回答Firepower可扩展操作系统(FXOS)常见问题

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简介

本文档介绍与FXOS平台相关的常见问题。

背景信息

Firepower可扩展操作系统(FXOS)是Firepower或安全防火墙平台上的底层操作系统。根据平台的不同，FXOS用于配置功能、监控机箱状态和访问高级故障排除功能。

在平台模式下使用自适应安全设备软件的Firepower 4100/9300和Firepower 2100上的FXOS允许更改配置，而在其他平台（特定功能除外）中，其是只读的。

问：如何从FXOS系统生成Show Tech？

从2.8.x版开始，fprm已弃用。因此，FXOS 2.8.x仅支持机箱和刀片显示技术。

<#root>

```
KSEC-FPR4115-2-1(local-mgmt)#
```

show tech-support fprm detail

```
WARNING: show tech-support fprm detail command is deprecated.
Please use show tech-support chassis 1 detail command instead.
```

- 机箱：包含机箱、刀片、适配器、基板管理控制器(BMC)和思科集成管理控制器(CIMC)的日

志文件
- 模块：包含逻辑设备自适应安全设备(ASA)或Firepower威胁防御(FTD)所在的刀片/模块的日志文件。这包括诸如appAgent等组件的日志)

在2.8.x之前的版本中，FXOS提供三种不同的show tech输出。FPRM捆绑包包含用于管理输入/输出(MIO)（管理引擎）和服务管理器)的日志文件

通常，生成全部3个捆绑包。使用show tech-support <option> detail生成3个不同的日志捆绑包，用于TAC分析：

<#root>

```
FPR4140-A# connect local-mgmt
FPR4140-A(local-mgmt)#
```

show tech-support fprm detail

```
FPR4140-A(local-mgmt)#
```

show tech-support chassis 1 detail

```
FPR4140-A(local-mgmt)#
```

show tech-support module 1 detail

- 如果未指定detail选项，则会在屏幕上显示输出
- detail选项用于创建tar文件

要检查生成的文件名：

<#root>

```
FPR4140-A(local-mgmt)#
```

dir techsupport/

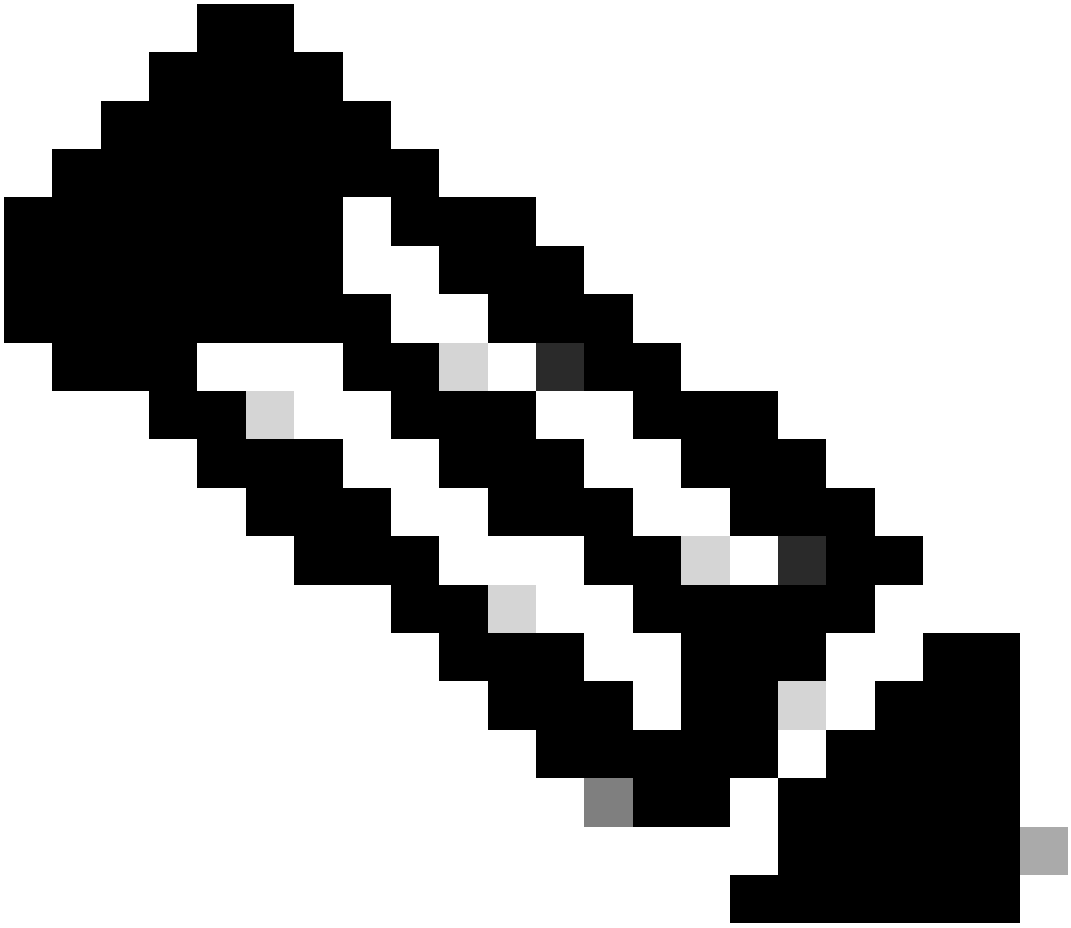
```
1 15595520 Apr 09 17:29:10 2017 20170409172722_FPR4140_FPRM.tar
1   962560 Apr 09 17:32:20 2017 20170409172916_FPR4140_BC1_all.tar
1  7014400 Apr 09 18:06:25 2017 Firepower-Module1_04_09_2017_18_05_59.tar
```

从CLI导出捆绑包：

<#root>

```
FPR4140-A(local-mgmt)#
```

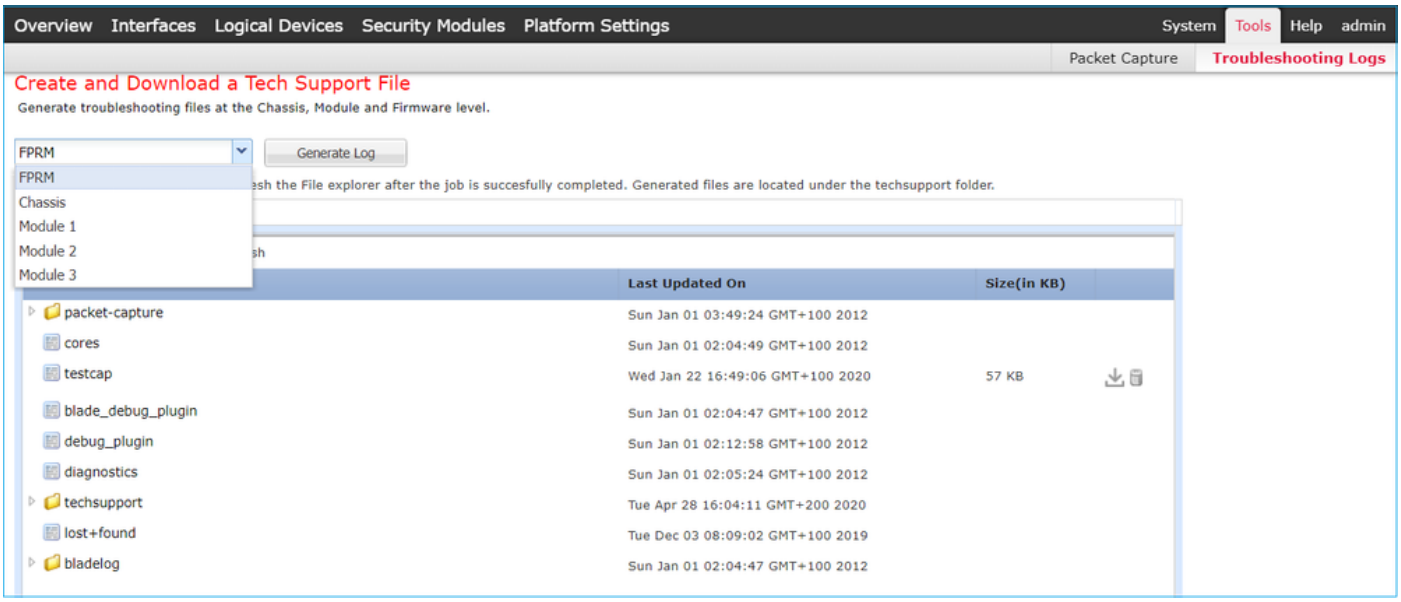
copy workspace:///techsupport/20170409172722_FPR4140_FPRM.tar ftp|tftp|scp|sftp://username@192.168.0.1/



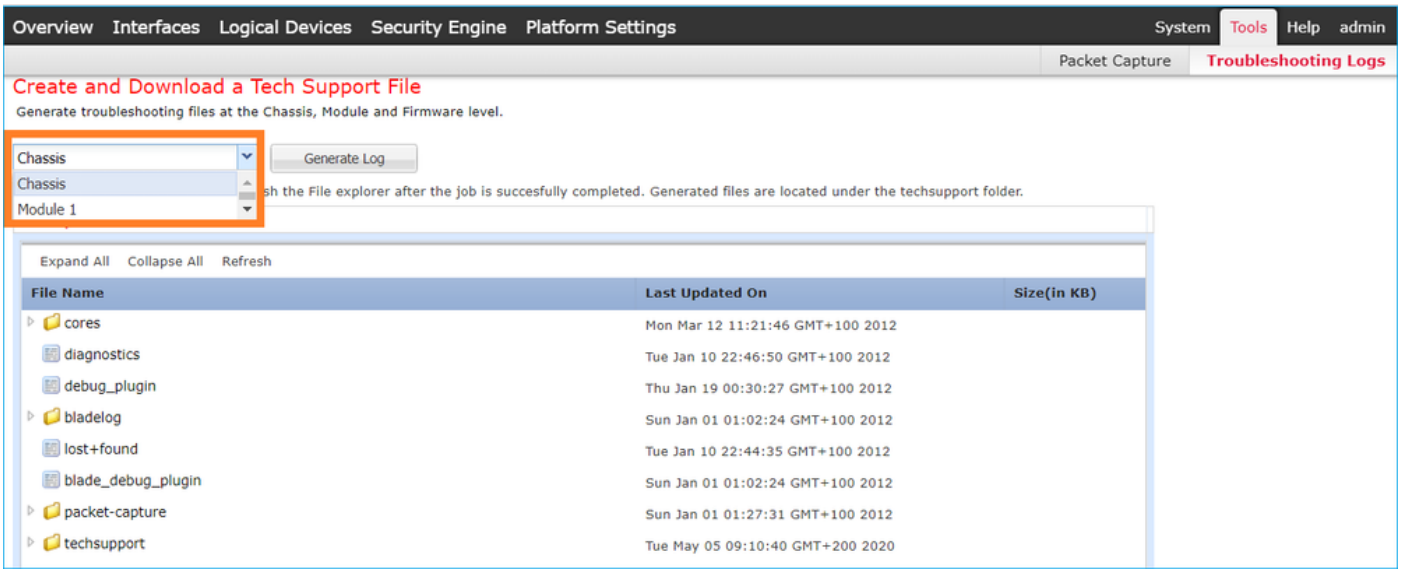
注意：除了FXOS show tech输出外，逻辑设备（例如ASA和/或FTD）还具有自己的独立show tech功能。在多实例(MI)中，每个实例也有其自己的独立show-tech捆绑包。最后，FCM不支持MI show-techs

从FXOS 2.6开始，可从Firepower机箱管理器(FCM) UI的“工具”(Tools) >“故障排除日志”(Troubleshooting Logs)下获取FXOS技术支持生成和下载

在FP9300上：



在FP41xx上：



问：如何验证和更改机箱管理IP地址、子网掩码和网关？

验证管理接口配置的方法有多种：

<#root>

FPR4115-2-1#

show fabric-interconnect

```
Fabric Interconnect:
    ID   OOB IP Addr     OOB Gateway     OOB Netmask     OOB IPv6 Address OOB IPv6 Gateway Prefix Operal
    ---- --------------- --------------- --------------- ---------------- ---------------- ------ -----
    A    10.62.184.19    10.62.184.1     255.255.255.0   ::               ::               64     Operal
```

或

```
<#root>

FPR4115-2-1#

scope fabric-interconnect a

FPR4115-2-1 /fabric-interconnect #

show


Fabric Interconnect:
    ID   OOB IP Addr     OOB Gateway     OOB Netmask     OOB IPv6 Address OOB IPv6 Gateway Prefix Operal
    ---- --------------- --------------- --------------- ---------------- ---------------- ------ -----
    A    10.62.184.19    10.62.184.1     255.255.255.0   ::               ::               64     Operal
FPR4115-2-1 /fabric-interconnect #

show detail


Fabric Interconnect:
    ID: A
    Product Name: Cisco FPR-4115-SUP
    PID: FPR-4115-SUP
    VID: V01
    Vendor: Cisco Systems, Inc.
    Serial (SN): JAD12345NY6
    HW Revision: 0
    Total Memory (MB): 8074
    OOB IP Addr: 10.62.184.19
    OOB Gateway: 10.62.184.1
    OOB Netmask: 255.255.255.0
    OOB IPv6 Address: ::
    OOB IPv6 Gateway: ::
    Prefix: 64
    Operability: Operable
    Thermal Status: Ok
    Ingress VLAN Group Entry Count (Current/Max): 0/500
    Switch Forwarding Path Entry Count (Current/Max): 14/1021
    Current Task 1:
    Current Task 2:
    Current Task 3:
```

要更改IP设置，请执行以下操作：

```
<#root>

FPR4115-2-1#

scope fabric-interconnect a

FPR4115-2-1 /fabric-interconnect #

set out-of-band

  gw        Gw
```

```
  ip       Ip
  netmask  Netmask
KSEC-FPR4115-2-1 /fabric-interconnect #
```

set out-of-band ip 10.62.184.19 netmask 255.255.255.0 gw 10.62.184.1

```
KSEC-FPR4115-2-1 /fabric-interconnect* #
```

commit-buffer

关于提交：

```
FPR4115-2-1 /fabric-interconnect # commit-buffer verify-only    ! verify the change for error
FPR4115-2-1 /fabric-interconnect # commit-buffer                ! commit the change
FPR4115-2-1 /fabric-interconnect # discard-buffer               ! cancel the change
```

有关详细信息，请查看：

[Cisco Firepower 4100/9300 FXOS命令参考]

问：如何运行FXOS Ping测试？

导航到本地管理CLI范围并使用ping命令：

<#root>

```
FPR4115-2-1#
```

connect local-mgmt

```
FPR4115-2-1(local-mgmt)#
```

ping 10.62.184.1

```
PING 10.62.184.1 (10.62.184.1) from 10.62.184.19 eth0: 56(84) bytes of data.
64 bytes from 10.62.184.1: icmp_seq=1 ttl=255 time=0.602 ms
64 bytes from 10.62.184.1: icmp_seq=2 ttl=255 time=0.591 ms
64 bytes from 10.62.184.1: icmp_seq=3 ttl=255 time=0.545 ms
64 bytes from 10.62.184.1: icmp_seq=4 ttl=255 time=0.552 ms
```

问：如何验证带外管理接口的Mac地址？

导航到本地管理CLI范围并使用此命令：

<#root>

```
FPR4115-2-1#
```

connect local-mgmt

```
FPR4115-2-1(local-mgmt)#

show mgmt-ip-debug | begin eth0

eth0      Link encap:Ethernet  HWaddr 78:bc:1a:e7:a4:11
          inet addr:10.62.184.19  Bcast:10.62.184.255  Mask:255.255.255.0
          inet6 addr: fe80::7abc:1aff:fee7:a411/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:3420589 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2551231 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:41936204 (399.9 MiB)  TX bytes:1530147643 (1.4 GiB)
```

问：如何验证带外管理接口是否已启用？

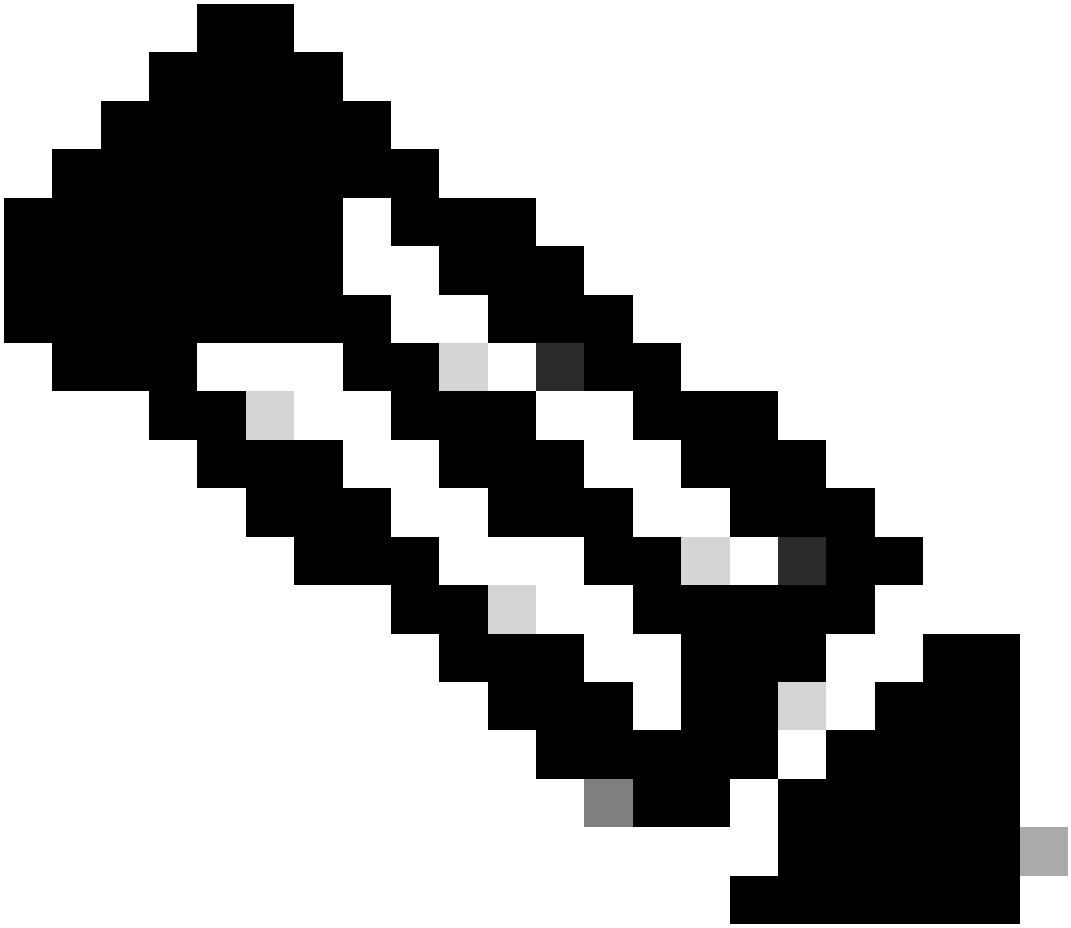
除了scope fabric-interconnect a > show下的Operational外，还可以使用以下命令：

```
<#root>

FPR4115-2-1#

connect local-mgmt

FPR4115-2-1(local-mgmt)#

show mgmt-port

eth0      Link encap:Ethernet  HWaddr 78:bc:1a:e7:a4:11
          inet addr:10.62.184.19  Bcast:10.62.184.255  Mask:255.255.255.0
          inet6 addr: fe80::7abc:1aff:fee7:a411/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:3422158 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2552019 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:419611452 (400.1 MiB)  TX bytes:1530247862 (1.4 GiB)
```

或者，您可以使用此命令。Scope部分显示Link UP。请注意，UP显示在下一行中：

```
<#root>

FPR4115-2-1#

connect local-mgmt

FPR4115-2-1(local-mgmt)#

show mgmt-ip-debug | begin eth0

eth0      Link encap:Ethernet  HWaddr 78:bc:1a:e7:a4:11
          inet addr:10.62.184.19  Bcast:10.62.184.255  Mask:255.255.255.0
          inet6 addr: fe80::7abc:1aff:fee7:a411/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
```

```
RX packets:3420589 errors:0 dropped:0 overruns:0 frame:0
TX packets:2551231 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:419362704 (399.9 MiB)  TX bytes:1530147643 (1.4 GiB)
```



