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简介

本文档介绍从Cisco IOS® XE 17.3.2中的旧许可证机制迁移至使用策略的新智能许可机制后的预期情况。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档中的信息基于以下硬件版本：

- Cisco Catalyst 9500
- Cisco Catalyst 9300

注意：该方法和命令可应用于其他Catalyst 9000系列交换机。有关本文档中提到的命令和配置，请参阅相应的配置指南。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

目的

在Cisco IOS XE 17.3.2和17.4.1版本中，智能许可功能已更改。如果设备处于脱机状态，则无需再向思科智能软件管理器(CSSM)注册设备的许可证，也无需从CSSM保留特定许可证(SLR)。评估许可证也已被删除。使用智能许可策略时，从零日（安装Cisco IOS XE 17.3.2或更高版本映像的那一天）开始使用所有配置的许可证。 之后，需要向CSSM报告许可证使用情况。

在使用策略的智能许可中，未更改任何许可证。对于Catalyst 9K平台，所有许可证均未实施，用于注册许可证的先前配置/拓扑仍然可用。假设设备已使用之前的智能许可证版本映像注册或保留。在这种情况下，一旦映像升级到支持使用策略的智能许可映像，许可证将自动转换为零接触使用策略许可证的智能许可。如果设备仍在使用使用使用权许可证，或者由于智能许可注册/预留尚未完成，而具有评估或评估过期映像，则存在使用适用于Windows 10的思科智能许可证实用程序(CSLU)应用的新拓扑(预期将来可随内部卫星或其他控制器（如思科DNAC）提供)。 CSLU位于设备和CSSM之间。它收集所有设备的使用数据，并为CSSM提供离线或在线的单一联系点。

使用策略将智能许可证注册(SL)迁移到智能许可

使用以前的智能许可映像（从所有Cat9K交换机的16.9.1开始，一直到17.3.1），在云中默认启用callhome以连接到CSSM。这要求设备(单个交换机、堆栈或StackWise虚拟(SVL))通过管理端口或前面板下行链路/上行链路端口连接到CSSM。

如果设备已注册，使用智能许可证传输callhome或智能许可证传输smart，则转换为使用策略的智能许可为“零接触”。当设备软件升级到支持使用策略的智能许可的映像时，无需更改配置即可支持向后兼容性。当设备使用支持策略的智能许可映像启动时，以前用于注册产品实例(PI)许可证的idtoken将转换为信任代码，以允许设备与CSSM之间的通信。所有许可证显示为正在使用，而不是注册和授权，如果智能帐户中有可用的自定义策略，则还会安装该策略。从此时起，将根据策略中的报告计划报告设备的许可证使用情况。

在CSSM上转换为使用策略的智能许可后，之前的PI从IP中每台交换机的主机名更改为UDI（PID和序列号）。对于HA系统，在活动交换机CSSM PI中都会报告使用的许可证。备用交换机和成员交换机（如果可用）在CSSM中也有一个PI，但不报告任何许可证使用情况。如果某个HA系统中的活动交换机在报告期间发生更改，则许可证使用情况现在会在新的活动PI下看到。

使用策略升级到智能许可之前，在具有已注册许可证的设备上显示Show命令

在show license命令输出中，请注意许可证是作为智能许可的一部分进行注册和授权的。

<#root>

```
Switch#

show license summary



Smart Licensing is ENABLED

Registration:
  Status:

REGISTERED



  Smart Account: BU Production Test
  Virtual Account: Cat9K-FranklinDT

Export-Controlled Functionality: ALLOWED
Last Renewal Attempt: None
Next Renewal Attempt: Mar 21 11:08:58 2021 PST

License Authorization:
  Status:

AUTHORIZED



  Last Communication Attempt: SUCCEEDED
  Next Communication Attempt: Oct 22 11:09:07 2020 PST

License Usage:
```

```
License Entitlement tag Count Status
-----------------------------------------------------------------------------
C9500 Network Advantage (C9500 Network Advantage) 2 AUTHORIZED
C9500-DNA-16X-A (C9500-16X DNA Advantage) 2 AUTHORIZED

Switch#
```

show license usage

```
License Authorization:
  Status:
```

AUTHORIZED

```
on Sep 22 11:09:07 2020 PST


C9500 Network Advantage (C9500 Network Advantage):
  Description: C9500 Network Advantage
  Count: 2
  Version: 1.0
  Status:
```

AUTHORIZED

```
  Export status: NOT RESTRICTED


C9500-DNA-16X-A (C9500-16X DNA Advantage):
  Description: C9500-DNA-16X-A
  Count: 2
  Version: 1.0
  Status:
```

AUTHORIZED

```
  Export status: NOT RESTRICTED


Switch#
```

show license status

```
Smart Licensing is ENABLED

Utility:
  Status: DISABLED

Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
```

```
    Smart Licensing hostname privacy: DISABLED
    Version privacy: DISABLED


Transport:
  Type: Callhome

Registration:
  Status: REGISTERED

  Smart Account: BU Production Test
  Virtual Account: Cat9K-FranklinDT
  Export-Controlled Functionality: ALLOWED
  Initial Registration: SUCCEEDED on Sep 22 11:08:58 2020 PST
  Last Renewal Attempt: None
  Next Renewal Attempt: Mar 21 11:08:57 2021 PST
  Registration Expires: Sep 22 11:04:23 2021 PST


License Authorization:
  Status:

AUTHORIZED


 on Sep 22 11:09:07 2020 PST
  Last Communication Attempt: SUCCEEDED on Sep 22 11:09:07 2020 PST
  Next Communication Attempt: Oct 22 11:09:06 2020 PST
  Communication Deadline: Dec 21 11:04:34 2020 PST


Export Authorization Key:
  Features Authorized:
    <none>


Miscellaneus:
  Custom Id: <empty>
```

使用策略支持的映像使用智能许可启动后在设备上显示Show命令

在show license输出中，请注意许可证现在使用而不是Registered and Authorized。此外，注册idtoken已自动用作受信任代码，以允许CSSM与设备之间的通信。此外，设备上会安装思科默认策略。

```
Switch#show license summary

License Usage:
License Entitlement tag Count Status
-----------------------------------------------------------------------------
network-advantage (C9500 Network Advantage) 2 IN USE
dna-advantage (C9500-16X DNA Advantage) 2 IN USE

Switch#show license usage
```

```
License Authorization:
  Status: Not Applicable

network-advantage (C9500 Network Advantage):
  Description: network-advantage
  Count: 2
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: network-advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual

dna-advantage (C9500-16X DNA Advantage):
  Description: C9500-16X DNA Advantage
  Count: 2
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: dna-advantage
  Feature Description: C9500-16X DNA Advantage
  Enforcement type: NOT ENFORCED
  License type: Subscription

Switch#show license status

Utility:
  Status: DISABLED

Smart Licensing Using Policy:
  Status: ENABLED

Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
  Version privacy: DISABLED

Transport:
  Type: Callhome

Policy:
  Policy in use: Merged from multiple sources.
  Reporting ACK required: yes (CISCO default)
  Unenforced/Non-Export Perpetual Attributes:
    First report requirement (days): 365 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Unenforced/Non-Export Subscription Attributes:
    First report requirement (days): 90 (CISCO default)
    Reporting frequency (days): 90 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Enforced (Perpetual/Subscription) License Attributes:*
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)
  Export (Perpetual/Subscription) License Attributes:*
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)
```

```
Miscellaneous:
  Custom Id: <empty>

Usage Reporting:**
  Last ACK received: Nov 10 08:56:48 2020 PST
  Next ACK deadline: Feb 08 08:56:48 2021 PST
  Reporting push interval: 30  days
  Next ACK push check: <none>
  Next report push: Dec 10 08:55:29 2020 PST
  Last report push: Nov 10 08:55:29 2020 PST
  Last report file write: <none>

Trust Code Installed:
  Active: PID:C9500-16X,SN:FCW2233A5ZV
    INSTALLED on Nov 10 08:54:48 2020 PST
  Standby: PID:C9500-16X,SN:FCW2233A5ZY
    INSTALLED on Nov 10 08:54:48 2020 PST
```

注意：在命令输出中，策略的Enforced和Export部分不适用于C9K交换机，因为交换机的所有许可证都是Unenforced。

注意：此表说明了“使用情况报告”部分中的每一行。

Field		Description
Usage Reporting:	Header for usage reporting (RUM reports) information.	
	Last ACK received:	Date and time of last ACK received, in the local time zone.
	Next ACK deadline:	Date and time for next ACK. If the policy states that an ACK is not requires then this field displays `none`. **Note** If an ACK is required and is not received by this deadline, a syslog is displayed.
	Reporting Interval:	Reporting interval in days The value displayed here depends on what you configure in the **license smart usage interval***interval_in_days* and the policy value. For more information, see the corresponding Syntax Default is 30 days
	Next ACK push check:	Date and time when the product instance will submit the next polling request for an ACK. Date and time are in the local time zone. This applies only to product instance- initiated communication to CSSM or CSLU. If the reporting interval is zero, or if no ACK polling is pending, then this field displays `none`.
	Next report push:	Date and time when the product instance will send the next RUM report. Date and time are in the local time zone. If the reporting interval is zero, or if there are no pending RUM reports, then this field displays `none`.
	Last report push:	Date and time for when the product instance sent the last RUM report. Date and time are in the local time zone.
	Last report file write:	Date and time for when the product instance last saved an offline RUM report. Date and time are in the local time zone.
	Last report pull:	Date and time for when usage reporting information was retrieved using data models. Date and time are in the local time zone.

