

Waarom vManager niet in staat is om Security App-container op een apparaat te installeren?

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Inleiding

Dit document beschrijft een probleem met de installatie van de app-container van Security wanneer het beveiligingsbeleid in een sjabloon van het apparaat wordt gebruikt en hoe het moet worden opgelost.

Probleem

Gebruiker kan Apparaatsjabloon niet toevoegen met een beveiligingsbeleid dat vereist dat Security app-container met deze fout in een vManager geïnstalleerd wordt:

```
Failed to install 1/1 Security App container (app-hosting-UTD-Snort-Feature-aarch64_be-1.0.8_SV2.9.11.1_XE16.10). Failed to enabled iox: null
05 Apr 2019 11:46:09 AM IST
[5-Apr-2019 6:16:09 UTC] Total number of Security App containers to be installed: 1. Security App containers to be installed are following: [app-hosting-UTD-Snort-Feature-aarch64_be-1.0.8_SV2.9.11.1_XE16.10]
[5-Apr-2019 6:16:09 UTC] Started 1/1 Security app container (app-hosting-UTD-Snort-Feature-aarch64_be-1.0.8_SV2.9.11.1_XE16.10) installation
[5-Apr-2019 6:16:10 UTC] Checking if iox is enabled on device
[5-Apr-2019 6:16:18 UTC] Failed to install 1/1 Security App container (app-hosting-UTD-Snort-Feature-aarch64_be-1.0.8_SV2.9.11.1_XE16.10).
Failed to enabled iox: null
```

Vanaf `/var/log/nms/vmanage-server.log` op een vManager-controller is deze fout te zien:

```
05-Apr-2019 08:41:54,488 UTC ERROR [vManage] [AppHostingTemplateProcessor] (device-action-lxc_install-10) |default| Error while enabling iox on device-C1111X-8P-FGL230513Y0-1.1.1.1: rpc-reply error: <rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="5">
  <rpc-error>
    <error-type>application</error-type>
    <error-tag>invalid-value</error-tag>
    <error-severity>error</error-severity>
    <error-message unknown:lang="en">inconsistent value: Device refused one or more commands</error-message>
    <error-info>
      <severity xmlns=" http://cisco.com/yang/cisco-ia">error_cli</severity>;
      <detail xmlns=" http://cisco.com/yang/cisco-ia">;
      <bad-cli>
```

```
<bad-command>iox</bad-command>
<error-location>l</error-location>
<parser-response/>          </bad-cli>
</detail>
</error-info>
</rpc-error>
</rpc-reply>
```

```
at com.tailf.jnc.NetconfSession.recv_rpc_reply_ok(Unknown Source) [JNC-1.2.jar:]
at com.tailf.jnc.NetconfSession.recv_rpc_reply_ok(Unknown Source) [JNC-1.2.jar:]
at com.tailf.jnc.NetconfSession.commit(Unknown Source) [JNC-1.2.jar:]
at
com.viptela.vmanage.server.device.common.NetConfClient.commitAndUnlock(NetConfClient.java:458)
[classes:]
at
com.viptela.vmanage.server.deviceaction.processor.config.AppHostingTemplateProcessor.checkAndEnableIox(AppHostingTemplateProcessor.java:358) [classes:]
at
com.viptela.vmanage.server.deviceaction.processor.config.AppHostingTemplateProcessor.preTemplatePushCheck(AppHostingTemplateProcessor.java:173) [classes:]
at
com.viptela.vmanage.server.deviceaction.processor.service.lxc.LxcInstallActionProcessor$LxcInstallActionWorker.startMaintenanceDeviceActions(LxcInstallActionProcessor.java:340) [classes:]
at
com.viptela.vmanage.server.deviceaction.DefaultActionWorker.startDeviceAction(DefaultActionWorker.java:82) [classes:]
at
com.viptela.vmanage.server.deviceaction.AbstractActionWorker.call(AbstractActionWorker.java:117) [classes:]
at
com.viptela.vmanage.server.deviceaction.AbstractActionWorker.call(AbstractActionWorker.java:35) [classes:]
at java.util.concurrent.FutureTask.run(FutureTask.java:266) [rt.jar:1.8.0_162]
at java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1149) [rt.jar:1.8.0_162]
at java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:624) [rt.jar:1.8.0_162]
at java.lang.Thread.run(Thread.java:748) [rt.jar:1.8.0_162]
```

```
05-Apr-2019 08:41:54,496 UTC ERROR [vManage] [LxcInstallActionProcessor] (device-action-lxc_install-10) |default| On device C1111X-8P-FGL230513Y0-1.1.1.1, Failed to install 1/1 Security App container (app-hosting-UTD-Snort-Feature-aarch64_be-1.0.8_SV2.9.11.1_XE16.10). Failed to enabled iox: null
```

```
05-Apr-2019 08:41:54,524 UTC INFO [vManage] [DeviceActionStatusDAO] (device-action-lxc_install-10) |default| End task lxc_install
```

```
05-Apr-2019 08:41:54,533 UTC INFO [vManage] [DeviceActionStatusDAO] (device-action-lxc_install-10) |default| Publish client event: ACTIVITY
```

```
05-Apr-2019 08:41:54,533 UTC INFO [vManage] [DeviceActionStatusDAO] (device-action-lxc_install-10) |default| Publish client event: DEVICE_ACTION
```