注意：UP状态是接口的管理状态。即使拔下物理电缆或SFP模块，状态仍为UP。 另一个重要点是RUNNING状态，这意味着链路运行正常（线路协议处于运行状态）。

要关闭接口的逻辑状态：

<#root>

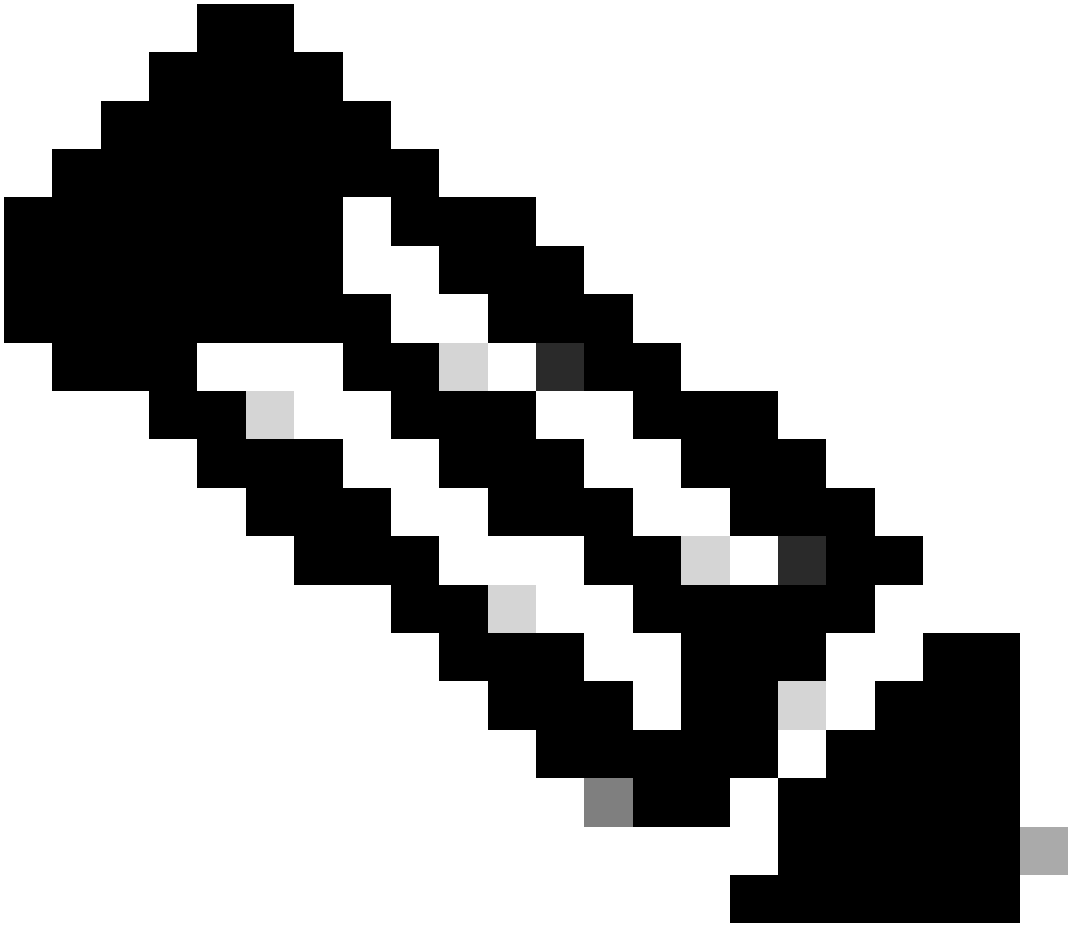
```
FPR4100-3-A(local-mgmt)#
mgmt-port shut
FPR4100-3-A(local-mgmt)#
show mgmt-ip-debug ifconfig | b eth0
```

```
eth0      Link encap:Ethernet  HWaddr 58:97:BD:B9:76:EB
          inet addr:10.62.148.88  Bcast:10.62.148.127  Mask:255.255.255.128
          BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:3685870 errors:0 dropped:0 overruns:0 frame:0
          TX packets:7068372 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:295216623 (281.5 MiB)  TX bytes:1049391193 (1000.7 MiB)
```

再次提到它：

<#root>

```
FPR4100-3-A(local-mgmt)#

mgmt-port no-shut

FPR4100-3-A(local-mgmt)#

show mgmt-ip-debug ifconfig | b eth0

eth0      Link encap:Ethernet  HWaddr 58:97:BD:B9:76:EB
          inet addr:10.62.148.88  Bcast:10.62.148.127  Mask:255.255.255.128
          inet6 addr: fe80::5a97:bdff:feb9:76eb/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:3685885 errors:0 dropped:0 overruns:0 frame:0
          TX packets:7068374 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:295218130 (281.5 MiB)  TX bytes:1049391353 (1000.7 MiB)
```



注意：fxos模式下有一个show interface brief和show interface mgmt 0，分别将mgmt0接口显示为down和Admin down。请勿使用此命令作为关闭的参考。

<#root>

```
FPR-4110-A#

connect fxos

FPR-4110-A(fxos)#

show interface brief | include mgmt0

mgmt0  --           down   172.16.171.83                           --       1500

FPR-4110-A(fxos)#

show interface mgmt 0

mgmt0 is down (Administratively down)
  Hardware: GigabitEthernet, address: 5897.bdb9.212d (bia 5897.bdb9.212d)
  Internet Address is 172.16.171.83/24
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec
```

```
  reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA
  auto-duplex, auto-speed
  EtherType is 0x0000
  1 minute input rate 3080 bits/sec 2 packets/sec
  1 minute output rate 0 bits/sec 0 packets/sec
  Rx
    977 unicast packets 12571 multicast packets 5229 broadcast packets
    18777 input packets 2333662 bytes
  Tx
    0 unicast packets 0 multicast packets 0 broadcast packets
    0 output packets 0 bytes
```

如果您在fxos模式下执行show run interface mgmt0，则在该接口下执行shutdown force。同样，请勿使用此命令作为关闭的参考：

```
<#root>

FPR4115-2-1(fxos)#

show run interface mgmt0


!Command:

show running-config interface mgmt0

!Time: Tue May  5 14:19:42 2020

version 5.0(3)N2(4.81)

interface mgmt0
  shutdown force
  ip address 10.62.184.19/24
```

问：如何检查FXOS路由表？

带外管理仅取决于默认网关设置。因此，请确保所选的默认网关允许连接到需要访问系统的客户端。connect fxos下有一个show ip route vrf all命令，但这不是用于带外管理。

问：如何检查FXOS ARP表？

ARP表在FXOS CLI中不可见。您还可以在fxos模式(ethanalyzer)下使用数据包捕获来捕获流向管理层/流出管理层的ARP和/或检查流量。

以下是捕获ARP数据包的示例。您可以将capture-filter更改为任何内容。该过滤器类似于tcpdump过

濾器：

<#root>

```
fp9300-A#
connect fxos

fp9300-A(fxos)#
ethanalyzer local interface mgmt capture-filter arp

Capturing on eth0
2016-10-14 18:04:57.551221 00:50:56:85:be:44 -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.240? Tell 172.
2016-10-14 18:04:57.935562 00:12:80:85:a5:49 -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.112? Tell 172.
2016-10-14 18:04:58.167029 00:50:56:85:78:4e -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.205? Tell 172.
2016-10-14 18:04:59.156000 00:50:56:9f:b1:43 -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.1? Tell 172.16
2016-10-14 18:04:59.165701 00:50:56:9f:b1:43 -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.1? Tell 172.16
2016-10-14 18:04:59.166925 00:50:56:85:78:4e -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.205? Tell 172.
2016-10-14 18:04:59.268168 00:50:56:9f:b1:43 -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.151? Tell 0.0.
2016-10-14 18:05:00.150217 00:50:56:85:78:4e -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.204? Tell 172.
2016-10-14 18:05:00.268369 00:50:56:9f:b1:43 -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.151? Tell 0.0.
2016-10-14 18:05:01.150243 00:50:56:85:78:4e -> ff:ff:ff:ff:ff:ff ARP Who has 172.16.171.204? Tell 172.
10 packets captured
Program exited with status 0.
fp9300-A(fxos)#
```

此外，您可以将捕获保存到文件，然后将其导出到远程服务器：

<#root>

```
FPR4140-A#
connect fxos

FPR4140-A(fxos)#
ethanalyzer local interface mgmt capture-filter arp limit-captured-frames 0 write workspace:///ARP.pcap

FPR4140-A#
connect local-mgmt

FPR4140-A(local-mgmt)#
dir

1 23075 Jan 12 13:13:18 2020 ARP.pcap
FPR4140-A(local-mgmt)#
copy  workspace:///ARP.pcap ftp://anonymous@10.48.40.70/ARP.pcap
```

问：如何检查FXOS故障事件？

使用show fault命令：

<#root>

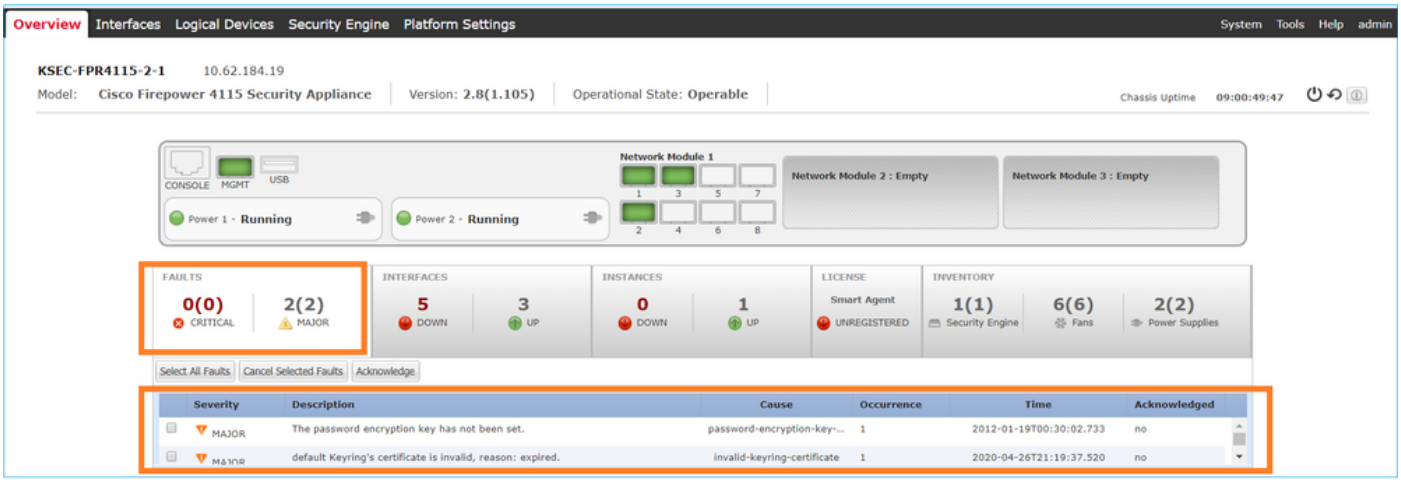
```
FPR4115-2-1#

show fault

Severity  Code     Last Transition Time     ID       Description
--------- -------- ----------------------- -------- -----------
Major     F0909    2020-04-26T21:19:37.520    554924 default Keyring's certificate is invalid, reason:
Major     F1769    2012-01-19T00:30:02.733    323268 The password encryption key has not been set.
Minor     F1437    2012-01-19T00:30:02.732     32358 Config backup may be outdated
```

您还可以根据严重性过滤故障：

<#root>

```
FPR4115-2-1#

show fault ?

  0-18446744073709551615  ID
  <CR>
  >                       Redirect it to a file
  >>                      Redirect it to a file in append mode
  cause                   Cause
  detail                  Detail
  severity                Severity
  suppressed              Fault Suppressed
  |                       Pipe command output to filter


FPR4115-2-1#

show fault severity major

Severity  Code     Last Transition Time     ID       Description
--------- -------- ----------------------- -------- -----------
Major     F0909    2020-04-26T21:19:37.520    554924 default Keyring's certificate is invalid, reason:
Major     F1769    2012-01-19T00:30:02.733    323268 The password encryption key has not been set.
```

从FXOS UI Overview > FAULTS控制面板也可看到相同的故障：



问：如何更改系统的主机名？

在系统范围下使用set name命令：

<#root>

KSEC-FPR4115-2-1#

scope system

KSEC-FPR4115-2-1 /system #

set name new-name

Warning: System name modification changes FC zone name and redeploys them non-disruptively
KSEC-FPR4115-2-1 /system* #

commit-buffer

KSEC-FPR4115-2-1 /system #

exit

new-name#

问：show server status Output下面的“Compute Mismatch”是什么？

新安装的安全模块必须经过确认并重新初始化，然后才能使用。即使通过RMA更换设备也是如此。

<#root>

FPR9300#

show server status

```
Server  Slot Status                        Overall Status        Discovery
------- ---------------------------------- -------------------- ---------
1/1     Mismatch                           Compute Mismatch      Complete
1/2     Equipped                           Ok                    Complete
1/3     Empty
FPR9300#
```

计算不匹配可能会导致此故障事件：

```
Service profile ssp-sprof-1 configuration failed due to compute-unavailable,insufficient-resources
```

show service-profile status将显示Unassociated，就如同模块不存在一样。

从CLI确认的步骤：

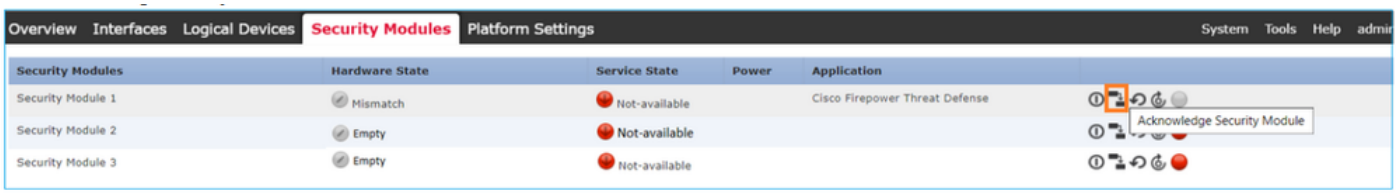
<#root>

scope chassis 1

acknowledge slot <slot#>

commit-buffer

或者，您可以使用机箱管理器UI来确认模块：



问： show slot Output中“令牌不匹配”的含义是什么？

这表示在确认安全模块后，尚未重新初始化：

<#root>

FPR9300#

scope ssa

FPR9300 /ssa #

```
show slot


Slot:
    Slot ID    Log Level Admin State  Operational State
    ---------- --------- ------------ -----------------
    1          Info      Ok           Token Mismatch
    2          Info      Ok           Online
    3          Info      Ok           Not Available
FPR9300 /ssa #
```

通过CLI重新初始化的步骤：

<#root>

```
scope ssa
scope slot <#>
reinitialize
commit-buffer
```

在Firepower 41xx上，这也可能意味着SSD缺失或出现故障。在scope server 1/1下通过show inventory storage检查SSD是否仍然存在：

<#root>

```
FPR4140-A#

scope ssa


FPR4140-A /ssa #

show slot 1



Slot:
    Slot ID    Log Level Admin State  Oper State
    ---------- --------- ------------ ----------
    1          Info      Ok           Token Mismatch

FPR4140-A /ssa #

show fault severity critical


Severity  Code     Last Transition Time     ID       Description
--------- -------- ------------------------ -------- -----------
Critical  F1548    2018-03-11T01:22:59.916     38768 Blade swap detected on slot 1

FPR4140-A /ssa #

scope server 1/1
```

```
FPR4140-A /chassis/server #
```

show inventory storage

```
Server 1/1:
    Name:
    User Label:
    Equipped PID: FPR4K-SM-36
    Equipped VID: V01
    Equipped Serial (SN): FLM12345KL6
    Slot Status: Equipped
    Acknowledged Product Name: Cisco Firepower 4100 Series Extreme Performance Security Engine
    Acknowledged PID: FPR4K-SM-36
    Acknowledged VID: V00
    Acknowledged Serial (SN): FLM12345KL6
    Acknowledged Memory (MB): 262144
    Acknowledged Effective Memory (MB): 262144
    Acknowledged Cores: 36
    Acknowledged Adapters: 2
    Motherboard:
        Product Name: Cisco Firepower 4100 Series Extreme Performance Security Engine
        PID: FPR4K-SM-36
        VID: V01
        Vendor: Cisco Systems Inc
        Serial (SN): FLM12345KL6
        HW Revision: 0

        RAID Controller 1:
            Type: SATA
            Vendor: Cisco Systems Inc
            Model: CHORLEYWOOD
            Serial: FLM12345KL6
            HW Revision:
            PCI Addr: 00:31.2
            Raid Support:
            OOB Interface Supported: No
            Rebuild Rate: N/A
            Controller Status: Unknown

            Local Disk 1:
                Vendor:
                Model:
                Serial:
                HW Rev: 0
                Operability: N/A
                Presence: Missing
                Size (MB): Unknown
                Drive State: Unknown
                Power State: Unknown
                Link Speed: Unknown
                Device Type: Unspecified

            Local Disk Config Definition:
                Mode: No RAID
                Description:
                Protect Configuration: No
```

问：如何通过CLI设置时区、NTP和DNS？

这在FXOS平台设置下配置。应用本文档中的说明：FXOS平台设置。

要验证机箱时间设置，请执行以下操作：

```
<#root>

KSEC-FPR4115-2-1#

show clock

Tue May  5 21:30:55 CEST 2020
KSEC-FPR4115-2-1#

show ntp


    NTP Overall Time-Sync Status: Time Synchronized
```

要从模块引导CLI验证模块/刀片时间，请使用以下3个命令：

```
<#root>

Firepower-module1>

show ntp peerstatus

     remote           local      st poll reach  delay   offset    disp
==============================================================================
*203.0.113.126   203.0.113.1      2   64  377 0.00006  0.000018 0.02789

remote 203.0.113.126, local 203.0.113.1
hmode client, pmode mode#255, stratum 2, precision -20
leap 00, refid [192.0.2.1], rootdistance 0.19519, rootdispersion 0.17641
ppoll 6, hpoll 6, keyid 0, version 4, association 43834
reach 377, unreach 0, flash 0x0000, boffset 0.00006, ttl/mode 0
timer 0s, flags system_peer, config, bclient, prefer, burst
reference time:      dbef8823.8066c43a  Mon, Dec  5 2016  8:30:59.501
originate timestamp: 00000000.00000000  Mon, Jan  1 1900  2:00:00.000
receive timestamp:   dbefb27d.f914589d  Mon, Dec  5 2016 11:31:41.972
transmit timestamp:  dbefb27d.f914589d  Mon, Dec  5 2016 11:31:41.972
filter delay:  0.00008  0.00006  0.00008  0.00009
               0.00008  0.00008  0.00008  0.00009
filter offset: 0.000028 0.000018 0.000034 0.000036
               0.000033 0.000036 0.000034 0.000041
filter order:  1        2        6        0
               4        5        3        7
offset 0.000018, delay 0.00006, error bound 0.02789, filter error 0.00412


Firepower-module1>

show ntp association

     remote           refid      st t when poll reach   delay   offset  jitter
==============================================================================
```

```
*203.0.113.126   192.0.2.1     2 u   37   64  377    0.062    0.018   0.017


ind assid status  conf reach auth condition  last_event cnt
===========================================================
  1 43834  961d   yes   yes  none  sys.peer              1

associd=43834 status=961d conf, reach, sel_sys.peer, 1 event, popcorn,
srcadr=203.0.113.126, srcport=123, dstadr=203.0.113.1, dstport=123,
leap=00, stratum=2, precision=-20, rootdelay=195.190, rootdisp=176.407,
refid=192.0.2.1,
reftime=dbef8823.8066c43a  Mon, Dec  5 2016  8:30:59.501,
rec=dbefb27d.f91541fc  Mon, Dec  5 2016 11:31:41.972, reach=377,
unreach=0, hmode=3, pmode=4, hpoll=6, ppoll=6, headway=22, flash=00 ok,
keyid=0, offset=0.018, delay=0.062, dispersion=0.778, jitter=0.017,
xleave=0.011,
filtdelay=     0.08    0.06    0.08    0.10    0.08    0.09    0.08    0.10,
filtoffset=    0.03    0.02    0.03    0.04    0.03    0.04    0.03    0.04,
filtdisp=      0.00    0.03    1.04    1.07    2.06    2.09    3.09    3.12


Firepower-module1>
```

show ntp sysinfo

```
associd=0 status=0618 leap_none, sync_ntp, 1 event, no_sys_peer,
version="ntpd 4.2.6p5@1.2349-o Fri Oct  7 17:08:03 UTC 2016 (2)",
processor="x86_64", system="Linux/3.10.62-ltsi-WR6.0.0.27_standard",
leap=00, stratum=3, precision=-23, rootdelay=195.271, rootdisp=276.641,
refid=203.0.113.126,
reftime=dbefb238.f914779b  Mon, Dec  5 2016 11:30:32.972,
clock=dbefb2a7.575931d7  Mon, Dec  5 2016 11:32:23.341, peer=43834, tc=6,
mintc=3, offset=0.035, frequency=25.476, sys_jitter=0.003,
clk_jitter=0.015, clk_wander=0.011

system peer:          203.0.113.126
system peer mode:     client
leap indicator:       00
stratum:              3
precision:            -23
root distance:        0.19527 s
root dispersion:      0.27663 s
reference ID:         [203.0.113.126]
reference time:       dbefb238.f914779b  Mon, Dec  5 2016 11:30:32.972
system flags:         auth monitor ntp kernel stats
jitter:               0.000000 s
stability:            0.000 ppm
broadcastdelay:       0.000000 s
authdelay:            0.000000 s

time since restart:     1630112
time since reset:       1630112
packets received:       157339
packets processed:      48340
current version:        48346
previous version:       0
declined:               0
access denied:          0
bad length or format:   0
bad authentication:     0
rate exceeded:          0
Firepower-module1>
```

有关NTP验证和故障排除的详细信息，请查阅本文档：配置、验证Firepower FXOS设备上的网络时间协议(NTP)设置并对其进行故障排除

问：如何设置智能许可和HTTP代理？

对于ASA逻辑设备，FXOS机箱需要智能许可。有关详细信息，请参阅本文档：ASA许可证管理

以下是许可证状态的示例输出：

```
<#root>

FPR4115-2-1#

scope license

FPR4115-2-1 /license #

show license all


Smart Licensing Status
======================

Smart Licensing is ENABLED

Registration:
  Status: REGISTERED
  Smart Account: BU Production Test
  Virtual Account: TAC-BETA
  Export-Controlled Functionality: Not Allowed
  Initial Registration: SUCCEEDED on Dec 15 14:41:55 2015 PST
  Last Renewal Attempt: SUCCEEDED on Dec 23 09:26:05 2015 PST
  Next Renewal Attempt: Jun 21 07:00:21 2016 PST
  Registration Expires: Dec 23 06:54:19 2016 PST

License Authorization:
  Status: AUTHORIZED on Apr 07 15:44:26 2016 PST
  Last Communication Attempt: SUCCEEDED on Apr 07 15:44:26 2016 PST
  Next Communication Attempt: May 07 15:44:25 2016 PST
  Communication Deadline: Jul 06 15:38:24 2016 PST

License Usage
=============

No licenses in use

Product Information
===================
UDI: PID:FPR9K-SUP,SN:JAD123456AB

Agent Version
=============
```

```
Smart Agent for Licensing: 1.4.1_rel/31
```