<#root>

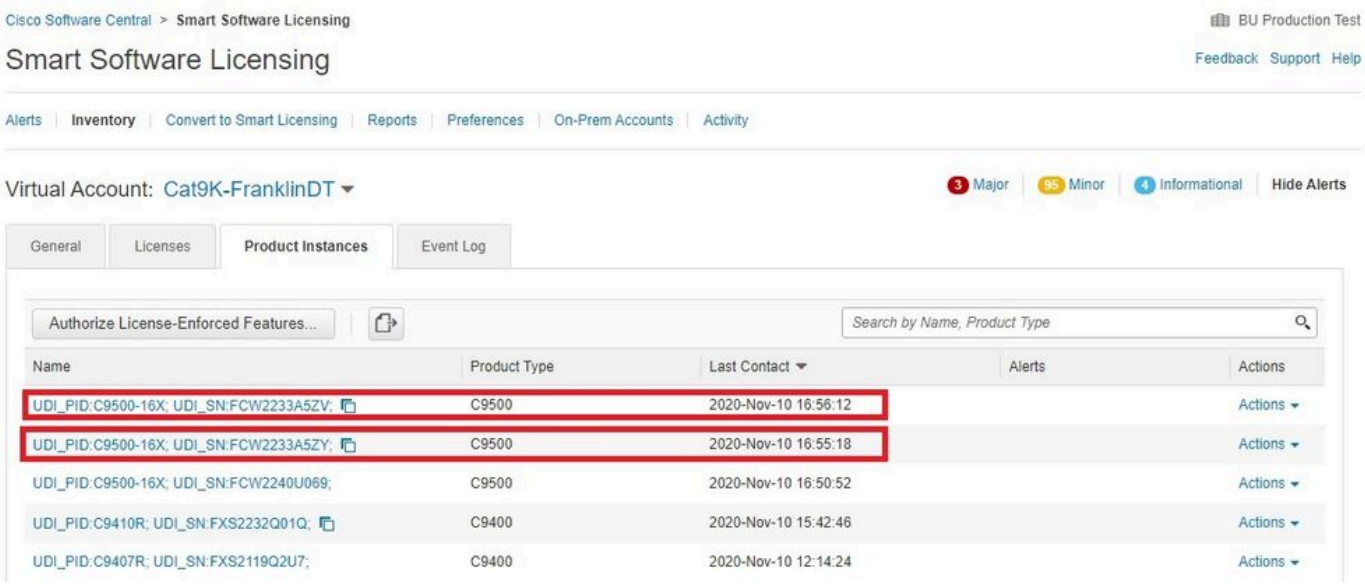
```
Switch#

show license udi

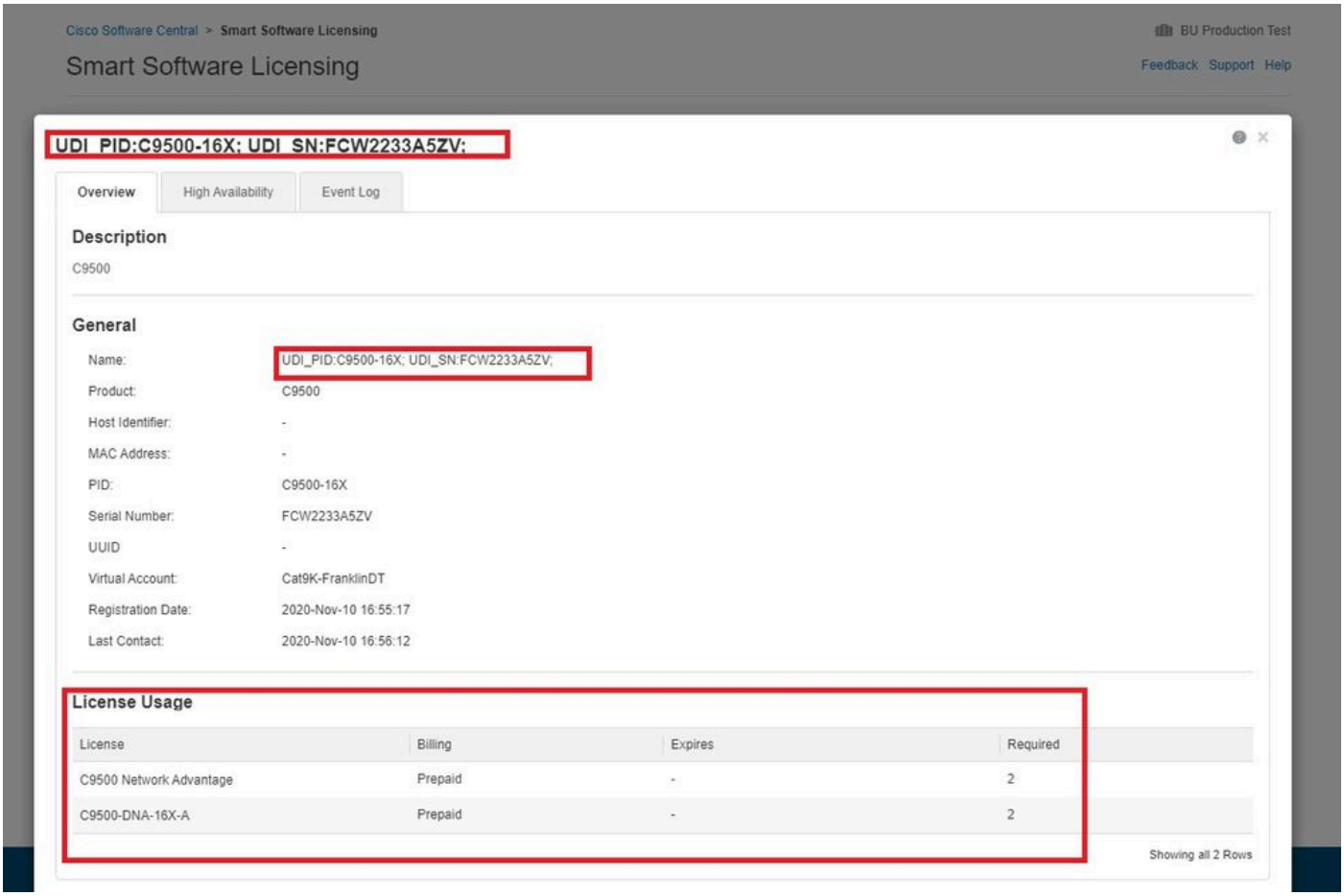

UDI: PID:C9500-16X,SN:FCW2233A5ZV

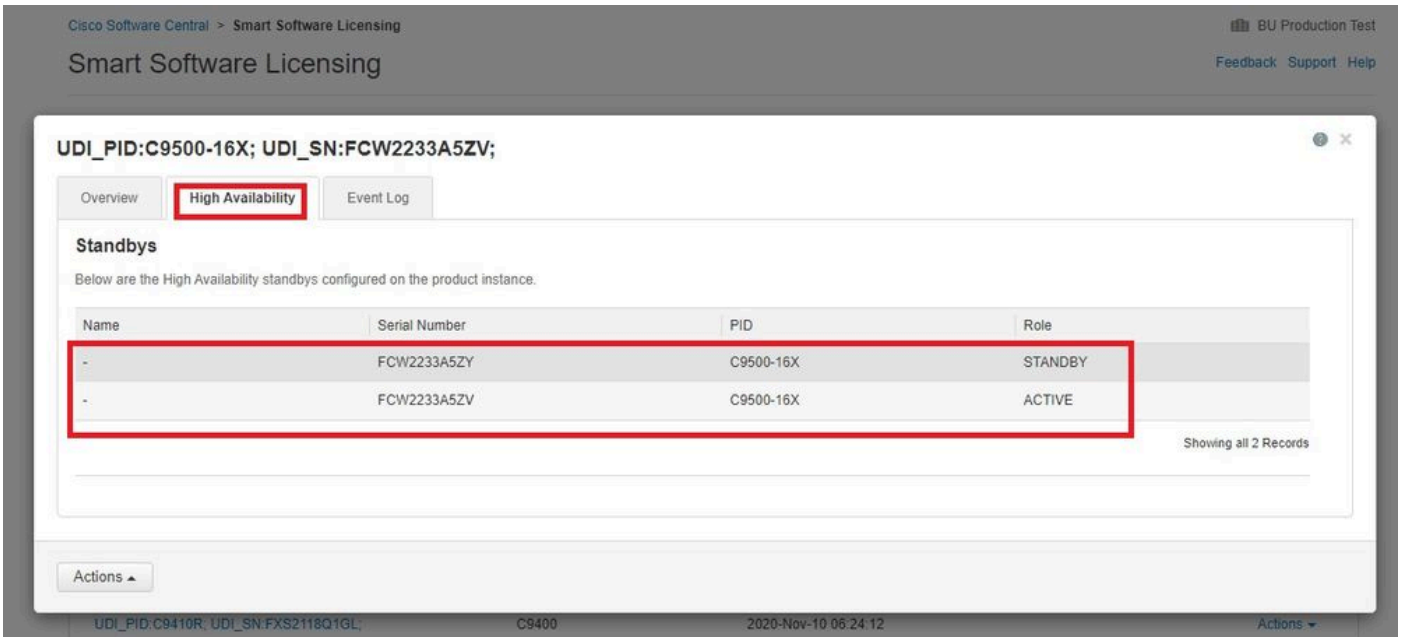
HA UDI List:
    Active:PID:C9500-16X,SN:FCW2233A5ZV
    Standby:PID:C9500-16X,SN:FCW2233A5ZY
```

