |
| > 🔤 Services | India Ext-D-G Isolabori | Chemoreo Chemoreo | | | | | | |
| 🔤 Security (Beta) | Subnets | K. | | | | | | · + |
| Or Quick Start | | IP Address | Scope | Name | Aggregate | Route Control Profile | Route Summarization P | olicy |
| | | 0.0.0.0/0 | External Subnets for the Extern | | | | | ~ |
| | | | | | | | | |
| | | | | | | Show U | sage Reset | |

Konfigurieren des externen EPG

| TN_D | 000 | External EPG - | EXT_static_EPG | | | | | | | | 0.0 |
|-------------------------------------|------|---------------------------|----------------------------|--------------|---------------|------------------------|--------------|-----------|---------------------|----------------|------------|
| ~ ∰ TN_D | | | | | | | | 0.0 | Construction of | Harden Fred | |
| > E Application Profiles | | | | | | | | POIR | Operational | Health Fau | ts History |
| V Metworking | | | | | | | General | Contracts | inherited Contracts | Subject Labels | EPG Labels |
| > 🚞 Bridge Domains | | | | | | | | | | | a 1 44 |
| > 🚞 VRFs | | V Healthy OU V | 00 | | | | | | | | 0 ± *** |
| > 🚞 L2Outs | | Name | Tenant | Tenant Alias | Contract Type | Provided / Consumed | QoS Class | State | Label | Sub | ect Label |
| ~ | | B Contract Type: Contract | | | | | | | | | |
| > 📤 L3out_N3K_BGP | | Contract 2nd BGB | TN D | | Contract | Drovidad | Linenacified | formed | | | |
| L3out_Static_server | | CONSIGC_COOL_DOP | IN_D | | CONSIDER | Provided | onspecified | Tormed | | | |
| Logical Node Profiles | | | | | | | | | | | |
| El L3out_Static_server_nodeProfile | | | | | | | | | | | |
| > Configured Nodes | | | | | | | | | | | |
| Logical Interface Profiles | | | | | | | | | | | |
| L3out_Static_server_interfaceProfit | ie · | | | | | | | | | | |
| External EPGs | | | | | | | | | | | |
| DCT_state_EPG | | | | | | | | | | | |
| Vertree en l'Oeuter | | ~ ~ | | | | | | | | | |

Vertrag an L3out anhängen

3. Erstellen von IP SLA Track Policies (IP SLA-Überwachungsrichtlinie, Richtlinie für Track-Member, Track-List-Richtlinie).

IP SLA-Überwachungsrichtlinie:

| TN_D | ©€⊙ | IP SLA Monitoring Policy - ICI | MP_Monitor | | | | | |
|--------------------------|-----|-----------------------------------|--------------|--------|------|--|--|--|
| ✓ | ^ | | | | | | | |
| > E Application Profiles | | | | | | | | |
| > 🚞 Networking | | 8 👽 🛆 🕔 | | | | | | |
| > 🚞 Contracts | | Properties | | | | | | |
| V 🖿 Policies | | Name: | ICMP_Monitor | | | | | |
| Protocol | | Description: | | | | | | |
| > 💳 BFD | | | | | | | | |
| > 🛅 BFD Multihop | | SLA Type: | ICMP TCP | L2Ping | НТТР | | | |
| > 🔄 ND RA Prefix | | SLA Frequency (sec): | 5 | | | | | |
| > 💼 BGP | | Detect Multiplier: | 3 | | | | | |
| > Custom QoS | | Request Data Size (bytes): | 28 | | | | | |
| > 💼 Data Plane Policing | | Type of Service: | 0 | ~ | | | | |
| | | Operation Timeout (milliseconds): | 900 | | | | | |
| > EIGRP | | Threshold (milliseconds): | 900 | | | | | |
| End Point Retention | | Traffic Class Value | 0 | | | | | |
| First Hop Security | | Hano oldo valac. | 0 | \sim | | | | |
| | | | | | | | | |
| IGMP Interface | | | | | | | | |
| IGMP Snoop | | | | | | | | |
| V III P SLA | | | | | | | | |
| F ICMP_Monitor | | | | | | | | |
| > 🖬 Track Lists | | | | | | | | |
| > 🔚 Track Members | | | | | | | | |