或者：

<#root>

```
fp9300-A#
```

connect local-mgmt

```
fp9300-A(local-mgmt)#
```

show license all

```
Smart Licensing Status
======================

Smart Licensing is ENABLED

Registration:
  Status: REGISTERED
  Smart Account: Cisco Internal
  Virtual Account: Escalations
  Export-Controlled Functionality: Allowed
  Initial Registration: SUCCEEDED on Feb 10 18:55:08 2016 CST
  Last Renewal Attempt: SUCCEEDED on Oct 09 15:07:25 2016 CST
  Next Renewal Attempt: Apr 07 15:16:32 2017 CST
  Registration Expires: Oct 09 15:10:31 2017 CST

License Authorization:
  Status: AUTHORIZED on Sep 20 07:29:06 2016 CST
  Last Communication Attempt: SUCCESS on Sep 20 07:29:06 2016 CST
  Next Communication Attempt: None  Communication Deadline: None
Licensing HA configuration error:
    No Reservation Ha config error

License Usage
==============

No licenses in use

Product Information
===================
UDI: PID:FPR9K-SUP,SN:JAD190800VU

Agent Version
=============
Smart Agent for Licensing: 1.6.7_rel/95
```

问：如何通过CLI配置系统日志？

检查以下文档：

- 在Firepower FXOS设备上配置系统日志
- FXOS配置指南：平台设置系统日志

问： 如何在Firepower设备上配置SNMP？

检查本文档：在Firepower NGFW设备上配置SNMP

问：如何安装/更换机箱管理器使用的SSL证书？

本文档可以帮助：安装FXOS机箱管理器的受信任证书

问：如何排除通过FPR9300机箱的流量故障？

检查以下文档：

- Firepower数据路径故障排除第1阶段：数据包入口
- Firepower数据路径故障排除：概述
- 分析 Firepower 防火墙捕获以有效排除网络问题

问： 如何查看机箱Mac地址表？

对于FP41xx和FP93xx平台，请使用以下任一命令：

<#root>

```
FPR4115-2-1#
connect fxos
FPR4115-2-1(fxos)#
 show l2-table
Ingress      MAC             Vlan Class VlanGrp   Status  Dst
Eth1/1       78bc.1ae7.a45e  101  1     0         present 1
Veth776      78bc.1ae7.a45e  101  1     0         present 1
Po1          0100.5e00.0005  1001 1     0         present 1
Po1          0100.5e00.0006  1001 1     0         present 1
Po1          78bc.1ae7.a44e  1001 1     0         present 1
Po1          ffff.ffff.ffff  1001 63    0         present 1
FPR4115-2-1(fxos)#
show mac address-table
Legend:
        * - primary entry, G - Gateway MAC, (R) - Routed MAC, O - Overlay MAC
```

```
        age - seconds since first seen,+ - primary entry using vPC Peer-Link
   VLAN     MAC Address      Type      age     Secure NTFY   Ports/SWID.SSID.LID
---------+----------------+--------+---------+------+----+------------------
* 1001     0100.5e00.0005    static    0          F    F  Eth1/1
* 1001     0100.5e00.0006    static    0          F    F  Eth1/1
* 1001     78bc.1ae7.a44e    static    0          F    F  Eth1/1
* 1001     ffff.ffff.ffff    static    0          F    F  Eth1/1
* 101      78bc.1ae7.a45e    static    0          F    F  Eth1/1
* 101      78bc.1ae7.a46f    static    0          F    F  Veth776
* 4047     0015.a501.0100    static    0          F    F  Veth864
* 4047     0015.a501.0101    static    0          F    F  Veth1015
* 4043     78bc.1ae7.b000    static    0          F    F  Eth1/10
* 4043     78bc.1ae7.b00c    static    0          F    F  Eth1/9
* 1        0015.a500.001f    static    0          F    F  Veth887
* 1        0015.a500.002f    static    0          F    F  Veth1018
* 1        0015.a500.01bf    static    0          F    F  Veth905
* 1        0015.a500.01ef    static    0          F    F  Veth1019
```

问：如何查看机箱接口MAC地址？

使用以下命令：

<#root>

```
FPR4115-2-1#
```

connect fxos

```
FPR4115-2-1(fxos)#
```

show interface mac-address

```
-------------------------------------------------------------------------------
Interface                   Mac-Address     Burn-in Mac-Address
-------------------------------------------------------------------------------
Ethernet1/1                 78bc.1ae7.a417  78bc.1ae7.a418
Ethernet1/2                 78bc.1ae7.a417  78bc.1ae7.a419
Ethernet1/3                 78bc.1ae7.a417  78bc.1ae7.a41a
Ethernet1/4                 78bc.1ae7.a417  78bc.1ae7.a41b
Ethernet1/5                 78bc.1ae7.a417  78bc.1ae7.a41c
Ethernet1/6                 78bc.1ae7.a417  78bc.1ae7.a41d
Ethernet1/7                 78bc.1ae7.a417  78bc.1ae7.a41e
Ethernet1/8                 78bc.1ae7.a417  78bc.1ae7.a41f
Ethernet1/9                 78bc.1ae7.a417  78bc.1ae7.a420
Ethernet1/10                78bc.1ae7.a417  78bc.1ae7.a421
Ethernet1/11                78bc.1ae7.a417  78bc.1ae7.a422
Ethernet1/12                78bc.1ae7.a417  78bc.1ae7.a423
port-channel1               78bc.1ae7.a417  78bc.1ae7.a41a
port-channel48              78bc.1ae7.a417  0000.0000.0000
mgmt0                       78bc.1ae7.a411  78bc.1ae7.a411
Vethernet690                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet691                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet692                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet693                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet694                78bc.1ae7.a417  78bc.1ae7.a417
```

```
Vethernet695                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet696                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet697                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet698                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet699                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet700                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet774                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet775                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet776                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet777                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet778                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet779                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet861                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet862                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet863                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet864                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet887                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet905                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet906                78bc.1ae7.a417  78bc.1ae7.a417
Vethernet1015               78bc.1ae7.a417  78bc.1ae7.a417
Vethernet1018               78bc.1ae7.a417  78bc.1ae7.a417
Vethernet1019               78bc.1ae7.a417  78bc.1ae7.a417
Vethernet1020               78bc.1ae7.a417  78bc.1ae7.a417
Vethernet1021               78bc.1ae7.a417  78bc.1ae7.a417
```

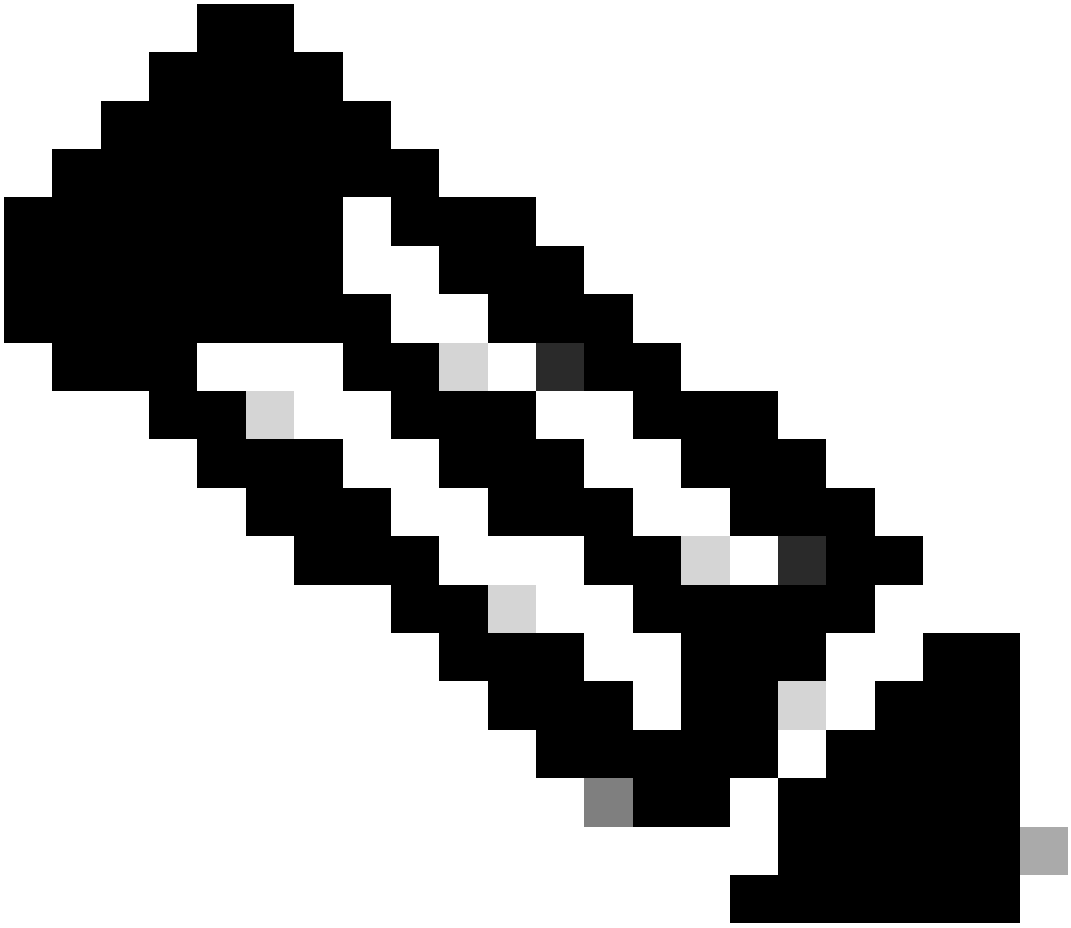
问：如何在FXOS管理引擎(MIO)上执行密码恢复？

有关FP41xx和FP9300上的口令恢复过程，请参阅本文档：Firepower 9300/4100系列设备的口令恢复过程

问：如何在ASA或FTD逻辑设备上执行密码恢复？

要重置逻辑设备密码，您需要重新引导设备。通过Bootstrap灾难恢复过程，您可以更改以下任何项目：

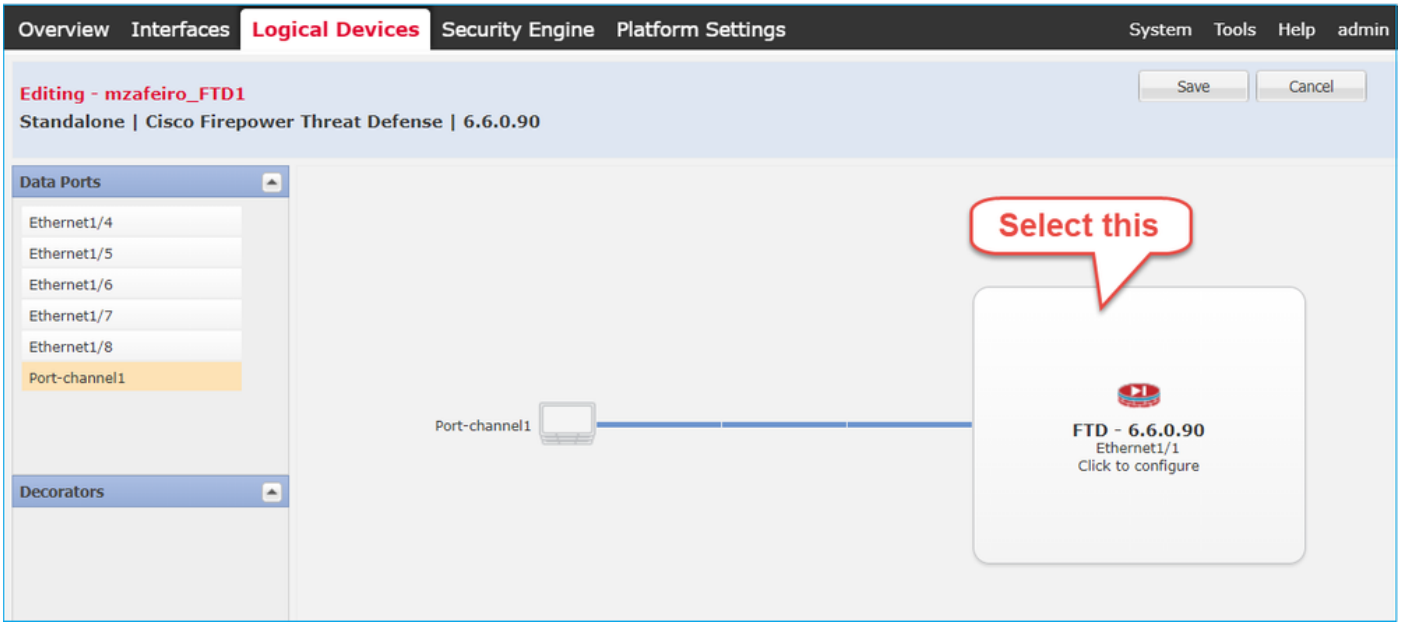
- ASA/FTD管理IP - IP、网络掩码、网关、IPv6、前缀长度
- ASA密码
- FTD注册密钥、密码、FMC IP、搜索域、防火墙模式、DNS服务器、FQDN
- ASA集群IP池、网络掩码、网关、前缀长度、虚拟IP。



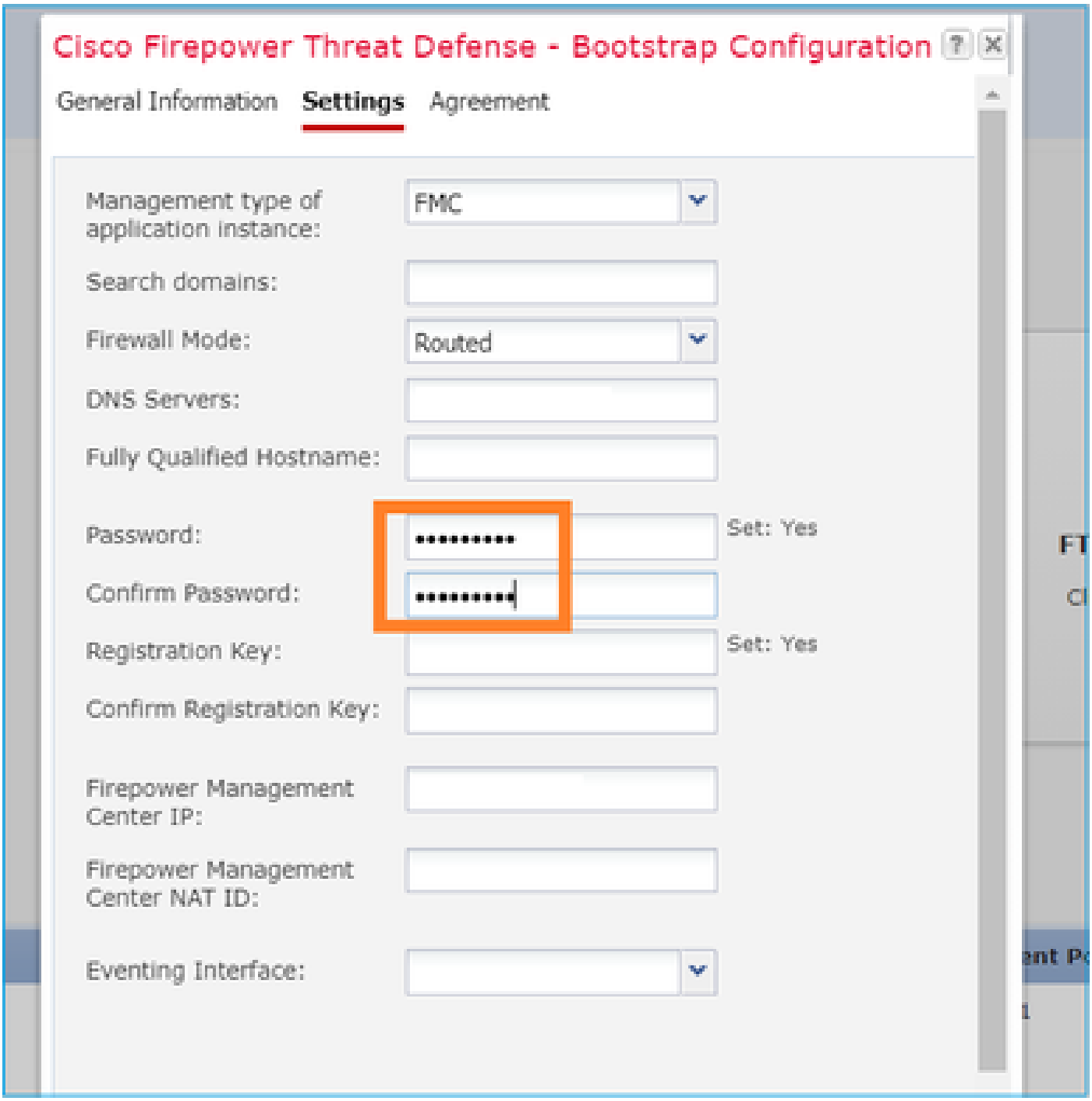
注意：必须在维护时段(MW)中执行引导恢复过程，因为它需要重新加载逻辑设备

示例 1

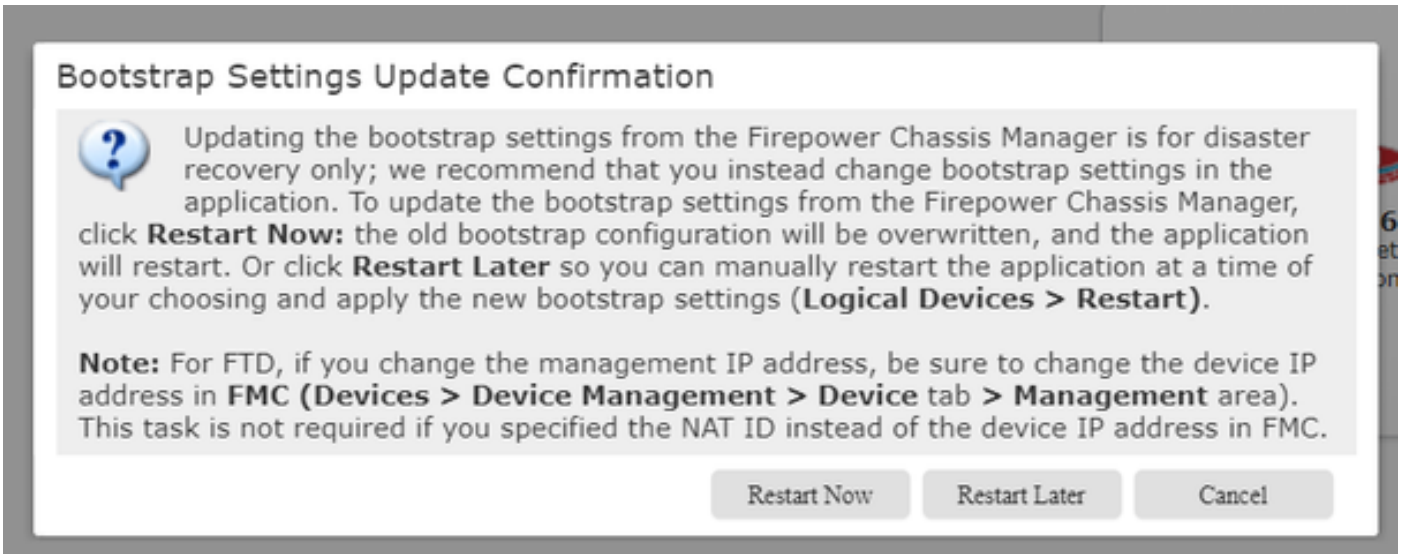
可以使用FXOS UI编辑逻辑设备的引导程序设置。导航到“逻辑设备”选项卡，编辑设备


Overview
Interfaces
Logical Devices
Security Engine
Platform Settings
System
Tools
Help
admin
Editing - mzafeiro_FTD1
Standalone | Cisco Firepower Threat Defense | 6.6.0.90
Save
Cancel
Data Ports
Ethernet1/4
Ethernet1/5
Ethernet1/6
Ethernet1/7
Ethernet1/8
Port-channel1
Decorators
Select this
Port-channel1
FTD - 6.6.0.90
Ethernet1/1
Click to configure

设置密码：


Cisco Firepower Threat Defense - Bootstrap Configuration
General Information
Settings
Agreement
Management type of application instance:
FMC
Search domains:
Firewall Mode:
Routed
DNS Servers:
Fully Qualified Hostname:
Password:
Set: Yes
Confirm Password:
Registration Key:
Set: Yes
Confirm Registration Key:
Firepower Management Center IP:
Firepower Management Center NAT ID:
Eventing Interface:

保存此消息后，将显示：



示例 2

以下是ASA启用密码更改/恢复的示例：

```
<#root>

FP4110-A#

scope ssa


FP4110-A /ssa #

show logical-device


Logical Device:
    Name       Description Slot ID    Mode       Oper State                Templa
    ---------- ----------- ---------- ---------- ------------------------- ------
    asa                    1          Standalone Ok                        asa

FP4110-A /ssa #

scope logical-device asa


FP4110-A /ssa/logical-device #

scope mgmt-bootstrap asa


FP4110-A /ssa/logical-device/mgmt-bootstrap #

show config


 enter mgmt-bootstrap asa
     create bootstrap-key-secret PASSWORD
 !       set value
     exit
     enter ipv4 1 default
         set gateway 172.16.171.1
         set ip 172.16.171.226 mask 255.255.255.0
```

```
     exit
 exit

FP4110-A /ssa/logical-device/mgmt-bootstrap #
```

enter bootstrap-key-secret PASSWORD

```
FP4110-A /ssa/logical-device/mgmt-bootstrap/bootstrap-key-secret #
```

set value

```
Value:   <enter new enable password in here>
Warning: Bootstrap changes are not automatically applied to app-instances. To apply the changes, please

FP4110-A /ssa/logical-device/mgmt-bootstrap/bootstrap-key-secret* #
```

commit-buffer

```
FP4110-A /ssa/logical-device/mgmt-bootstrap/bootstrap-key-secret #
```

top

```
FP4110-A#
```

scope ssa

```
FP4110-A /ssa #
```

scope slot 1

```
FP4110-A /ssa/slot #
```

scope app-instance asa

```
FP4110-A /ssa/slot/app-instance #
```

clear-mgmt-bootstrap

```
Warning: Clears the application management bootstrap. Application needs to be restarted for this action
FP4110-A /ssa/slot/app-instance* #
```

commit-buffer

```
FP4110-A /ssa/slot/app-instance #
```

restart

```
FP4110-A /ssa/slot/app-instance* #
```

commit-buffer

在连接到ASA之前检查它是否处于联机状态，并使用新的启用密码。

<#root>

```
FP4110-A /ssa/slot/app-instance #
```

show

```
Application Instance:
    App Name   Admin State Oper State       Running Version Startup Version Profile Name Cluster State
    ---------- ----------- ---------------- --------------- --------------- ------------ --------------
    asa        Enabled     Online           9.9.1.76        9.9.1.76                     Not Applicable
FP4110-A /ssa/slot/app-instance #
```

问：如何更改FXOS用户（例如admin）的当前密码？

使用此程序：

<#root>

```
FP4110-1-A#
```

scope security

```
FP4110-1-A /security #
```

show local-user

```
User Name       First Name      Last name
--------------- --------------- ---------
admin
FP4110-1-A /security #
```

enter local-user admin

```
FP4110-1-A /security/local-user #
```

set password

```
Enter a password:
Confirm the password:
FP4110-1-A /security/local-user* #
```

commit-buffer

```
FP4110-1-A /security/local-user #
```

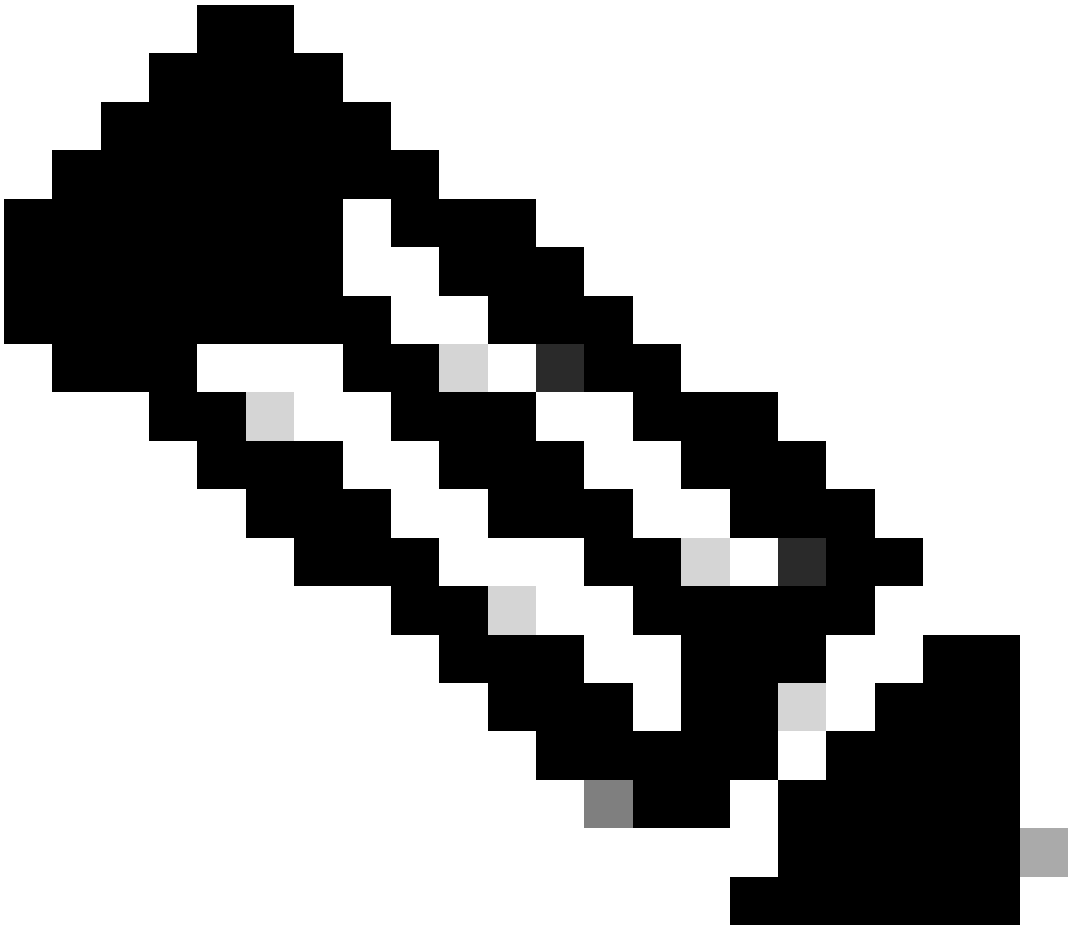
问：如何降级FXOS？

FXOS映像的降级不受官方支持。降级FXOS映像版本的唯一方法是执行设备的完整重新映像。这记录在Firepower 4100/9300升级路径

问：如何降级/升级ASA逻辑设备？

通过机箱管理器降级/升级ASA版本的步骤：更新逻辑设备的映像版本

要通过CLI进行更改，请使用以下配置指南部分：更新逻辑设备的映像版本



注意：在CLI上提交commit-buffer后，它会立即重新启动模块。与此类似，在机箱管理器上，一旦您点击ok，它会重新启动模块。无需手动重新启动。

问： 如何通过CLI检查FXOS升级状态？

当所有组件进入就绪状态后，升级完成：

<#root>

FP9300#

scope system

```
FP9300 /system #
show firmware monitor

FPRM:
    Package-Vers: 2.0(1.37)
    Upgrade-Status: Ready

Fabric Interconnect A:
    Package-Vers: 2.0(1.23)
    Upgrade-Status: Upgrading

Chassis 1:
    Server 1:
        Package-Vers: 2.0(1.23)
        Upgrade-Status: Ready
    Server 2:
        Package-Vers: 2.0(1.23)
        Upgrade-Status: Upgrading
```

其他有用的命令

```
<#root>
FP9300 /firmware/auto-install #
show fsm status
FP9300 /firmware/auto-install #
show fsm status expand
```

问：如何从FXOS CLI重新加载逻辑设备？

首选方法是使用FCM UI。如果由于某种原因无法访问UI，请使用以下命令：

```
<#root>
#
scope chassis 1

/chassis #
scope server 1/1

/chassis/server #
```

```
reset ?

  hard-reset-immediate  Perform an immediate hard reset

  hard-reset-wait       Wait for the completion of any pending management oper

/chassis/server #
commit-buffer
```

问： 如何检查FXOS机箱正常运行时间和上次重新加载原因？

FXOS正常运行时间检查在存在FXOS回溯的情况下非常有用。您可以从UI (FCM)或CLI查看FXOS：

```
<#root>

FPR9K-1-A#
connect fxos

FPR9K-1-A(fxos)#
show system uptime

System start time: Sun Sep 25 09:57:19 2016
System uptime: 28 days, 9 hours, 38 minutes, 14 seconds
Kernel uptime: 28 days, 9 hours, 38 minutes, 41 seconds
Active supervisor uptime: 28 days, 9 hours, 38 minutes, 14 seconds
```

此外，为了确定上次重新加载的原因，请使用此命令：

```
<#root>

FPR9K-1-A(fxos)#
show system reset-reason


----- reset reason for Supervisor-module 1 (from Supervisor in slot 1) ---
1) At 212883 usecs after Fri Oct 21 22:34:35 2016
 Reason: Kernel Panic
 Service:
 Version: 5.0(3)N2(3.02)

2) At 106690 usecs after Thu May 26 16:07:38 2016
 Reason: Reset Requested by CLI command reload
 Service:
```

```
 Version: 5.0(3)N2(3.02)
```

对于FPR2100正常运行时间，请执行以下操作：

1. 获取“show tech-support fprm detail”捆绑包

2. 提取捆绑包的内容

3. 检查文件tmp/inventory_manager.xml

有一个条目显示正常运行时间（以秒为单位）：

<#root>

tmp/inventory_manager.xml:

<uptime>151</uptime>

问：如何检查FXOS的可用磁盘空间？

也称为“工作区”：

<#root>

```
FPR9K-1-A#
```

connect local-mgmt

```
FPR9K-1-A(local-mgmt)#
```

dir

```
1       29 Sep 25 09:56:22 2016 blade_debug_plugin
1       19 Sep 25 09:56:22 2016 bladelog
1       16 Aug 05 15:41:05 2015 cores
1  2841476 Apr 26 14:13:12 2016 d
2     4096 Dec 01 10:09:11 2015 debug_plugin/
1       31 Aug 05 15:41:05 2015 diagnostics
1  2842049 Feb 23 03:26:38 2016 dp
1 18053120 Feb 23 11:10:19 2016 fpr9k-1-0-sam_logs_all.tar
1 18176000 Feb 23 11:10:43 2016 fpr9k-1-1-sam_logs_all.tar
1 19302400 Feb 23 11:11:07 2016 fpr9k-1-2-sam_logs_all.tar
1 16312320 Feb 23 11:06:53 2016 fpr9k-1-3-sam_logs_all.tar
1  2841476 Feb 22 18:47:00 2016 fxos-dplug.5.0.3.N2.3.13.67g.gSSA
2     4096 Aug 05 15:38:58 2015 lost+found/
1       25 Dec 01 11:11:50 2015 packet-capture
1 18493440 Feb 23 10:44:51 2016 sam_logs_all.tar
```

```
2     4096 Sep 14 11:23:11 2016 techsupport/

Usage for workspace://
4032679936 bytes total
324337664 bytes used
3503489024 bytes free
```

<#root>

```
FPR9K-1-A(local-mgmt)#

dir volatile:/


1 66 Oct 27 08:17:48 2016 xmlout_5816

Usage for volatile://
251658240 bytes total
4096 bytes used
251654144 bytes free
```

检查引导闪存可用空间。请注意，此输出还显示工作空间大小和使用情况：

<#root>

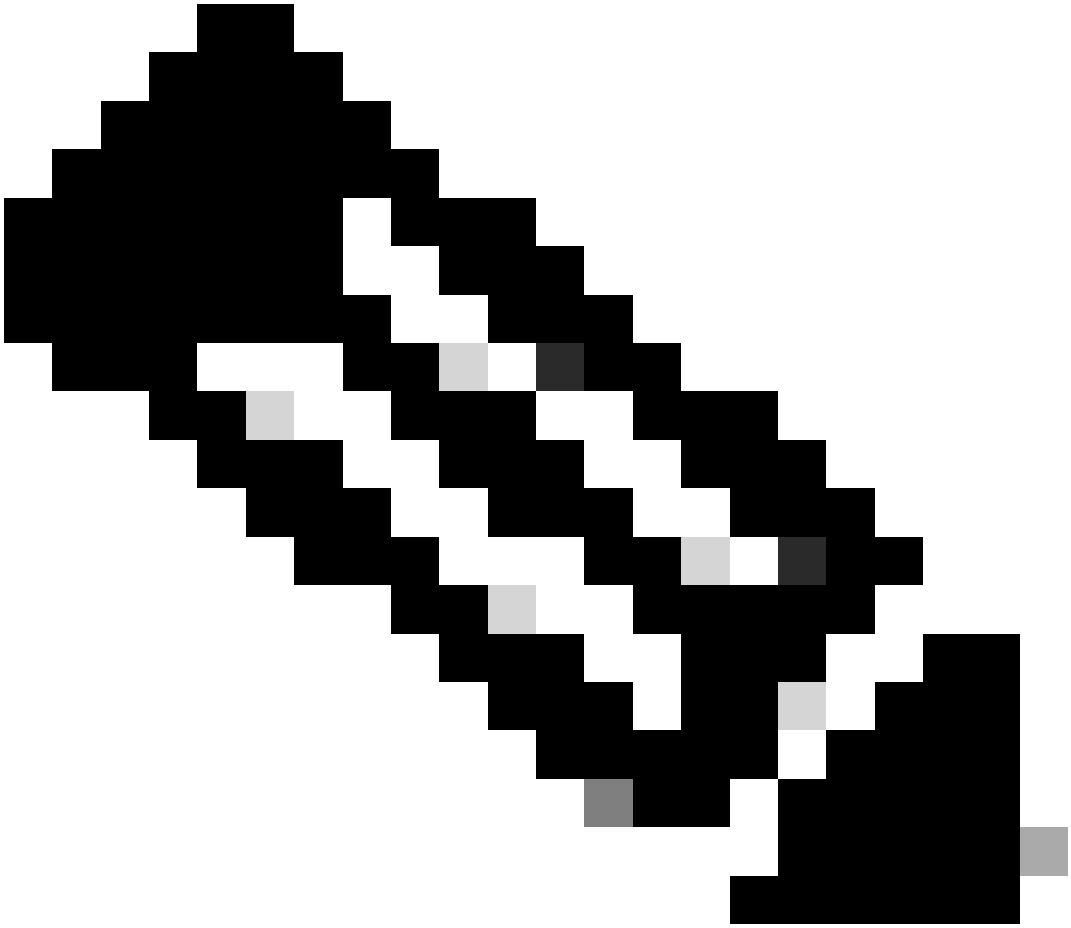
```
FPR9K-1-A#

scope fabric-interconnect a

FPR9K-1-A /fabric-interconnect #

show storage


Storage on local flash drive of fabric interconnect:
    Partition        Size (MBytes)    Used Percentage
    ---------------- ---------------- ---------------
    bootflash        106490           9
    opt              3870             2
    spare            5767             1
    usbdrive         Nothing          Empty
    workspace        3845             9
```

问：如何将FXOS的配置重置为出厂默认设置？

使用以下命令：

<#root>

```
FPR9K-1-A#
connect local-mgmt
FPR9K-1-A(local-mgmt)#
erase configuration
```



注意：这将重新启动系统并擦除整个配置，包括管理IP地址。因此，请确保连接了控制台。系统重新启动后，安装应用程序将运行，您可以重新输入管理配置信息。

示例

```
<#root>
FPR9K-1#
connect local-mgmt
FPR9K-1(local-mgmt)#
```

```
erase configuration

All configurations are erased and system must reboot. Are you sure? (yes/no):

yes

Removing all the configuration. Please wait....
/bin/rm: cannot remove directory `/bootflash/sysdebug//tftpd_logs': Device or resource busy
sudo: cannot get working directory
sudo: cannot get working directory
Configurations are cleaned up. Rebooting....
...
System is coming up ... Please wait ...
System is coming up ... Please wait ...
2016 Oct 28 06:31:00  %$ VDC-1 %$ %USER-0-SYSTEM_MSG: Starting bcm_attach - bcm_usd
System is coming up ... Please wait ...
2016 Oct 28 06:31:06  %$ VDC-1 %$ %USER-0-SYSTEM_MSG: Finished bcm_attach... - bcm_usd
2016 Oct 28 06:31:07  %$ VDC-1 %$ %USER-0-SYSTEM_MSG: Enabling Filter on CPU port  - bcm_usd
System is coming up ... Please wait ...
2016 Oct 28 06:31:11 switch %$ VDC-1 %$ %VDC_MGR-2-VDC_ONLINE: vdc 1 has come online
System is coming up ... Please wait ...
nohup: appending output to `nohup.out'
           ---- Basic System Configuration Dialog ----
  This setup utility guides you through the basic configuration of
  the system. Only minimal configuration including IP connectivity to
  the Fabric interconnect and its clustering mode is performed through these steps.
  Type Ctrl-C at any time to abort configuration and reboot system.
  To back track or make modifications to already entered values,
  complete input till end of section and answer no when prompted
  to apply configuration.
  You have chosen to setup a new Security Appliance. Continue? (y/n):
```

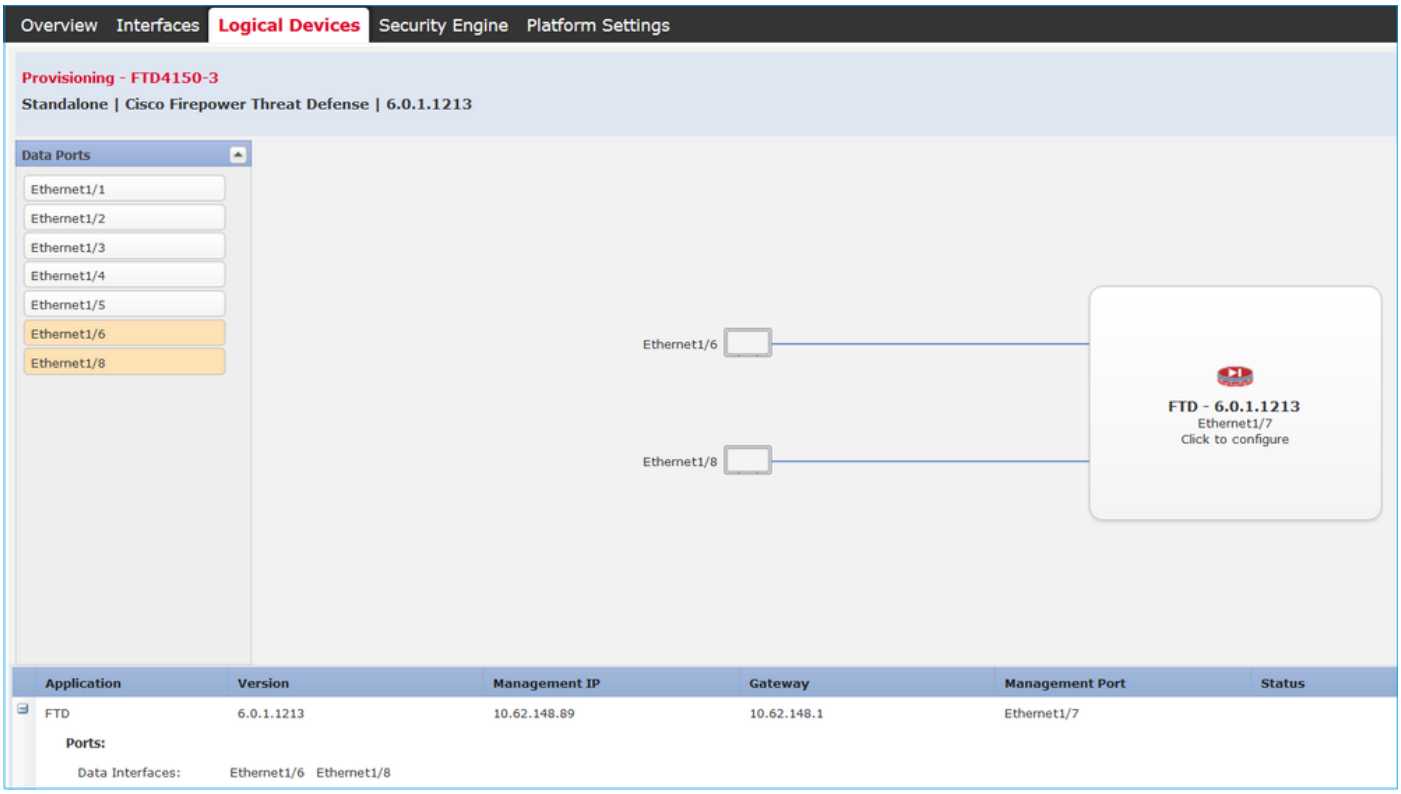
问：如何从FXOS CLI检查逻辑设备的引导程序配置（分配的接口、版本等）？

<#root>

```
FPR4100-3-A#

scope ssa

FPR4100-3-A /ssa #

show configuration

 scope ssa
     enter logical-device FTD4150-3 ftd 1 standalone
         enter external-port-link Ethernet16_ftd Ethernet1/6 ftd
             set decorator ""
             set description ""
             set port-name Ethernet1/6
         exit
         enter external-port-link Ethernet17_ftd Ethernet1/7 ftd
             set decorator ""
```

```
            set description ""
            set port-name Ethernet1/7
        exit
        enter external-port-link Ethernet18_ftd Ethernet1/8 ftd
            set decorator ""
            set description ""
            set port-name Ethernet1/8
        exit
        enter mgmt-bootstrap ftd
            enter bootstrap-key DNS_SERVERS
                set value 192.0.2.100
            exit
            enter bootstrap-key FIREPOWER_MANAGER_IP
                set value 10.62.148.57
            exit
            enter bootstrap-key FIREWALL_MODE
                set value routed
            exit
            enter bootstrap-key FQDN
                set value FTD4150-3.lab.com
            exit
            enter bootstrap-key SEARCH_DOMAINS
                set value lab.com
            exit
            enter bootstrap-key-secret PASSWORD
!               set value
            exit
            enter bootstrap-key-secret REGISTRATION_KEY
!               set value
            exit
            enter ipv4 1 firepower
                set gateway 10.62.148.1
                set ip 10.62.148.89 mask 255.255.255.128
            exit
        exit
        set description ""
        set res-profile-name ""
    exit
    scope slot 1
        enter app-instance ftd
            enable
            set startup-version 6.0.1.1213
        exit
        set log-level info
    exit
    scope app asa 9.12.4.12
        set-default
    exit
    scope app ftd 6.0.1.1213
        accept-license-agreement
        set-default
    exit
exit
```