在CSSM中，主用UDI和备用UDI都显示，而不是选项卡下的PI主Product Instances机名。

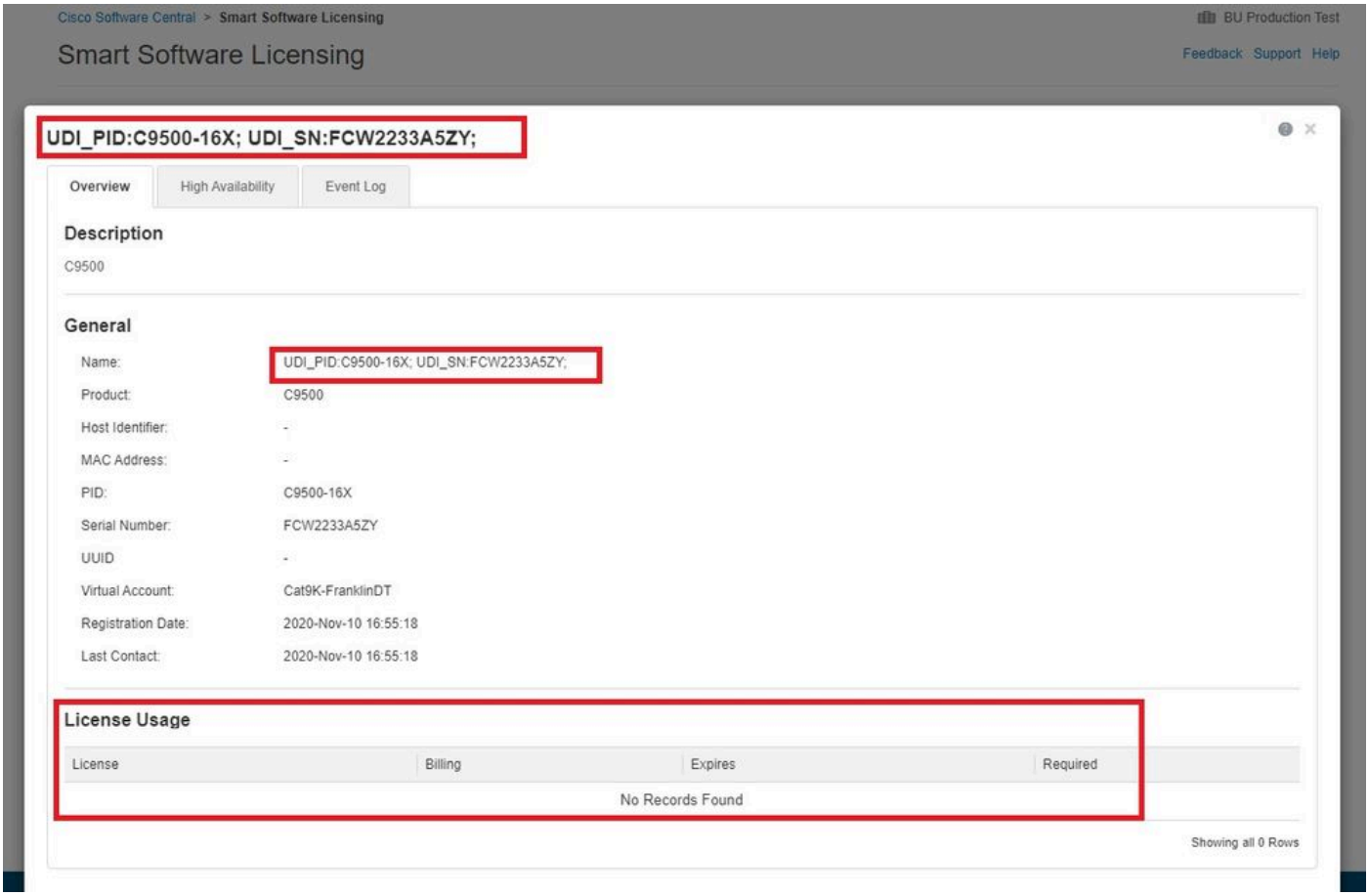


单击active PID以显示许可证使用情况。单击High Availability选项卡以显示HA系统中包含的所有PID。





单击Product Instance选项卡下的Standby switch UDI，以显示备用交换机的信息。备用交换机不显示任何许可证使用情况，因为设备的许可证使用情况仅在活动交换机下显示。



发生此转换后，许可证使用情况将继续根据安装的策略报告。

从使用策略的智能许可降级到智能许可证注册映像

如果由于某种原因，必须将设备降级为不支持使用智能许可策略的先前映像，请勿更改配置并安装映像以降级。根据设备降级的图像，可能需要在设备上重新注册。在17.3.2或17.4.1开发工作之前发布的映像不了解使用策略或信任代码的智能许可，因此，降级后需要重新注册。从CSSM获取idtoken并在设备上使用命令是一件简单license smart register idtoken

all
的事。

16.9.6及更高版本、16.12.4及更高版本以及17.3.1映像已添加代码，以便识别信任代码并在映像降级时将其转换回注册标识符。许可证将自动重新设置为“已注册”(REGISTERED)状态和“已授权”(AUTHORIZED)。

使用策略将SLR迁移到智能许可

由于各种原因，客户并不总是希望连接CSSM或外部。为此，添加了离线特定许可证保留(SLR)功能，以允许交换机符合要求。本文对此进行了说明，并可以使用特定许可证保留文档了解详细信息。SLR从16.9.1版本一直到17.3.1版本。

当安装了特定许可证预留的设备升级为使用策略支持的智能许可映像时，许可证转换是自动的，此时无需执行其他操作。这些许可证现已在使用中，表明它们之前已通过SLR获得授权。但是，在已安装策略所指示的较迟日期，可能需要报告许可证使用情况，如本节稍后部分所示。

在设备上显示命令以及支持旧版智能许可证的映像

<#root>

```
Switch#

show license summary


Smart Licensing is ENABLED
License Reservation is ENABLED
Registration:
  Status:

REGISTERED - SPECIFIC LICENSE RESERVATION


  Export-Controlled Functionality: ALLOWED
License Authorization:
  Status:
```

AUTHORIZED - RESERVED

```
License Usage:
  License                 Entitlement tag               Count Status
  -----------------------------------------------------------------------------
  C9500 Network Advantage (C9500 Network Advantage)         2
```

