

在cEdge SD-WAN XE上配置HSECK9许可证

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简介

本文档介绍如何在SD-WAN XE cEdge上安装和排除HSECK9许可证故障。

先决条件

要求

Cisco 建议您了解以下主题：

- 思科软件定义的广域网(SD-WAN)
- Cisco IOS® XE命令行界面(CLI)
- 智能许可
- 思科软件中心

使用的组件

本文档基于以下软件和硬件版本：

- cEdge C111-8PWE版本17.6.3
- 思科智能软件管理器(CSSM)

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。

背景信息

概念

使用策略的智能许可使用各种新概念，例如：

- 许可证实施类型
- 许可证持续时间
- 授权码
- 需要智能许可授权码(SLAC)的吞吐量级别 — 需要SLAC的路由器平台
- 策略
- 资源利用率测量报告（RUM报告）和报告确认
- 信任代码

有关详细信息，请导航至[使用策略概念的智能许可](#)。

吞吐量行为

- 如果产品没有任何形式的HSECK9许可证，则所有ISR1000系列、ISR4000系列、C8200、C8300、CSR1000v、C8000v和ISRv默认为250 Mbps。
- 如果吞吐量需要高于250 Mbps，则所有ISR1000系列、ISR4000系列、C8200、C8300、CSR1000v、C8000v和ISRv都需要安装HSECK9许可证。
- 所有ASR1000系列都不需要超过250 Mbps的HSECK9。
- 所有C8500都应在制造商中安装HSECK9许可证。否则，可以手动安装HSECK9许可证。
- 控制器管理模式中没有吞吐量配置。HSECK9许可证安装会自动启用转发核心/数据包处理器引擎，以释放吞吐量。
- HSECK9许可证安装后的最大吞吐量取决于平台的硬件功能。有关详细信息，请查看特定平台数据表。

许可证可用性验证

步骤1. 导航至 [Cisco Software Central](#).

步骤2. 单击Smart Software Manager.

步骤3. 选择 Inventory 从顶部菜单中。

步骤4. 选择适当的 Virtual Account.

步骤5. 选择 Licenses 选项卡。

步骤6. 检验许可证已添加且可用且余额为正。

The screenshot shows the Cisco Software Central interface for Smart Software Licensing. The breadcrumb trail is "Cisco Software Central > Smart Software Licensing". The page title is "Smart Software Licensing". The navigation menu includes "Alerts", "Inventory", "Convert to Smart Licensing", "Reports", "Preferences", "On-Prem Accounts", and "Activity". The "Virtual Account" is set to "sdwan-lab". The "Licenses" tab is selected. The interface includes buttons for "Available Actions", "Manage License Tags", "License Reservation...", and "Show License Transactions" (checked). A search bar is present with "Search by License". The license table is as follows:

| <input type="checkbox"/> | License | Billing | Available to Use | In Use | Substitution | Balance | Alerts | Actions |
|-------------------------------------|-------------------------------|---------|------------------|--------|--------------|---------|--------|---------|
| <input checked="" type="checkbox"/> | Router US Export Lic. for DNA | Prepaid | 1 | 0 | - | +1 | | Actions |

Showing 1 Record

如果没有可用的许可证或余额为负（红色），请向思科许可团队[反映问题](#)。

注意：本指南假设您已购买了HSECK9许可证或用于DNA的路由器美国出口许可证，该许可证会添加到智能帐户中的有效虚拟帐户。

路由器操作模式

使用其中一个命令检验路由器是否处于控制器管理模式。

```
show platform software device-mode
show version | include mode
```

示例：

```
Router# show platform software device-mode
Device Operating-mode: Controller-Managed
Device-mode bootup status:
8/03 00:44:16 System is green
Bootup Success
```

```
Router# show version | in mode
Router operating mode: Controller-Managed
```

注意：如果工作模式导致自治模式，请将路由器移至控制器管理模式 `controller-mode enable` 命令。

配置

CSSM的在线方法

配置传输类型并设置默认CSSM URL

步骤1.配置正确的传输类型和URL。

```
cEdge#config-transaction
cEdge(config)# license smart transport smart
cEdge(config)# license smart url default
cEdge(config)# commit
Commit complete.
```

注意：如果路由器附加了模板。支持传输和URL的智能命令，可以使用CLI附加功能模板进行配置。有关详细信息，请导航到[CLI附加功能模板](#)。

步骤2.检验更改是否正确提交。

```
cEdge# show lic tech support | begin Smart Licensing Status
Smart Licensing Tech Support info

Smart Licensing Status
=====

Smart Licensing is ENABLED
```


Create Registration Token



This will create a token that is used to register product instances, so that they can use licenses from this virtual account. Once it's created, go to the Smart Licensing configuration for your products and enter the token, to register them with this virtual account.

