

Smart License your XRv 9000 via Smart Software Manager (SSM) Satellite

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Introduction

This document describes the procedure to enable Cisco Smart License on XRv 9000 when there is no direct access to the Internet from the Virtual Machine (VM) hosting the XRv 9000.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Basic knowledge of Virtual Machines.

- Knowledge about Cisco IOS XRv 9000 Router installed either on VMware or KVM Hypervisors.
- Basic Knowledge of Cisco IOS XRv 9000 Router Licensing Model.
- Basic knowledge of Cisco Smart Software Manager (SSM) satellite.

Components Used

The information provided in this document is based on these software and hardware versions:

- Cisco IOS XRv 9000 Router -xrv9k-xr-6.0.1
- Smart Software Manager satellite- Version 3.0.4

The information in this document was created from devices in a specific laboratory environment. All the devices used in this document were initialized with a default configuration. If your network is live, ensure that you understand the potential impact of any command.

Cisco Smart Licensing

Cisco Smart Licensing is a cloud-based, software license management solution which enables you to automate manual licensing tasks. It assists you in purchasing, management and reporting functions. Cisco Smart Licensing uses Cisco Smart Call Home feature to communicate with the Cisco Smart Software Manager. Smart Call Home is auto-configured for default Smart Licensing Setup.

In Cisco IOS XRv 9000 Router, the licensing would be Smart Licensing only. Therefore, you need to enable Smart Licensing, and it would not include a Node Locked Licensing implementation at all. The XRv 9000 Router communicates to the Cisco Licensing Cloud to provide a report of which features and to what scale the system is being used.

These are the benefits of using Cisco Smart License:

- You can automatically self-register the software installed in your network without Product Activation Key (PAKs).
- You do not have to install the license file on every node. You can create license pools (logical grouping of licenses) to reflect your organization structure. Smart Licensing offers you Cisco Smart Software Manager, a centralized portal that enables you to manage all your Cisco software licenses from one centralized website.
- You can have an integrated view of the licenses you have purchased, and what has been actually deployed in your network via the portal.

Cisco IOS XRv 9000 Router Licensing Model

The Cisco IOS XRv 9000 Router (Sunstone) licensing model includes demo and production modes. This table gives a short description of each mode:

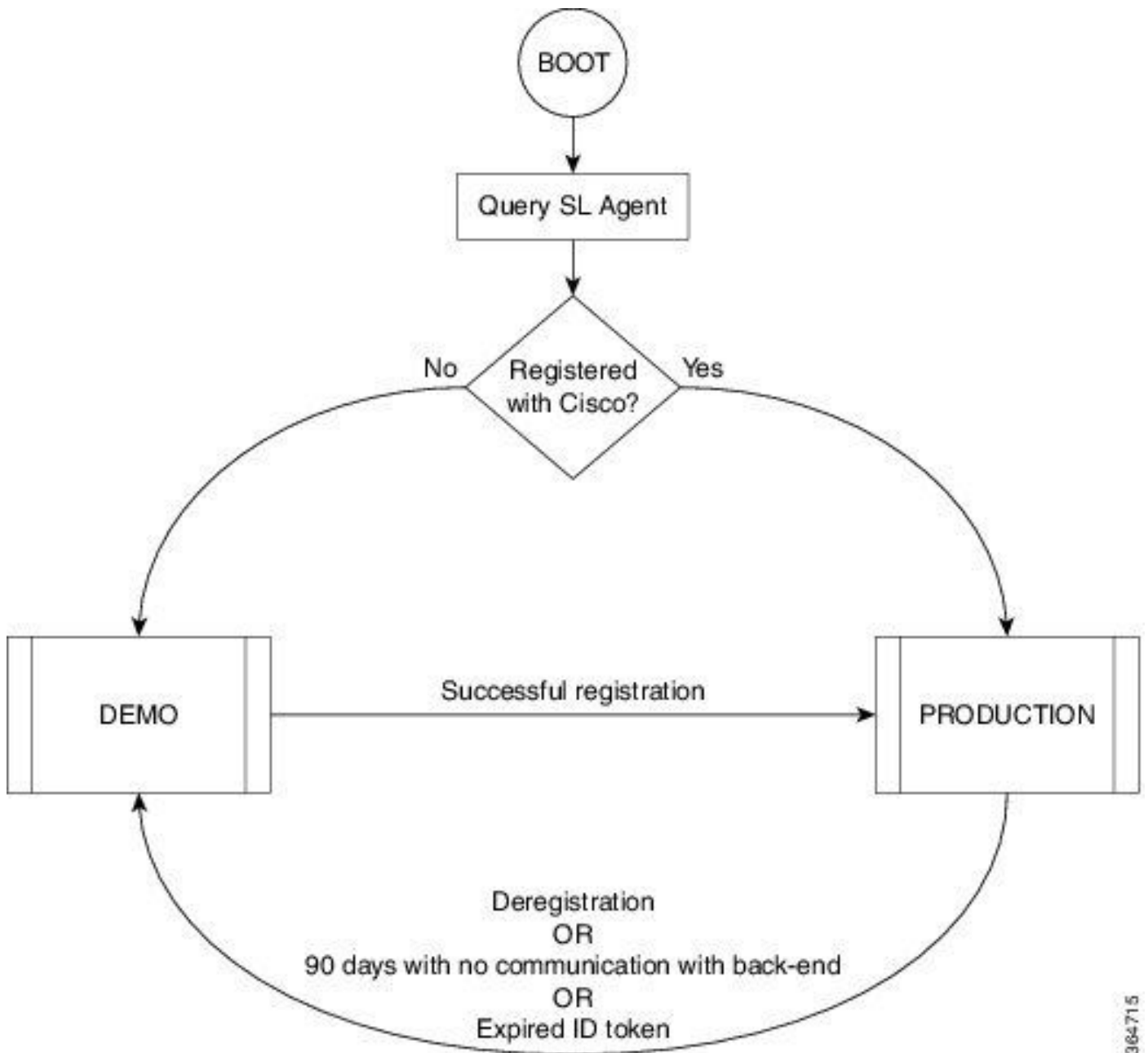
Mode	Description
Demo	<ul style="list-style-type: none"> · This is the default mode when the router is launched. · No cloud connectivity is required. · No feature level enforcement. · Rate limitations of 200 Kbps
Production	<ul style="list-style-type: none"> · This mode requires registration. · No enforcement applied.