AUTHORIZED

```
  C9500-DNA-16X-A         (C9500-16X DNA Advantage)         2
```

AUTHORIZED

```
Switch#
```

show license reservation

```
License reservation: ENABLED
Overall status:
  Active: PID:C9500-16X,SN:FCW2233A5ZV
       Reservation status: SPECIFIC INSTALLED on Aug 31 10:15:01 2020 PDT
       Export-Controlled Functionality: ALLOWED
       Last Confirmation code: 4bfbea7f
  Standby: PID:C9500-16X,SN:FCW2233A5ZY
       Reservation status: SPECIFIC INSTALLED on Aug 31 10:15:01 2020 PDT
       Export-Controlled Functionality: ALLOWED
       Last Confirmation code: 9394f196
Specified license reservations:
  C9500 Network Advantage (C9500 Network Advantage):
    Description: C9500 Network Advantage
    Total reserved count: 2
    Term information:
      Active: PID:C9500-16X,SN:FCW2233A5ZV
        License type: PERPETUAL
          Term Count: 1
      Standby: PID:C9500-16X,SN:FCW2233A5ZY
        License type: PERPETUAL
          Term Count: 1
  C9500-DNA-16X-A (C9500-16X DNA Advantage):
    Description: C9500-DNA-16X-A
    Total reserved count: 2
    Term information:
      Active: PID:C9500-16X,SN:FCW2233A5ZV
        License type: TERM
          Start Date: 2020-MAR-17 UTC
          End Date: 2021-MAR-17 UTC
          Term Count: 1
      Standby: PID:C9500-16X,SN:FCW2233A5ZY
        License type: TERM
          Start Date: 2020-MAR-17 UTC
          End Date: 2021-MAR-17 UTC
          Term Count: 1
```

```
Switch#
```

show license status

```
Smart Licensing is ENABLED

Utility:
  Status: DISABLED

License Reservation is ENABLED

Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
   Version privacy: DISABLED

Transport:
  Type: Callhome

Registration:
  Status:
```

REGISTERED - SPECIFIC LICENSE RESERVATION

```
  Export-Controlled Functionality: ALLOWED
  Initial Registration: SUCCEEDED on Aug 31 11:07:39 2020 PDT

License Authorization:
  Status:
```

AUTHORIZED - RESERVED

```
 on Aug 31 10:15:01 2020 PDT

Export Authorization Key:
  Features Authorized:
    <none>
```

使用策略支持的映像使用智能许可启动后在设备上显示Show命令

show命令显示正在使用的许可证，并指示这些许可证以前已由特定许可证保留授权。思科默认策略正在使用中。

<#root>

```
Switch#
```

show license summary

```
License Reservation is ENABLED
License Usage:
  License                 Entitlement tag               Count Status
  -----------------------------------------------------------------------------
  network-advantage       (C9500 Network Advantage)         2
```

IN USE

```
  dna-advantage           (C9500-16X DNA Advantage)         2
```

IN USE

```
Switch#
```

show license all

```
Smart Licensing Status
======================
Smart Licensing is ENABLED
License Reservation is ENABLED

Export Authorization Key
  Features Authorized:
    <none>


Utility:
  Status: DISABLED

Smart Licensing Using Policy:
  Status: ENABLED

Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
  Version privacy: DISABLED

Transport:
  Type: Transport Off

Miscellaneous:
  Custom Id: <empty>

Policy:
  Policy in use: Merged from multiple sources.
  Reporting ACK required: yes (CISCO default)
  Unenforced/Non-Export Perpetual Attributes:
    First report requirement (days): 365 (CISCO default)
 Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Unenforced/Non-Export Subscription Attributes:
    First report requirement (days): 90 (CISCO default)
```

```
    Reporting frequency (days): 90 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Enforced (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)
  Export (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)

Usage Reporting:
  Last ACK received: <none>
  Next ACK deadline: Nov 29 10:50:05 2020 PDT
  Reporting Interval: 30
  Next ACK push check: <none>
  Next report push: Aug 31 10:52:05 2020 PDT
  Last report push: <none>
  Last report file write: <none>

Trust Code Installed: <none>

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

network-advantage (C9500 Network Advantage):
  Description: network-advantage
  Count: 2
  Version: 1.0
  Status: IN USE
  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: network-advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual
  Reservation:
    Reservation status:


SPECIFIC INSTALLED



    Total reserved count: 2

dna-advantage (C9500-16X DNA Advantage):
  Description: C9500-16X DNA Advantage
  Count: 2
  Version: 1.0
  Status:


 IN USE



  Export status: NOT RESTRICTED
  Feature Name: dna-advantage
  Feature Description: C9500-16X DNA Advantage
  Enforcement type: NOT ENFORCED
  License type: Subscription
  Reservation:
    Reservation status:
```

SPECIFIC INSTALLED

    Total reserved count: 2

Product Information
==========
UDI: PID:C9500-16X,SN:FCW2233A5ZV

HA UDI List:
    Active:PID:C9500-16X,SN:FCW2233A5ZV
    Standby:PID:C9500-16X,SN:FCW2233A5ZY

Agent Version
==========
Smart Agent for Licensing: 5.0.5_rel/42

License Authorizations
==========
Overall status:
  Active: PID:C9500-16X,SN:FCW2233A5ZV
      Status:

SPECIFIC INSTALLED

 on Aug 31 10:15:01 2020 PDT
      Last Confirmation code: 4bfbea7f
  Standby: PID:C9500-16X,SN:FCW2233A5ZY
      Status:

SPECIFIC INSTALLED

 on Aug 31 10:15:01 2020 PDT
      Last Confirmation code: 9394f196

Specified license reservations:
  C9500 Network Advantage (C9500 Network Advantage):
    Description: C9500 Network Advantage
    Total reserved count: 2
    Enforcement type: NOT ENFORCED
    Term information:
      Active: PID:C9500-16X,SN:FCW2233A5ZV
        Authorization type:

SPECIFIC INSTALLED

on Aug 31 10:15:01 2020 PDT
        License type: PERPETUAL
          Term Count: 1
      Standby: PID:C9500-16X,SN:FCW2233A5ZY
        Authorization type:

SPECIFIC INSTALLED

 on Aug 31 10:15:01 2020 PDT
        License type: PERPETUAL
          Term Count: 1

```
  C9500-DNA-16X-A (C9500-16X DNA Advantage):
    Description: C9500-DNA-16X-A
    Total reserved count: 2
    Enforcement type: NOT ENFORCED
    Term information:
      Active: PID:C9500-16X,SN:FCW2233A5ZV
        Authorization type:

SPECIFIC INSTALLED


 on Aug 31 10:15:01 2020 PDT
        License type: PERPETUAL
          Term Count: 1
      Standby: PID:C9500-16X,SN:FCW2233A5ZY
        Authorization type:

SPECIFIC INSTALLED


on Aug 31 10:15:01 2020 PDT
        License type: PERPETUAL
          Term Count: 1

Purchased Licenses:

  No Purchase Information Available


Derived Licenses:
  Entitlement Tag: regid.2017-03.com.cisco.advantagek9-Nyquist-C9500,1.0_f1563759-2e03-4a4c-bec5-5feec5
  Entitlement Tag: regid.2017-07.com.cisco.C9500-DNA-16X-A,1.0_ef3574d1-156b-486a-864f-9f779ff3ee49


Switch#

show license status



Utility:
  Status: DISABLED

License Reservation is ENABLED

Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
   Version privacy: DISABLED

Transport:
  Type: Transport Off

Policy:
  Policy in use: Merged from multiple sources.
  Reporting ACK required: yes (CISCO default)
  Unenforced/Non-Export Perpetual Attributes:
    First report requirement (days): 365 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 90 (CISCO default)
```