Virtual Account: sdwan-lab

Description: hseckk9 Installation

* Expire After: 30 Days

Between 1 - 365, 30 days recommended

Max. Number of Uses:

The token will be expired when either the expiration or the maximum uses is reached

Allow export-controlled functionality on the products registered with this token

Create Token

Cancel

描述:令牌用途简要说明。

到期时间:令牌对产品注册有效的天数。

最大值.使用次数:令牌最大使用次数。可选。

确保 **Allow export-controlled** 选中该选项，否则，许可证注册失败，然后单击 **Create Token**。

注意：当达到到期时间或达到最大使用量时，令牌到期。

注意：有关详细信息，请导航至[思科出口贸易](#)。

步骤3.复制令牌。

将刚生成的令牌复制到剪贴板；导航至 **Actions > Copy** 或手动输入令牌字符串旁边的小蓝色图标。

Virtual Account: sdwan-lab

General Licenses Product Instances Event Log

Virtual Account

Description:

Default Virtual Account: No

product instances to this virtual account.

Press ctrl + c to copy selected text to clipboard.

ODRIMjg0YWQTMdK4ZC00NWlxLTgzYmYtODMxNjU3NTQwMTY0LTE2NmM0ODM2%0ANjU4MDB8S2lFK3BsUXZEZwPcaEJBK2lkREMrvjRmUTB0bzluZit4MEwyb3hX%0AVTI4ND0%3D%0A

The token will be expired when either the expiration or the maximum uses is reached

| Uses | Export-Controlled | Description | Created By | Actions |
|------|-------------------|----------------------|------------|---------|
| 1 | Allowed | hseckk9 Installation | ericqar | Actions |

Copy
Download...
Revoke...

1 Record

在cEdge和CSSM之间生成信任建立

为了提供使用出口管制许可证的授权，cEdge必须与CSSM建立信任。对于握手，cEdge使用上一步中在CSSM上生成的令牌。

```
license smart trust idtoken TOKEN local force
```

示例：

```
cEdge# license smart trust idtoken
ZThjOTlmM2UtMjQ2ZC00YjI1LTgwNjctZGIxZjIzYjZiYmVmLTE2NjM0NjI1%0AMjgyNTk4YWNVeTFiZU03N01CdTFadmJ4e
jZBL0toR2Mva21odElrQmxDa1FN%0AcVI3cz0%3D%0A local force
```

建立信任后，日志会显示与CSSM的通信。

```
cEdge# show logging last 50
```

<snip>

```
*Aug 18 21:03:44.730: %CRYPTO_ENGINE-5-KEY_DELETED: A key named SLA-KeyPair2 has been removed
from key storage
```

```
*Aug 18 21:03:46.146: %CRYPTO_ENGINE-5-KEY_ADDITION: A key named SLA-KeyPair2 has been generated
or imported by crypto-engine
```

```
*Aug 18 21:03:53.221: %SYS-6-PRIVCFG_ENCRYPT_SUCCESS: Successfully encrypted private config file
```

```
*Aug 18 21:03:56.107: %SMART_LIC-5-COMM_RESTORED: Communications with Cisco Smart Software
Manager (CSSM) restored
```

```
*Aug 18 21:03:56.347: %SMART_LIC-6-TRUST_INSTALL_SUCCESS: A new licensing trust code was
successfully installed on P:C1111-8PWE,S:FGL2149XXXX.
```

验证信任建立成功计数器

验证信任建立成功计数器是否增加，这意味着许可代理可以到达CSSM。

```
cEdge# show lic tech support | begin Communication Statistics
```

Communication Statistics:

=====

Communication Level Allowed: DIRECT

Overall State: <empty>

Trust Establishment:

Attempts: Total=1, Success=1, Fail=0 Ongoing Failure: Overall=0 Communication=0 <<<<<<<<<