Zoals hierboven te zien is, is er een niet erg informatief bericht "Het iox niet ingeschakeld: nul" wordt in beide uitgangen gezien, wat soms betekent dat er niet genoeg geheugen is voor het geselecteerde Security App Hosting-profiel dat aan het apparaat was gekoppeld.

Oplossing


Aangezien geheugenproblemen vanwege het profiel van Security App Hosting werden vermoed, wordt deze gecontroleerd en vervolgens wordt ontdekt dat het standaardprofiel wordt gebruikt.

SECURITY POLICY PARAMETERS

NAT

 On Off

Resource Profile

 default ▼

In tegenstelling tot het **hoge** profiel waarvan bekend is dat het problemen veroorzaakt wanneer het apparaat niet genoeg geheugen heeft.

Als volgende stap werd het geheugenverbruik op het apparaat zelf gecontroleerd en werd ontdekt dat de C111X-router met 8 Gb RAM slechts ongeveer 1 Gb aan vrij geheugen heeft (let op **Gratis**):

```
cEdge10#show memory platform
Virtual memory : 11512180736
Pages resident : 730200
Major page faults: 2501
Minor page faults: 114581800

Architecture : aarch64_be
Memory (kB)
  Physical : 3758804
  Total : 3758804
  Used : 2620884
  Free : 1137920
  Active : 2191472
  Inactive : 807536
  Inact-dirty : 0
  Inact-clean : 0
  Dirty : 0
  AnonPages : 1473636
  Bounce : 0
  Cached : 1212660
  Commit Limit : 1813864
  Committed As : 3224504
  High Total : 0
  High Free : 0
  Low Total : 3758804
  Low Free : 1137920
  Mapped : 416524
  NFS Unstable : 0
  Page Tables : 17160
  Slab : 170624
  Writeback : 0

Swap (kB)
  Total : 0
  Used : 0
  Free : 0
  Cached : 0

Buffers (kB) : 312844

Load Average
  1-Min : 0.60
```

```
5-Min          : 0.66
15-Min         : 0.86
```

Tegelijkertijd werd uit de **show**-uitvoer bevestigd dat het apparaat 8 Gb RAM (let op **fysiek geheugen**) heeft:

```
cisco C1111X-8P (1RU) processor with 1453914K/6147K bytes of memory.
Processor board ID FGL230513Y0
1 Virtual Ethernet interface
10 Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
6336511K bytes of flash memory at bootflash:.
```

Gebrek aan geheugen is de reden waarom de container van de Security App niet kan worden geïnstalleerd, zodat de versie van ROMmon wordt gecontroleerd omdat de minimum vereisten van ROMmon voor IOS-XE SD-WAN ondersteunde platforms bestaan. Deze versie is te vinden op het apparaat:

```
cEdge10#show platform | b Firmware
Slot      CPLD Version      Firmware Version
-----
0         17100501         16.8(1r)
R0        17100501         16.8(1r)
F0        17100501         16.8(1r)
```