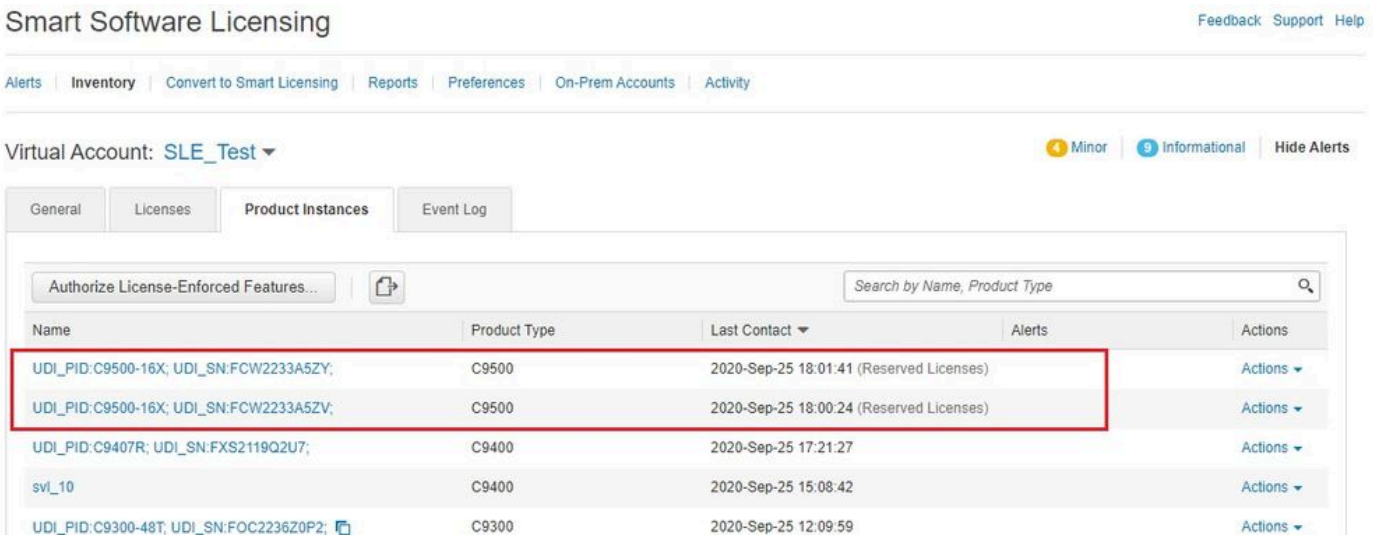
```
  Unenforced/Non-Export Subscription Attributes:
    First report requirement (days): 90 (CISCO default)
    Reporting frequency (days): 90 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Enforced (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)
  Export (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)


Miscellaneus:
  Custom Id: <empty>

Usage Reporting:
  Last ACK received: <none>
  Next ACK deadline: Nov 29 10:50:05 2020 PDT
  Reporting Interval: 30
  Next ACK push check: <none>
  Next report push: Aug 31 10:52:05 2020 PDT
  Last report push: <none>
  Last report file write: <none>

Trust Code Installed: <none>
```

在CSSM中，PI未更改并指示预留许可证，因为此时未报告使用量。在收到策略指示或系统日志消息之前，不需要使用报告。

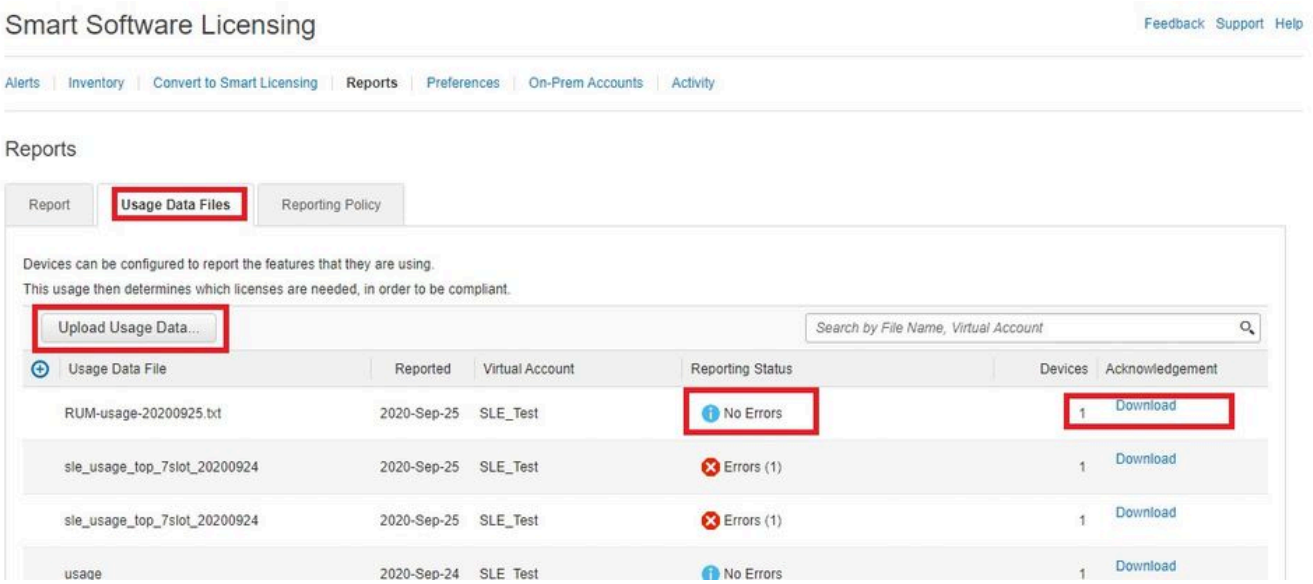


根据策略在以后需要时报告使用情况

如果思科DNA许可证正在使用，则以后可要求设备报告使用情况。这仍可以在离线模式下完成。但是，对于HA系统，完整设备只需要一个报告文件。使用命令license smart save usageCLI创建要在CSSM中使用的报告文件。然后，将文件复制到CSSM可访问的位置。

```
Switch#license smart save usage unreported file flash:RUM-usage-20200925.txt
Switch#copy flash:RUM-usage-20200925.txt tftp://172.27.18.5//auto/tftp-sjc-users2/byodis/
Address or name of remote host [172.27.18.5]?
Destination filename [/auto/tftp-sjc-users2/byodis/RUM-usage-20200925.txt]?
!!
15128 bytes copied in 0.161 secs (93963 bytes/sec)
```

现在打开CSSM，然后单击“报告Report”窗口中的选项卡。现在，点击Usage Data Files选项卡，然后点击Upload Usage Data按钮以上传使用情况报告文件。它要求安装虚拟帐户，因此请确保选择正确的帐户。等待报告完成处理(单击Usage Data Files选项卡以刷新屏幕并查看是否已完成)。 如果报告成功，则状态指示No errors，并且有文件可供下载并安装在设备上，表示已成功接收并报告使用情况Download ACK。



将此下载文件复制到设备或设备可访问的地方，然后使用命令license smart import，将ACK文件导入到设备。

```
Switch#license smart import tftp://172.27.18.5//auto/tftp-sjc-users2/byodis/ACK_RUM-usage-20200925.txt
Import Data Successfull
```

的输出show license status，表示在正确的时间记录了ACK。

<#root>

Switch#

show license status

```
Utility:
  Status: DISABLED

Smart Licensing Using Policy:
  Status: ENABLED

License Reservation is ENABLED

Data Privacy:
  Sending Hostname: yes
  Callhome hostname privacy: DISABLED
  Smart Licensing hostname privacy: DISABLED
  Version privacy: DISABLED


Transport:
  Type: Off

Policy:
  Policy in use: Merged from multiple sources.
  Reporting ACK required: yes (CISCO default)
  Unenforced/Non-Export Perpetual Attributes:
    First report requirement (days): 365 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Unenforced/Non-Export Subscription Attributes:
    First report requirement (days): 90 (CISCO default)
    Reporting frequency (days): 90 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Enforced (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)
  Export (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)

Miscellaneus:
  Custom Id: <empty>


Usage Reporting:

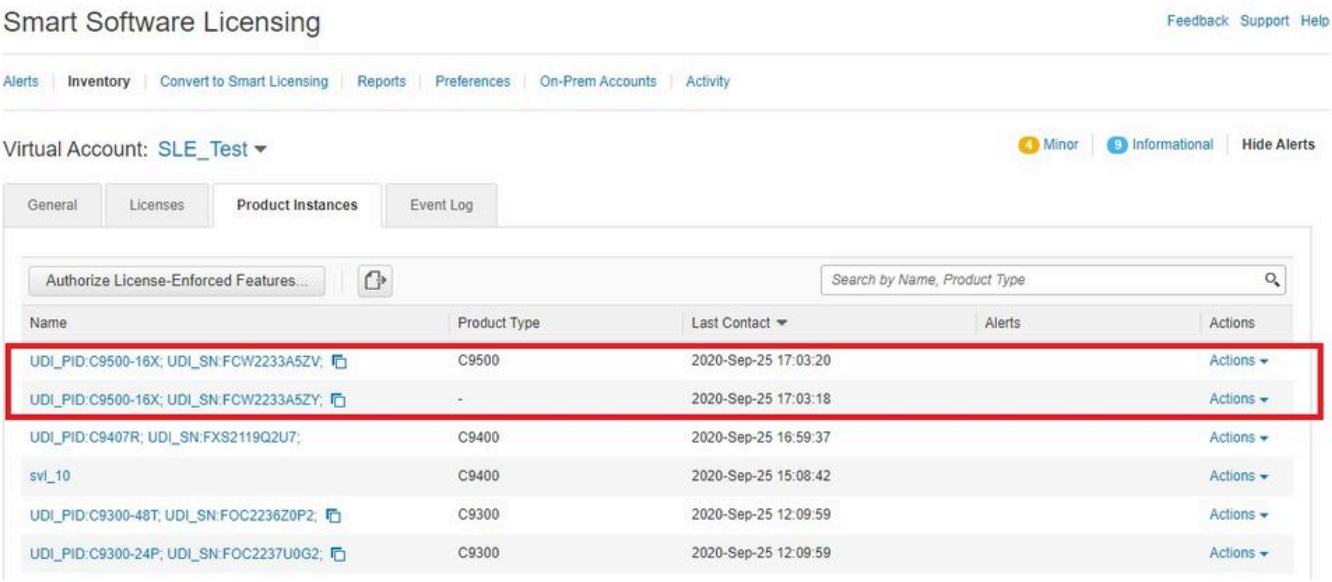

Last ACK received: Sep 25 10:12:15 2020 PST



  Next ACK deadline: Dec 24 10:12:15 2020 PST
  Reporting push interval: 30 days
  Next ACK push check: Sep 25 07:55:35 2020 PST
  Next report push: Sep 25 10:12:46 2020 PST
  Last report push: Sep 25 07:54:33 2020 PST
  Last report file write: <none>


Trust Code Installed: <none>
```