Konfigurieren der IP SLA-Überwachungsrichtlinie

IP SLA Track-Member:

| TN_D | 000 | Track Member - S | Server_Phys | ical_IP | | | | | | | | 0.0 |
|------------------------------|-----|--|---|-------------------------|------------------|--|------------------|--------------------------------|--------|-------|--------|---------|
| ~ ∰ TN_D | ~ | | | | | | | | Deter | 01-1- | Freder | |
| > 🚞 Application Profiles | | | | | | | | | Policy | Stats | Faults | History |
| > 🖿 Networking | | | | | | | | | | | 0 | ÷ %- |
| > 🚞 Contracts | | Properties | | | | | | | | | | |
| V E Policies | | | Name: | Server_Physical_IP | | | | | | | | |
| V 🚍 Protocol | | | Description: | | | | | | | | | |
| > 🚍 BFD | | | | | | | | | | | | |
| > 🚍 BFD Mutthop | | Track ID Of Object To Be Tracked: 2000 | | | | | | | | | | |
| > 🚞 ND RA Prefix | | Destination IP | Destination IP To Be Tracked 10.100.0.100 | | | | | | | | | |
| > 🚍 BGP | | Scope of | Track Member: | L3Out - L3out_Static_se | INA 🗢 🚱 | | | | | | | |
| > 🚞 Custom QoS | | | IPSLA Policy: | ICMP_Monitor | V 🚱 | | Statu | us of destination track IP | | | | |
| > 🚞 Data Plane Policing | | | Deployments: | Node ID | Operation Number | | Operation Status | Latest Operation Error Message | | | | |
| > 🚍 DHCP | | | | Pod-1/Node-101 | 2000 | | Reachable | OK | | | | |
| > 🚞 EIGRP | | | | | | | | | | | | |
| > 🚞 End Point Retention | | | | | | | | | | | | |
| > 🚍 First Hop Security | | | | | | | | | | | | |
| > 🚍 HSRP | | | | | | | | | | | | |
| > 🔤 IGMP Interface | | | | | | | | | | | | |
| > 🧮 IGMP Snoop | | | | | | | | | | | | |
| V 🚍 IP SLA | | | | | | | | | | | | |
| V IP SLA Monitoring Policies | | | | | | | | | | | | |
| F ICMP_Monitor | | | | | | | | | | | | |
| > 🚞 Track Lists | | | | | | | | | | | | |
| Track Members | | | | | | | | | | | | |
| E Server_Physical_IP | | | | | | | | | | | | |

Hinzufügen von IP zur Richtlinienüberwachung

Track List Policy:

| TN_D | 00 | Track List - Tracking_Server_Physical_JP | | | | 0.0 |
|------------------------------|----------|---|--------|-------|--------|---------|
| ✓ III TN_D | <u>^</u> | | | | | |
| > Application Profiles | | | Policy | Stats | Faults | History |
| > 🧮 Networking | | | | | 0 | ± %- |
| Contracts | | Properties | | | | |
| 🖂 🚞 Policies | | Name: Tracking_Server_Physical_P | | | | |
| V 🚞 Protocol | | Description: optional | | | | |
| > 🚍 BFD | | | | | | |
| > 🧮 BFD Multihop | | Type of Track List: Threshold percentage | | | | |
| > 🥅 ND RA Prefix | | Percentage Up (percentage): 1 | | | | |
| > 🚞 BGP | | Weicentage Up Model be greater than the centage Down | | | | |
| > 🚞 Custom QoS | | Percentage Jown (percentage): 0 Percentage Down toold be less than Percentage Up | | | | |
| > 🚞 Data Plane Policing | | Track list to track member | | | | 11 + |
| > 🚞 DHCP | | readon: Track Member | | | | |
| > 🚞 Eigra | | TN_D/Server_Physical_JP | | | | |
| > 🧮 End Point Retention | | | | | | |
| > 🧮 First Hop Security | | | | | | |
| > 🚞 HSRP | | | | | | |
| > 🧰 IGMP Interface | | | | | | |
| > 🥅 IGMP Snoop | | | | | | |
| V 🚞 IP SLA | | | | | | |
| V IP SLA Monitoring Policies | | | | | | |
| E ICMP_Monitor | | | | | | |
| Track Lists | | | | | | |
| Tracking_Server_Physical_IP | | | | | | |
| Track Members | | | | | | |
| Server_Physical_IP | | | | | | |

