Solucionar problemas de "network-receive-error" de SMF CNDP em interfaces eno6/bd0

Contents

Introduction

Este documento descreve como identificar o computador e o switch leaf para uma plataforma de implantação nativa de nuvem (CNDP) específica da Session Management Function (SMF) e resolver o alerta "network-receive-error" relatado no Common Execution Environment (CEE).

Problema

Os alertas de "erro de recepção de rede" são reportados no CEE Opcenter Rack2.

```
[lab0200-smf/labceed22] cee# show alerts active summary
NAME UID SEVERITY STARTS AT SOURCE SUMMARY
-------------------------------------------------------------------------------------------
----------------------------------------------------
network-receive-error 998c77d6a6a0 major 10-26T00:10:31 lab0200-smf-mas Network interface "bd0"
showing receive errors on hostname lab0200-s...
network-receive-error ea4217bf9d9e major 10-26T00:10:31 lab0200-smf-mas Network interface "bd0"
showing receive errors on hostname lab0200-s...
network-receive-error 97fad40d2a58 major 10-26T00:10:31 lab0200-smf-mas Network interface "eno6"
showing receive errors on hostname lab0200-...
network-receive-error b79540eb4e78 major 10-26T00:10:31 lab0200-smf-mas Network interface "eno6"
showing receive errors on hostname lab0200-...
network-receive-error e3d163ff4012 major 10-26T00:10:01 lab0200-smf-mas Network interface "bd0"
showing receive errors on hostname lab0200-s...
network-receive-error 12a7b5a5c5d5 major 10-26T00:10:01 lab0200-smf-mas Network interface "eno6"
showing receive errors on hostname lab0200-...
```

Consulte o Ultra Cloud Core Subscriber Microservices Infrastructure Operations Guide para obter a descrição do alerta.

```
Alert: network-receive-errors
Annotations:
Type: Communications Alarm
Summary: Network interface "{{ $labels.device }}" showing receive errors on hostname {{
$labels.hostname }}"
Expression:
|
rate(node_network_receive_errs_total{device!~"veth.+"}[2m]) > 0
For: 2m
Labels:
Severity: major
```

Identificar a Origem dos Alertas

Faça login no **CEE labceed22**, verifique os detalhes do alerta "network-receive-error" reportados nas interfaces bd0 e eno6 para identificar o nó e o pod.

```
[lab0200-smf/labceed22] cee# show alerts active summary
NAME                    UID            SEVERITY  STARTS AT       SOURCE           SUMMARY

------------------------------------------------------------------------------------------------
----------------------------------------------------------
network-receive-error  3b6a0a7ce1a8   major     10-26T21:17:01  lab0200-smf-mas  Network
interface "bd0" showing receive errors on hostname tpc...
network-receive-error  15abab75c8fc   major     10-26T21:17:01  lab0200-smf-mas  Network
interface "eno6" showing receive errors on hostname tp...
```

Execute **show alerts ative detail network-receive-error <UID>** para obter detalhes do alerta.

No exemplo, a origem de ambos os alertas é o nó lab0200-smf-primary-1 pod node-export-47xmm.

```
[lab0200-smf/labceed22] cee# show alerts active detail network-receive-error  3b6a0a7ce1a8
alerts active detail network-receive-error 3b6a0a7ce1a8
 severity    major
 type        "Communications Alarm"
 startsAt    2021-10-26T21:17:01.913Z
 source      lab0200-smf-primary-1
 summary     "Network interface \"bd0\" showing receive errors on hostname lab0200-smf-primary-
1\""
 labels      [ "alertname: network-receive-errors" "cluster: lab0200-smf_cee-labceed22"
"component: node-exporter" "controller_revision_hash: 75c4cb979f" "device: bd0" "hostname:
lab0200-smf-primary-1" "instance: 10.192.1.42:9100" "job: kubernetes-pods" "monitor: prometheus"
"namespace: cee-labceed22" "pod: node-exporter-47xmm" "pod_template_generation: 1" "replica:
lab0200-smf_cee-labceed22" "severity: major" ]
 annotations [ "summary: Network interface \"bd0\" showing receive errors on hostname lab0200-
smf-primary-1\"" "type: Communications Alarm" ]

[lab0200-smf/labceed22] cee# show alerts active detail network-receive-error 15abab75c8fc
alerts active detail network-receive-error 15abab75c8fc
 severity    major
 type        "Communications Alarm"
 startsAt    2021-10-26T21:17:01.913Z
 source      lab0200-smf-primary-1
 summary     "Network interface \"eno6\" showing receive errors on hostname lab0200-smf-primary-
1\""
 labels      [ "alertname: network-receive-errors" "cluster: lab0200-smf_cee-labceed22"
"component: node-exporter" "controller_revision_hash: 75c4cb979f" "device: eno6" "hostname:
lab0200-smf-primary-1" "instance: 10.192.1.42:9100" "job: kubernetes-pods" "monitor: prometheus"
```

```
"namespace: cee-labceed22" "pod: node-exporter-47xmm" "pod_template_generation: 1" "replica:
lab0200-smf_cee-labceed22" "severity: major" ]
 annotations [ "summary: Network interface \"eno6\" showing receive errors on hostname lab0200-
smf-primary-1\"" "type: Communications Alarm" ]
```