这相当于：



如果要查看所有FXOS配置，请添加关键字“all”（输出有几页长）：

<#root>

FPR4100-3-A /ssa #

show configuration all

问：如何检查FXOS接口的状态（端口类型、状态）？

<#root>

FPR4100-3-A#

scope eth-uplink

FPR4100-3-A /eth-uplink #

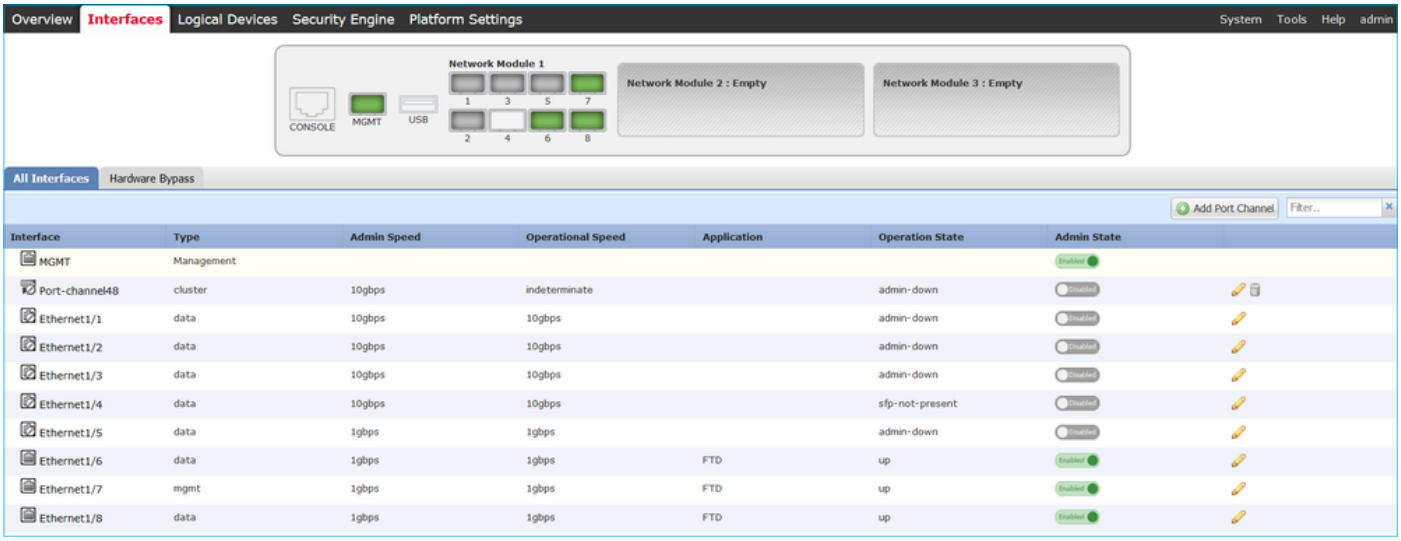
scope fabric a

FPR4100-3-A /eth-uplink/fabric #

show interface

```
Interface:
    Port Name       Port Type          Admin State Oper State       State Reason
    --------------- ------------------ ----------- ---------------- ------------
    Ethernet1/1     Data               Disabled    Admin Down       Administratively down
    Ethernet1/2     Data               Disabled    Admin Down       Administratively down
    Ethernet1/3     Data               Disabled    Admin Down       Administratively down
    Ethernet1/4     Data               Disabled    Sfp Not Present  Unknown
    Ethernet1/5     Data               Disabled    Admin Down       Administratively down
    Ethernet1/6     Data               Enabled     Up
    Ethernet1/7     Mgmt               Enabled     Up
    Ethernet1/8     Data               Enabled     Up
FPR4100-3-A /eth-uplink/fabric #
```

这相当于：



问：如何检查机箱上的CPU和内存利用率？

<#root>

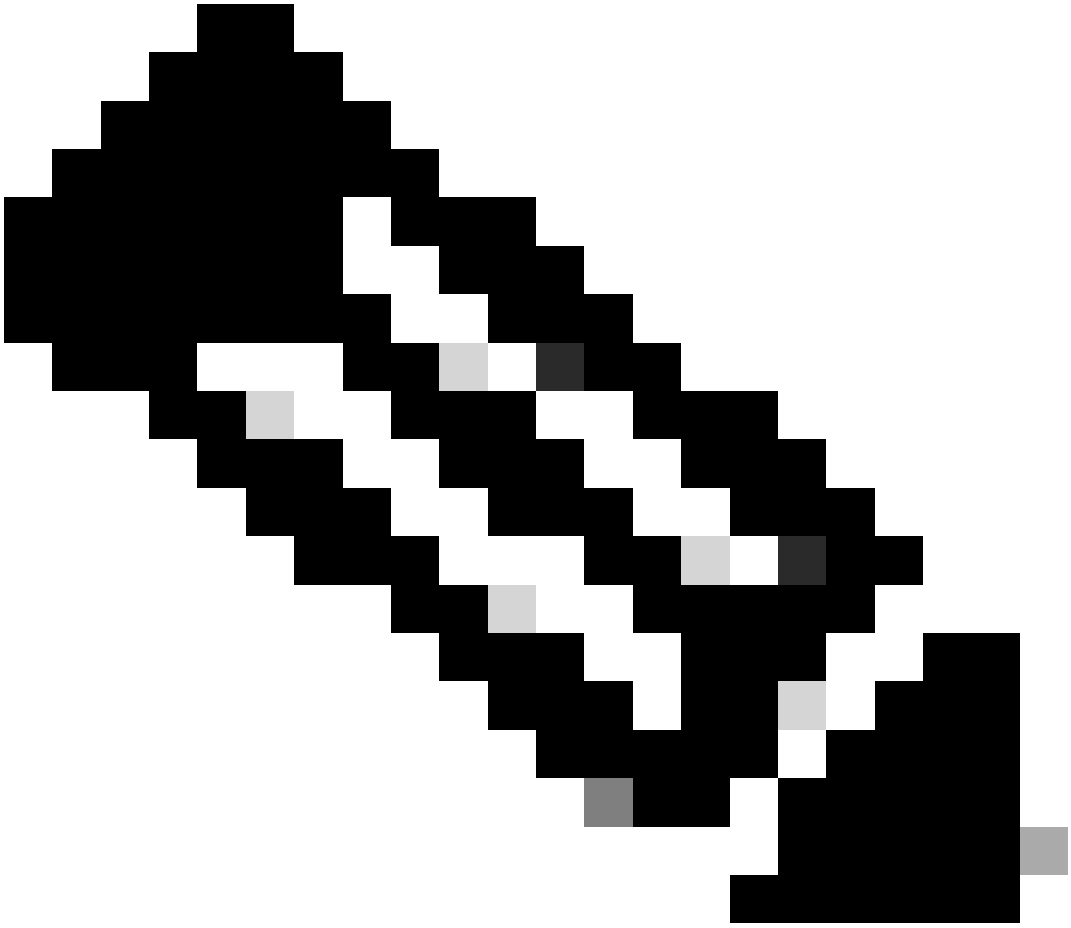
FPR9K-2-A#

connect fxos

FPR9K-2-A(fxos)#

show system resources

```
Load average:   1 minute: 1.60   5 minutes: 1.30   15 minutes: 1.15
Processes    :   967 total, 1 running
CPU states   :   1.8% user,   1.1% kernel,   97.1% idle
Memory usage:   16326336K total,   4359740K used,   11966596K free
```



注意：即使对于属于同一型号的2台设备，输出中显示的总数也可能不同。具体来说，总数取自free命令输出，而后者又取自/proc/meminfo。

要检查内存，请执行以下操作：

<#root>

```
FPR4100-8-A /fabric-interconnect #
```

show detail

```
Fabric Interconnect:
    ID: A
    Product Name: Cisco FPR-4140-SUP
    PID: FPR-4140-SUP
    VID: V02
    Vendor: Cisco Systems, Inc.
    Serial (SN): FLM12345KL6
    HW Revision: 0
    Total Memory (MB): 8074
```

```
    OOB IP Addr: 10.62.148.196
    OOB Gateway: 10.62.148.129
    OOB Netmask: 255.255.255.128
    OOB IPv6 Address: ::
    OOB IPv6 Gateway: ::
    Prefix: 64
    Operability: Operable
    Thermal Status: Ok
    Current Task 1:
    Current Task 2:
    Current Task 3:
```

要验证每进程内存使用率检查（RES =物理内存），请执行以下操作：

<#root>

```
FPR4100-2-A-A#
```

connect local-mgmt

```
FPR4100-2-A-A(local-mgmt)#
```

show processes

```
Cpu(s):  8.0%us,  4.2%sy,  3.9%ni, 83.8%id,  0.0%wa,  0.0%hi,  0.1%si,  0.0%st
Mem:   8267648k total,  3866552k used,  4401096k free,      288k buffers
Swap:        0k total,        0k used,        0k free,  1870528k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
 5024 root      -2   0  354m 114m  34m R   43  1.4   7976:51 /isan/bin/bcm_usd
 1096 root      20   0 10352 3992 3332 S    0  0.0   0:00.28 sshd: admin@pts/1
 1140 root      20   0  117m  78m  53m S    0  1.0   0:00.42 /isan/bin/ucssh --ucs-mgmt -p admin
 1856 root      20   0  2404  632  512 S    0  0.0   2:29.32 /nuova/bin/cmcmon -f /etc/cmcmon.conf
 1859 root      20   0 23804 1932 1532 S    0  0.0   1427:47 dmserver -F
 1860 root      20   0  2244  472  404 S    0  0.0   0:00.01 /sbin/hotplug2 --persistent --set-rules-fi
 1861 root      20   0 57116  10m 6552 S    0  0.1   7:28.76 /isan/sbin/sysmgr -V
 1864 root      20   0 14044 4136 1072 S    0  0.1   1:06.19 rsyslogd -c3 -i/var/run/rsyslogd.pid
 4909 root      20   0  3568 1100  876 S    0  0.0   0:00.48 /isan/sbin/xinetd -syslog local7 -loop 250
 4911 root      20   0 58232  12m 6152 S    0  0.2  18:39.24 /isan/sbin/syslogd -d -n -m 0 -r
 4912 root      20   0 20076 3532 2368 S    0  0.0   0:00.02 /isan/bin/sdwrapd
 4913 root      21   1  2756  300  192 S    0  0.0   0:00.04 /usr/sbin/in.tftpd -l -c -s /bootflash
 4914 root      20   0 58312  17m 8724 S    0  0.2  13:45.34 /isan/bin/pfm
 4937 root      20   0  2208  332  272 S    0  0.0   0:00.01 /sbin/klogd -2 -x -c 1
 4939 root      20   0 26692 4656 3620 S    0  0.1   0:24.01 /isan/bin/vshd
...
```

提示：
1. 收集show process memory输出
2. 将输出粘贴到Linux计算机上的文件中(cat > top.log)
3. 根据RES列对文件进行排序

这将显示GB、MB等

<#root>

```
mzafeiro@MZAFEIRO-JA2YS:$
```

cat top.log | sort -V -k 6

```
 1954 root      20   0 1645m 1.6g 1372 S  0.0 20.7 793:32.99 dmserver
 7556 root      20   0  207m 9.8m 6184 S  0.0  0.1  73:52.25 udld
 5563 root      20   0  333m 9.8m 7032 S  0.0  0.1   5:08.65 cdpd
 5523 root      20   0  327m 103m  28m S  0.0  1.3   0:12.38 afm
24040 daemon    23   3  592m 115m  33m S  0.0  1.5  74:56.57 httpd
 5329 root      -2   0  384m 132m  29m S  9.4  1.7  27130:09 bcm_usd
 5317 root      20   0  401m 150m  35m S  0.0  1.9  33:19.05 fwm
 5625 root      24   4  450m 179m  35m S  0.0  2.3 275:38.25 svc_sam_statsAG
 5614 root      23   3  495m 247m  54m S  0.0  3.2 355:59.95 svc_sam_dme
21688 root      20   0  2672 1080  880 S  0.0  0.0   3:15.29 ntpd
 8819 root      35  15  2408 1084  748 R  5.6  0.0   0:00.06 top
```

问：如何检查机箱接口收发器类型？

在Firepower 4100/9300中，请使用此命令：

<#root>

```
FPR9K-2-A#
```

connect fxos

```
FPR9K-2-A(fxos)#
```

show interface e1/3 transceiver details

```
Ethernet1/3
    transceiver is present
    type is 1000base-T
    name is CISCO-METHODE
    part number is SP7041-R
    revision is
    serial number is FLM12345KL6
    nominal bitrate is 1300 MBit/sec
    Link length supported for copper is 100 m
    cisco id is --
    cisco extended id number is 4

DOM is not supported

FPR9K-2-A(fxos)#
```

如果是光纤，输出为：

<#root>

```
FPR4100-1-A(fxos)#
```

```
 show interface e1/1 transceiver details

Ethernet1/1
    transceiver is present
    type is 10Gbase-SR
    name is CISCO-JDSU
    part number is PLRXPL-SC-S43-CS
    revision is 1
    serial number is FLM12345KL6
    nominal bitrate is 10300 MBit/sec
    Link length supported for 50/125um OM2 fiber is 82 m
    Link length supported for 62.5/125um fiber is 26 m
    Link length supported for 50/125um OM3 fiber is 300 m
    cisco id is --
    cisco extended id number is 4

    Calibration info not available
```

在Firepower 1000/2100中，请使用此命令：

```
<#root>

FPR2100#

scope fabric-interconnect


FPR2100 /fabric-interconnect #

show inventory expand detail | egrep ignore-case "Port|Xcvr"


...
        Slot 1 Port 13:
            Xcvr: 10 Gbase SR
            Xcvr Model: PLRXPL-SC-S43-C
            Xcvr Vendor: Cisco Systems, Inc.
            Xcvr Serial: ABCD1234
        Slot 1 Port 14:
            Xcvr: 10 Gbase SR
            Xcvr Model: PLRXPL-SC-S43-C
            Xcvr Vendor: Cisco Systems, Inc.
            Xcvr Serial: VWXY1234
        Slot 1 Port 15:
            Xcvr: Non Present
            Xcvr Model:
            Xcvr Vendor:
            Xcvr Serial:
        Slot 1 Port 16:
            Xcvr: Non Present
            Xcvr Model:
            Xcvr Vendor:
            Xcvr Serial:
```

问：如何检查模块/刀片/服务器/网络模块信息（硬件类型/PID/SN/内存/内核等）？

此命令显示机箱和模块（网络模块）的产品ID (PID)和序列号(SN)

<#root>

```
FP4110-7-A#
connect fxos

FP4110-7-A(fxos)#
show inventory

NAME: "Chassis", DESCR: "Firepower 41xx Security Appliance"
PID: FPR-4110-SUP      , VID: V02 , SN: FLM12345KL6  <--- Chassis SN

NAME: "Module 1", DESCR: "Firepower 41xx Supervisor"
PID: FPR-4110-SUP      , VID: V02 , SN: FLM12345KL6  <--- Embedded module on FPR4100

NAME: "Module 3", DESCR: "Firepower 6x10G FTW SFP+ SR NM"
PID: FPR-NM-6X10SR-F   , VID: V00 , SN: FLM12345KL6  <--- FTW Netmode SN
```

FPR4110具有2个用于网络模块（2和3）的插槽，示例中的设备在插槽3中安装了FTW网络模块。

<#root>

```
FPR9K-1-A#
scope chassis 1

FPR9K-1-A /chassis #
show inventory server

Chassis 1:
    Servers:
        Server 1/1:
            Equipped Product Name: Cisco Firepower 9000 Series High Performance Security Module
            Equipped PID: FPR9K-SM-36
            Equipped VID: V01
            Equipped Serial (SN): FLM12345KL6
            Slot Status: Equipped
            Acknowledged Product Name: Cisco Firepower 9000 Series High Performance Security Module
            Acknowledged PID: FPR9K-SM-36
            Acknowledged VID: V01
            Acknowledged Serial (SN): FLM12345KL6
            Acknowledged Memory (MB): 262144
            Acknowledged Effective Memory (MB): 262144
            Acknowledged Cores: 36
            Acknowledged Adapters: 2

        Server 1/2:
```

```
        Equipped Product Name: Cisco Firepower 9000 Series High Performance Security Module
        Equipped PID: FPR9K-SM-36
        Equipped VID: V01
        Equipped Serial (SN): FLM12345KL6
        Slot Status: Equipped
        Acknowledged Product Name: Cisco Firepower 9000 Series High Performance Security Module
        Acknowledged PID: FPR9K-SM-36
        Acknowledged VID: V01
        Acknowledged Serial (SN): FLM12345KL6
        Acknowledged Memory (MB): 262144
        Acknowledged Effective Memory (MB): 262144
        Acknowledged Cores: 36
        Acknowledged Adapters: 2

    Server 1/3:
        Equipped Product Name: Cisco Firepower 9000 Series High Performance Security Module
        Equipped PID: FPR9K-SM-36
        Equipped VID: V01
        Equipped Serial (SN): FLM12345KL6
        Slot Status: Equipped
        Acknowledged Product Name: Cisco Firepower 9000 Series High Performance Security Module
        Acknowledged PID: FPR9K-SM-36
        Acknowledged VID: V01
        Acknowledged Serial (SN): FLM12345KL6
        Acknowledged Memory (MB): 262144
        Acknowledged Effective Memory (MB): 262144
        Acknowledged Cores: 36
        Acknowledged Adapters: 2
```

服务器1/1 =模块/刀片1

服务器1/2 =模块/刀片2

服务器1/3 =模块/刀片3

FPR41xx型号PID：

- FPR4K-SM-12 = FPR4110
- FPR4K-SM-24 = FPR4120
- FPR4K-SM-36 = FPR4140
- FPR4K-SM-44 = FPR4150
- FPR4K-SM-24S = FPR4115
- FPR4K-SM-32S = FPR4125
- FPR4K-SM-44S = FPR4145

您还可以获取scope server <chassis-id/blade-id>下的其他信息：

<#root>

```
FP9300-A#
scope server 1/1

FP9300-A /chassis/server #
```

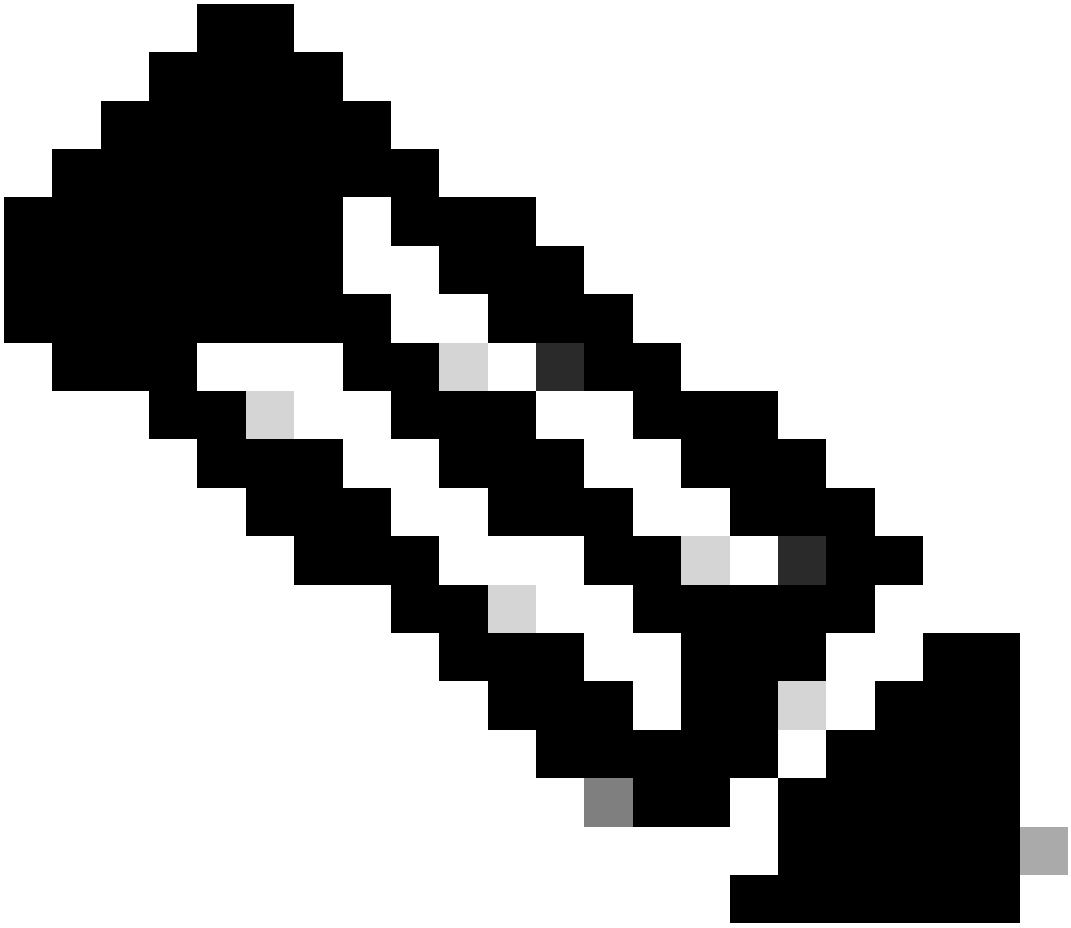
show inventory

```
  <CR>
  >         Redirect it to a file
  >>        Redirect it to a file in append mode
  adapter   Adapter
  bios      Bios
  board     Board
  cpu       Cpu
  detail    Detail
  expand    Expand
  memory    Memory
  mgmt      Mgmt
  storage   Storage
  |         Pipe command output to filter


FP9300-A /chassis/server #
```

show inventory storage

```
Server 1/1:
    Name:
    User Label:
    Equipped PID: FPR9K-SM-36
    Equipped VID: V01
    Equipped Serial (SN): FLM12345PBD
    Slot Status: Equipped
    Acknowledged Product Name: Cisco Firepower 9000 Series High Performance Security Module
    Acknowledged PID: FPR9K-SM-36
    Acknowledged VID: 01
    Acknowledged Serial (SN): FLM67890PBD
    Acknowledged Memory (MB): 262144
    Acknowledged Effective Memory (MB): 262144
    Acknowledged Cores: 36
    Acknowledged Adapters: 2
    Motherboard:
        Product Name: Cisco Firepower 9000 Series High Performance Security Module
        PID: FPR9K-SM-36
        VID: V01
        Vendor: Cisco Systems Inc
        Serial (SN): FLM12345KL6
        HW Revision: 0

        RAID Controller 1:
            Type: SAS
            Vendor: Cisco Systems Inc
            Model: UCSB-MRAID12G
            Serial: FLM12345KL6
            HW Revision: C0
            PCI Addr: 01:00.0
            Raid Support: RAID0, RAID1
            OOB Interface Supported: Yes
            Rebuild Rate: 30
            Controller Status: Optimal

            Local Disk 1:
                Product Name:
                PID:
                VID:
                Vendor: TOSHIBA
```

```
            Model: PX02SMF080
            Vendor Description:
            Serial: FLM12345KL6
            HW Rev: 0
            Block Size: 512
            Blocks: 1560545280
            Operability: Operable
            Oper Qualifier Reason: N/A
            Presence: Equipped
            Size (MB): 761985
            Drive State: Online
            Power State: Active
            Link Speed: 12 Gbps
            Device Type: SSD

        Local Disk 2:
            Product Name:
            PID:
            VID:
            Vendor: TOSHIBA
            Model: PX02SMF080
            Vendor Description:
            Serial: FLM12345KL6
            HW Rev: 0
            Block Size: 512
            Blocks: 1560545280
            Operability: Operable
            Oper Qualifier Reason: N/A
            Presence: Equipped
            Size (MB): 761985
            Drive State: Online
            Power State: Active
            Link Speed: 12 Gbps
            Device Type: SSD

        Local Disk Config Definition:
            Mode: RAID 1 Mirrored
            Description:
            Protect Configuration: Yes

        Virtual Drive 0:
            Type: RAID 1 Mirrored
            Block Size: 512
            Blocks: 1560545280
            Operability: Operable
            Presence: Equipped
            Size (MB): 761985
            Lifecycle: Allocated
            Drive State: Optimal
            Strip Size (KB): 64
            Access Policy: Read Write
            Read Policy: Normal
            Configured Write Cache Policy: Write Through
            Actual Write Cache Policy: Write Through
            IO Policy: Direct
            Drive Cache: No Change
            Bootable: True
FP9300-A /chassis/server #
```