Konfiguration der Track-Liste

4. Konfigurieren der statischen Route unter L3out zum Server mithilfe einer neu erstellten IP SLA-Tracklist-Richtlinie.

| cisco APIC | | | | | | | admin 🔍 | 00 | 0 0 |
|-------------------------------------|-----------------------|------------------------------------|--------------------------------|--|--------------------------------------|---|-------------------------|--------|---------|
| System Tenants Fabric | Virtual Networking | Admin Opera | itions Apps Inte | grations | | | | | |
| ALL TENANTS Add Tenant Tenant ! | Search: name or descr | common | TN_D donwang2 | SERVERS edge | | | | 1 | |
| TN_D | ര | | Accoriation | | | | | | ~ ~ |
| ✓ Ⅲ TN_D | | 110007 | 1000000000 | | | | | | 00 |
| > Application Profiles | | | | | | | Policy | Faults | History |
| Networking | | 8 | | | | | | 0 | ± %- |
| > 🚞 Bridge Domains | | Prope | rties | | | | | | |
| > 🖿 VRFs | | | Node ID: | topology/pod-1/node-101 | | | | | ^ |
| > 🔛 L2Outs | | | Router ID: | 101.101.101.101 | | | | | |
| 🖂 🚍 L3Outs | | Use | Router ID as Loopback Address: | This setting will be ignored if loopback addre | sses are defined in the table below. | | | | |
| > 🛧 L3out_N3K_BGP | | | Loopback Addresses: | | | | | | ÷ + |
| L3out_Static_server | | | | ▲ IP | | | | | |
| Logical Node Profiles | | | | | | No items have been found. | | | |
| I.3out_Static_server_nod | seProfile | | | | | Select Actions to create a new item. | | | |
| Configured Nodes | | | | | | | | | |
| > 🖝 topology/pod-1/m | 0010-101 | | | | | | | | _ |
| External EDGs | ** | | Intersite Loopback Addresses. | | | | | | · + |
| Brate map for import and ex | most mute control | | | * IP | | | | | _ |
| SR-MPLS V8FL30uts | | | | | | No items have been found. Select Actions to create a new item. | | | |
| > Dot1Q Tunnels | | | | | | | | | |
| > E Contracts | Lea | 101 | | | | | | | |
| > E Policies | N9K-C93 15. | 180YC-FX ((2f) | Static Routes: | | | | | | · + |
| > 🚍 Services | | Eth1/3 13out Static server | | IP Address | Description | Track Policy | Next Hop IP | | |
| 🚍 Security (Beta) | 13Out | Encap vlan 507 | | 200.0.0.1/32 | | TN_D/Tracking_Server_Pt | vysical IP 10.100.0.100 | | |
| > C+ Quick Start | LSOUL | 10.100.0.254/24 VRF: TN_D:VRF_S | | | Static route added wit | h IP SLA Track which tracking physical IP of se | erver. | | |
| | | | | | | | | | |
| | Physical IP: 10 | 100.0.100/24 | | | | | | • | ~ |
| | Loopback 507 | 200.0.0.1/32 | | | | | | | |
| | | | | | | | Show Usage | | |

Konfigurieren der statischen Route unter L3out

5. Erstellen Sie ein neues L3out zum N3K-Gerät, das Border Gateway Protocol (BGP) verwendet. (EBGP) ACI AS 65535 und N3K AS 65536.