Aangezien u de software van 16.10.2 gebruikt en volgens de release notes is de minimaal vereiste ROMmon versie 16.9(1r), werd ROMmon bijgewerkt en wordt het vrije geheugen opnieuw gecontroleerd:

```
cEdge10#sh memory platform
Virtual memory : 11516805120
Pages resident : 708276
Major page faults: 2303
Minor page faults: 1705306

Architecture : aarch64_be
Memory (kB)
Physical      : 8143440
Total        : 8143440
Used         : 2571908
Free        : 5571532
Active       : 2213868
Inactive     : 1128140
Inact-dirty  : 0
Inact-clean  : 0
Dirty       : 8
AnonPages   : 1410328
Bounce      : 0
Cached      : 1619664
Commit Limit : 4006184
Committed As : 3136948
High Total  : 0
High Free   : 0
Low Total   : 8143440
Low Free    : 5571532
Mapped     : 397692
NFS Unstable : 0
Page Tables : 17216
```

Slab : 158776
Writeback : 0

Let bij de bovenstaande uitvoer op Gratis en fysiek geheugen (meer dan 5 Gbps en 8 Gbps corresponderend).

Nadat deze Security App-containerinstallatie opnieuw geactiveerd werd omdat de apparaatsjabloon los en opnieuw aangesloten is en de berichten over een succesvolle installatie worden weergegeven:

```
%IOSXE-5-PLATFORM: R0/0: VCONFD_NOTIFIER: Install status: cc761b3b-cb3b-4070-81de-9b842fd68b27
download-start. Message Downloading http://10.10.10.100:8080/software/package/lxc/app-
hosting_UTD-Snort-Feature-x86_64_1.0.8_SV2.9.11.1_XE16.10_secapp-
ucmk9.16.10.2.1.0.8_SV2.9.11.1_XE16.10.x86_64.tar?deviceId=10.10.10.10
%Cisco-SDWAN-cEdge10-action_notifier-6-INFO-1400002: R0/0: VCONFD_NOTIFIER: Notification:
4/5/2019 09:54:4 system-software-install-status severity-level:minor host-name:cEdge10 system-
ip:10.10.10.10 status:download-start install-id:cc761b3b-cb3b-4070-81de-9b842fd68b27
message:Downloading http://10.10.10.100:8080/software/package/lxc/app-hosting_UTD-Snort-Feature-
x86_64_1.0.8_SV2.9.11.1_XE16.10_secapp-
ucmk9.16.10.2.1.0.8_SV2.9.11.1_XE16.10.x86_64.tar?deviceId=10.10.10.10
%IOSXE-5-PLATFORM: R0/0: VCONFD_NOTIFIER: Install status: cc761b3b-cb3b-4070-81de-9b842fd68b27
download-complete. Message Downloaded app image to /bootflash/.UTD_IMAGES/app-hosting_UTD-Snort-
Feature-x86_64_1.0.8_SV2.9.11.1_XE16.10_secapp-ucmk9.16.10.2.1.0.8_SV2.9.11.1_XE16.10.x86_64.tar
%Cisco-SDWAN-cEdge10-action_notifier-6-INFO-1400002: R0/0: VCONFD_NOTIFIER: Notification:
4/5/2019 09:54:5 system-software-install-status severity-level:minor host-name:cEdge10 system-
ip:10.10.10.10 status:download-complete install-id:cc761b3b-cb3b-4070-81de-9b842fd68b27
message:Downloaded app image to /bootflash/.UTD_IMAGES/app-hosting_UTD-Snort-Feature-
x86_64_1.0.8_SV2.9.11.1_XE16.10_secapp-ucmk9.16.10.2.1.0.8_SV2.9.11.1_XE16.10.x86_64.tar
%IOSXE-5-PLATFORM: R0/0: VCONFD_NOTIFIER: Install status: 9fd36cd6-f601-4fac-a5b0-1a36f06ba18a
verification-complete. Message NOOP
%Cisco-SDWAN-cEdge10-action_notifier-6-INFO-1400002: R0/0: VCONFD_NOTIFIER: Notification:
4/5/2019 9:54:5 system-software-install-status severity-level:minor host-name:cEdge10 system-
ip:10.10.10.10 status:verification-complete install-id:cc761b3b-cb3b-4070-81de-9b842fd68b27
message:NOOP
%VMAN-5-PACKAGE_SIGNING_LEVEL_ON_INSTALL: R0/0: vman: Package 'iox-
utd_1.0.8_SV2.9.11.1_XE16.10.tar' for service container 'utd' is 'Cisco signed', signing level
cached on original install is 'Cisco signed'
%VIRT_SERVICE-5-INSTALL_STATE: Successfully installed virtual service utd
%IOSXE-5-PLATFORM: R0/0: VCONFD_NOTIFIER: Install status: cc761b3b-cb3b-4070-81de-9b842fd68b27
install-start. Message Success, App state: DEPLOYED
%Cisco-SDWAN-cEdge10-action_notifier-6-INFO-1400002: R0/0: VCONFD_NOTIFIER: Notification:
4/5/2019 09:54:5 system-software-install-status severity-level:minor host-name:ISR-4331 system-
ip:10.10.10.10 status:install-start install-id:cc761b3b-cb3b-4070-81de-9b842fd68b27
message:Success, App state: DEPLOYED
```