Validar Status de Nó, Pod e Portas

Validação de nó e pod do VIP principal

Faça login no VIP primário do K8s do Rack2 para validar o status do nó e do pod de origem.

No exemplo, ambos estão em um bom estado: Pronto e em execução.

```
cloud-user@lab0200-smf-primary-1:~$ kubectl get nodes
NAME                       STATUS     ROLES                   AGE     VERSION
lab0200-smf-primary-1     Ready      control-plane           105d    v1.21.0
lab0200-smf-primary-2     Ready      control-plane    105d   v1.21.0
lab0200-smf-primary-3     Ready      control-plane    105d   v1.21.0
lab0200-smf-worker-1      Ready      <none>                  105d    v1.21.0
lab0200-smf-worker-2      Ready      <none>                  105d    v1.21.0
lab0200-smf-worker-3      Ready      <none>                  105d    v1.21.0
lab0200-smf-worker-4      Ready      <none>                  105d    v1.21.0
lab0200-smf-worker-5      Ready      <none>                  105d    v1.21.0

cloud-user@lab0200-smf-primary-1:~$ kubectl get pods -A -o wide | grep node-exporter--47xmm
cee-labceed22       node-exporter-47xmm                                      1/1     Running    0
      18d    10.192.1.44        lab0200-smf-primary-1   <none>            <none>
```

Validações de portas do VIP principal do K8s

Valide se as interfaces bd0 e eno6 estão ATIVADAS com **endereço IP | grep eno6** e **ip addr | grep bd0**.

> **Note**: Quando o filtro é aplicado para bd0, o eno6 é mostrado na saída. O motivo é que o eno5 e o eno6 são configurados como interfaces vinculadas em bd0, que podem ser validadas no SMI Cluster Deployer.

```
cloud-user@lab0200-smf-primary-1:~$ ip addr | grep eno6
3: eno6: <BROADCAST,MULTICAST,SECONDARY,UP,LOWER_UP> mtu 1500 qdisc mq primary bd0 state UP
group default qlen 1000

cloud-user@lab0200-smf-primary-1:~$ ip addr | grep bd0
2: eno5: <BROADCAST,MULTICAST,SECONDARY,UP,LOWER_UP> mtu 1500 qdisc mq primary bd0 state UP
group default qlen 1000
3: eno6: <BROADCAST,MULTICAST,SECONDARY,UP,LOWER_UP> mtu 1500 qdisc mq primary bd0 state UP
group default qlen 1000
12: bd0: <BROADCAST,MULTICAST,PRIMARY,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default
qlen 1000
13: vlan111@bd0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default
qlen 1000
14: vlan112@bd0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default
qlen 1000
182: cali7a166bd093d@if4: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1440 qdisc noqueue state UP
group default
```