| TN_D | 00 | L3 Outside - L3out_N3K_BGP |
|--|----|--|
| ע_אד | | |
| > Application Profiles | | |
| 🗸 💳 Networking | | |
| > 🔚 Bridge Domains | | |
| > 🖿 VRFs | | |
| > 🔚 L2Outs | | Properties |
| V 🖿 L3Outs | | Name: L3out_N3K_BGP |
| V 🚯 L3out_N3K_BGP | | Paraletter antional |
| V 🖬 Logical Node Profiles | | Description: Optional |
| V E L3out_BGP_nodeProfile | | |
| > 🚞 Configured Nodes | | Annotations: 🕀 Click to add a new annotation |
| 🗸 🚞 Logical Interface Profiles | | Global Alias: |
| V 🗧 L3out_N3K_BGP_interfaceProfile | | Provider Label: |
| BGP Peer 100.0.0.2- Node-102/1/3 | | Consumer Label: select an option |
| ✓ ➡ External EPGs | | Target DSCP: Unspecified |
| EXT_N3K_BGP_EPG | | |
| > The second | | PIMv6: |
| > 合 L3out_Static_server | | Route Control Enforcement: Import |
| > 🔤 SR-MPLS VRF L3Outs | | VRE: VRE S |
| > 🚍 Dot1Q Tunnels | | Resolved VRE TN D/VRE S |
| > 🚞 Contracts | • | L3 Domain: TN_D_L3Dom |
| > 💳 Policies | | Route Profile for Interleak: select a value |
| > 💳 Services | | Route Profile for Redistribution: |
| 🚞 Security (Beta) | | ▲ Source |
| > 🕞 Quick Start | | |
| | | |
| | | |
| | | _ |
| | | Enable BGP/EIGRP/OSPF BGP OSPF EIGRP |
| | | Route Control for Dampening: |
| | | Address Family Type |
| | | |

Konfigurieren des BGP-Protokolls

| TN_D (C) | Logical Node Profile - L3out_BGP_no | deProfile | | | | | | | |
|---|--|----------------------|-----------------|-----------------------|--|--|--|--|--|
| ~ III | | | | | | | | | |
| > 🚞 Application Profiles | | | | | | | | | |
| Networking | | | | | | | | | |
| > 🧱 Bridge Domains | Properties | | | | | | | | |
| > 🧮 V#Fs | Name: L3out, | _BGP_nodeProfile | | | | | | | |
| > 🔤 120us | Description: optic | | | | | | | | |
| V 😂 Lätturs | | | | | | | | | |
| V 🔿 LSout_NSK_BSP | Alas: | | | | | | | | |
| 🗸 🚍 Logical Node Ptofiles | Target DSCP: Unsp | edited 🗸 | | | | | | | |
| V P L3out_BOP_nodeProfile | Nodes: | | | | | | | | |
| > 🔛 Configured Nodes | - N | ode D | Studer (D | Loopback Address | | | | | |
| Logical Interface Profiles | topo | alagu/pod=1/hode=102 | 102.102.102.102 | 102.102.102.102 | | | | | |
| I.Sout_NIK_BGP_interfaceProfile | | | | | | | | | |
| BSP Peer 100.0.0.2 - Node-102/1/3 | | | | | | | | | |
| Eternal EPCs | | | | | | | | | |
| ECT_NOK_BOP_EPQ | | | | | | | | | |
| E Route map for import and export route control | | | | | | | | | |
| > 📤 L3out_Static_server | BGP Peer Connectivity: | | | | | | | | |
| > 🔤 SR-MPLS VIF LOOUS | Peer | IP Address | Peer Controls | Interface | | | | | |
| > 🔛 Dot10 Turnets | 100. | 0.0.2 | | Pod-1/Node-102/eth1/3 | | | | | |
| > Contracts | | | | | | | | | |
| > E Policius | | | | | | | | | |
| | | | | | | | | | |
| E Security (Beta) | | | | | | | | | |
| > ()• Qaox Start | | | | | | | | | |
| | Create BED Multiture Protocol Profile: | | | | | | | | |
| | Create or or manalop Protocol Protec. | | | | | | | | |