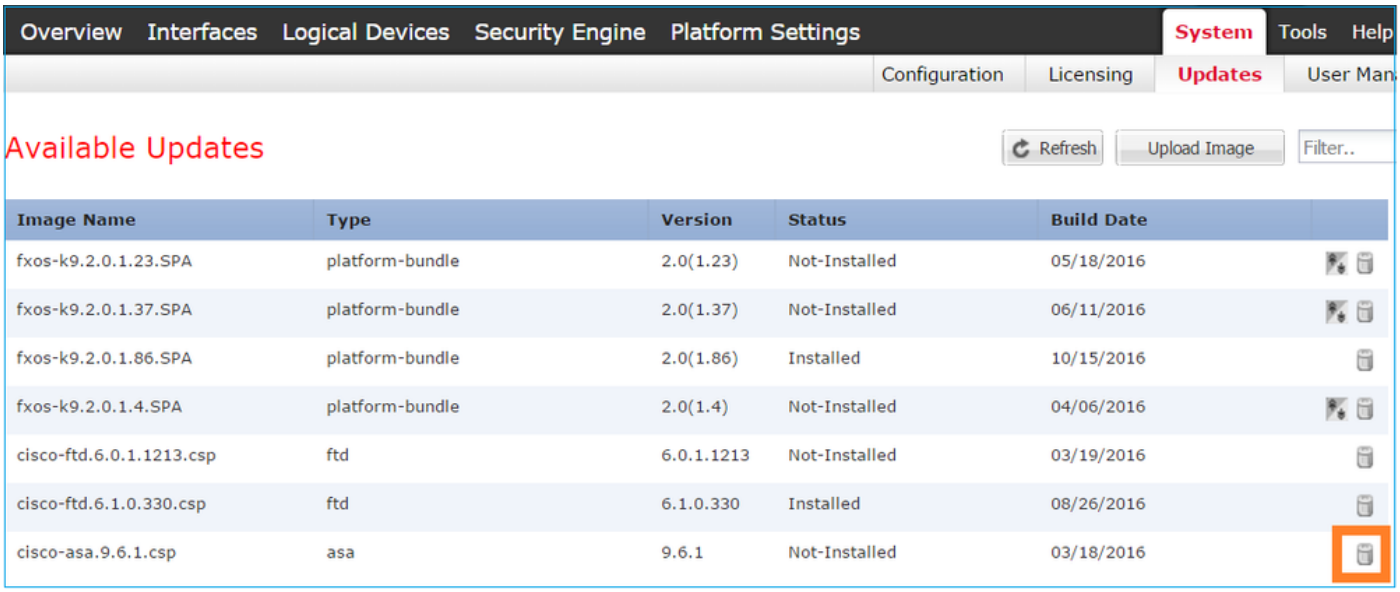


注意：在FP41xx平台上，因为它们不使用RAID，show inventory storage会将控制器状态显示为“未知”。它们不是RAID的主要原因是第二个SSD用于其他功能，如FTD逻辑设备上的MSP（恶意软件存储包）。

问： 如何从FXOS GUI和CLI中删除ASA或FTD映像？

从FCM GUI：

要从GUI中删除，请导航到System > Updates并删除映像：



从FXOS CLI

<#root>

FPR4100#

scope ssa

FPR4100 /ssa #

show app

```
Application:
    Name    Version    Description Author     Deploy Type CSP Type    Is Default App
    ------ ---------- ----------- ---------- ----------- ----------- --------------
    asa     9.6.1      N/A         cisco      Native      Application Yes
    ftd     6.0.1.1213 N/A         cisco      Native      Application No
    ftd     6.1.0.330  N/A         cisco      Native      Application Yes
FPR4100 /ssa #
```

delete app asa 9.6.1

FPR4100 /ssa* #

commit

FPR4100 /ssa #

show app

```
Application:
    Name       Version    Description Author     Deploy Type CSP Type    Is Default App
    ---------- ---------- ----------- ---------- ----------- ----------- --------------
    ftd        6.0.1.1213 N/A         cisco      Native      Application No
    ftd        6.1.0.330  N/A         cisco      Native      Application Yes
```

问：如何从CLI检查FXOS版本？

有几种方法可以做到这一点。

方式1

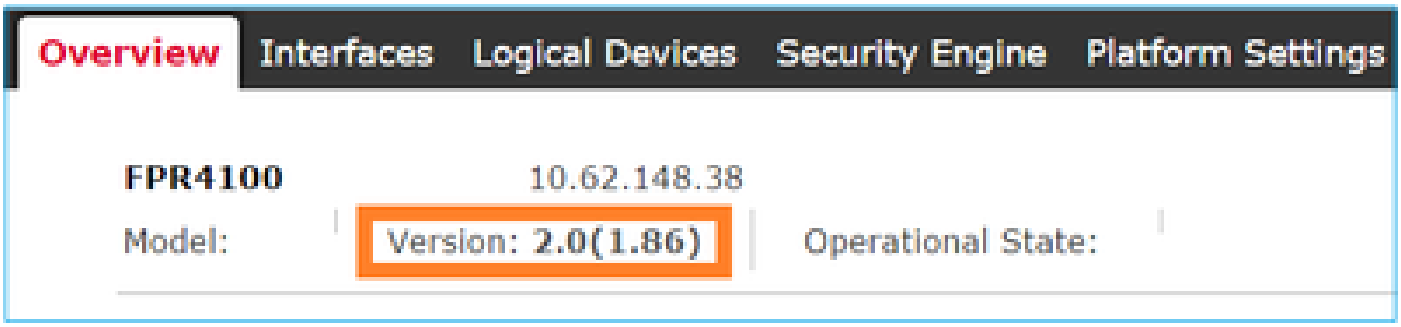
<#root>

```
FPR4100#
```

show fabric-interconnect firmware

```
Fabric Interconnect A:
    Running-Kern-Vers: 5.0(3)N2(4.01.65)
    Running-Sys-Vers: 5.0(3)N2(4.01.65)
    Package-Vers: 2.0(1.86)
    Startup-Kern-Vers: 5.0(3)N2(4.01.65)
    Startup-Sys-Vers: 5.0(3)N2(4.01.65)
    Act-Kern-Status: Ready
    Act-Sys-Status: Ready
    Bootloader-Vers:
```

这与FCM GUI中显示的内容相同：



途径2

<#root>

```
FP4145-1#
```

show version

```
    Version: 2.6(1.192)
    Startup-Vers: 2.6(1.192)
```

问：如何验证FXOS上的接口MTU？

默认情况下，Firepower 4100/9300机箱支持超巨型帧。您可以使用以下命令检查接口MTU：

<#root>

FPR9K-1-A#

connect fxos

```
FPR9K-1-A(fxos)# show hardware internal bcm-usd info phy-info all
+-----------------+-------------------------------------------------------------+
| port phy info                                                                 |
+-----------------+-------------------------------------------------------------+
          front-port :   1           asic-port : 125      sfp installed : yes
              enable : ena               speed :  1G            autoneg :  on
           interface : (10)XFI           duplex: half          linkscan : sw
            pause_tx : 0x0            pause_rx : 0x0
```

max frame : 9216

```
        local_advert : 0x20       remote_advert : 0x420    port_40g_enable : 0
        local_fault : 0x1       remote_fault : 0x0
       xcvr sfp type : (1)PHY_SFP_1G_COPPER
TSC4 registers:
        txfir(0xc252):0x0000      txdrv(0xc017):0x0000      lane(0x9003):0x1b1b
Asic 56846 Registers
     signal_detect(1.0x81d0):0x0000      link_status(1.0x81d1):0x0000
       rx_link_state(1.0x0):0x0000      pcs_rx_tx_fault(1.0x0008):0x0000
       pcs_block_status_0x20(1.0x20) :0x0000
       pcs_block_status_0x21(1.0x021) : 0x0000
        transmitter_reg(1.0x8000):0x0000      micro_ver(1.0x81f0):0x0000
```

或者，在fxos命令shell中检查MTU：

<#root>

KSEC-FPR4112-4#

connect fxos

<output is skipped>

KSEC-FPR4112-4(fxos)#

show interface ethernet 1/1

```
Ethernet1/1 is up
 Dedicated Interface
  Hardware: 1000/10000 Ethernet, address: 14a2.a02f.07c0 (bia 14a2.a02f.07c0)
  Description: U: Uplink
```

MTU 9216 bytes

, BW 1000000 Kbit, DLY 10 usec

问：如何检查已安装的应用程序？

从机箱CLI使用命令scope ssa，然后使用show slot expand detail。

还可以在chassis show tech bundle内的文件sam_techsupportinfo上找到相同信息。

<#root>

```
`scope ssa`
`show slot expand detail`


Slot:
    Slot ID: 1
    Log Level: Info
    Admin State: Ok
    Operational State: Online
    Disk State: Ok
    Clear Log Data: Available

    Application Instance:
        Application Name: asa
        Admin State: Enabled
        Operational State: Online
        Running Version: 9.6.2
        Startup Version: 9.6.2
        Hotfixes:
        Externally Upgraded: No
        Cluster Oper State: Not Applicable
        Current Job Type: Start
        Current Job Progress: 100
        Current Job State: Succeeded
        Clear Log Data: Available
        Error Msg:
        Current Task:

        App Attribute:
            App Attribute Key: mgmt-ip
            Value: 0.0.0.0

            App Attribute Key: mgmt-url
            Value: https://0.0.0.0/

        Heartbeat:
            Last Received Time: 2017-03-15T10:25:02.220
            Heartbeat Interval: 1
            Max Number of Missed heartbeats Permitted: 3

        Resource:
            Allocated Core NR: 46
            Allocated RAM (KB): 233968896
            Allocated Data Disk (KB): 20971528
            Allocated Binary Disk (KB): 174964
            Allocated Secondary Disk (KB): 0

    Heartbeat:
        Last Received Time: 2017-03-15T10:25:00.447
        Heartbeat Interval: 5
        Max Number of Missed heartbeats Permitted: 3
```

```
    Monitor:
        OS Version: 9.6(1.150)
        CPU Total Load 1 min Avg: 48.110001
        CPU Total Load 5 min Avg: 48.110001
        CPU Total Load 15 min Avg: 48.110001
        Memory Total (KB): 264377600
        Memory Free (KB): 236835112
        Memory Used (KB): 27542488
        Memory App Total (KB): 233968896
        Disk File System Count: 5
        Blade Uptime: up 1 day,  6:56
        Last Updated Timestamp: 2017-03-15T10:24:10.306

        Disk File System:
            File System: /dev/sda1
            Mount Point: /mnt/boot
            Disk Total (KB): 7796848
            Disk Free (KB): 7694456
            Disk Used (KB): 102392

            File System: /dev/sda2
            Mount Point: /opt/cisco/config
            Disk Total (KB): 1923084
            Disk Free (KB): 1734420
            Disk Used (KB): 90976

            File System: /dev/sda3
            Mount Point: /opt/cisco/platform/logs
            Disk Total (KB): 4805760
            Disk Free (KB): 4412604
            Disk Used (KB): 149036

            File System: /dev/sda5
            Mount Point: /var/data/cores
            Disk Total (KB): 48061320
            Disk Free (KB): 43713008
            Disk Used (KB): 1906892

            File System: /dev/sda6
            Mount Point: /opt/cisco/csp
            Disk Total (KB): 716442836
            Disk Free (KB): 714947696
            Disk Used (KB): 1495140
```

问：如何从FXOS CLI验证端口通道配置？

端口通道验证命令

检查 1

要验证机箱上当前配置了哪些端口通道，请执行以下操作：

<#root>

```
FPR9K-1-A#
```

connect fxos

```
FPR9K-1-A(fxos)# show port-channel summary
Flags:  D - Down        P - Up in port-channel (members)
        I - Individual  H - Hot-standby (LACP only)
        s - Suspended   r - Module-removed
        S - Switched    R - Routed
        U - Up (port-channel)
        M - Not in use. Min-links not met
--------------------------------------------------------------------------------
Group Port-       Type     Protocol  Member Ports
      Channel
--------------------------------------------------------------------------------
11    Po11(SU)    Eth      LACP      Eth1/4(P)    Eth1/5(P)
15    Po15(SD)    Eth      LACP      Eth1/6(D)
48    Po48(SU)    Eth      LACP      Eth1/2(P)    Eth1/3(P)
```

检查 2

要验证分配给逻辑设备的端口通道，请执行以下操作：

<#root>

FPR9K-1-A#

scope ssa

FPR9K-1-A /ssa #

show configuration

```
 scope ssa
     enter logical-device ftd_682021968 ftd "1,2,3" clustered
         enter cluster-bootstrap
             set chassis-id 1
             set ipv4 gateway 0.0.0.0
             set ipv4 pool 0.0.0.0 0.0.0.0
             set ipv6 gateway ::
             set ipv6 pool :: ::
             set virtual ipv4 0.0.0.0 mask 0.0.0.0
             set virtual ipv6 :: prefix-length ""
 !           set key
             set mode spanned-etherchannel
             set name 682021968
             set site-id 0
         exit
         enter external-port-link Ethernet11_ftd Ethernet1/1 ftd
             set decorator ""
             set description ""
             set port-name Ethernet1/1
         exit
         enter external-port-link PC11_ftd Port-channel11 ftd
             set decorator ""
             set description ""
             set port-name Port-channel11
         exit
         enter external-port-link PC48_ftd Port-channel48 ftd
             set decorator ""
```

```
            set description ""
            set port-name Port-channel48
        exit
```

检查 3

要检查每个端口的端口通道流量统计信息，请执行以下操作：

<#root>

```
FPR9K-1-A(fxos)#

show port-channel traffic interface port-channel 11

ChanId      Port Rx-Ucst Tx-Ucst Rx-Mcst Tx-Mcst Rx-Bcst Tx-Bcst
------ --------- ------- ------- ------- ------- ------- -------
    11    Eth1/4  62.91%    0.0%  58.90%  49.99% 100.00%    0.0%
    11    Eth1/5  37.08%    0.0%  41.09%  50.00%    0.0%    0.0%
```

检查 4

要检查特定端口通道的详细信息，请执行以下操作：

<#root>

```
FPR9K-1-A(fxos)#

show port-channel database interface port-channel 11

port-channel11
    Last membership update is successful
    2 ports in total, 2 ports up
    First operational port is Ethernet1/4
    Age of the port-channel is 0d:20h:26m:27s
    Time since last bundle is 0d:18h:29m:07s
    Last bundled member is Ethernet1/5
    Ports:   Ethernet1/4     [active ] [up] *
             Ethernet1/5     [active ] [up]
```

检查 5

要检查本地LACP系统ID，请执行以下操作：

<#root>

```
FPR9K-1-A(fxos)#

show lacp system-identifier

32768,b0-aa-77-2f-81-bb
```

检查 6

要检查上游设备的LACP系统ID以及LACP状态标志，请执行以下操作：

<#root>

```
FPR9K-1-A(fxos)#

show lacp neighbor

Flags:  S - Device is sending Slow LACPDUs F - Device is sending Fast LACPDUs
        A - Device is in Active mode       P - Device is in Passive mode
port-channel11 neighbors
Partner's information
            Partner                 Partner                       Partner
Port        System ID               Port Number     Age           Flags
Eth1/4      32768,4-62-73-d2-65-0    0x118           66828         FA

            LACP Partner            Partner                       Partner
            Port Priority           Oper Key                      Port State
            32768                   0xb                           0x3d

Partner's information
            Partner                 Partner                       Partner
Port        System ID               Port Number     Age           Flags
Eth1/5      32768,4-62-73-d2-65-0    0x119           66826         FA

            LACP Partner            Partner                       Partner
            Port Priority           Oper Key                      Port State
            32768                   0xb                           0x3d
```

检查 7

要检查端口通道事件历史记录，请执行以下操作：

<#root>

```
FPR9K-1-A(fxos)#

show port-channel internal event-history all

Low Priority Pending queue: len(0), max len(1) [Thu Apr  6 11:07:48 2017]
High Priority Pending queue: len(0), max len(16) [Thu Apr  6 11:07:48 2017]
PCM Control Block info:
pcm_max_channels        : 4096
pcm_max_channel_in_use  : 48
pc count                : 3
hif-pc count            : 0
Max PC Cnt              : 104
Load-defer timeout      : 120
================================================
PORT CHANNELS:
2LvPC PO in system : 0

port-channel11
channel       : 11
bundle        : 65535
```

```
ifindex       : 0x1600000a
admin mode    : active
oper mode     : active
fop ifindex   : 0x1a003000
nports     : 2
active     : 2
pre cfg    : 0
ltl        : 0x0 (0)
lif        : 0x0
iod        : 0x78 (120)
global id  : 3
flag       : 0
lock count : 0
num. of SIs: 0
ac mbrs    : 0 0
lacp graceful conv disable   : 0
lacp suspend indiv disable   : 1
pc min-links                 : 1
pc max-bundle                : 16
pc max active members        : 32
pc is-suspend-minlinks       : 0
port load defer enable       : 0
lacp fast-select-hot-standby disable   : 0
ethpm bundle lock count : 0
bundle res global id    : 2
Members:
Ethernet1/4 [bundle_no = 0]
Ethernet1/5 [bundle_no = 0]
port-channel external lock:
Lock Info: resource [eth-port-channel 11]
  type[0] p_gwrap[(nil)]
      FREE @ 246108 usecs after Wed Apr  5 14:18:10 2017
  type[1] p_gwrap[(nil)]
      FREE @ 436471 usecs after Wed Apr  5 16:15:30 2017
  type[2] p_gwrap[(nil)]
      FREE @ 436367 usecs after Wed Apr  5 16:15:30 2017
0x1600000a
internal (ethpm bundle) lock:
Lock Info: resource [eth-port-channel 11]
  type[0] p_gwrap[(nil)]
      FREE @ 246083 usecs after Wed Apr  5 14:18:10 2017
  type[1] p_gwrap[(nil)]
      FREE @ 610546 usecs after Wed Apr  5 16:19:04 2017
  type[2] p_gwrap[(nil)]
      FREE @ 610437 usecs after Wed Apr  5 16:19:04 2017
0x1600000a


>>>>FSM: <eth-port-channel 11> has 194 logged transitions<<<<<

1) FSM:<eth-port-channel 11> Transition at 557291 usecs after Wed Apr  5 16:04:27 2017
    Previous state: [PCM_PC_ST_WAIT_REL_RESRC]
    Triggered event: [PCM_PC_EV_REL_RESRC_DONE]
    Next state: [PCM_PC_ST_INIT]

2) FSM:<eth-port-channel 11> Transition at 49036 usecs after Wed Apr  5 16:07:18 2017
    Previous state: [PCM_PC_ST_INIT]
    Triggered event: [PCM_PC_EV_L2_CREATE]
    Next state: [PCM_PC_ST_WAIT_CREATE]

3) FSM:<eth-port-channel 11> Transition at 49053 usecs after Wed Apr  5 16:07:18 2017
    Previous state: [PCM_PC_ST_WAIT_CREATE]
```

```
    Triggered event: [PCM_PC_EV_L2_CREATED]
    Next state: [PCM_PC_ST_CREATED]
```