Validações de Portas do Implantador de Cluster SMI

Faça login no **Cluster Manager VIP** e, em seguida, acesse o ssh para Operations (Ops) Center ops-center-smi-cluster-deployer.

```
cloud-user@lab-deployer-cm-primary:~$ kubectl get svc -n smi-cm
NAME                                        TYPE        CLUSTER-IP       EXTERNAL-IP
PORT(S)                                                 AGE
cluster-files-offline-smi-cluster-deployer  ClusterIP   10.102.53.184    <none>
8080/TCP                                                110d
iso-host-cluster-files-smi-cluster-deployer ClusterIP   10.102.38.70     172.16.1.102
80/TCP                                                  110d
iso-host-ops-center-smi-cluster-deployer    ClusterIP   10.102.83.54     172.16.1.102
3001/TCP                                                110d
netconf-ops-center-smi-cluster-deployer     ClusterIP   10.102.196.125   10.241.206.65
3022/TCP,22/TCP                                         110d
ops-center-smi-cluster-deployer             ClusterIP   10.102.12.170    <none>
8008/TCP,2024/TCP,2022/TCP,7681/TCP,3000/TCP,3001/TCP   110d
squid-proxy-node-port                       NodePort    10.102.72.168    <none>
3128:32572/TCP                                          110d


cloud-user@lab-deployer-cm-primary:~$ ssh -p 2024 admin@10.102.12.170
admin@10.102.12.170's password:
    Welcome to the Cisco SMI Cluster Deployer on lab-deployer-cm-primary
    Copyright © 2016-2020, Cisco Systems, Inc.
    All rights reserved.
admin connected from 172.16.1.100 using ssh on ops-center-smi-cluster-deployer-5cdc5f94db-bnxqt
[lab-deployer-cm-primary] SMI Cluster Deployer#
```

Verifique o cluster, os padrões de nó, as interfaces e o modo de parâmetros do nó. No exemplo, o lab0200-smf.

```
[lab-deployer-cm-primary] SMI Cluster Deployer#  show running-config clusters
clusters lab0200-smf
 environment lab0200-smf-deployer_1
…
 node-defaults initial-boot netplan ethernets eno5
 dhcp4 false
 dhcp6 false
 exit
 node-defaults initial-boot netplan ethernets eno6
 dhcp4 false
 dhcp6 false
 exit
 node-defaults initial-boot netplan ethernets enp216s0f0
 dhcp4 false
 dhcp6 false
 exit
 node-defaults initial-boot netplan ethernets enp216s0f1
 dhcp4 false
 dhcp6 false
 exit
 node-defaults initial-boot netplan ethernets enp94s0f0
 dhcp4 false
 dhcp6 false
 exit
 node-defaults initial-boot netplan ethernets enp94s0f1
 dhcp4 false
```

```
 dhcp6 false
 exit
node-defaults initial-boot netplan bonds bd0
 dhcp4       false
 dhcp6       false
 optional    true
 interfaces [ eno5 eno6 ]
 parameters mode       active-backup
 parameters mii-monitor-interval 100
 parameters fail-over-mac-policy active
 exit
```

No VIP primário, valide erros e/ou quedas nas interfaces bd0 e eno6.

Quando ambas as interfaces têm quedas, o hardware do switch UCS ou Leaf deve ser verificado para verificar se há problemas de hardware.

```
cloud-user@lab0200-smf-primary-1:~$ ifconfig bd0
bd0: flags=5187<UP,BROADCAST,RUNNING,PRIMARY,MULTICAST>  mtu 1500
        inet6 fe80::8e94:1fff:fef6:53cd  prefixlen 64  scopeid 0x20<link>
        ether 8c:94:1f:f6:53:cd  txqueuelen 1000  (Ethernet)
        RX packets 47035763777  bytes 19038286946282 (19.0 TB)
        RX errors 49541  dropped 845484  overruns 0  frame 49541
        TX packets 53797663096  bytes 32320571418654 (32.3 TB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0


cloud-user@lab0200-smf-primary-1:~$ ifconfig eno6
eno6: flags=6211<UP,BROADCAST,RUNNING,SECONDARY,MULTICAST>  mtu 1500
        ether 8c:94:1f:f6:53:cd  txqueuelen 1000  (Ethernet)
        RX packets 47035402290  bytes 19038274391478 (19.0 TB)
        RX errors 49541  dropped 845484  overruns 0  frame 49541
        TX packets 53797735337  bytes 32320609021235 (32.3 TB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

Identificar o servidor UCS

Validação do servidor UCS do implantador de cluster SMI

Execute show running-config clusters <nome do cluster> nodes <nome do nó> no SMI Cluster Deployer para descobrir o endereço IP do CIMC do servidor UCS.