BGP-Peer-Profil



BGP-Peer-Richtlinie konfigurieren



Konfigurieren des logischen Schnittstellenprofils unter L3Out

| cisco APIC | | 0 0 0 0 0 0 minte | | | | | | |
|--|--|--|--|--|--|--|--|--|
| System Tenants Fabric Virtual Networking Adm | System Terments Fabric Visual Networking Admin Operations Apps Integrations | | | | | | | |
| ALL TENANTS Add Tenant Tenant Search: Iname or cliescr | i common i 114,0 i donwang2 i 508/085 i edge | | | | | | | |
| TN_D | RIGIO - Extended - EVENIX BOR EDG | | | | | | | |
| ~ 囲 1N.0 | COM Commence - Drillow Bon Tod | 06 | | | | | | |
| > 🖬 Application Profiles | | Policy Operational Health Faults History | | | | | | |
| Wetworking | | General Contracts Inherited Contracts Subject Labels EPG Labels | | | | | | |
| > 🔛 Bridge Comains | | A 1 4 | | | | | | |
| > 🔛 VIE's | | V 1 A. | | | | | | |
| > 🔤 L20vis | Properties Name: DCL.NDL.800_EP0 | * | | | | | | |
| | Akac | | | | | | | |
| A Date NOCIOP | Amobations 🚱 Citck to add a new annotation | | | | | | | |
| Uppeal Node Profiles | Gobal Alas: | | | | | | | |
| Education and a second s | Descriptional | | | | | | | |
| Complete Notes El Lorinal Interface Burdles | | | | | | | | |
| V E Lind NIK BOP Internetion | pcTag: 16385 | | | | | | | |
| BCP Peer 100 0 0 2- Node-102/1/3 | Contract Designion Tag: | | | | | | | |
| V 🖬 Deternal DPCa | Configured VHF Name: VHF_S | | | | | | | |
| E DXT_NDK_BOP_EPG | Resolved WPF units TAL (Octor VPF _5 | | | | | | | |
| Route map for import and export route control | terror terrar (Vispaninu) | | | | | | | |
| > 🕰 Läsut_Static_server | Programming Strategy and Control Contr | | | | | | | |
| > 🔤 SR-MPLS VIP LOOKS | Contiguration Issues: | | | | | | | |
| > 🔛 Dot1Q Tunnels | Endered Group Member Exclusion Industry | | | | | | | |
| > El Contracts | tata far-RKS totates Entrance Literatorial | | | | | | | |
| > El Policies | | | | | | | | |
| > El Services | abate Same Anna Anna Anna Anna Anna Anna Anna Ann | Productional Backlass Comparison and Data | | | | | | |
| Ecourty (leta) | Approprie URA Approprie Ap | Hove summarized in the summari | | | | | | |
| > C+ Guocsan | VVV UNIT UNIT UNIT UNIT UNIT UNIT UNIT UNIT | | | | | | | |
| | Exercise contract Exercise Contract Contract Contract Contract | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Externes EPG-Export-Subnetz für Transit-L3Out

| TN_D | 001 | External EPG - EXT_N | 3K BGP_EPG | | | | | | |
|---|-----|-------------------------|----------------------------|--------------|---------------|---------------------|-------------|---------|-------------------------------|
| ~ III 11.0 | | | | | | | | | Policy Operational |
| > Application Profiles | | | | | | | | General | Contracts Inherited Contracts |
|) 🚞 Bridge Domains | | | | | | | | | |
| > E2 V#Fs > E2 L20xs | | Name | Tenant | Tenant Alias | Contract Type | Provided / Consumed | QoS Class | State | Label |
| ✓ ➡ 130xs | | Contract Type: Contract | | | | | | | |
| | | Contract_L3out_BGP | TN_D | | Contract | Consumed | Unspecified | formed | |
| V 2 L3out_80P_nodeProfile | | | | | | | | | |
| > Configured Nodes | | | | | | | | | |
| Cogical Interface Profiles V V Lout, NIK, BOP, interfaceProfile | | | | | | | | | |
| BGP Peer 100.0.0.2 - Node-102/1/3 | | | | | | | | | |
| DT_NGK_BOP_EPG | | | | | | | | | |

Vertrag an externes EPG anhängen

6. Statische Route von L3Out in Richtung N3K exportieren.

```
switchname N3K
feature bgp
feature interface-vlan
interface Vlan550
 no shutdown
 vrf member BGP_L3out
 ip address 100.0.2/30
interface loopback200
 vrf member BGP_L3out
 ip address 30.30.30.1/32
interface Ethernet1/1
 switchport mode trunk
router bgp 65536
 address-family ipv4 unicast
 neighbor 100.0.0.1
 vrf BGP_L3out
   router-id 3.3.3.3
   address-family ipv4 unicast
     network 30.30.30.1/32
   neighbor 100.0.0.1
     remote-as 65535
     update-source Vlan550
     address-family ipv4 unicast
```

Überprüfung

In diesem Abschnitt überprüfen Sie, ob Ihre Konfiguration ordnungsgemäß funktioniert.