Last Response: OK on Aug 18 21:03:56 2022 UTC

Failure Reason: <none>

Last Success Time: Aug 18 21:03:56 2022 UTC

Last Failure Time: Aug 18 21:00:43 2022 UTC

<snip>

注意：如果故障计数器增加，请导航至本文档中的故障排除部分。

请求授权

此时，信任已建立，但HSECK9许可证尚未使用。之所以发生这种情况，是因为需要路由器向CSSM请求许可证。要获取许可证，请运行授权请求。

```
cEdge# license smart authorization request add hseck9 local
```

日志：

```
cEdge# show logging | include SMART
```

```
*Aug 18 21:11:41.553: %SMART_LIC-6-AUTHORIZATION_INSTALL_SUCCESS: A new licensing authorization code was successfully installed on PID:C1111-8PWE,SN:FGL2149XXXX  
*Aug 18 21:11:41.641: %SMART_LIC-6-EXPORT_CONTROLLED: Usage of export controlled features is allowed for feature hsec9
```

在智能许可事件日志中，保存许可证请求信息，以备需要时使用。

```
cEdge# show lic eventlog 0
```

```
**** Event Log ****
```

```
2022-08-18 21:11:41.538 UTC SAEVT_RESERVE_INSTALL_START udi="PID:C1111-8PWE,SN:FGL2149XXXX" authorizationCode="<smartLicenseAuthorization><udi>P:C1111-8PWE,S:FGL2149XXXX</udi><authorizationCode><customerInfo><smartAccount>Cisco Systems, TAC</smartAccount><virtualAccount>sdwan-lab</virtualAccount></customerInfo><flag>A</flag><version>C</version><piid>d216f143-7e2c-48df-aa71-652b15ealc7e</piid><dateStamp>2022-08-18T21:17:45</dateStamp><entitlements><entitlement><tag>regid.2019-03.com.cisco.DNA_HSEC,1.0_509c41ab-05a8-431f-95fe-ec28086e8844</tag><count>1</count><startDate></startDate><endDate></endDate><licenseType>PERPETUAL</licenseType><displayName>Router US Export Lic. for DNA</displayName><tagDescription>U.S. Export Restriction Compliance license for DNA based Routers</tagDescription><tagType>PERPETUAL</tagType><status><success>>true</success></status></entitlement></entitlements><status><success>>true</success><correlationID>62feac79ca9112704623118db58bbc2c-09b6eebc91ae833f</correlationID></status></authorizationCode><signature>MEUCIBuNw8+ogfZmJAbsRa+8B+F0wnDZLrv5RXm822rN/he5AiEAtfzzFV9L3dqht4sUYDxRvnUHF2KYi+vFv2vivDF6rIs=</signature></smartLicenseAuthorization>"  
2022-08-18 21:11:41.552 UTC SAEVT_TAG_EXPORT exportAllowed="False" count="0" entitlementTag="regid.2019-03.com.cisco.DNA_HSEC,1.0_509c41ab-05a8-431f-95fe-ec28086e8844"  
2022-08-18 21:11:41.576 UTC SAEVT_TAG_EXPORT exportAllowed="True" count="0" entitlementTag="regid.2019-03.com.cisco.DNA_HSEC,1.0_509c41ab-05a8-431f-95fe-ec28086e8844"  
2022-08-18 21:11:41.576 UTC SAEVT_STATE_RESERVE_AUTHORIZED  
2022-08-18 21:11:41.641 UTC SAEVT_TAG_AUTHORIZED count="1" entitlementTag="regid.2019-03.com.cisco.DNA_HSEC,1.0_509c41ab-05a8-431f-95fe-ec28086e8844"  
2022-08-18 21:11:41.641 UTC SAEVT_TAG_EXPORT exportAllowed="True" count="1" entitlementTag="regid.2019-03.com.cisco.DNA_HSEC,1.0_509c41ab-05a8-431f-95fe-ec28086e8844"  
2022-08-18 21:12:06.119 UTC SAEVT_RESERVE_INSTALL_START udi="PID:C1111-8PWE,SN:FGL2149XXXX" authorizationCode="<smartLicenseAuthorization><udi>P:C1111-8PWE,S:FGL2149XXXX</udi><authorizationCode><customerInfo><smartAccount>Cisco Systems, TAC</smartAccount><virtualAccount>sdwan-lab</virtualAccount></customerInfo><piid>d216f143-7e2c-48df-aa71-652b15ealc7e</piid><status><success>>false</success><message>last update already confirmed</message><code>last update already confirmed</code><correlationID>62feac7c4be974f92eefc15a640f938b-f08787827763ca37</correlationID></status></authorizationCode><signature>MEUCIQDhI8x+Rzf7wyibdoHVYY6q9/8puukf8SuJ4ok48d4y5QIgd15/z/7rLu+LEd5gK9kgOxA2Vb+vnJUcTOVPO3/R0pc=</signature></smartLicenseAuthorization>"
```