```
[lab-deployer-cm-primary] SMI Cluster Deployer# show running-config clusters lab0200-smf nodes
primary-1
clusters lab0200-smf
nodes primary-1
 maintenance  false
 host-profile cp-data-r2-sysctl
 k8s node-type        primary
 k8s ssh-ip           10.192.1.42
 k8s sshd-bind-to-ssh-ip true
 k8s node-ip          10.192.1.42
 k8s node-labels smi.cisco.com/node-type oam
 exit
 k8s node-labels smi.cisco.com/node-type-1 proto
 exit
 ucs-server cimc user admin
...
```

```
 ucs-server cimc ip-address 172.16.1.62
...
 exit
```

Use SSH no endereço IP do CIMC 172.16.1.62 por meio do CM ativo e valide o nome do servidor.

No exemplo, o nome do servidor é LAB0200-Server8-02.

```
cloud-user@lab-deployer-cm-primary:~$ ssh admin@172.16.1.62
Warning: Permanently added '172.16.1.62' (RSA) to the list of known hosts.
admin@172.16.1.62's password:
LAB0200-Server8-02#
```

> **Note**: Valide o nome do servidor no CIQ (Questionário de informações do cliente), se o CIQ estiver disponível.

Mapeie as principais portas VIP e interfaces de rede UCS

No VIP primário, verifique os nomes de interface física para o eno6 com o **comando ls -la /sys/class/net**. No exemplo, quando o **lscpi** é usado para identificar o dispositivo eno6, a porta **1d:00.1** deve ser usada para identificar o **eno6**.

```
cloud-user@lab0200-smf-primary-1:~$ ls -la /sys/class/net
total 0
drwxr-xr-x  2 root root    0 Oct 12 06:18 .
drwxr-xr-x 87 root root    0 Oct 12 06:18 ..
lrwxrwxrwx  1 root root    0 Oct 12 06:18 bd0 -> ../../devices/virtual/net/bd0
lrwxrwxrwx  1 root root    0 Oct 12 06:18 bd1 -> ../../devices/virtual/net/bd1
…
lrwxrwxrwx  1 root root    0 Oct 12 06:18 eno5 ->
../../devices/pci0000:17/0000:17:00.0/0000:18:00.0/0000:19:01.0/0000:1b:00.0/0000:1c:00.0/0000:1
d:00.0/net/eno5
lrwxrwxrwx  1 root root    0 Oct 12 06:18 eno6 ->
../../devices/pci0000:17/0000:17:00.0/0000:18:00.0/0000:19:01.0/0000:1b:00.0/0000:1c:00.0/0000:1
d:00.1/net/eno6
```

> **Note**: O **lspci** mostra informações sobre todos os dispositivos no servidor UCS, como MLOM, SLOM, PCI e assim por diante. As informações do dispositivo podem ser usadas para mapear com os nomes das interfaces na saída do comando **ls -la /sys/class/net**.

No exemplo, a porta 1d:00.1 pertence à interface **MLOM** e **eno6**. O **eno5** é uma porta 1d:00.0 MLOM.

```
cloud-user@lab0200-smf-primary-1:~$ lspci
……
1d:00.0 Ethernet controller: Cisco Systems Inc VIC Ethernet NIC (rev a2)
1d:00.1 Ethernet controller: Cisco Systems Inc VIC Ethernet NIC (rev a2)
3b:00.0 Ethernet controller: Intel Corporation Ethernet Controller 10G X550T (rev 01)
3b:00.1 Ethernet controller: Intel Corporation Ethernet Controller 10G X550T (rev 01)
5e:00.0 Ethernet controller: Intel Corporation Ethernet Controller XL710 for 40GbE QSFP+ (rev
02)
```

```
5e:00.1 Ethernet controller: Intel Corporation Ethernet Controller XL710 for 40GbE QSFP+ (rev
02)
d8:00.0 Ethernet controller: Intel Corporation Ethernet Controller XL710 for 40GbE QSFP+ (rev
02)
d8:00.1 Ethernet controller: Intel Corporation Ethernet Controller XL710 for 40GbE QSFP+ (rev
02)
```

Na GUI do CIMC, corresponda ao endereço MAC MLOM visto na saída de **ifconfig** do VIP principal.