Nexus3K



Verkehrsmittelwerbung durch Topologie erklärt

N3K# routing vrf BGP_L3out

N3K%BGP_L3out# show ip route IP Route Table for VRF "BGP_L3out" '*' denotes best ucast next-hop '**' denotes best mcast next-hop '[x/y]' denotes [preference/metric] '%' in via output denotes VRF 30.30.30.1/32, ubest/mbest: 2/0, attached *via 30.30.30.1, Lo200, [0/0], 02:35:27, local *via 30.30.30.1, Lo200, [0/0], 02:35:27, direct 100.0.0/30, ubest/mbest: 1/0, attached *via 100.0.0.2, Vlan550, [0/0], 05:52:18, direct 100.0.0.2/32, ubest/mbest: 1/0, attached *via 100.0.0.2, Vlan550, [0/0], 05:52:18, local 200.0.0.1/32, ubest/mbest: 1/0 *via 100.0.0.1, [20/0], 02:32:36, bgp-65536, external, tag 65535

Der Server-Loopback ist mit der Quelle als N3K-Loopback-Adresse erreichbar.

N3K

```
interface loopback200
vrf member BGP_L3out
ip address 30.30.30.1/32
```

N3K# ping 200.0.0.1 vrf BGP_L3out source 30.30.30.1

```
PING 200.0.0.1 (200.0.0.1): 56 data bytes
64 bytes from 200.0.0.1: icmp_seq=0 ttl=252 time=0.94 ms
64 bytes from 200.0.0.1: icmp_seq=1 ttl=252 time=0.729 ms
64 bytes from 200.0.0.1: icmp_seq=2 ttl=252 time=0.658 ms
64 bytes from 200.0.0.1: icmp_seq=3 ttl=252 time=0.706 ms
64 bytes from 200.0.0.1: icmp_seq=4 ttl=252 time=0.655 ms
--- 200.0.0.1 ping statistics ---
5 packets transmitted, 5 packets received, 0.00% packet loss
round-trip min/avg/max = 0.655/0.737/0.94 ms
```

ACI Leaf 102-Routing-Tabelle (mit L3out in Richtung Nexus 3K).

Leaf102# show ip route vrf TN_D:VRF_S

```
IP Route Table for VRF "TN_D:VRF_S"
'*' denotes best ucast next-hop
'**' denotes best mcast next-hop
'[x/y]' denotes [preference/metric]
'%' in via output denotes VRF
10.100.0.0/24, ubest/mbest: 1/0
    *via 10.0.96.64%overlay-1, [200/0], 02:56:36, bgp-65535, internal, tag 65535
30.30.1/32, ubest/mbest: 1/0
```

```
of N3K.
    *via 100.0.0.2%TN_D:VRF_S, [20/0], 02:44:34, bgp-65535, external, tag 65536
100.0.0/30, ubest/mbest: 1/0, attached, direct
    *via 100.0.0.1, vlan19, [0/0], 05:09:37, direct
100.0.0.1/32, ubest/mbest: 1/0, attached
    *via 100.0.0.1, vlan19, [0/0], 05:09:37, local, local
101.101.101.101/32, ubest/mbest: 1/0
    *via 10.0.96.64%overlay-1, [1/0], 02:56:36, bgp-65535, internal, tag 65535
102.102.102.102.102,102, lo5, [0/0], 16:49:13, local, local
    *via 102.102.102.102, lo5, [0/0], 16:49:13, direct
200.0.0.1/32, ubest/mbest: 1/0
    *via 10.0.96.64%overlay-1, [1/0], 02:42:15, bgp-65535, internal, tag 65535
```