验证激活成功

有些命令用于验证许可证现在是否可用并正确激活。

```
show license tech support | begin License Usage
```

```
show license authorization
```

```
show license summary
```

```
show license usage
```

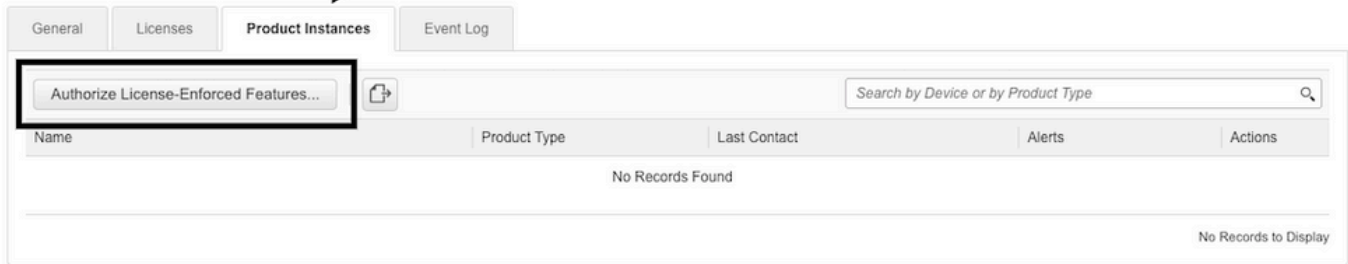
示例：

```
cEdge# show license tech support | begin License Usage
```


Smart Software Licensing

Support Help

Alerts | Inventory | Convert to Smart Licensing | Reports | Preferences | On-Prem Accounts | Activity

Virtual Account: **sdwan-lab**


General Licenses **Product Instances** Event Log

Authorize License-Enforced Features...

Search by Device or by Product Type

| Name | Product Type | Last Contact | Alerts | Actions |
|------------------|--------------|--------------|--------|---------|
| No Records Found | | | | |

No Records to Display

获取cEdge UDI信息

本地许可证保留需要唯一设备标识符(UDI)中，运行 `show license udi` 命令获取产品ID(PID)和序列号(SN)。

```
cEdge# show license udi
```

```
UDI: PID:C1111-8PWE,SN:FGL2149XXXX
```

在预留表单中填充cEdge UDI

选择 **Single Device** 并填写cEdge的SN和PID。点击 **Next**。

Authorize License-Enforced Features

STEP 1 **Enter Request Code** | STEP 2 Select Licenses | STEP 3 Review and Confirm | STEP 4 Authorization Code

device to enable the features. [Learn More](#)

Generating an authorization code here is only required for devices that do not connect to the Smart Software Manager directly, or through the Cisco Licensing Manager, to report the features they need.

Single Device

Enter the identifiers for the device to be licensed.

Display Name:

UUID:

Serial Number:

PID:

Version ID:

Host ID:

MAC Address:

Virtual ID(SUVI)

You can use the 'show license udi' command to see the identifiers for a device

Cancel

Next

选择要保留的许可证数量

由于它是单个设备，因此保留的许可证是1，请在框中键入数字。确保数字不超过可用数字。

Authorize License-Enforced Features



UDI Serial Number: FGL214991A9

Select the Licenses to Enabled the Features

Select the set of licenses that will enable the desired features. The licenses will be reserved on the devices


| License | Purchased | Available | Reserve |
|--|-----------|-----------|--------------------------------|
| Router US Export Lic. for DNA <small>U.S. Export Restriction Compliance license for DNA based Routers</small> | 1 | 1 | <input type="text" value="1"/> |

选择许可证设备类型

设备类型可以是内部数字网络架构(DNA)或DNA云，这取决于所购买许可证的类型。

Select a Device Type

Some devices could not be identified based on the identifiers provided.
Please select a device type.