This table shows Cisco IOS XRv Router Licensing Mode (Source: [Cisco IOS XRv 9000 Router Installation and Configuration Guide- Chapter: Cisco IOS XRv 9000 Router Smart Licensing](#))

XRv 9000 (Sunstone) by default is running in Demo mode, which applies high scale limit on the number of supported routes and amount of throughput. It expires after certain number of days and keeps showing the warning alarm.

You can utilize all the available capacity of your XRv 9000 when it is in production mode. However to enable the production mode, router's license needs to be registered with back-end (<https://software.cisco.com/#SmartLicensing-Alerts>) and purchased entitlements (directly, through a proxy, or through a Smart Licensing Satellite).

This image shows the basic state transitions between Demo and Production mode.



384715

Transition between Demo and Production mode is shown in the image

A default Smart Call Home configuration on Cisco IOS XRv 9000 (XRv9k) Router is enough to run Smart Licensing. This configuration is triggered by Smart Licensing internally, using a built-in CiscoTAC-1 profile. However, you need to ensure that there is connectivity to Cisco.com via traffic or management ports on XRv9k Router. Therefore the only requirement is to configure IP connectivity to have access to the Cisco cloud from XRv9k Router.

By default, Smart Licensing is always enabled on XRv9k routers and to use the router in production mode, you must register with Cisco. Using the ID token, the license agent on the router registers the product with Cisco and receives an identity certificate. This certificate is used for all future communications with Cisco. The license agent on the router automatically renews the registration information with Cisco every 30 days. You can refer to the following link for further information about registering XRv9k Router:

[Cisco IOS XRv 9000 Router Installation and Configuration Guide- Chapter: Cisco IOS XRv 9000 Router Smart Licensing](#)

Problem: No Internet Access to Register XRv9k Router License.

Due to security reason or corporate policy, you cannot connect the XRv9k or VM host to the Internet or even Cisco Cloud. Therefore the license agent on XRv9k Router cannot reach <https://software.cisco.com/#SmartLicensing-Alerts> to register the product and renew it every 30 days. Therefore, you cannot enable production mode. Is there any other solution?

Solution

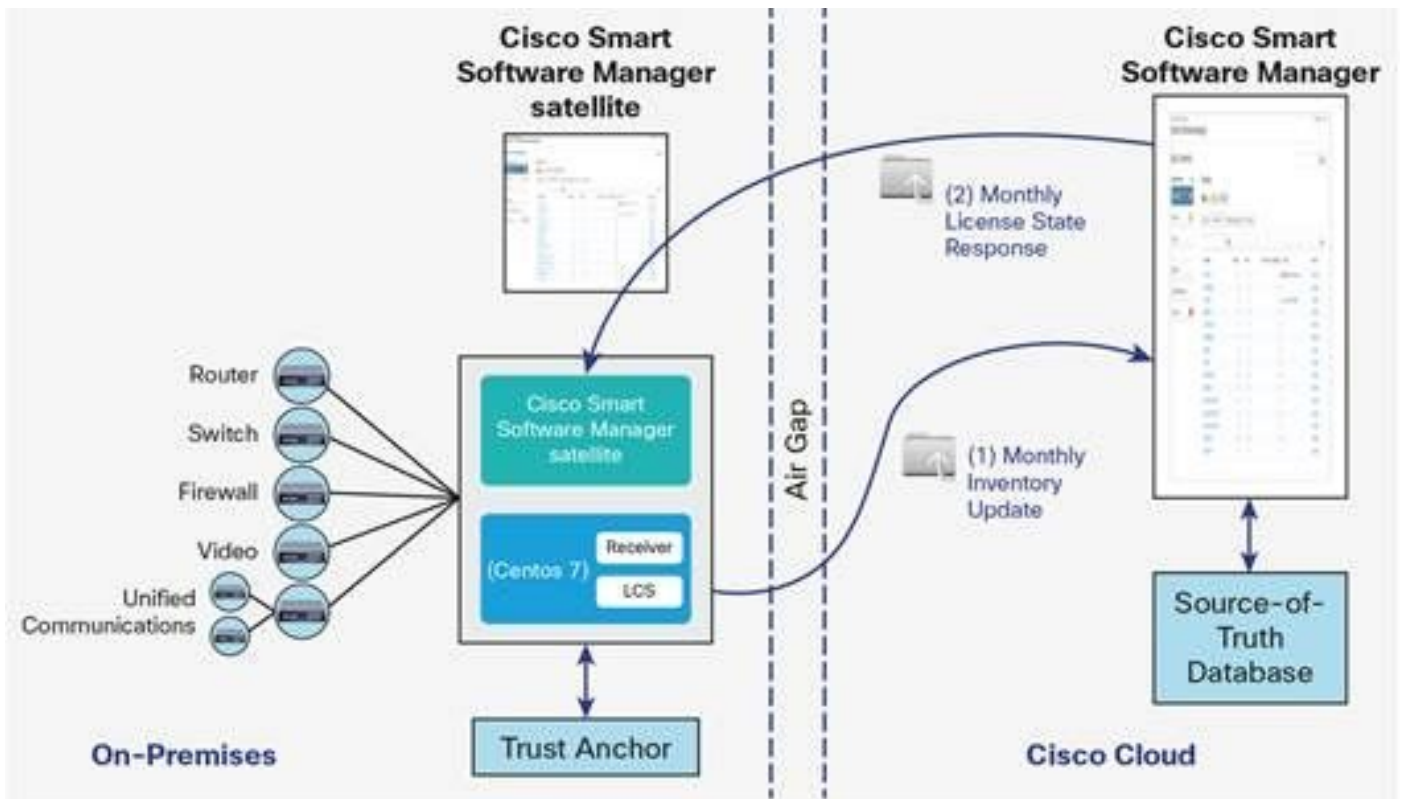
Depending on the requirements with respect to security, manageability, and operational mode of your network, you can deploy Smart Licensing in several ways:

1. You may choose not to allow the XRv9K to connect directly with Cisco Cloud/Backend servers. In this case, you can use a proxy server on your premises and manage the firewall, traffic flow, and how the Smart Licensing application fits in the organization's security needs. This can be easily set up via Open Source Apache software that runs on Windows or Linux Operating Systems.
2. You may want to have all your XRv9K devices connected to an aggregator host, which can receive all the local requests from all the XRv9K devices before you forward them to Cisco Backend Servers. This is a job for Transport Gateway software that runs on Linux and Windows and is available for download at Cisco Transport-Gateway download: [Cisco Transport Gateway – Release and General Information](#)
3. You may want to operate totally offline with On-Premise software that runs on Linux and Windows and allows you to have only **this On-Premise host** to do the talking for licensing information exchange with the Cisco Cloud and in turn provide information to the end devices as to their state of compliance. This software will be available in Release 5.3.1 or later.

This discussion describes a scenario which includes **Smart Software Manager Satellite** as an On-Premise software to communicate with Cisco cloud and register the XRv9k Router in Production mode as well as renew the license.

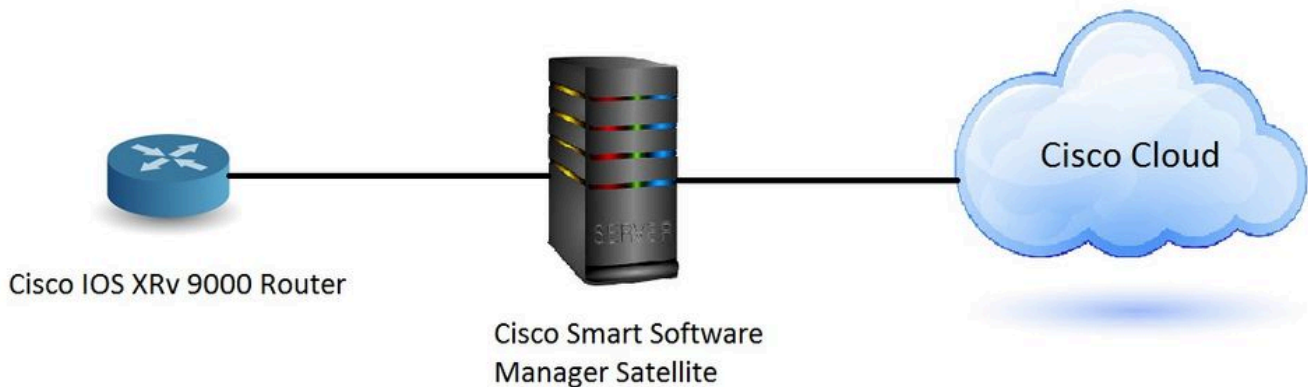
Implementing Smart Software Manager Satellite

Smart Software Manager Satellite is a component of Cisco Smart Licensing. It works in conjunction with Cisco Smart Software Manager (SSM) to intelligently manage your product licenses. It is providing near real-time visibility and reporting of Cisco licenses that you purchase and consume. The image shows Smart Software Manager Satellite implementation:



This image shows Smart Software Manager Satellite Deployment (Source: [Cisco Smart Software Manager satellite Data Sheet](#))

If you decide to install the XRv9k Router totally, offline, without direct connection to the Internet, you can use Cisco Smart Software Manager Satellite to communicate with the Cisco cloud. You can implement this solution as per the topology shown in the image :



Install Smart Software Manager Satellite

Smart Software Manager Satellite is packaged as an Open Virtual Appliance (OVA) and requires these configurations:

- 50GB - 200GB hard disk
- 8 GB memory
- 4 vCPUs

Smart Software Manager Satellite supports the following web browsers:

- Chrome 32.0 and later versions
- Firefox 25.0 and later versions
- Safari 6.0.5

When you open the OVA file, Smart Software Manager satellite extracts the VM and imports it into whatever virtualization software you have installed on your computer.

You must provide, install, and configure the following external components before you install the OVA file:

- ESXi v5.x or above host with sufficient OVA resources
- vSphere Client v5.x

To deploy and install the Smart Software Manager Satellite OVA, there is a document which guides you through the installation step by step:

[Smart Software Manager satellite Installation Guide](#)

Configure the IP address on Smart Software Manager Satellite

After you deploy the Satellite successfully, power it on and open the console of the Satellite on your vSphere client.

You are asked for default User name and Password:

- Default User: admin
- Default Password: Admin!23



Note: When you login for the first time, you will be asked to change the password.

You must configure IP address for the Satellite to have access to it via a Web browser.

- To configure IPv4: **sudo conf ip** <interface-name(eth0)> <IP> <NetMask> <Gateway>
- To configure DNS: **sudo conf dns** [DNS ip-address2]

This is an example:

```

[admin@satellite-node-01 ~]$ sudo conf ip
This script is used to configure IPv4 networking - Usage:
=====

Configure IPv4:
-----
      /sbin/conf ip <interface-name(eth0)> <IP> <NetMask> <Gateway>

Configure IPv6:
-----
      /sbin/conf ip6 <interface-name(eth0)> <IP> <Gateway>

Configure DNS:
-----
      /sbin/conf dns <DNS ip-address1> [DNS ip-address2]

[admin@satellite-node-01 ~]$ sudo conf ip eth0 10.66.70.125 255.255.255.128 10.66.70.1
Configuring Network.....
IP = 10.66.70.125
NETMASK = 255.255.255.128
GATEWAY = 10.66.70.1
Restarting network (via systemctl): [ OK ]
Configuring satellite.....
success
[admin@satellite-node-01 ~]$ sudo conf dns 8.8.8.8
Configuring DNS.....
DNS nameserver: 8.8.8.8
Restarting network (via systemctl): [ OK ]
[admin@satellite-node-01 ~]$

```

Access to Smart Software Manager Satellite via Web Browser

After you configure IP address on Satellite via CLI then you can login to it via a Web browser:

Step 1. Open the web browser and enter the address: `http://<ip-address>:8080` or `https://<ip-address>:8443`

For example: <https://10.66.70.125:8443>

Step 2. The login window as shown in the image appears. Login to Satellite using default User and Password.