检查 8

Debug lacp all会产生非常大的输出：

<#root>

```
FPR9K-1-A(fxos)#

debug lacp all


2017 Jul 11 10:42:23.854160 lacp: lacp_pkt_parse_pdu(569): lacp_pkt_parse_pdu: got packet from actorport
2017 Jul 11 10:42:23.854177 lacp: lacp_pkt_compute_port_params(1163): Ethernet1/3(0x1a002000): pa aggre
2017 Jul 11 10:42:23.854190 lacp: lacp_pkt_compute_port_params(1170): p_el=(8000, 2-0-0-0-0-1, 136, 800
2017 Jul 11 10:42:23.854198 lacp: lacp_pkt_compute_port_params(1172): p_el_pkt=(8000, 2-0-0-0-0-1, 136,
2017 Jul 11 10:42:23.854207 lacp: lacp_utils_get_obj_type_from_ifidx(390): lacp_utils_get_obj_type_from_
2017 Jul 11 10:42:23.854218 lacp: Malloc in fu_fsm_event_new@../utils/fsmutils/fsm.c[5317]-ty[1]0x9bf71
2017 Jul 11 10:42:23.854228 lacp: lacp_utils_cr_fsm_event(572): Called from lacp_utils_create_fsm_event_
2017 Jul 11 10:42:23.854237 lacp: Malloc in fu_fsm_event_pair_new@../utils/fsmutils/fsm.c[5327]-ty[2]0x
2017 Jul 11 10:42:23.854248 lacp: fu_fsm_execute_all: match_msg_id(0), log_already_open(0)
2017 Jul 11 10:42:23.854257 lacp: Malloc in fu_fsm_event_new@../utils/fsmutils/fsm.c[5317]-ty[1]0x9bf71
2017 Jul 11 10:42:23.854268 lacp: fu_fsm_execute: (Ethernet1/3)
2017 Jul 11 10:42:23.854275 lacp:     current state [LACP_ST_PORT_MEMBER_COLLECTING_AND_DISTRIBUTING_ENA
2017 Jul 11 10:42:23.854283 lacp:     current event [LACP_EV_PARTNER_PDU_IN_SYNC_COLLECT_ENABLED_DISTRI
2017 Jul 11 10:42:23.854291 lacp:     next state    [FSM_ST_NO_CHANGE]
2017 Jul 11 10:42:23.854304 lacp: lacp_proto_get_state(969): IF Ethernet1/3(0x1a002000): end PartnerEnd
2017 Jul 11 10:42:23.854314 lacp: lacp_proto_record_pdu(2266): Recording PDU for LACP pkt on IF Etherne
2017 Jul 11 10:42:23.854325 lacp: lacp_proto_set_state(900): IF Ethernet1/3(0x1a002000): Set end ActorE
2017 Jul 11 10:42:23.854335 lacp: lacp_proto_get_state(969): IF Ethernet1/3(0x1a002000): end PartnerEnd
2017 Jul 11 10:42:23.854344 lacp: lacp_proto_update_ntt(2211): updateNTT called for IF Ethernet1/3(0x1a
2017 Jul 11 10:42:23.854355 lacp: lacp_proto_get_state(969): IF Ethernet1/3(0x1a002000): end ActorEnd(1
2017 Jul 11 10:42:23.854362 lacp: lacp_timer_start_w_chgd_time(681): lacp_timer_start_w_chgd_time: star
2017 Jul 11 10:42:23.854377 lacp: lacp_timer_start(637): Timer Started: Timer_Arg ([rid type IF-Rid: if
2017 Jul 11 10:42:23.854386 lacp: lacp_timer_start(638): Timer period=15 seconds
2017 Jul 11 10:42:23.854396 lacp: Free ptr in fu_fsm_execute@../utils/fsmutils/fsm.c[1091] for addr 0x9
2017 Jul 11 10:42:23.854408 lacp: fu_fsm_execute_all: done processing event LACP_EV_PARTNER_PDU_IN_SYNC_
2017 Jul 11 10:42:23.854419 lacp: fu_mts_drop ref 0x9bf7320 opc 90117
2017 Jul 11 10:42:23.854434 lacp: fu_fsm_execute_all: MTS_OPC_NET_L2_RX_DATA_HDR(msg_id 2623696) droppe
2017 Jul 11 10:42:23.854445 lacp: fu_fsm_engine_post_event_processing
2017 Jul 11 10:42:23.854453 lacp:  end of while in fu_fsm_engine
2017 Jul 11 10:42:23.854461 lacp: fu_handle_process_hot_plugin_msg: Entered the function line 143
2017 Jul 11 10:42:23.854468 lacp: begin fu_fsm_engine: line[2357]
2017 Jul 11 10:42:24.361501 lacp: lacp_pkt_encode_pdu_helper(770): lacp_pkt_encode_pdu_helper: pkt_len=
2017 Jul 11 10:42:24.361530 lacp: lacp_pkt_encode_pdu_helper(797): lacp_pkt_encode_pdu_helper: if_idx=E
2017 Jul 11 10:42:24.361542 lacp: lacp_debug_wrapper_tl(1718): Executing [mcecm_api_is_pc_mcec]
2017 Jul 11 10:42:24.361551 lacp: lacp_debug_wrapper_tl(1718): input: if_index = [0x16000000]
2017 Jul 11 10:42:24.361559 lacp: lacp_debug_wrapper_tl(1718): Executing [mcecm_cache_is_pc_mcec]
2017 Jul 11 10:42:24.361568 lacp: lacp_debug_wrapper_tl(1718): output:0
2017 Jul 11 10:42:24.361589 lacp: lacp_pkt_encode_pdu_helper(842): 0x1a002000: Set short_timeout to per
2017 Jul 11 10:42:24.361599 lacp: lacp_pkt_encode_pdu_helper(879): lacp_pkt_encode_pdu_helper: actor-po
2017 Jul 11 10:42:24.361612 lacp: lacp_pkt_encode_pdu_helper(906): lacp_pkt_encode_pdu_helper: if_idx=E
2017 Jul 11 10:42:24.361624 lacp: lacp_pkt_encode_pdu_helper(910): lacp_pkt_encode_pdu_helper: if_idx=E
2017 Jul 11 10:42:24.361636 lacp: lacp_net_tx_data(206): lacp_net_tx_data: Sending buffer with length 1
2017 Jul 11 10:42:24.361648 lacp: lacp_net_tx_data(215): 01 01 01 14 ffff
2017 Jul 11 10:42:24.361658 lacp: lacp_net_tx_data(215): ffff
2017 Jul 11 10:42:24.361668 lacp: lacp_net_tx_data(215): 00 00 00 02 14 ffff
```

```
2017 Jul 11 10:42:24.361678 lacp: lacp_net_tx_data(215): ffff
2017 Jul 11 10:42:24.361689 lacp: lacp_net_tx_data(215): 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0
2017 Jul 11 10:42:24.361700 lacp: lacp_net_tx_data(215): 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0
2017 Jul 11 10:42:24.361710 lacp: lacp_net_tx_data(215): 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0
2017 Jul 11 10:42:24.361721 lacp: lacp_net_tx_data(247): Ethernet1/3(0x1a002000): Tx LACP PDU len: 110 
2017 Jul 11 10:42:24.361753 lacp: lacp_proto_get_state(969): IF Ethernet1/3(0x1a002000): end PartnerEnd
2017 Jul 11 10:42:24.361764 lacp: lacp_proto_restart_tx_timer(1802): lacp_proto_restart_tx_timer: got e
2017 Jul 11 10:42:24.361773 lacp: lacp_proto_restart_tx_timer(1825): lacp_proto_restart_tx_timer: flag 
2017 Jul 11 10:42:24.361782 lacp: lacp_timer_start_w_chgd_time(681): lacp_timer_start_w_chgd_time: star
2017 Jul 11 10:42:24.361798 lacp: lacp_timer_start(637): Timer Started: Timer_Arg ([rid type IF-Rid: if
2017 Jul 11 10:42:24.361807 lacp: lacp_timer_start(638): Timer period=1 seconds
2017 Jul 11 10:42:24.361820 lacp: lacp_pkt_encode_pdu_helper(770): lacp_pkt_encode_pdu_helper: pkt_len=
2017 Jul 11 10:42:24.361833 lacp: lacp_pkt_encode_pdu_helper(797): lacp_pkt_encode_pdu_helper: if_idx=E
2017 Jul 11 10:42:24.361841 lacp: lacp_debug_wrapper_tl(1718): Executing [mcecm_api_is_pc_mcec]
2017 Jul 11 10:42:24.361849 lacp: lacp_debug_wrapper_tl(1718): input: if_index = [0x16000000]
2017 Jul 11 10:42:24.361857 lacp: lacp_debug_wrapper_tl(1718): Executing [mcecm_cache_is_pc_mcec]
2017 Jul 11 10:42:24.361865 lacp: lacp_debug_wrapper_tl(1718): output:0
2017 Jul 11 10:42:24.361879 lacp: lacp_pkt_encode_pdu_helper(842): 0x1a003000: Set short_timeout to per
2017 Jul 11 10:42:24.361888 lacp: lacp_pkt_encode_pdu_helper(879): lacp_pkt_encode_pdu_helper: actor-po
2017 Jul 11 10:42:24.361899 lacp: lacp_pkt_encode_pdu_helper(906): lacp_pkt_encode_pdu_helper: if_idx=E
2017 Jul 11 10:42:24.361910 lacp: lacp_pkt_encode_pdu_helper(910): lacp_pkt_encode_pdu_helper: if_idx=E
2017 Jul 11 10:42:24.361920 lacp: lacp_net_tx_data(206): lacp_net_tx_data: Sending buffer with length 1
2017 Jul 11 10:42:24.361930 lacp: lacp_net_tx_data(215): 01 01 01 14 ffff
2017 Jul 11 10:42:24.361940 lacp: lacp_net_tx_data(215): ffff
2017 Jul 11 10:42:24.361950 lacp: lacp_net_tx_data(215): 00 00 00 02 14 00 00 00 00 00 00 00 00 00 00 0
2017 Jul 11 10:42:24.361960 lacp: lacp_net_tx_data(215): 00 00 00 00 00 00 03 10 00 00 00 00 00 00 00 0
2017 Jul 11 10:42:24.361971 lacp: lacp_net_tx_data(215): 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0
2017 Jul 11 10:42:24.361981 lacp: lacp_net_tx_data(215): 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0
2017 Jul 11 10:42:24.361991 lacp: lacp_net_tx_data(215): 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 0
2017 Jul 11 10:42:24.362001 lacp: lacp_net_tx_data(247): Ethernet1/4(0x1a003000): Tx LACP PDU len: 110 
2017 Jul 11 10:42:24.362022 lacp: lacp_proto_get_state(969): IF Ethernet1/4(0x1a003000): end PartnerEnd
2017 Jul 11 10:42:24.362032 lacp: lacp_proto_restart_tx_timer(1802): lacp_proto_restart_tx_timer: got e
2017 Jul 11 10:42:24.362042 lacp: lacp_proto_restart_tx_timer(1825): lacp_proto_restart_tx_timer: flag 
2017 Jul 11 10:42:24.362050 lacp: lacp_timer_start_w_chgd_time(681): lacp_timer_start_w_chgd_time: star
2017 Jul 11 10:42:24.362062 lacp: lacp_timer_start(637): Timer Started: Timer_Arg ([rid type IF-Rid: if
```

提示

检查您是否从对等体收到LACP数据包。例如，Ethernet1/3接口接收LACP数据包，但Ethernet1/4没有：

```
2017 Jul 11 10:42:25.641920 lacp: lacp_net_get_pkt_info(746): Packet received on phy_if_idx Ethernet1/3
2017 Jul 11 10:42:25.641937 lacp: lacp_net_process_rx_data(480): Ethernet1/3(0x1a002000): Rx LACP PDU l
```

检查 9

在此输出中，接口Ethernet1/4是Port-Channel的成员，但处于独立模式（在交换机端挂起）：

<#root>

ciscofcm01-A(fxos)#

show lacp internal event-history interface ethernet 1/4

```
>>>>FSM: <Ethernet1/4> has 549 logged transitions<<<<<

1) FSM:<Ethernet1/4> Transition at 385779 usecs after Wed Jul  5 13:13:03 2017
    Previous state: [LACP_ST_PORT_IS_DOWN_OR_LACP_IS_DISABLED]
    Triggered event: [LACP_EV_CLNUP_PHASE_II]
    Next state: [LACP_ST_PORT_IS_DOWN_OR_LACP_IS_DISABLED]

2) FSM:<Ethernet1/4> Transition at 955546 usecs after Wed Jul  5 13:13:03 2017
    Previous state: [LACP_ST_PORT_IS_DOWN_OR_LACP_IS_DISABLED]
    Triggered event: [LACP_EV_LACP_ENABLED_AND_PORT_UP]
    Next state: [LACP_ST_DETACHED_LAG_NOT_DETERMINED]

3) FSM:<Ethernet1/4> Transition at 962224 usecs after Wed Jul  5 13:13:10 2017
    Previous state: [LACP_ST_DETACHED_LAG_NOT_DETERMINED]
    Triggered event: [LACP_EV_RECEIVE_PARTNER_PDU_TIMED_OUT]
    Next state: [FSM_ST_NO_CHANGE]

4) FSM:<Ethernet1/4> Transition at 963838 usecs after Wed Jul  5 13:13:13 2017
    Previous state: [LACP_ST_DETACHED_LAG_NOT_DETERMINED]
    Triggered event: [LACP_EV_RECEIVE_PARTNER_PDU_TIMED_OUT]
    Next state: [FSM_ST_NO_CHANGE]

5) FSM:<Ethernet1/4> Transition at 964002 usecs after Wed Jul  5 13:13:13 2017
    Previous state: [LACP_ST_DETACHED_LAG_NOT_DETERMINED]
    Triggered event: [LACP_EV_RECEIVE_PARTNER_PDU_TIMED_OUT_II_INDIVIDUAL]
    Next state: [LACP_ST_INDIVIDUAL_OR_DEFAULT]

6) FSM:<Ethernet1/4> Transition at 735923 usecs after Wed Jul  5 13:13:36 2017
    Previous state: [LACP_ST_INDIVIDUAL_OR_DEFAULT]
    Triggered event: [LACP_EV_UNGRACEFUL_DOWN]
    Next state: [LACP_ST_PORT_IS_DOWN_OR_LACP_IS_DISABLED]
```

检查 10

在此输出中，接口Ethernet1/3运行正常并属于PortChannel1，而Ethernet1/4虽然属于PortChannel1的成员处于独立模式。请注意，Ethernet1/3发送(tx)和接收(rx)数据包，但Ethernet1/4仅发送(rx)no tx：

<#root>

```
ciscofcm01-A(fxos)#

debug lacp pkt

ciscofcm01-A(fxos)# 2017 Jul 11 11:04:05.278736 lacp: lacp_net_process_rx_data(480): Ethernet1/3(0x1a00
2017 Jul 11 11:04:05.602855 lacp: lacp_net_tx_data(247): Ethernet1/3(0x1a002000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:05.983134 lacp: lacp_net_tx_data(247): Ethernet1/4(0x1a003000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:06.249929 lacp: lacp_net_process_rx_data(480): Ethernet1/3(0x1a002000): Rx LACP PDU l
2017 Jul 11 11:04:06.602815 lacp: lacp_net_tx_data(247): Ethernet1/3(0x1a002000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:06.992812 lacp: lacp_net_tx_data(247): Ethernet1/4(0x1a003000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:07.163780 lacp: lacp_net_process_rx_data(480): Ethernet1/3(0x1a002000): Rx LACP PDU l
2017 Jul 11 11:04:07.602814 lacp: lacp_net_tx_data(247): Ethernet1/3(0x1a002000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:08.002817 lacp: lacp_net_tx_data(247): Ethernet1/4(0x1a003000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:08.102006 lacp: lacp_net_process_rx_data(480): Ethernet1/3(0x1a002000): Rx LACP PDU l
2017 Jul 11 11:04:08.612810 lacp: lacp_net_tx_data(247): Ethernet1/3(0x1a002000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:09.002811 lacp: lacp_net_tx_data(247): Ethernet1/4(0x1a003000): Tx LACP PDU len: 110 
```

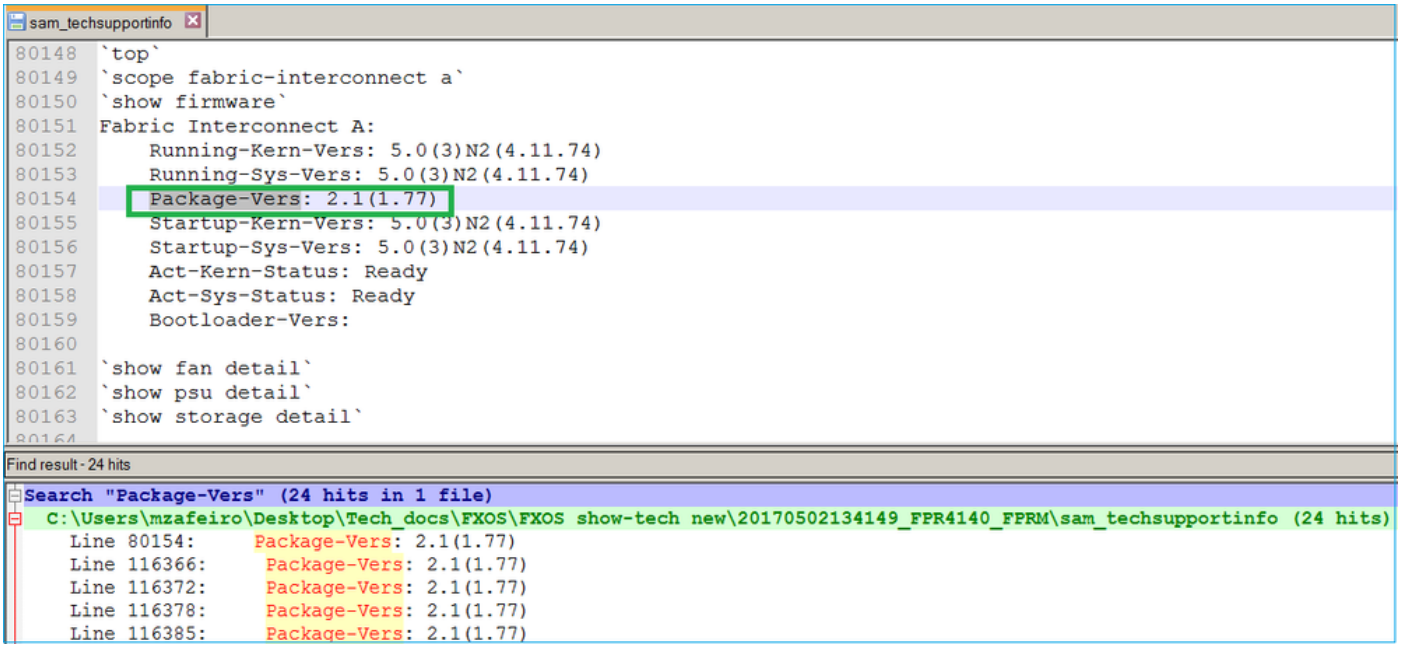
```
2017 Jul 11 11:04:09.091937 lacp: lacp_net_process_rx_data(480): Ethernet1/3(0x1a002000): Rx LACP PDU l
2017 Jul 11 11:04:09.622810 lacp: lacp_net_tx_data(247): Ethernet1/3(0x1a002000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:10.002807 lacp: lacp_net_tx_data(247): Ethernet1/4(0x1a003000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:10.004411 lacp: lacp_net_process_rx_data(480): Ethernet1/3(0x1a002000): Rx LACP PDU l
2017 Jul 11 11:04:10.632806 lacp: lacp_net_tx_data(247): Ethernet1/3(0x1a002000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:10.854094 lacp: lacp_net_process_rx_data(480): Ethernet1/3(0x1a002000): Rx LACP PDU l
2017 Jul 11 11:04:11.002789 lacp: lacp_net_tx_data(247): Ethernet1/4(0x1a003000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:11.642807 lacp: lacp_net_tx_data(247): Ethernet1/3(0x1a002000): Tx LACP PDU len: 110 
2017 Jul 11 11:04:11.714199 lacp: lacp_net_process_rx_data(480): Ethernet1/3(0x1a002000): Rx LACP PDU l
```

有关其他信息，请查看此文档：

问：如何从Show Tech输出中查找FXOS捆绑包版本？

方式1

在FPRM tar文件中，提取FPRM_A_TechSupport.tar.gz文件的内容。然后打开sam_techsupportinfo文件并搜索Package-Verse：



<#root>

FPR4140-A#

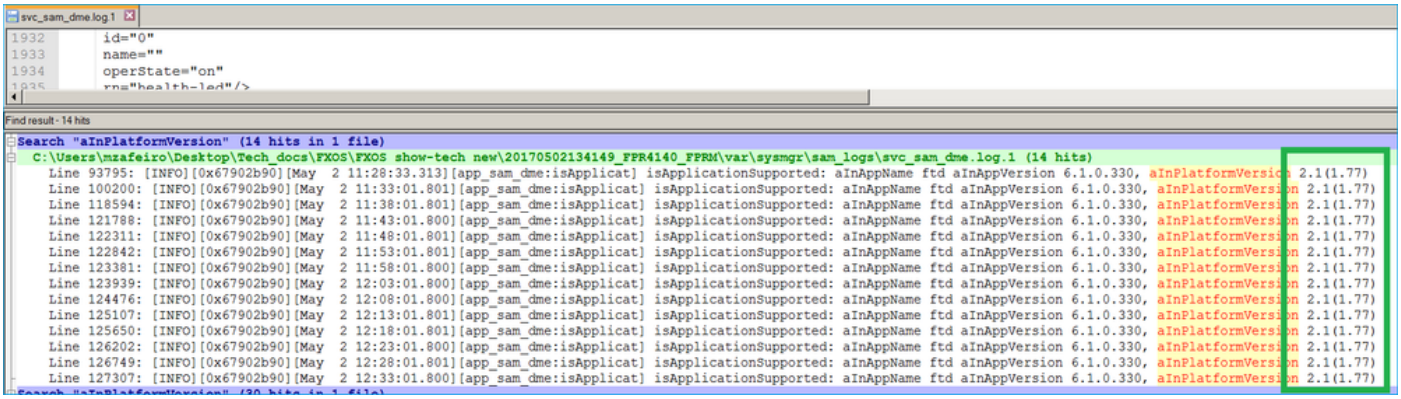
show fabric-interconnect firmware

```
Fabric Interconnect A:
    Running-Kern-Vers: 5.0(3)N2(4.11.74)
    Running-Sys-Vers: 5.0(3)N2(4.11.74)
    Package-Vers: 2.1(1.77)
    Startup-Kern-Vers: 5.0(3)N2(4.11.74)
    Startup-Sys-Vers: 5.0(3)N2(4.11.74)
    Act-Kern-Status: Ready
```

```
    Act-Sys-Status: Ready
    Bootloader-Vers:
```