```
cloud-user@lab0200-smf-primary-1:~$  ifconfig bd0
bd0: flags=5187<UP,BROADCAST,RUNNING,PRIMARY,MULTICAST>  mtu 1500
        inet6 fe80::8e94:1fff:fef6:53cd  prefixlen 64  scopeid 0x20<link>
        ether 8c:94:1f:f6:53:cd  txqueuelen 1000  (Ethernet)
        RX packets 47035763777  bytes 19038286946282 (19.0 TB)
        RX errors 49541  dropped 845484  overruns 0  frame 49541
        TX packets 53797663096  bytes 32320571418654 (32.3 TB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0


cloud-user@lab0200-smf-primary-1:~$  ifconfig eno6
eno6: flags=6211<UP,BROADCAST,RUNNING,SECONDARY,MULTICAST>  mtu 1500
        ether 8c:94:1f:f6:53:cd  txqueuelen 1000  (Ethernet)
        RX packets 47035402290  bytes 19038274391478 (19.0 TB)
        RX errors 49541  dropped 845484  overruns 0  frame 49541
        TX packets 53797735337  bytes 32320609021235 (32.3 TB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```
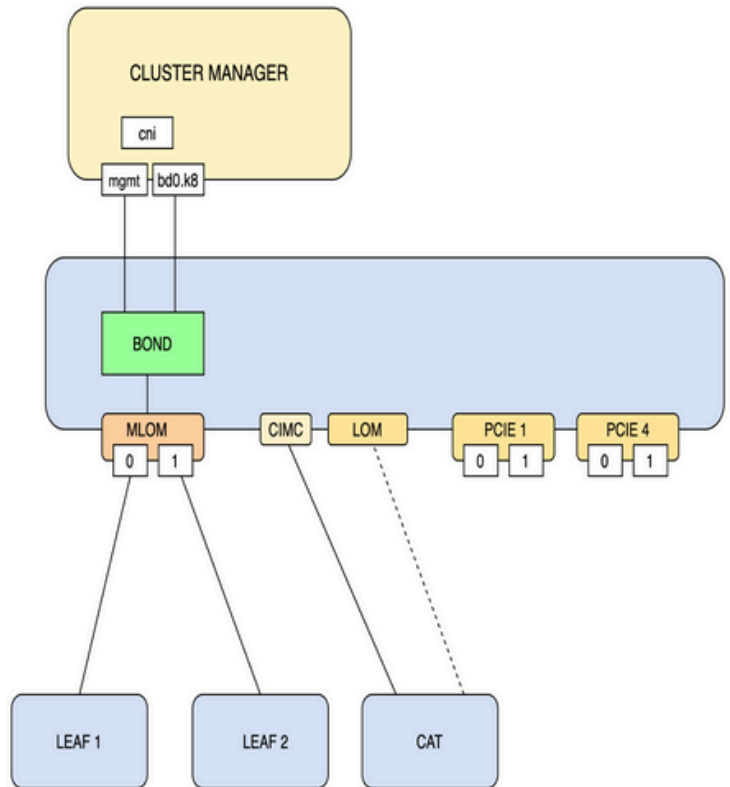
Identificar o Switch Leaf

Na rede do Cluster Manager, como mostrado na imagem, o **MLOM (eno5/eno6)** está conectado aos Leafs 1 e 2.

> **Note**: Validar deixa nomes de host no CIQ, se o CIQ estiver disponível.

CM Networking Design

- Management Port (CIMC)– this port is connected to the Management network.
  - External provisioner accesses CIMC and mounts vMedia with initial boot configuration
- Initial boot
  - MLOM port 1 and 2 bonded
  - Management VLAN (with IP)
- Additional networking added post boot
  - Internal VLAN attached to MLOM Bond
  - LAN1 is activated and attached to the CIMC network

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Efetue login em ambos os Leaves e gere o nome do servidor.

No exemplo, as interfaces LAB0200-Server8-02 MLOM e MLOM estão conectadas às interfaces **Eth1/49** em Leaf1 e Leaf2.

```
Leaf1# sh int description | inc LAB0200-Server8-02
Eth1/10      eth    40G     PCIE-01-2-LAB0200-Server8-02
Eth1/30      eth    40G     PCIE-02-2-LAB0200-Server8-02
Eth1/49      eth    40G     LAB0200-Server8-02 MLOM-P2


Leaf2# sh int description | inc LAB0200-Server8-02
Eth1/10      eth    40G     PCIE-01-1-LAB0200-Server8-02
Eth1/30      eth    40G     PCIE-02-1-LAB0200-Server8-02
Eth1/49      eth    40G     LAB0200-Server8-02 MLOM-P1
```

Solução

> **Importante:** Cada questão precisa de uma análise própria. Caso nenhum erro seja encontrado no lado do Nexus, verifique se há erros nas interfaces do servidor UCS.