Smart Software Manager satellite

Version 1.0.0

Username:

User:

Password:

Log in

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Step 3. As it is the first time, you are prompted to change the password. Enter your new password as shown in the image:

Smart Software Manager satellite

Version 3.8.4

Signed in successfully

New Password:

Confirm New Password:

Change Password



For security purposes, you must create a new password.

Password requirements:

- Length should be between 8 to 128
- Need at least one letter
- At least one digit
- At least one of `!@#$%^&*~`

Logout

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Then this is the procedure to continue Satellite configuration:

Step 1. To install new Satellite, check **Configure as new Satellite**, as shown in the image:

Smart Software Manager satellite admin Log Out | About | Help

Satellite Setup

Choose whether to configure this as a new satellite or by importing data from an existing backup file.

Configure as new satellite.

Configure by importing data from a satellite backup file - this will restore configuration settings, including registered product instances.


No file chosen

Step 2. The next window shows the initial configuration that you've done via CLI.

Step 3. Verify the clock setting and if it is not synchronized, you must edit the **NTP Settings**.

Satellite Setup

[Network Settings](#) [Setup Method](#) [Register Satellite](#) [Synchronization Settings](#) [Summary](#)

 Unless the time on the satellite is accurate, synchronization with the Cisco Smart Software Manager will fail. Verify that the time displayed below is accurate. If it is not accurate, ensure sure that the platform the satellite is running on is configured to use an NTP server.

[Edit Network Settings](#) [Launch Network Diagnostics](#)**Administration Network Interface - eth0**Status: Enabled Connected

Hardware Address: 1500

IPv4:	IPv6:
Configuration: static	Configuration: not configured
IP Address: 10.66.70.125	IP Address:
Subnet Mask: 255.255.255.128	Prefix Length:
Gateway: 10.66.70.1	Gateway:

Product Registration Interface - eth1

Status: Disabled

Hardware Address:

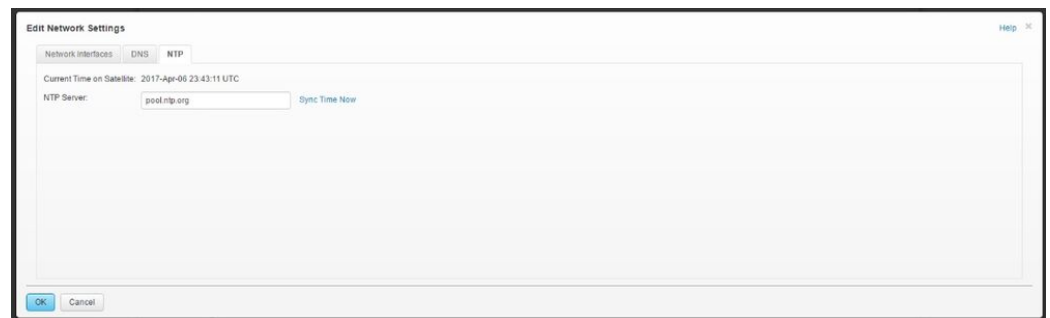
DNS Settings

DNS Servers: 8.8.8.8

Search Domains:

NTP Settings

Current Time on Satellite: 2017-Apr-06 23:43:11 UTC

Selected NTP Server: pool.ntp.org [Sync Time Now](#)[Back](#) [Next](#)

Step 4. Select **Sync Time Now**, you receive a successful message as shown image:

Satellite Setup

[Network Settings](#) [Setup Method](#) [Register Satellite](#) [Synchronization Settings](#) [Summary](#)

Unless the time on the satellite is accurate, synchronization with the Cisco Smart Software Manager will fail. Verify that the time displayed below is accurate. If it is not accurate, ensure sure that the platform the satellite is running on is configured to use an NTP server.

Administration Network Interface - eth0

[Edit Network Settings](#)[Launch Network Diagnostics](#)Status: Enabled Connected

Hardware Address: 1500

IPv4:	IPv6:
Configuration: static	Configuration: not configured
IP Address: 10.66.70.125	IP Address:
Subnet Mask: 255.255.255.128	Prefix Length:
Gateway: 10.66.70.1	Gateway:

Product Registration Interface - eth1

Status: Disabled

Hardware Address:

DNS Settings

DNS Servers: 64.104.200.248

Search Domains:

NTP Settings

Current Time on Satellite: 2017-Apr-07 02:06:17 UTC

 Synchronization SuccessfulSelected NTP Server: ntp.esl.cisco.com [Sync Time Now](#)[Back](#)[Next](#)

You can choose setup method:

- Network setup
- Manual setup

In this scenario, network Setup has been selected, as shown in the image:

Satellite Setup

[Network Settings](#) [Setup Method](#) [Register Satellite](#) [Synchronization Settings](#) [Summary](#)

Before the satellite can be configured, it must first be registered with your Smart Account using Smart Software Manager. Choose a registration method below. Registering over the network requires this application to have internet access.

Network Setup - the setup utility will connect to Cisco to complete the registration.



When you click the Next button you will be redirected to a login page to enter your Cisco.com user name and password.

Manual Setup - the setup utility will generate a file that you will need to upload to Smart Software Manager to complete the registration.

[Back](#)[Next](#)

Smart Licensing requires products to be associated with [Smart Accounts](#), which can be created on [Cisco Software Central](#). A Smart Account is associated with a unique company ID and is like an online banking

account containing Cisco entitlements and devices for that customer. From the Cisco Smart Software Manager, sub-accounts (also called **virtual accounts**) can be created to represent various sub-divisions or buying centers of the company.