途径2

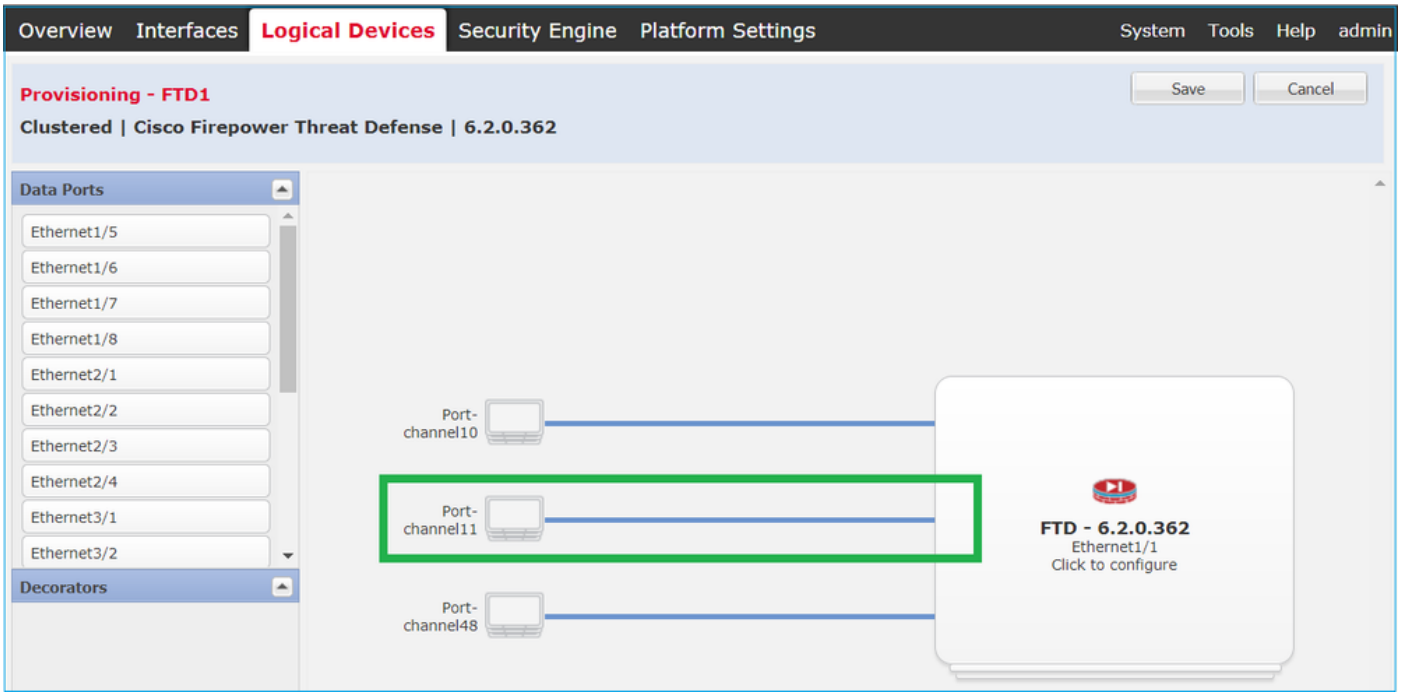
在FRPM tar文件中，提取FPRM_A_TechSupport.tar.gz文件的内容。然后打开/var/sysmgr/sam_logs/svc_sam_dme.log文件并搜索aInPlatformVersion关键字：



问：MIO如何将接口信息（添加/删除）传播到刀片应用(FTD、ASA)？

它使用MIO应用代理组件。

例如，从MIO为FTD分配新的端口信道时：



FTD应用代理调试显示：

<#root>

```
firepower#
```

debug app-agent 255

```
appagent : part 0 : ftd_001_JAD19500BAB0Z690F2.interfaceMapping.update
appagent : part 1 : ssp-xml:3
appagent : part 2 : 7
appagent : part 3 : appAG
appagent : part 4 : <interfaceMappingConfigUpdateRequest><interfaceMapping action="insert"><externalPor
<bladeVNIC>22</bladeVNIC></internalPort></interfaceMapping></interfaceMappingConfigUpdateRequest>
appagent : Process the request message
appagent : It is an update request command
appagent : Invoke request msg handler for cmd interfaceMapping.update
appagent : Processing InterfaceMapping Update Message
appagent : Creating Interface Mapping Structure.
appagent : Processing the tag externalPort.
appagent : ================================
appagent : PortName=Port-channel11
appagent : ftw capability=0
appagent : no available ftw peers
appagent : cleaning external_port_ftw_peers_t
appagent : Sending Response message for Interface Mapping update Message
appagent : Send response message to appAG
appagent : resp_msg->cmdName =appAG.interfaceMapping.update
appagent : resp_msg->content_version =ssp-xml:3
appagent : resp_msg->msgId =7
appagent : resp_msg->statuscode =100
appagent : resp_msg->data =<interfaceMappingConfigUpdateResponse>
  <response>
    <code>100</code>
    <message>Request success</message>
  </response>
</interfaceMappingConfigUpdateResponse>
appagent : part 0 : ftd_001_JAD19500BAB0Z690F2.interfaceStatus.update
appagent : part 1 : ssp-xml:3
appagent : part 2 : 8
appagent : part 3 : appAG
appagent : part 4 : <interfaceStatusUpdateRequest><interface><interfaceName>Port-channel11</interfaceNa
appagent : Process the request message
appagent : It is an update request command
appagent : Invoke request msg handler for cmd interfaceStatus.update
appagent : Processing Interface Status Update Request.
appagent : The Fxos version is 2.1.1 or newer
appagent : Parsing interface status update request message for FXOS > 211
appagent : Parsing Interface Status Req.
appagent : Interface Status Successfully Updated.
appagent : Sending Response for Interface Status Update Request
appagent : Send response message to appAG
appagent : resp_msg->cmdName =appAG.interfaceStatus.update
appagent : resp_msg->content_version =ssp-xml:3
appagent : resp_msg->msgId =8
appagent : resp_msg->statuscode =100
appagent : resp_msg->data =<interfaceStatusUpdateResponse>
  <response>
    <code>100</code>
    <message>Request success</message>
  </response>
</interfaceStatusUpdateResponse>
```

问：对于Firepower机箱的RMA，必须使用什么序列号(SN)？

Firepower机箱具有多个SN。用于RMA请求的请求可从以下输出中获取：

<#root>

```
FP4120-5-A#

scope chassis 1

FP4120-5-A /chassis # show inventory
Chassis    PID             Vendor            Serial (SN) HW Revision
---------- --------------- ----------------- ----------- -----------
         1 FPR-4120-K9     Cisco Systems Inc FLM12345KL6 0
```

或者:

<#root>

```
FP4120-5-A#

connect local-mgmt

FP4120-5-A(local-mgmt)#

show license all


Smart Licensing Status
======================

Smart Licensing is ENABLED

Registration:
  Status: UNREGISTERED
  Export-Controlled Functionality: Not Allowed

License Authorization:
  Status: No Licenses in Use

License Usage
==============

No licenses in use

Product Information
===================

UDI: PID:FPR-4120-SUP,SN:JAD19500BAB
```

或者:

```
<#root>

FP4120-5-A#

scope license

FP4120-5-A /license #

show license all


Smart Licensing Status
======================

Smart Licensing is ENABLED

Registration:
  Status: UNREGISTERED
  Export-Controlled Functionality: Not Allowed

License Authorization:
  Status: No Licenses in Use

License Usage
==============

No licenses in use

Product Information
===================

UDI: PID:FPR-4120-SUP,SN:JAD19500BAB
```

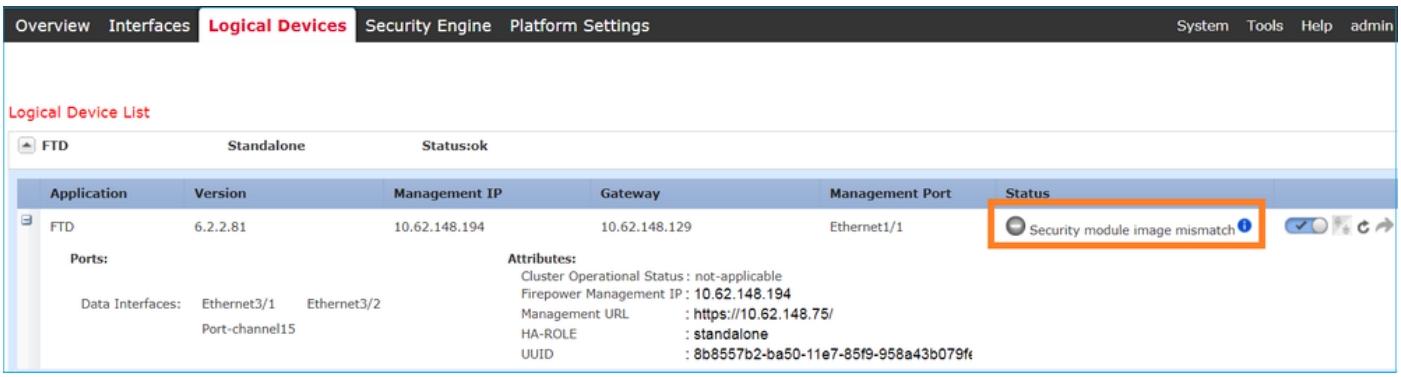
问：您能否在2个不同的FXOS机箱之间交换SSD1？

简短的答案是否。SSD1包含应用映像（例如FTD或ASA）。如果您从机箱中取出SSD1并将其插入其他机箱，则模块未启动，并且出现以下错误：

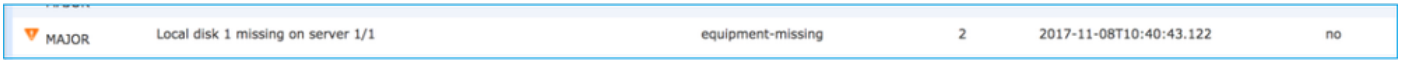
插槽1上检测到关键F1548 2017-11-08T11:36:40.095 427280刀片交换

Severity	Description	Cause	Occurrence	Time	Acknowledged
CRITICAL	Blade swap detected on slot 1	blade-swap	1	2017-11-08T11:36:40.095	no

安全模块映像不匹配



服务器1/1上缺少本地磁盘1



问：如何检查机箱功耗？

从FXOS 2.2.1版本开始，可以使用命令show environment summary：

<#root>

```
FPR4100-1 /chassis #

show environment summary


Chassis INFO :
    Total Power Consumption: 440.000000
    Inlet Temperature (C): 21.000000
    CPU Temperature (C): 39.000000
    Last updated Time: 2018-07-01T09:39:55.157

    PSU 1:
        Type: AC
        Input Feed Status: Ok
        12v Output Status: Ok
        Overall Status: Operable
    PSU 2:
        Type: AC
        Input Feed Status: N/A
        12v Output Status: N/A
        Overall Status: Removed

    FAN 1
        Fan Speed RPM (RPM): 12110
        Speed Status: Ok
        Overall Status: Operable
    FAN 2
        Fan Speed RPM (RPM): 12110
        Speed Status: Ok
        Overall Status: Operable
    FAN 3
        Fan Speed RPM (RPM): 12100
        Speed Status: Ok
        Overall Status: Operable
```

有关其他信息，请查看：

监控机箱运行状况

问：如何检查引导加载程序版本？

<#root>

```
FPR-4110-7-A#
scope chassis 1

FPR-4110-7-A /chassis #
scope server 1

FPR-4110-7-A /chassis/server #
scope adapter 1

FPR-4110-7-A /chassis/server/adapter #
show version detail

Adapter 1:
 Running-Vers: 5.3(1.91)
 Package-Vers: 2.3(1.88)
 Update-Status: Ready
 Activate-Status: Ready
 Bootloader-Update-Status: Ready
 Startup-Vers: 5.3(1.91)
 Backup-Vers: 5.3(1.48)
 Bootloader-Vers: MF-111-234949
```

问：如何升级引导加载程序？

安装FXOS 2.3.1.58或更高版本后，系统可能会显示安全设备上发生严重故障，指示需要升级适配器固件：

```
Critical F1715 2017-05-11T11:43:33.121 339561 Adapter 1 on Security Module 1 requires a critical firmwa
```

引导加载程序升级过程在此链接中描述：
https://www.cisco.com/c/en/us/td/docs/security/firepower/fxos/fxos231/release/notes/fxos231_rn.html#pgfl
173826

如果在引导加载程序升级期间遇到以下错误，您可以尝试使用“force”选项。

<#root>

```
FPR-4110-7-A#
scope chassis 1

FPR-4110-7-A /chassis #
scope server 1
```

```
FPR-4110-7-A /chassis/server #
```

scope adapter 1/1/1

```
FPR-4110-7-A /chassis/server/adapter #
```

show image

```
Name Type Version
------------------------------------------- -------------------- -------
fxos-m83-8p40-cruzboot.4.0.1.62.bin Adapter Boot 4.0(1.62)
fxos-m83-8p40-vic.4.0.1.51.bin Adapter 4.0(1.51)
fxos-m83-8p40-vic.5.3.1.2.bin Adapter 5.3(1.2)
fxos-m83-8p40-vic.5.3.1.48.bin Adapter 5.3(1.48)
fxos-m83-8p40-vic.5.3.1.91.bin Adapter 5.3(1.91)
FPR-4110-7-A /chassis/server/adapter #
```

update boot-loader 4.0(1.62)

```
Warning: Please DO NOT reboot blade or chassis during uprgade, otherwise, it may cause adapter UNUSABLE
After upgrade completed, blade must be power cycled automatically
FPR-4110-7-A /chassis/server/adapter* #
```

commit-buffer

```
Error: Update failed: [This adaptor is not applicable for boot-loader upgrade.]
```

问：如何禁用绝对SSH超时？

这在实验室测试和故障排除期间非常有用。请注意，此绝对超时是在用户环境中临时执行非零操作的安全最佳实践，因此请注意这一点。

<#root>

```
FPR-4115-A#
```

scope security

```
FPR-4115-A /security #
```

scope default-auth

```
FPR-4115-A /security/default-auth #
```

show detail

```
Default authentication:
Admin Realm: Local
Operational Realm: Local
Web session refresh period(in secs): 600
Idle Session timeout(in secs) for web, ssh, telnet sessions: 3600
```

```
Absolute Session timeout(in secs) for web, ssh, telnet sessions: 3600


Serial Console Idle Session timeout(in secs): 3600
Serial Console Absolute Session timeout(in secs): 3600
Admin Authentication server group:
Operational Authentication server group:
Use of 2nd factor: No

FPR-4115-A /security/default-auth #

set absolute-session-timeout 0


FPR-4115-A /security/default-auth* #

commit-buffer


FPR-4115-A /security/default-auth #

show detail



Default authentication:
Admin Realm: Local
Operational Realm: Local
Web session refresh period(in secs): 600
Idle Session timeout(in secs) for web, ssh, telnet sessions: 3600

Absolute Session timeout(in secs) for web, ssh, telnet sessions: 0


Serial Console Idle Session timeout(in secs): 3600
Serial Console Absolute Session timeout(in secs): 3600
Admin Authentication server group:
Operational Authentication server group:
Use of 2nd factor: No
```

问：如何捕获发往机箱管理引擎（控制平面）的LACP数据包？

目标为Firepower 4100/9300机箱管理引擎（控制平面）的LACP数据包封装在特定数据包的数据部分中，并可使用ethanalyzer命令在内部入站- 高接口上捕获。LACP PDU字节从值为01 80 C2 00 00 02（IEEE 802.3 Slow_Protocols_Multicast地址）的字节开始嵌入，直到数据部分结束：

```
<#root>
firepower#

connect fxos


...
firepower(fxos)#

ethanalyzer local interface inbound-hi limit-captured-frames 10000 limit-frame-size 9000 detail

Capturing on 'eth4'
```

```
Frame 1: 188 bytes on wire (1504 bits), 188 bytes captured (1504 bits) on interface 0
    Interface id: 0 (eth4)
        Interface name: eth4
    Encapsulation type: Ethernet (1)
    Arrival Time: Dec  5, 2023 09:16:06.736180828 UTC
    [Time shift for this packet: 0.000000000 seconds]
    Epoch Time: 1701767766.736180828 seconds
    [Time delta from previous captured frame: 0.000000000 seconds]
    [Time delta from previous displayed frame: 0.000000000 seconds]
    [Time since reference or first frame: 0.000000000 seconds]
    Frame Number: 1
    Frame Length: 188 bytes (1504 bits)
    Capture Length: 188 bytes (1504 bits)
    [Frame is marked: False]
    [Frame is ignored: False]
    [Protocols in frame: eth:ethertype:vlan:ethertype:data]
Ethernet II, Src: 02:10:18:a3:4f:f5 (02:10:18:a3:4f:f5), Dst: 58:97:bd:b9:36:4e (58:97:bd:b9:36:4e)
    Destination: 58:97:bd:b9:36:4e (58:97:bd:b9:36:4e)
        Address: 58:97:bd:b9:36:4e (58:97:bd:b9:36:4e)
        .... ..0. .... .... .... .... = LG bit: Globally unique address (factory default)
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Source: 02:10:18:a3:4f:f5 (02:10:18:a3:4f:f5)
        Address: 02:10:18:a3:4f:f5 (02:10:18:a3:4f:f5)
        .... ..1. .... .... .... .... = LG bit: Locally administered address (this is NOT the factory d
        .... ...0 .... .... .... .... = IG bit: Individual address (unicast)
    Type: 802.1Q Virtual LAN (0x8100)
802.1Q Virtual LAN, PRI: 0, DEI: 0, ID: 4048
000. .... .... .... = Priority: Best Effort (default) (0)
    ...0 .... .... .... = DEI: Ineligible
    .... 1111 1101 0000 = ID: 4048
    Type: Unknown (0xde08)

Data (170 bytes)
0000  b8 50 20 04 00 00 00 00 00 00 00 00 00 81 00   .P ..............
0010  00 00 00 00 00 04 09 04 cd 00 00 00 00 00 00 00   ................
0020  00 00 00 00 00 00 00 00 00 00 00 00 00 00

01 80   ................


0030

c2 00 00 02 58 97 bd b9 36 51 88 09 01 01 01 14   ....X...6Q......


0040

80 00 58 97 bd b9 36 4d 00 28 80 00 00 44 3f 00   ..X...6M.(...D?.


0050

00 00 02 14 80 00 00 17 df d6 ec 00 00 33 80 00   .............3..


0060

02 2c 3d 00 00 00 03 10 00 00 00 00 00 00 00 00   .,=.............


0070

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00   ................
```

```
0080

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00   ................

0090

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00   ................

00a0

00 00 00 00 00 00 00 00 00 00

        ..........
    Data: b85020040000000000000000000081000000000000040904...
```

可使用在线工具将十六进制转储转换为PCAP。

问：如何查找SSD信息？

机箱管理引擎内部SSD信息可在FN72077的步骤1的解决办法/解决方案部分提到的所有FXOS版本中找到：

```
<#root>

KSEC-FPR4112-4 #

scope chassis 1


KSEC-FPR4112-4 /chassis #

show sup version detail


SUP FIRMWARE:
    ROMMON:
        Running-Vers: 1.0.15
        Package-Vers: 1.0.18
        Activate-Status: Ready
        Upgrade Status: SUCCESS
    FPGA:
        Running-Vers: 2.00
        Package-Vers: 1.0.18
        Activate-Status: Ready
    SSD:


 Running-Vers: MU03



Model: Micron_M500IT_MTFDDAT128MBD
```

安全引擎（刀片）SSD：

<#root>

KSEC-FPR4112-4#

show server storage detail

Server 1/1:
<output skipped>
        RAID Controller 1:
            Type: SATA
            Vendor: Cisco Systems Inc
            Model: FPR4K-PT-01
            Serial: JAD2605O8TZ
            HW Revision:
            PCI Addr: 00:31.2
            Raid Support:
            OOB Interface Supported: No
            Rebuild Rate: N/A
            Controller Status: Unknown

Local Disk 1:

Vendor: INTEL

Model: SSDSC2KG48

Serial: PHYG109603PA480BGN

HW Rev: 0

Operability: Operable

Presence: Equipped

Size (MB): 400000

Drive State: Online

Power State: Active

Link Speed: 6 Gbps

Device Type: SSD

```
Local Disk 2:

  Vendor: INTEL

                Model: SSDSC2KG96

                Serial: PHYG143301JG960CGN

                HW Rev: 0

                Operability: Operable

                Presence: Equipped

  Size (MB): 800000

                Drive State: Online

                Power State: Active

                Link Speed: 6 Gbps

Device Type: SSD

            Local Disk Config Definition:
                Mode: No RAID
                Description:
                Protect Configuration: No
```

问：如何配置内部交换机(FXOS)捕获？

请参阅文章配置和验证安全防火墙和Firepower内部交换机捕获。

参考

- 思科Firepower 4100/9300 FXOS安全防火墙机箱管理器配置指南，2.14(1)

- 适用于Firepower 4100/9300 CLI的思科安全FXOS配置指南，2.14(1)
- Cisco Firepower 4100/9300 FXOS命令参考
- 配置并验证安全防火墙和Firepower内部交换机捕获

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