Leaf 101 IP SLA-Konfigurationsverifizierung von CLI.

```
Leaf101# show ip sla configuration
IP SLAs Infrastructure Engine-III
Entry number: 2000
Owner: owner-icmp-echo-dme
Taq:
Operation timeout (milliseconds): 900
Type of operation to perform: icmp-echo
Target address/Source address: 10.100.0.100/0.0.0.0
Traffic-Class parameter: 0x0
Type Of Service parameter: 0x0
Request size (ARR data portion): 28
Verify data: No
Vrf Name: TN_D:VRF_S
Schedule:
   Operation frequency (seconds): 5 (not considered if randomly scheduled)
  Next Scheduled Start Time: Start Time already passed
   Group Scheduled : FALSE
   Randomly Scheduled : FALSE
   Life (seconds): Forever
   Entry Ageout (seconds): 3600
   Recurring (Starting Everyday): FALSE
   Status of entry (SNMP RowStatus): Active
Threshold (milliseconds): 900
Distribution Statistics:
   Number of statistic hours kept: 2
   Number of statistic distribution buckets kept: 1
   Statistic distribution interval (milliseconds): 20
History Statistics:
  Number of history Lives kept: 0
   Number of history Buckets kept: 15
   History Filter Type: None
Leaf101# show track brief
```

| TrackId | Туре | Instance | Parameter | State | Last Change |
|---------|--------|----------|--------------|-------|-------------------------------|
| 4 | IP SLA | 2000 | reachability | up | 2021-09-16T18:08:42.364+00:00 |
| 3 | List | | percentage | up | 2021-09-16T18:08:42.365+00:00 |

Leaf101# show track

```
Route prefix 200.0.0.1/32

Track 2

IP SLA 2000

reachability is up

6 changes, last change 2021-09-16T00:01:50.338+00:00

Tracked by:

Track List 1
```

Befehl Verification with Managed Object Query (Moquery):

apic1# moquery -c fvIPSLAMonitoringPol -f 'fv.IPSLAMonitoringPol.name=="ICMP_Monitor"'
Total Objects shown: 1

| # fv.IPSLAMonitoringPol | | | | | | |
|-------------------------|---|---|--|--|--|--|
| name | : | ICMP_Monitor | | | | |
| annotation | : | | | | | |
| childAction | : | | | | | |
| descr | : | | | | | |
| dn | : | uni/tn-TN_D/ipslaMonitoringPol-ICMP_Monitor | | | | |
| extMngdBy | : | | | | | |
| httpMethod | : | get | | | | |
| httpUri | : | / | | | | |
| httpVersion | : | HTTP10 | | | | |
| ipv4Tos | : | 0 | | | | |
| ipv6TrfClass | : | 0 | | | | |
| lcOwn | : | local | | | | |
| modTs | : | 2021-09-15T21:18:48.195+00:00 | | | | |
| monPolDn | : | uni/tn-common/monepg-default | | | | |
| nameAlias | : | | | | | |
| ownerKey | : | | | | | |
| ownerTag | : | | | | | |
| reqDataSize | : | 28 | | | | |
| rn | : | ipslaMonitoringPol-ICMP_Monitor | | | | |
| slaDetectMultiplier | : | 3 | | | | |
| slaFrequency | : | 5 | | | | |
| slaPort | : | 0 | | | | |
| slaType | : | icmp | | | | |
| status | : | | | | | |
| threshold | : | 900 | | | | |
| timeout | : | 900 | | | | |
| uid | : | 15374 | | | | |
| userdom | : | :all: | | | | |
| | | | | | | |

apic1# moquery -c fvTrackMember -f 'fv.TrackMember.name=="Server_Physical_IP"'
Total Objects shown: 1

| <pre># fv.TrackMe</pre> | mbe | er |
|-------------------------|-----|--|
| name | : | Server_Physical_IP |
| annotation | : | |
| childAction | : | |
| descr | : | |
| dn | : | uni/tn-TN_D/trackmember-Server_Physical_IF |
| dstIpAddr | : | 10.100.0.100 |
| extMngdBy | : | |
| id | : | 2000 |
| lcOwn | : | local |
| modTs | : | 2021-09-15T21:16:22.992+00:00 |
| monPolDn | : | uni/tn-common/monepg-default |
| nameAlias | : | |
| ownerKey | : | |
| ownerTag | : | |
| | | |

```
rn : trackmember-Server_Physical_IP
scopeDn : uni/tn-TN_D/out-L3out_Static_server
status :
uid : 15374
userdom : :all:
```

apic1# moquery -c fvTrackList -f 'fv.TrackList.name=="Tracking_Server_Physical_IP"'
Total Objects shown: 1