Step 1. To register Satellite, you must select a name for Satellite, then enter Smart account and Virtual account information. Click on **Register Satellite** to continue, as shown in the image:

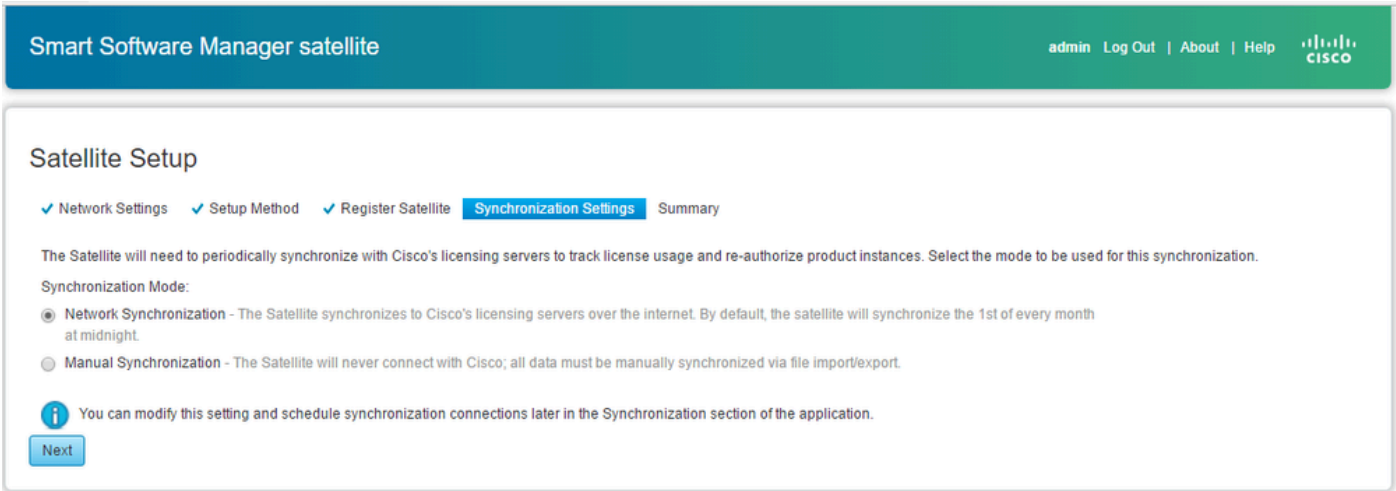
The screenshot shows the 'Satellite Setup' page in the Cisco Smart Software Manager. The page has a green header with 'Smart Software Manager satellite' and navigation links for 'admin', 'Log Out', 'About', and 'Help'. The main content area is titled 'Satellite Setup' and includes a breadcrumb trail: 'Network Settings' > 'Setup Method' > 'Register Satellite' > 'Synchronization Settings' > 'Summary'. A yellow warning box states: 'The registration process will take several minutes and will require the satellite setup application to restart. When you click Register Satellite below you will be taken to a progress page and then automatically redirected to the login page when the restart has completed. After you log in, you will be taken to the next step in the setup process.' Below this, a text prompt says: 'Enter a name for the satellite and choose the Smart Account and one or more Virtual Accounts to associate with this satellite.' The form includes three fields: 'Satellite Name' (text input with 'SYD-XR-LAB-Satellite'), 'Smart Account' (dropdown menu with 'Cisco Demo Smart Account'), and 'Virtual Accounts' (dropdown menu with '1 - Spark Flex' and an 'Add' button). Below the form is a table with columns 'Name', 'Description', and 'Actions'. The table contains one row: '1 - Spark Flex' with a 'Remove' link in the 'Actions' column. At the bottom left, there are 'Back' and 'Register Satellite' buttons.

Step 2. Satellite restarts automatically after registration, then login prompt appears again, as shown in the image:

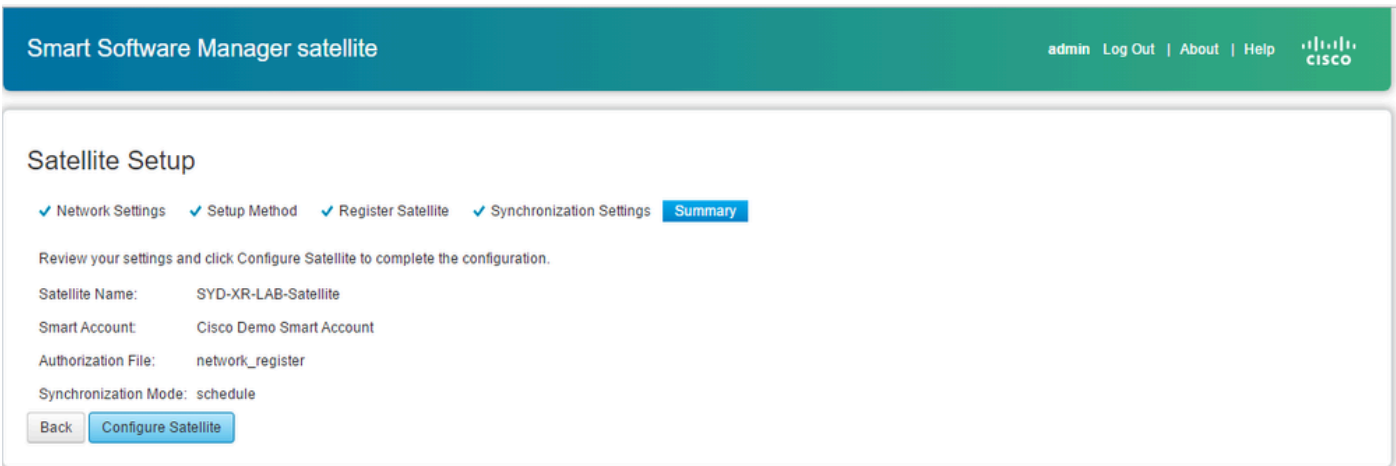
The screenshot shows the 'Satellite Setup' page in the Cisco Smart Software Manager. The page has a green header with 'Smart Software Manager satellite' and navigation links for 'admin', 'Log Out', 'About', and 'Help'. The main content area is titled 'Satellite Setup' and includes a breadcrumb trail: 'Network Settings' > 'Setup Method' > 'Register Satellite' > 'Synchronization Settings' > 'Summary'. A yellow information box states: 'Restart in Progress. This Smart Software Manager satellite is currently restarting. This page will automatically reload to the login page when the restart has completed. Once you log in, you will be able to complete the satellite setup process.' Below this, there is no form or table visible, only the 'Back' and 'Register Satellite' buttons at the bottom left.