En hier is te zien hoe succesvolle installatie er uit vManager ziet:

```
[6-Apr-2019 12:38:13 CEST] Total number of Security App containers to be installed: 1. Security
App containers to be installed are following: [app-hosting-UTD-Snort-Feature-x86_64-
1.0.8_SV2.9.11.1_XE16.10]
[6-Apr-2019 12:38:13 CEST] Started 1/1 Security app container (app-hosting-UTD-Snort-Feature-
x86_64-1.0.8_SV2.9.11.1_XE16.10) installation
[6-Apr-2019 12:38:14 CEST] Checking if iox is enabled on device
[6-Apr-2019 12:38:17 CEST] Waiting for iox to be enabled on device
[6-Apr-2019 12:40:05 CEST] iox enable
[6-Apr-2019 12:40:05 CEST] Iox enabled on device
[6-Apr-2019 12:40:11 CEST] Security App container image: app-hosting_UTD-Snort-Feature-
x86_64_1.0.8_SV2.9.11.1_XE16.10_secapp-ucmk9.16.10.2.1.0.8_SV2.9.11.1_XE16.10.x86_64.tar
[6-Apr-2019 12:40:19 CEST] Connection Instance: 0, Color: biz-internet
[6-Apr-2019 12:40:19 CEST] Downloading http://10.10.10.100:8080/software/package/lxc/app-
hosting_UTD-Snort-Feature-x86_64_1.0.8_SV2.9.11.1_XE16.10_secapp-
```

```
ucmk9.16.10.2.1.0.8_SV2.9.11.1_XE16.10.x86_64.tar?deviceId=10.10.10.10
[6-Apr-2019 12:56:45 CEST] Downloaded app image to /bootflash/.UTD_IMAGES/app-hosting_UTD-Snort-
Feature-x86_64_1.0.8_SV2.9.11.1_XE16.10_secapp-ucmk9.16.10.2.1.0.8_SV2.9.11.1_XE16.10.x86_64.tar
[6-Apr-2019 12:56:48 CEST]
[6-Apr-2019 12:57:19 CEST] Success, App state: DEPLOYED
[6-Apr-2019 12:57:27 CEST] utd installed successfully
Current state is deployed

[6-Apr-2019 12:57:27 CEST] app-hosting-UTD-Snort-Feature-x86_64 installed in DEPLOYED state
[6-Apr-2019 12:57:27 CEST] Finished 1/1 Security app container (app-hosting-UTD-Snort-Feature-
x86_64-1.0.8_SV2.9.11.1_XE16.10) installation
```

Referenties

- https://sdwan-docs.cisco.com/Product_Documentation/vManage_Help/Release_18.4/Security/Configuring_Security_Virtual_Image_for_IPS%2F%2FIDS_and_URL_Filtering
- https://sdwan-docs.cisco.com/Product_Documentation/Software_Features/Release_18.4/Release_Notes/Release_Notes_for_IOS_XE_SD-WAN_Release_16.10_and_SD-WAN_Release_18.4#ROMmon_Requirements_Matrix