在CSSM中，PI不再显示保留许可证，并且仅在活动PI中看到许可证使用情况。



使用策略从智能许可降级到支持特定许可证预留的映像

如果映像降级到不支持使用策略的智能许可但支持SLR的版本，则只需对映像执行降级。许可证保留为保留和授权 — 无需其他任何操作。

使用策略将评估或评估过期迁移至智能许可

从16.9.1版本开始，直到17.3.1版本，如果许可证未注册或发布，则默认情况下它们是评估许可证。90天后，它们将成为“评估过期”许可证。两者都表示许可证不合规。由于未实施所有许可证，因此设备上不会丢失任何功能功能。

使用策略的智能许可不再具有许可证的评估状态。因此，当设备升级到受策略支持的智能许可映像时，如果任何设备具有Eval或Eval Expired许可证，则所有这些许可证均被视为正在使用，且应用思科默认策略。许可证不再显示为“未授权”或“不合规”。

评估/评估过期模式下智能许可证的Show命令

<#root>

Switch#

show license summary

Smart Licensing is ENABLED

Registration:
  Status:

UNREGISTERED

  Export-Controlled Functionality: NOT ALLOWED

License Authorization:
  Status:

EVAL MODE

  Evaluation Period Remaining: 89 days, 21 hours, 37 minutes, 30 seconds

License Usage:
License Entitlement tag Count Status

(C9500 Network Advantage) 2

EVAL MODE

(C9500-16X DNA Advantage) 2

EVAL MODE

Switch#

show license usage

License Authorization:
  Status: EVAL MODE
  Evaluation Period Remaining: 89 days, 21 hours, 37 minutes, 21 seconds

(C9500 Network Advantage):
  Description:
  Count: 2
  Version: 1.0
  Status:

EVAL MODE

  Export status: NOT RESTRICTED

```
(C9500-16X DNA Advantage):
  Description:
  Count: 2
  Version: 1.0
  Status:

EVAL MODE


  Export status: NOT RESTRICTED


Switch#

show license status



Smart Licensing is ENABLED

Utility:
  Status: DISABLED

  Data Privacy:
    Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
    Version privacy: DISABLED

Transport:
  Type: Callhome

Registration:
  Status:

UNREGISTERED


  Export-Controlled Functionality: NOT ALLOWED

License Authorization:
  Status:

EVAL MODE


  Evaluation Period Remaining: 89 days, 21 hours, 37 minutes, 15 seconds

Export Authorization Key:
  Features Authorized:
    <none>

Miscellaneus:
  Custom Id: <empty>
```

在升级后使用策略显示智能许可证智能许可的命令，但尚未报告使用情况

<#root>

Switch#

show license summary

License Usage:
License Entitlement tag Count Status
----
network-advantage (C9500 Network Advantage) 2

IN USE

dna-advantage (C9500-16X DNA Advantage) 2

IN USE

Switch#

show license usage

License Authorization:
  Status:

Not Applicable

network-advantage (C9500 Network Advantage):
  Description: network-advantage
  Count: 2
  Version: 1.0
  Status:

 IN USE

  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: network-advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual

dna-advantage (C9500-16X DNA Advantage):
  Description: C9500-16X DNA Advantage

```
  Count: 2
  Version: 1.0
  Status:

IN USE



  Export status: NOT RESTRICTED
  Feature Name: dna-advantage
  Feature Description: C9500-16X DNA Advantage
  Enforcement type: NOT ENFORCED
  License type: Subscription


Switch#

show license status




Utility:
  Status: DISABLED

Smart Licensing Using Policy:
  Status: ENABLED

Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
  Version privacy: DISABLED

Transport:
  Type: Transport Off

Policy:
  Policy in use: Merged from multiple sources.
  Reporting ACK required: yes (CISCO default)
  Unenforced/Non-Export Perpetual Attributes:
    First report requirement (days): 365 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Unenforced/Non-Export Subscription Attributes:
    First report requirement (days): 90 (CISCO default)
    Reporting frequency (days): 90 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Enforced (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)
  Export (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)

Miscellaneous:
  Custom Id: <empty>

Usage Reporting:
  Last ACK received: <none>
```

```
  Next ACK deadline: Feb 08 08:27:59 2021 PST
  Reporting push interval: 30  days
  Next ACK push check: <none>
  Next report push: Nov 10 08:29:59 2020 PST
  Last report push: <none>
  Last report file write: <none>

Trust Code Installed: <none>
```

连接到CSLU后使用策略显示智能许可命令并报告使用情况

如输出中的策略所示show license status，订阅许可证（dna-advantage和dna-essentials）需要在90天内报告。可以使用任何支持的使用报告拓扑。请参阅使用策略的智能许可配置指南。此外，本文结尾提供了一些链接，这些链接可用于有用的视频和文档。此处的示例是将具有显式配置的CSLU PUSH模型用于安装在Windows 10计算机（笔记本电脑、服务器、VM）上的CSLU服务器。CSLU下载、安装指南和用户指南位于[软件下载 — 智能软件管理器2.5.2版]

<#root>

```
Switch#

show running-config all | include cslu


license smart transport cslu
Switch#
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#

license smart url cslu http://10.24.74.180:8182/cslu/v1/pi


Switch(config)#^Z
Switch#
Switch#write memory
Building configuration...
[OK]
Switch#

show running-config all | include cslu


license smart url cslu http://10.24.74.180:8182/cslu/v1/pi
license smart transport cslu
Switch#


To force the license usage to be reported use the "license smart sync" command.

Switch#

license smart sync all
```

```
Switch#
*Sep 22 10:48:36.050 PST: %SMART_LIC-5-COMM_RESTORED: Communications with Cisco Smart License Utility (

Note: Use the "all" option for HA device. Use "local" option for standalone switch

Switch#
```

show license summary

```
License Usage:
License Entitlement tag Count Status
-----------------------------------------------------------------------------
network-advantage (C9500 Network Advantage) 2
```

IN USE

```
dna-advantage (C9500-16X DNA Advantage) 2
```

IN USE

```
Switch#
```

show license usage

```
License Authorization:
  Status: Not Applicable


network-advantage (C9500 Network Advantage):
  Description: network-advantage
  Count: 2
  Version: 1.0
  Status:
```

IN USE

```
  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: network-advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual

dna-advantage (C9500-16X DNA Advantage):
  Description: C9500-16X DNA Advantage
  Count: 2
  Version: 1.0
  Status:
```