You can register the satellite using the online or offline method through the GUI. The online (network) option requires a network connection; you would use the offline (manual) when you are disconnected from the Cisco Smart Software Manager portal. After you complete the satellite registration process, you receive an immediate response, confirming the registration, from Cisco Smart Software Manager.

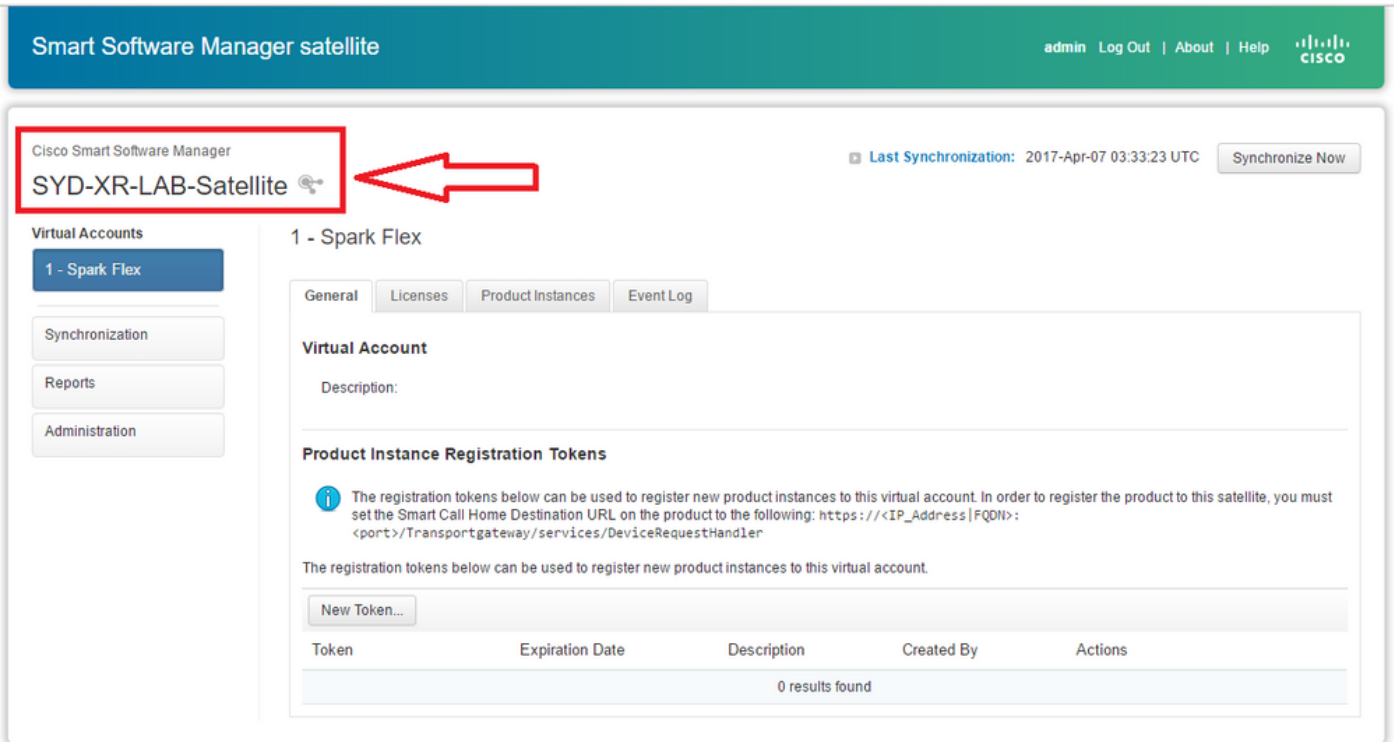
Step 1. As shown in the image, check **Network synchronization**, if you have internet access from Satellite.



Step 2. As shown in the image, click on **Configure Satellite** to be synchronised with Cisco Smart Software Manager.

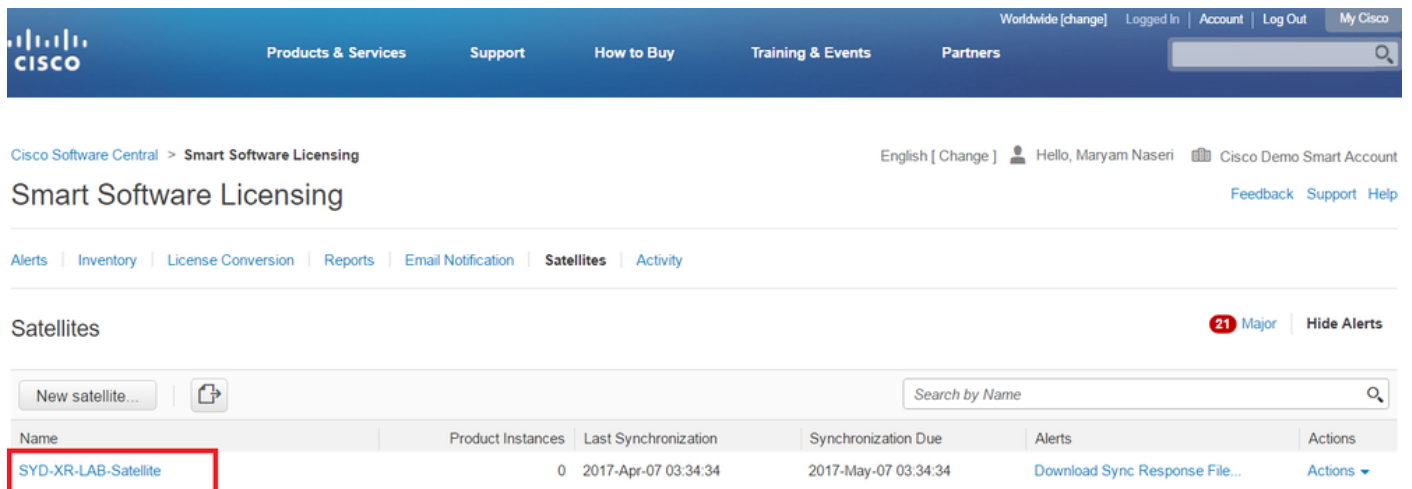


When Satellite is registered with Smart Software Manager (SSM), you can see the link icon in the main page, as shown in the image:



Verify on Cisco Smart Software Manager

Step 1. Log in to your Smart account then click in **Satellite** tab, you can see the linked Sattelite in the list, as shown in the image. <https://software.cisco.com/#module/SmartLicensing>



Step 2. When you order a license, you can see the available license for specific smart account and virtual account in **Inventory > License** as shown in the image:


Smart Software Licensing

[Feedback](#) [Support](#) [Help](#)[Alerts](#) | [Inventory](#) | [License Conversion](#) | [Reports](#) | [Email Notification](#) | [Satellites](#) | [Activity](#)Questions About Licensing? 
Try our Virtual Assistant

Virtual Account:

20 Minor | [Hide Alerts](#)6_APJGC Demo  Satellite Virtual Account (SYD-XR-LAB-Satellite)

General
Licenses
Product Instances
Event Log




Q

License	Quantity	In Use	Surplus (+) / Shortage (-)	Alerts	Actions
IOS XRv 9000 License for 1 vRouter Instantiation	1	0		1	Transfer..
IOS XRv 9000 License for vRR functionality with 1m...	1	0		1	Transfer..

Showing All 2 Records

Step 3. After Satellite synchronization the license is available at Satellite Licenses tab, as shown in the image:

Smart Software Manager satellite
admin Log Out | About | Help 

Cisco Smart Software Manager
Last Synchronization: 2017-Apr-10 03:24:17 UTC [Synchronize Now](#)

Virtual Accounts

1 - Spark Flex 1

6_APJGC Demo

Synchronization

Reports

Administration

i Version Compatibility Update Installed - The compatibility update has been successfully installed and the satellite can now be used to register Product Instances using Smart Licensing Agent versions prior to version 1.5. Dismiss

6_APJGC Demo

General
Licenses
Product Instances
Event Log


Filter
Q

License	Quantity	In Use	Surplus (+) / Shortage (-)	Alerts
IOS XRv 9000 License for 1 vRouter Instantiation	1	0	1	
IOS XRv 9000 License for vRR functionality with 1m Route	1	0	1	

Create Registration Token at Satellite

In general tab of the Satellite, click on the **New Token**. then enter a description of the token in the **Create Registration Token** dialog box.

Step 1. Enter the # of days you want the token to be valid for.

 **Note:** The default is 30 days and maximum will be 365.

Step 2. Click in **Create Token** button, as shown in the image.

Create Registration Token Help ×

This dialog will generate the token required to register your product instances with your Smart Account.

Virtual Account: 1 - Spark Flex

Description:

Expire After: days
Enter a value between 1 and 365, but Cisco recommends a maximum of 30 days.

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

Step 3. You can see the generated Token in the list which is needed for XRv9k configuration.

Smart Software Manager satellite
admin Log Out | About | Help

Cisco Smart Software Manager Last Synchronization: 2017-Apr-10 03:24:17 UTC

SYD-XR-LAB-Satellite 🔍

Virtual Accounts

- 1 - Spark Flex 1
- 6_APJGC Demo

Synchronization

Reports

Administration

i Version Compatibility Update Installed - The compatibility update has been successfully installed and the satellite can now be used to register Product Instances using Smart Licensing Agent versions prior to version 1.5. Dismiss

1 - Spark Flex

Major

Hide Alerts

General | Licenses | **Product Instances** | Event Log

Virtual Account

Description:

Product Instance Registration Tokens

i The registration tokens below can be used to register new product instances to this virtual account. In order to register the product to this satellite, you must set the Smart Call Home Destination URL on the product to the following: `https://<IP_Address>|FQDN>:<port>/Transportgateway/services/DeviceRequestHandler`

The registration tokens below can be used to register new product instances to this virtual account.

Token	Expiration Date	Description	Export-Controlled Functionality	Created By	Actions
NzE0YmVjNjENTUzYi00...	Apr 7, 2018 (in 355 days)	SYD-XRv9k-LAB	Allowed	admin	Copy Download... Revoke...

XRv9k Router Configuration

This default configuration is already available in XRv9k as shown in the image:

```
RP/0/RP0/CPU0:ios#show running-config call-home
Fri Apr 7 02:26:09.468 UTC
call-home
  service active
  contact smart-licensing
  profile CiscoTAC-1
  active
  destination transport-method http
!
!
RP/0/RP0/CPU0:ios#_
```

If you check the license, you can see Smart Licensing is enabled by default. However, it is not registered. Therefore XRv9k state is also in **DEMO** state:

```
RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license all
Fri Apr 7 03:09:56.674 UTC

Smart Licensing Status
=====

Smart Licensing is ENABLED

Registration:
  Status: UNREGISTERED
  Smart Account:
  Virtual Account:

License Authorization:
  Status: No Licenses in Use

License Usage
=====

No licenses in use

Product Information
=====
UDI: PID:R-IOSXRV9000-IMG, SN:2651B9AEF31, SUVI:R-IOSXRV9000-IMG2651B9AEF31, UUID:423F5DA9-773D-43AC-56FB-A6656291FE6B

Agent Version
=====
Smart Agent for Licensing: 2.2.0_rel/5
RP/0/RP0/CPU0:SYD-XRV9k-LAB#
```

```
RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license platform summary
Fri Apr 7 03:12:26.465 UTC
Current state:      DEMO

Collection:  LAST: (disabled)
              NEXT: (disabled)
Reporting:   LAST: (disabled)
              NEXT: (disabled)

Feature/Area      Entitlement
=====
RP/0/RP0/CPU0:SYD-XRV9k-LAB#
```

Feature/Area	Entitlement	Count	
		Last	Next
=====			

Configuring Connectivity between XRv9k and Satellite

Configure required route to have connectivity between Satellite and XRv9k.