| <pre># fv.TrackList</pre> | | |
|---------------------------|---|---|
| name | : | Tracking_Server_Physical_IP |
| annotation | : | |
| childAction | : | |
| descr | : | |
| dn | : | uni/tn-TN_D/tracklist-Tracking_Server_Physical_IP |
| extMngdBy | : | |
| lcOwn | : | local |
| modTs | : | 2021-09-15T07:41:15.958+00:00 |
| monPolDn | : | uni/tn-common/monepg-default |
| nameAlias | : | |
| ownerKey | : | |
| ownerTag | : | |
| percentageDown | : | 0 |
| percentageUp | : | 1 |
| rn | : | tracklist-Tracking_Server_Physical_IP |
| status | : | |
| type | : | percentage |
| uid | : | 15374 |
| userdom | : | :all: |
| weightDown | : | 0 |
| weightUp | : | 1 |

Fehlerbehebung

Für diese Konfiguration sind derzeit keine spezifischen Informationen zur Fehlerbehebung verfügbar.

Wenn die Verbindung getrennt wird oder die physische IP-Adresse nicht erreichbar ist, zeigt das ACI IP SLA das Ziel-IP-Timeout an, nachdem der konfigurierte Grenzwert erreicht wurde.



L3out-Schnittstelle ausgefallen

| TN_D | 00 | Track Member - Server_Phys | ical_IP | | | |
|--|----|-----------------------------------|------------------------|--------------------|------------------|--------------------------------|
| ✓ ∰ TN_D > Mathematical Application Profiles | | | | | | Polic |
| > 🖿 Networking | | 8 9 4 0 | | | | |
| > 🧮 Contracts | | Properties | | | | |
| Policies | | Name: | Server_Physical_IP | | | |
| V 🚞 Protocol | | Description: | | | | |
| > 🚍 BFD | | | | | | |
| > 🚍 BFD Multihop | | Track ID Of Object To Be Tracked: | 2000 | | | |
| > 🧮 ND RA Prefix | | Destination IP To Be Tracked: | 10.100.0.100 | | | |
| > 🚞 BGP | | Scope of Track Member: | L3Out - L3out_Static_s | erv 🗸 🚱 | | |
| > 🚞 Custom QoS | | IPSLA Policy: | ICMP_Monitor | V 🕑 | | |
| > 🚞 Data Plane Policing | | Deployments: | Node ID | Operation Number | Operation Status | Latest Operation Error Message |
| > 🚍 DHCP | | | Pod-1/Node-101 | 2000 ms (2seconds) | Unreachable | Timeout |
| > 🚞 EIGRP | | | | | | |
| > 🚞 End Point Retention | _ | | | | | |
| First Hop Security | | | | | | |
| > 🚞 HSRP | | | | | | |
| > 🚞 IGMP Interface | | | | | | |
| > 🔤 IGMP Snoop | | | | | | |
| V 🚔 IP SLA | | | | | | |
| > IP SLA Monitoring Policies | | | | | | |
| > 🚞 Track Lists | | | | | | |
| Track Members | | | | | | |
| Server_Physical_IP | | | | | | |

IP SLA Monitor-Verbindungsstatus nach Verbindungsausfall

CLI-Verifizierung für Leaf 101 (Sie sehen das Timeout für "Last Operation Return Code" (Letzter Vorgangsrückgabecode).

Leaf101# show ip sla statistics

IPSLAs Latest Operation Statistics IPSLA operation id: 2000 Latest RTT: NoConnection/Busy/Timeout Latest operation start time: 23:54:30 UTC Wed Sep 15 2021 Latest operation return code: Timeout Number of successes: 658 Number of failures: 61 Operation time to live: forever

Sobald der Server erreichbar ist, wird der Status OK angezeigt.



Status des IP SLA-Monitors nach dem Herstellen der Verbindung

```
Leaf101# show ip sla statistics

IPSLAs Latest Operation Statistics

IPSLA operation id: 2000

Latest RTT: 1 milliseconds

Latest operation start time: 00:03:15 UTC Thu Sep 16 2021

Latest operation return code: OK

Number of successes: 18

Number of failures: 86

Operation time to live: forever
```

Zugehörige Informationen

- <u>Cisco APIC Layer-3-Netzwerkkonfigurationsleitfaden, Version 5.2(x)</u>
- Technischer Support und Dokumentation für Cisco Systeme