IN USE

```
  Export status: NOT RESTRICTED
  Feature Name: dna-advantage
  Feature Description: C9500-16X DNA Advantage
  Enforcement type: NOT ENFORCED
  License type: Subscription

Switch#
```

show license status

```
Utility:
  Status: DISABLED

Smart Licensing Using Policy:
  Status: ENABLED

Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
  Version privacy: DISABLED

Transport:
  Type: cslu
  Cslu address: http://10.24.74.180:8182/cslu/v1/pi

  Proxy:
    Not Configured

Policy:
  Policy in use: Merged from multiple sources.
  Reporting ACK required: yes (CISCO default)
  Unenforced/Non-Export Perpetual Attributes:
First report requirement (days): 365 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Unenforced/Non-Export Subscription Attributes:
    First report requirement (days): 90 (CISCO default)
    Reporting frequency (days): 90 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Enforced (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)
  Export (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)

Miscellaneous:
  Custom Id: <empty>

Usage Reporting:
  Last ACK received: Nov 10 08:56:48 2020 PST
  Next ACK deadline: Feb 08 08:56:48 2021 PST
  Reporting push interval: 30  days
  Next ACK push check: <none>
  Next report push: Dec 10 08:55:29 2020 PST
```

```
  Last report push: Nov 10 08:55:29 2020 PST
  Last report file write: <none>

Trust Code Installed: <none>
```

从使用策略映像的智能许可降级到支持评估许可证或评估许可证的映像

如果需要将映像降级到不支持SL Using Policy的映像，则许可证将恢复为Eval或Eval expired。保留原始剩余评估期。由于所有Cat9K许可证均未实施，因此不会丢失任何功能。

使用策略将RTU许可证迁移到智能许可

使用权(RTU)许可是从C9300、C9400和C9500到版本16.8.1a的初始许可方案。智能许可在16.9.1之前不可用。

所有许可证仍然相同，但配置和show命令使用较旧的命令license right-to-use。使用策略支持的映像将映像升级到智能许可后，许可证即会使用，与评估/评估模式相同。如果有任何思科DNA许可证在使用中，思科默认策略要求在90天内报告使用情况。可以使用使用策略映像的智能许可报告使用情况所支持的任何不同拓扑。

使用RTU许可的设备上的Show命令

<#root>

```
Switch#

show license right-to-use summary



License Name Type Period left
------------------------------------------------
network-essentials Permanent Lifetime
dna-essentials Subscription CSSM Managed
------------------------------------------------


License Level In Use: network-essentials+dna-essentials Subscription
License Level on Reboot: network-essentials+dna-essentials Subscription

Switch#

show license right-to-use



Slot# License Name Type Period left
```

```
-------------------------------------------------

1 network-essentials Permanent Lifetime



1 dna-essentials Subscription CSSM Managed


-------------------------------------------------
License Level on Reboot: network-essentials+dna-essentials Subscription


Slot# License Name Type Period left
-------------------------------------------------

2 network-essentials Permanent Lifetime



2 dna-essentials Subscription CSSM Managed


-------------------------------------------------
License Level on Reboot: network-essentials+dna-essentials Subscription


Slot# License Name Type Period left
-------------------------------------------------

3 network-essentials Permanent Lifetime



3 dna-essentials Subscription CSSM Managed


-------------------------------------------------
License Level on Reboot: network-essentials+dna-essentials Subscription


Switch#

show license right-to-use usage


Slot# License Name Type usage-duration(y:m:d) In-Use EULA
-------------------------------------------------------------------------------

1 network-essentials Permanent 00:00:00 yes yes


1 network-essentials Evaluation 00:00:00 no no
1 network-essentials Subscription 00:00:00 no no
```

```
1 network-advantage Permanent 00:00:00 no no
1 network-advantage Evaluation 00:00:00 no no
1 network-advantage Subscription 00:00:00 no no
1 dna-essentials Evaluation 00:00:00 no no

1 dna-essentials Subscription 00:00:00 yes yes



1 dna-advantage Evaluation 00:00:00 no no
1 dna-advantage Subscription 00:00:00 no no
-------------------------------------------------------------------------------

Slot# License Name Type usage-duration(y:m:d) In-Use EULA
-------------------------------------------------------------------------------

2 network-essentials Permanent 00:00:00 yes yes



2 network-essentials Evaluation 00:00:00 no no
2 network-essentials Subscription 00:00:00 no no
2 network-advantage Permanent 00:00:00 no no
2 network-advantage Evaluation 00:00:00 no no
2 network-advantage Subscription 00:00:00 no no
2 dna-essentials Evaluation 00:00:00 no no

2 dna-essentials Subscription 00:00:00 yes yes



2 dna-advantage Evaluation 00:00:00 no no
2 dna-advantage Subscription 00:00:00 no no
-------------------------------------------------------------------------------

Slot# License Name Type usage-duration(y:m:d) In-Use EULA
-------------------------------------------------------------------------------

3 network-essentials Permanent 00:00:00 yes yes



3 network-essentials Evaluation 00:00:00 no no
3 network-essentials Subscription 00:00:00 no no
3 network-advantage Permanent 00:00:00 no no
3 network-advantage Evaluation 00:00:00 no no
3 network-advantage Subscription 00:00:00 no no
3 dna-essentials Evaluation 00:00:00 no no

3 dna-essentials Subscription 00:00:00 yes yes



3 dna-advantage Evaluation 00:00:00 no no
3 dna-advantage Subscription 00:00:00 no no
```

使用策略支持的映像从RTU升级到智能许可后，在设备上显示Command

<#root>

Switch#

show license summary

License Usage:
  License   Entitlement Tag   Count Status
  ----
  network-advantage   (C9300-24 Network Advan...)   2

IN USE

  dna-advantage   (C9300-24 DNA Advantage)   2

IN USE

  network-advantage   (C9300-48 Network Advan...)   1

IN USE

  dna-advantage   (C9300-48 DNA Advantage)   1

 IN USE

Switch#

show license usage

License Authorization:
  Status: Not Applicable

network-advantage (C9300-24 Network Advantage):
  Description: C9300-24 Network Advantage
  Count: 2
  Version: 1.0
  Status:

IN USE

  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: C9300-24 Network Advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual

```
dna-advantage (C9300-24 DNA Advantage):
  Description: C9300-24 DNA Advantage
  Count: 2
  Version: 1.0
  Status:

 IN USE



  Export status: NOT RESTRICTED
  Feature Name: dna-advantage
  Feature Description: C9300-24 DNA Advantage
  Enforcement type: NOT ENFORCED
  License type: Subscription

network-advantage (C9300-48 Network Advantage):
  Description: C9300-48 Network Advantage
  Count: 1
  Version: 1.0
  Status:

 IN USE



  Export status: NOT RESTRICTED
  Feature Name: network-advantage
  Feature Description: C9300-48 Network Advantage
  Enforcement type: NOT ENFORCED
  License type: Perpetual

dna-advantage (C9300-48 DNA Advantage):
  Description: C9300-48 DNA Advantage
  Count: 1
  Version: 1.0
  Status:

 IN USE



  Export status: NOT RESTRICTED
  Feature Name: dna-advantage
  Feature Description: C9300-48 DNA Advantage
  Enforcement type: NOT ENFORCED
  License type: Subscription

Switch#

show license status




Utility:
  Status: DISABLED

Smart Licensing Using Policy:
  Status: ENABLED
```

```
Data Privacy:
  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
  Version privacy: DISABLED

Transport:
  Type: Transport Off

Policy:
  Policy in use: Merged from multiple sources.
  Reporting ACK required: yes (CISCO default)
  Unenforced/Non-Export Perpetual Attributes:
    First report requirement (days): 365 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Unenforced/Non-Export Subscription Attributes:
    First report requirement (days): 90 (CISCO default)
    Reporting frequency (days): 90 (CISCO default)
    Report on change (days): 90 (CISCO default)
  Enforced (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)
  Export (Perpetual/Subscription) License Attributes:
    First report requirement (days): 0 (CISCO default)
    Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)

Miscellaneous:
  Custom Id: <empty>

Usage Reporting:
  Last ACK received: <none>
  Next ACK deadline: Feb 08 08:27:59 2021 PST
  Reporting push interval: 20  days
  Next ACK push check: <none>
  Next report push: Nov 10 08:29:59 2020 PST
  Last report push: <none>
  Last report file write: <none>

Trust Code Installed: <none>
```

这些show命令是在使用策略支持的映像升级到智能许可后执行的，但尚未向CSSM报告使用情况。许可证全部转换为使用策略智能许可，显示在使用中，并使用思科默认策略。如果使用订用许可证，则需要在90天内报告使用情况。之后，系统日志消息从CSSM发送。但是，由于所有C9K许可证均未实施，因此不会丢失任何功能功能。