Device Type: 

Unidentified Devices:

| <input checked="" type="checkbox"/> | Device |
|-------------------------------------|-------------------------------------|
| | <input type="text" value="Search"/> |
| <input checked="" type="checkbox"/> | SN: FGL214991A9 PID: C1111-8PWE |

Selected: 1

If you want to enable features on different types of devices, you must perform this operation separately for each type.

[Continue](#)

[Cancel](#)

生成授权码

查看配置，然后单击 **Generate Authorization Code**。

Authorize License-Enforced Features

x



Product Instance Details

UDI PID: C1111-8PWE
UDI Serial Number: FGL214991A9
Device Type: DNA On Prem

Licenses to Reserve

| License | Total Quantity to Reserve |
|--|---------------------------|
| Router US Export Lic. for DNA <small>U.S. Export Restriction Compliance license for DNA based Routers</small> | 1 |

Cancel Back **Generate Authorization Code**

下载SLAC

SLAC可下载为文件或复制到剪贴板。

将SLAC复制到CEdge

有三个选项可以将SLAC文件复制到cEdge。

- 使用USB驱动器：

```
cEdge# show file systems | include usb|Size
Size(b) Free(b) Type Flags Prefixes
15598043136 15596658688 disk rw usb0:

cEdge# dir usb0:
Directory of usb0:/

5 -rwx 1557 Aug 19 2022 00:43:30 +00:00 AuthorizationCode_SN_FGL2149XXXX.txt

15598043136 bytes total (15596658688 bytes free)

cEdge# copy usb0:AuthorizationCode_SN_FGL2149XXXX.txt bootflash:
Destination filename [AuthorizationCode_SN_FGL2149XXXX.txt]?
Copy in progress...C
1557 bytes copied in 0.020 secs (77850 bytes/sec)
```

- 使用vManage通过Control Connections，导航到[Transfer Files between a cEdge and vManage](#)以了解详细信息。
- 服务端的SCP/FTP/TFTP。

安装SLAC

使用智能导入在bootflash中安装SLAC文件。

```
cEdge# license smart import bootflash:AuthorizationCode_SN_FGL2149XXXX.txt
Import Data Successful
Last Confirmation code UDI: PID:C1111-8PWE,SN:FGL2149XXXX
Confirmation code: aaa6b57e
```

日志。

```
cEdge# show logging | include SMART
*Aug 19 05:42:45.309: %SMART_LIC-6-AUTHORIZATION_INSTALL_SUCCESS: A new licensing authorization
code was successfully installed on PID:C1111-8PWE,SN:FGL2149XXXX
*Aug 19 05:42:45.362: %SMART_LIC-6-EXPORT_CONTROLLED: Usage of export controlled features is
allowed for feature hseck9
```

```
cEdge# show license eventlog 0
**** Event Log ****
```

```
2022-08-19 05:42:45.293 UTC SAEVT_RESERVE_INSTALL_START udi="PID:C1111-8PWE,SN:FGL2149XXXX"
authorizationCode="<smartLicenseAuthorization><udi>P:C1111-
8PWE,S:FGL2149XXXX</udi><authorizationCode><customerInfo><smartAccount>Cisco Systems,
TAC</smartAccount><virtualAccount>sdwan-
lab</virtualAccount></customerInfo><flag>A</flag><version>C</version><piid>0ceadf0a-3145-4779-
8cbb-743c5a234a05</piid><dateStamp>2022-08-
19T05:43:11</dateStamp><entitlements><entitlement><tag>regid.2019-
03.com.cisco.DNA_HSEC,1.0_509c41lab-05a8-431f-95fe-
ec28086e8844</tag><count>1</count><startDate></startDate><endDate></endDate><licenseType>PERPETU
AL</licenseType><displayName>Router US Export Lic. for DNA</displayName><tagDescription>U.S.
Export Restriction Compliance license for DNA based
Routers</tagDescription><tagType>PERPETUAL</tagType><status><success>>true</success></status></en
titlement></entitlements><status><success>>true</success><correlationID>62ff22ec38ab5858bde12581a
2589b39-
bde12581a2589b39</correlationID></status></authorizationCode><signature>MEUCIQDrUe1lCPAsnjonKRmU
e40arqPiY/q/UfTGSJ1IdmkkraIgfF8G2zoHIxz04IVO2J7ZHA1M51+QMvLzUGyZsfvwK5tk=</signature></smartLicen
seAuthorization>"
2022-08-19 05:42:45.308 UTC SAEVT_TAG_EXPORT exportAllowed="False" count="0"
entitlementTag="regid.2019-03.com.cisco.DNA_HSEC,1.0_509c41lab-05a8-431f-95fe-ec28086e8844"
2022-08-19 05:42:45.333 UTC SAEVT_TAG_EXPORT exportAllowed="True" count="0"
entitlementTag="regid.2019-03.com.cisco.DNA_HSEC,1.0_509c41lab-05a8-431f-95fe-ec28086e8844"
2022-08-19 05:42:45.334 UTC SAEVT_STATE_RESERVE_AUTHORIZED
2022-08-19 05:42:45.362 UTC SAEVT_TAG_AUTHORIZED count="1" entitlementTag="regid.2019-
03.com.cisco.DNA_HSEC,1.0_509c41lab-05a8-431f-95fe-ec28086e8844"
2022-08-19 05:42:45.362 UTC SAEVT_TAG_EXPORT exportAllowed="True" count="1"
entitlementTag="regid.2019-03.com.cisco.DNA_HSEC,1.0_509c41lab-05a8-431f-95fe-ec28086e8844"
```