No cenário, o problema está relacionado à falha de link na Leaf1 **int eth1/49** que está conectada ao LAB0200-Server8-02 MLOM eno6.

O servidor UCS foi validado e nenhum problema de hardware foi encontrado, o MLOM e as portas estavam em bom estado.

A folha1 mostrou erros de saída TX:

```
Leaf1# sh int Eth1/49
Ethernet1/49 is up
admin state is up, Dedicated Interface
 Hardware: 10000/40000/100000 Ethernet, address: e8eb.3437.48ca (bia e8eb.3437.48ca)
 Description: LAB0200-Server8-02 MLOM-P2
 MTU 9216 bytes, BW 40000000 Kbit , DLY 10 usec
 reliability 255/255, txload 1/255, rxload 1/255
 Encapsulation ARPA, medium is broadcast
 Port mode is trunk
 full-duplex, 40 Gb/s, media type is 40G
 Beacon is turned off
 Auto-Negotiation is turned on  FEC mode is Auto
 Input flow-control is off, output flow-control is off
 Auto-mdix is turned off
 Rate mode is dedicated
 Switchport monitor is off
 EtherType is 0x8100
 EEE (efficient-ethernet) : n/a
   admin fec state is auto, oper fec state is off
 Last link flapped 5week(s) 6day(s)
 Last clearing of "show interface" counters never
 12 interface resets
 Load-Interval #1: 30 seconds
   30 seconds input rate 162942488 bits/sec, 26648 packets/sec
   30 seconds output rate 35757024 bits/sec, 16477 packets/sec
   input rate 162.94 Mbps, 26.65 Kpps; output rate 35.76 Mbps, 16.48 Kpps
 Load-Interval #2: 5 minute (300 seconds)
   300 seconds input rate 120872496 bits/sec, 22926 packets/sec
   300 seconds output rate 54245920 bits/sec, 17880 packets/sec
   input rate 120.87 Mbps, 22.93 Kpps; output rate 54.24 Mbps, 17.88 Kpps
 RX
   85973263325 unicast packets  6318912 multicast packets  55152 broadcast packets
   85979637389 input packets  50020924423841 bytes
   230406880 jumbo packets  0 storm suppression bytes
   0 runts  0 giants  0 CRC  0 no buffer
   0 input error  0 short frame  0 overrun   0 underrun  0 ignored
   0 watchdog  0 bad etype drop  0 bad proto drop  0 if down drop
   0 input with dribble  0 input discard
   0 Rx pause
  TX
   76542979816 unicast packets  88726302 multicast packets  789768 broadcast packets
   76632574981 output packets  29932747104403 bytes
   3089287610 jumbo packets
   79095 output error  0 collision  0 deferred  0 late collision
   0 lost carrier  0 no carrier  0 babble  0 output discard
   0 Tx pause
```

O alerta "network-receive-error" foi resolvido com a substituição de cabo no **int eth1/49 Leaf1**.

A última falha de link de interface foi relatada logo antes da substituição do cabo.

```
2021 Nov 17 07:36:48 TPLF0201 %BFD-5-SESSION_STATE_DOWN: BFD session 1090519112 to neighbor
10.22.101.1 on interface Vlan2201 has gone down. Reason: Control
Detection Time Expired.
2021 Nov 17 07:37:30 TPLF0201 %BFD-5-SESSION_STATE_DOWN: BFD session 1090519107 to neighbor
10.22.101.2 on interface Vlan2201 has gone down. Reason: Control
Detection Time Expired.
2021 Nov 18 05:09:12 TPLF0201 %ETHPORT-5-IF_DOWN_LINK_FAILURE: Interface Ethernet1/48 is down
(Link failure)
```

Os alertas são eliminados em eno6/bd0 do labceed22 após a substituição do cabo.

```
[lab0200-smf/labceed22] cee# show alerts active summary
NAME UID SEVERITY STARTS AT SOURCE SUMMARY
-------------------------------------------------------------------------------------------
-------------------------------------------------------
watchdog a62f59201ba8 minor 11-02T05:57:18 System This is an alert meant to ensure that the
entire alerting pipeline is functional. This ale...
```