需要报告时，可以使用使用策略的智能许可配置指南中描述的任何拓扑。license show命令输出与本文档中介绍的输出类似。根据使用的拓扑，某些输出可能会有所不同。

从使用策略映像的智能许可降级到支持RTU许可证的映像

如果需要将Cisco IOS XE映像降级回16.9.1之前的映像，则保留许可证和功能功能。但是，任何智

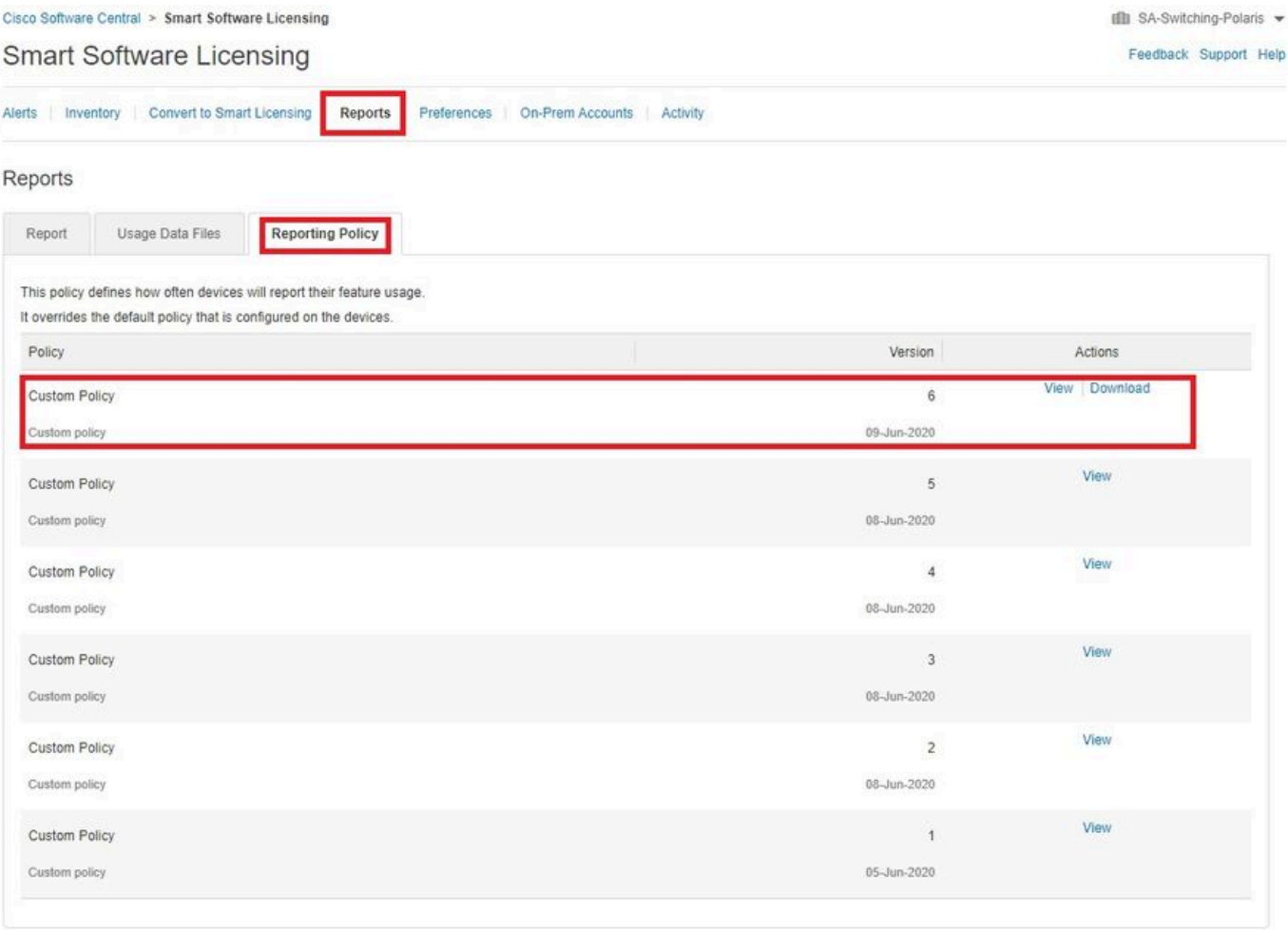
能许可配置都是未知且未保存的。

从使用策略映像的智能许可降级到支持智能许可证的映像

如果设备从支持RTU的映像迁移到支持策略的智能许可映像，然后降级为支持17.3.2和17.4.1之前的智能许可的映像，则这些设备上的许可证需要执行注册或特定许可证保留操作。

使用策略自定义策略的智能许可

公司可能已与思科协商自定义策略。如果出现这种情况，思科会将该策略安装到智能帐户中。每个智能帐户只能有一个自定义策略，该策略应用于该智能帐户中的所有虚拟帐户。要告知CSSM中自定义策略是否有效，请打开Reports视图并点击Reporting Policy选项卡。可以有多个版本，但只能安装最新版本。



如果在智能帐户中安装了自定义策略，则在执行许可证使用报告时安装该策略。可使用exec命令查看新的自定义策略show license status。显示自定义策略，而不是思科默认策略。根据自定义策略中定义的内容，可以看到自定义值和默认值的组合。自定义策略中未定义的任何字段继续具有Cisco默认值

。

如果使用离线拓扑或具有CSSM拓扑的CSLU脱机，则可将自定义策略从CSSM下载到设备可访问的文件/位置。然后，可以使用exec命令在设备上安装自定义策略license smart import

。

<#root>

Switch#

show license status

Utility:
  Status: DISABLED

Smart Licensing Using Policy:
  Status: ENABLED

Data Privacy:

  Sending Hostname: yes
    Callhome hostname privacy: DISABLED
    Smart Licensing hostname privacy: DISABLED
  Version privacy: DISABLED

Transport:
Type: Transport Off

Policy:

Policy in use: Installed On Nov 09 09:09:36 2020 PST

Policy name: Custom Policy

Reporting ACK required: yes (

Customer Policy

)
Unenforced/Non-Export Perpetual Attributes:
First report requirement (days):

60 (Customer Policy)

Reporting frequency (days):

60 (Customer Policy)

```
Report on change (days):

60 (Customer Policy)


Unenforced/Non-Export Subscription Attributes:
First report requirement (days):

30 (Customer Policy)


Reporting frequency (days):

30 (Customer Policy)


Report on change (days):

30 (Customer Policy)


Enforced (Perpetual/Subscription) License Attributes:
First report requirement (days): 0 (CISCO default)
Reporting frequency (days): 0 (CISCO default)
Report on change (days): 0 (CISCO default)
Export (Perpetual/Subscription) License Attributes:
First report requirement (days): 0 (CISCO default)
Reporting frequency (days): 0 (CISCO default)
    Report on change (days): 0 (CISCO default)

Miscellaneous:

Custom Id: <empty>

Usage Reporting:
Last ACK received: Nov 09 09:09:36 2020 PST
Next ACK deadline: Dec 09 09:09:36 2020 PST
Reporting push interval: 30  days
Next ACK push check: Oct 29 14:39:50 2020 PST
Next report push: Nov 09 09:10:07 2020 PST
Last report push: Oct 29 14:35:51 2020 PST
Last report file write: <none>

Trust Code Installed:

Active: PID:C9300-24UX,SN:FCW2303D16Y
 INSTALLED on Oct 29 14:35:12 2020 PST
Standby: PID:C9300-24U,SN:FHH2043P09E
 INSTALLED on Oct 29 14:35:13 2020 PST
Member: PID:C9300-48T,SN:FCW2139L056
 INSTALLED on Oct 29 14:35:13 2020 PST
```

相关信息

- 发行说明：RN-9200、RN-9300、RN-9400、RN-9500、RN-9600
- 配置指南：Cat9200-CG、Cat9300-CG、Cat9400-CG、Cat9500-CG、Cat9600-CG
- 命令参考：Cat9200-CR、Cat9300-CR、Cat9400-CR、Cat9500-CR、Cat9600-CR
- 用于Windows 10的CSLU下载（包括用户指南和安装指南）：软件下载 — 智能软件管理器
- 技术支持和文档 - Cisco Systems

关于此翻译
思科采用人工翻译与机器翻译相结合的方式将此文档翻译成不同语言，希望全球的用户都能通过各自的语言得到支持性的内容。

请注意：即使是最好的机器翻译，其准确度也不及专业翻译人员的水平。

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