验证安装是否成功

使用与在线方法中相同的命令以验证许可证是否正确安装。

```
show license authorization
show license summary
show license tech support | begin License Usage
```

如果安装正确，虚拟帐户中的许可证将自动递增 In Use 计数并递减 Available to Use 计数器。

Virtual Account: [sdwan-lab](#) ▾

| License | Billing | Available to Use | In Use | Substitution | Balance | Alerts | Actions |
|--|---------|------------------|-------------------|--------------|---------|--------|---------------------------|
| <input type="checkbox"/> Router US Export Lic. for DNA | Prepaid | 1 | 1 (1 Reserved) | - | 0 | | Actions ▾ |

Showing 1 Record

也在 **Product Instances** 选项卡，显示cEdge的UDI信息，单击条目以获取有关许可证特征的更多信息。

| Name | Product Type | Last Contact | Alerts | Actions |
|-----------------------------------|--------------|--|--------|---------------------------|
| UDI_PID:C1111-8PWE; UDI_SN:FGL214 | DNA On Prem | 2022-Aug-19 05:43:12 (Reserved Licenses) | | Actions ▾ |

Showing 1 Record

返回HSECK9许可证

在线方法

目前，控制器管理模式中没有实现以在线或离线方式返回许可证。

```
cEdge# license smart authorization return local online
Operation cannot be completed because license is in use
```

```
cEdge# license smart authorization return local offline
Operation cannot be completed because license is in use
要删除许可证安装，需要将路由器更改为自主模式。
```

```
cEdge# controller-mode disable
Disabling controller mode erases the nvram filesystem, remove all configuration files, and
reload the box!
Ensure the BOOT variable points to a valid image
Continue? [confirm]
```

注意：此模式更改会删除当前的SD-WAN配置，强烈建议在安全的位置备份配置。这有助于在cEdge移回控制器管理模式时重建控制连接。

一旦路由器处于自主模式，必须完成一些基本配置才能访问Internet和域名系统(DNS)解析：

1. 配置WAN接口的IP地址和掩码
2. 打开WAN接口的电源
3. 配置默认IP路由
4. 启用 DNS
5. 配置DNS服务器

注意：自治模式使用configure terminal命令进入配置模式，而不是configuration-transaction命令。

注意：自主模式不需要提交更改，而是将所有完成的配置保存在运行配置文件中。

使用来自HSECK9或DNA导出控制许可证所在虚拟帐户的令牌。如果没有活动令牌，请生成一个新令牌。

按照与cEdge中相同的步骤生成与CSSM建立的信任。

```
Router# configure terminal
Router(config)# license smart transport smart
Router(config)# license smart url default
Router(config)# end
Router# license smart trust idtoken TOKEN local force
Router# license smart authorization request add hseck9 local
```

注意：使用前面介绍的相同命令验证是否启用了正确的传输类型和智能接收器URL，并且信任建立已成功完成。

通信完成后，将许可证返回虚拟帐户中的存储站。

```
Router# license smart authorization return local online
Authorization already returned with this code:
UDI: PID:C1111-8PWE,SN:FGL2149XXXX
Return code: CmJHqn-5CFUkd-efkCh-4XqCpQ-SgK5Sz-fQFfM8-6qH7MA-33hDbX-sXT
日志。
```

```
Router# show logging | include SMART
*Aug 18 22:00:22.998: %SMART_LIC-6-AUTHORIZATION_REMOVED: A licensing authorization code has
been removed from PID:C1111-8PWE,SN:FGL2149XXXX.
```

```
Router#show license eventlog 0
**** Event Log ****
2022-08-18 22:08:53.275 UTC SAEVT_RESERVE_RETURN_START udi="PID:C1111-8PWE,SN:FGL2149XXXX"
authorizationCode="<smartLicenseAuthorization><udi>P:C1111-
8PWE,S:FGL2149XXXX</udi><authorizationCode><customerInfo><smartAccount>Cisco Systems,
TAC</smartAccount><virtualAccount>sdwan-
lab</virtualAccount></customerInfo><flag>A</flag><version>C</version><piid>519e0f72-85d6-4a57-
```



```
8805-5999e7b712be</piid><dateStamp>2022-08-18T22:08:17</dateStamp><entitlements><entitlement><tag>regid.2019-03.com.cisco.DNA_HSEC,1.0_509c41ab-05a8-431f-95fe-ec28086e8844</tag><count>1</count><startDate></startDate><endDate></endDate><licenseType>PERPETUAL</licenseType><displayName>Router US Export Lic. for DNA</displayName><tagDescription>U.S. Export Restriction Compliance license for DNA based Routers</tagDescription><tagType>PERPETUAL</tagType><status><success>true</success></status></entitlement></entitlements><status><success>true</success><correlationID>62feb851b0b3a2264144901cb3491c22-ff31e87ded74ffde</correlationID></status></authorizationCode><signature>MEUCIQCTL9Y/HrhJXgR3+oxCWH/mpLxezThnvoAMFRIO7BHzJgIgBNDnvAD4uleiQZ3Qrg8uGc4I6rLkBR/pn3fDv67eG5c=</signature></smartLicenseAuthorization>"
```

注意：将路由器移回控制器管理模式，方法是 `controller-mode enable` 命令。

离线方法

为了生成返回代码，路由器必须处于自主模式。按照在线方法更改模式。

生成退货代码

使用路由器中的本地授权验证CSSM中保留的许可证需要返回代码。

```
Router# license smart authorization return local offline
Enter this return code in Cisco Smart Software Manager portal:
UDI: PID:C1111-8PWE,SN:FGL2149XXXX
Return code: CCKUTq-Qg2Ytw-ZhSLq5-bDFw7e-VvWgf2-QwwBed-3MaRcT-fFfGcn-X6e <<<< Copy the string
```

删除预留

导航至 **Product Instances > Actions > Remove**。粘贴刚从路由器复制的返回代码，然后单击 **Remove Reservation**。

Remove Reservation

To remove a Product Instance that has reserved licenses and make those licenses once again available to other Product Instances, enter in the Reservation Return Code generated by the Product Instance. If you cannot generate a Reservation Return Code, contact [Cisco Support](#)

* Reservation Return Code:

CCKUTq-Qg2Ytw-ZhSLq5-bDFw7e-VvWgf2-QwwBed-3MaRcT-fFfGcn-X6e

Remove Reservation

Cancel

The License reservation removed successfully notification shown when after. (成功删除的许可证)

保留通知。) 再次导航至 **Actions > Remove > Remove Instance**.

验证

使用本部分可确认配置能否正常运行。

有用的命令

在线或离线方法的每个步骤中描述了验证过程。

```
show license tech support
show license status
show license authorization
show license summary
show license history message
show license eventlog
```

```
license smart clear event log
license smart sync local
license smart factory reset
```

故障排除

本部分提供的信息可用于对配置进行故障排除。

使用策略的智能许可依赖于cEdge和CSSM之间通过Internet的安全双向通信，以便交换支持注册和许可证获取的确认和握手。

有些常见场景不允许在设备之间正确交换消息。

常见问题

DNS解析不起作用

要访问smartreceiver.com,cEdge必须能够解析域名，否则，URL不会转换为可路由IP，通信失败。此错误通常在尝试建立信任后显示。

```
*Aug 18 20:45:10.345: %SMART_LIC-3-COMM_FAILED: Communications failure with the Cisco Smart License Utility (CSLU) : Unable to resolve server hostname/domain name
```

确保有IP连接到Internet。

```
ping 8.8.8.8
```

对URL执行ping操作以验证DNS是否有效，如果外部设备使用telnet访问URL阻止了Internet控制消息协议(ICMP)。

```
ping cisco.com
telnet cisco.com 80
```

如果测试失败，请配置DNS服务器并启用DNS解析。

```
ip domain lookup
ip name-server 8.8.8.8
```

如果无法配置外部DNS服务器，请在路由器中配置本地DNS解析。

```
cEdge# config-transaction
cEdge(config)# ip host smartreceiver.com A.B.C.D
cEdge(config)# commit
```

注意：如果您需要知道哪些IP响应smartreceiver.com，请运行 `nslookup` 命令。

注意：不建议使用本地DNS解析，因为响应方IP可以随时间变化，而思科不会通知此变化。

智能许可(SL)事件日志中出现常见错误消息。

```
cEdge# show license eventlog 0
**** Event Log ****
```

```
2022-08-18 20:45:10.345 UTC SAEVT_COMM_FAIL error="Unable to resolve server hostname/domain
name"
2022-08-18 20:45:57.804 UTC SAEVT_COMM_FAIL error="Unable to resolve server hostname/domain
name"
```

```
cEdge# show logging | include SMART
*Aug 18 20:59:44.914: %SMART_LIC-3-COMM_FAILED: Communications failure with the Cisco Smart
Software Manager (CSSM) : No detailed information given
```

SD-WAN隧道阻止DNS

如果SD-WAN隧道中的隐式ACL阻止传入DNS响应，也会发生类似的问题。

```
cEdge# show license eventlog 0
**** Event Log ****
```

```
2022-08-18 20:45:10.345 UTC SAEVT_COMM_FAIL error="Unable to resolve server hostname/domain
name"
2022-08-18 20:45:57.804 UTC SAEVT_COMM_FAIL error="Unable to resolve server hostname/domain
name"
```

```
cEdge# show logging | include SMART
*Aug 18 20:59:44.914: %SMART_LIC-3-COMM_FAILED: Communications failure with the Cisco Smart
Software Manager (CSSM) : No detailed information given
```

确保在注册时允许DNS服务。

```
cEdge# show sdwan running-config sdwan
sdwan
interface GigabitEthernet0/0/0
tunnel-interface
encapsulation gre
encapsulation ipsec weight 1
no border
```


Username: <empty>
Password: <empty>
Server Identity Check: False

日志中的常见错误。

```
cEdge# show license eventlog 0
**** Event Log ****
2022-08-18 20:45:10.345 UTC SAEVT_COMM_FAIL error="Unable to resolve server hostname/domain
name"
2022-08-18 20:45:57.804 UTC SAEVT_COMM_FAIL error="Unable to resolve server hostname/domain
name"
```

```
cEdge# show logging | include SMART
*Aug 18 20:59:44.914: %SMART_LIC-3-COMM_FAILED: Communications failure with the Cisco Smart
Software Manager (CSSM) : No detailed info
```

注意：思科SD-WAN(Cisco vManage)不支持CSLU，CSLU不能用于报告由Cisco vManage管理的路由产品实例的许可证使用情况。有关详细信息，请导航至[Cisco Smart License Utility\(CSLU\)](#)。

手动配置智能代理的默认URL和传输类型，并再次尝试使用令牌建立的信任。

```
cEdge# configure terminal
cEdge(config)# license smart transport smart
cEdge(config)# license smart url default
cEdge(config)# commit
```

SD-WAN隧道阻止HTTPS

智能许可通信基于超文本传输协议安全(HTTPS)端口443，因此，如果SD-WAN隧道阻止传入HTTPS响应，注册、授权请求和RUM报告通知将失败。

日志和事件日志中的常见错误。

```
*Aug 18 20:59:44.914: %SMART_LIC-3-COMM_FAILED: Communications failure with the Cisco Smart
Software Manager (CSSM) : No detailed information given
```

确保在注册时在SD-WAN隧道中允许HTTPS服务。否则，请允许该令牌并再次尝试使用令牌建立信任。

```
cEdge# show sdwan running-config sdwan
sdwan
interface GigabitEthernet0/0/0
tunnel-interface
encapsulation gre
encapsulation ipsec weight 1
no border
color public-internet
no last-resort-circuit
no low-bandwidth-link
no vbond-as-stun-server
vmanage-connection-preference 5
port-hop
carrier default
nat-refresh-interval 5
hello-interval 1000
```


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