You can configure static route to satellite as this:

```
RP/0/RP0/CPU0:XRv9000(config)#router static
RP/0/RP0/CPU0:XRv9000(config-static)# address-family ipv4 unicast
RP/0/RP0/CPU0:XRv9000(config-static-afi)# 10.66.70.0/25 MgmtEth0/RP0/CPU0/0 1
RP/0/RP0/CPU0:XRv9000(config-static-afi)#commit
```

Ping Satellite IP address to ensure about the connectivity.

Configuring Call-home profile to use Smart Software Manager Satellite on the XRv9k

You must add destination address which points to Satellite as this:

```
RP/0/RP0/CPU0:XRv9000(config)#call-home
RP/0/RP0/CPU0:XRv9000(config-call-home)# service active
RP/0/RP0/CPU0:XRv9000(config-call-home)# profile CiscoTAC-1
RP/0/RP0/CPU0:XRv9000(config-call-home-profile)# active
RP/0/RP0/CPU0:XRv9000(config-call-home-profile)# destination address http http://10.66.70.125:80/Transp
RP/0/RP0/CPU0:XRv9000(config-call-home-profile)# destination transport-method http
RP/0/RP0/CPU0:XRv9000(config-call-home-profile)# no destination address http https://tools.cisco.com/i
RP/0/RP0/CPU0:XRv9000(config-call-home-profile)#commit
```

Registration of XRv9k with Cisco Smart Software Manager Satellite

Register the XRv9000 with CSSM Satellite with the token ID generated at CSSM Satellite.

Example:

```
RP/0/RP0/CPU0:XRv9000#license smart register idtoken ZTZIMDE5ODgtOTIzZC00MDd
```

```
RP/0/RP0/CPU0:SYD-XRV9k-LAB# license smart register idtoken NZE0YmVjNjEtNTUZYi00N2Q4LWEzOGQtZWVhNZA3YZE2Y2Fi
Mon Apr 10 03:58:04.287 UTC
License command "license smart register idtoken " completed successfully.
Registration process is in progress. Use the 'show license status' command to check the progress and result
```

Step 1. You can see initial registration is successful. It may take time to find the license.

```

RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license status
Fri Apr 7 03:24:57.692 UTC

Smart Licensing is ENABLED
  Initial Registration: SUCCEEDED on Fri Apr 07 2017 03:23:52 UTC
  Last Renewal Attempt: None
  Registration Expires: Never

License Authorization:
  Status: No Licenses in Use
  Last Communication Attempt: SUCCEEDED on Mon Apr 03 2017 23:56:05 UTC
  Next Communication Attempt: Thu Jan 01 1970 00:00:00 UTC
  Communication Deadline: Thu Jan 01 1970 00:00:00 UTC
RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license platform summary
Fri Apr 7 03:25:09.601 UTC
Current state:      DEMO

Collection: LAST: (disabled)
              NEXT: (disabled)
Reporting:  LAST: (disabled)
              NEXT: (disabled)

Feature/Area      Entitlement                                     Count
=====          =====
Last Next

RP/0/RP0/CPU0:SYD-XRV9k-LAB#

```

Step 2. You can login to the Satellite and synchronise it manually. Then you see the status is changed to **Registered**, as shown in the image:

```

RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license all
Mon Apr 10 03:00:07.162 UTC

Smart Licensing Status
=====

Smart Licensing is ENABLED
Registration:
Status: REGISTERED
Smart Account: CISCO Demo Smart Account
Virtual Account: 1 - Spark Flex
Initial Registration: SUCCEEDED on Fri Apr 07 2017 12:47:22 UTC
Last Renewal Attempt: None
Next Renewal Attempt: Wed Oct 04 2017 12:47:23 UTC
Registration Expires: Sat Apr 07 2018 12:11:35 UTC

License Authorization:
  Status: OUT OF COMPLIANCE on Fri Apr 07 2017 12:49:21 UTC
  Last Communication Attempt: SUCCEEDED on Mon Apr 10 2017 00:49:35 UTC
  Next Communication Attempt: Mon Apr 10 2017 12:49:35 UTC
  Communication Deadline: Sat Apr 07 2018 12:11:34 UTC

License Usage
=====

IOS XRV 9000 License for 1 vRouter Instantiation (IOS-XRV-9000-vRouter-VM):
  Description: IOS XRV 9000 License for 1 vRouter Instantiation
  Count: 1
  Version: 1.0
  Status: OUT OF COMPLIANCE

Product Information
=====
UDI: PID:R-IOSXRV9000-IMG,SN:2651B9AEF31,SUVI:R-IOSXRV9000-IMG2651B9AEF31,UUID:423

Agent Version
=====
Smart Agent for Licensing: 2.2.0_re1/5

```

Step 3. If the required licence is not in your Smart account or your defined virtual account, the status of the license usage shows **Out Of Compliance**. However, the current state is changed to **PRODUCTION**, as shown in the image:

```
RP/0/RP0/CPU0:SYD-XRV9k-LAB#
RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license platform summary
Mon Apr 10 03:31:01.804 UTC
Current state:      PRODUCTION

collection: LAST: Mon Apr 10 02:53:48 2017
              NEXT: Mon Apr 10 03:53:48 2017
Reporting:  LAST: Sun Apr  9 12:53:48 2017
              NEXT: Mon Apr 10 12:53:48 2017
```

Feature/Area	Entitlement	Count	
		Last	Next
system	Product: Right to Use	1	1

Step 4. The Smart Software Manager Satellite also shows the major alarm as **"Insufficient Licenses"** and shortage of one license (-1).

The screenshot shows the Smart Software Manager satellite interface. At the top, it says "Smart Software Manager satellite" with user "admin" and options "Log Out | About | Help" and the Cisco logo. Below this, it displays "Cisco Smart Software Manager" and "SYD-XR-LAB-Satellite". A "Last Synchronization: 2017-Apr-07 12:21:25 UTC" is shown with a "Synchronize Now" button.

On the left, there are "Virtual Accounts" listed: "1 - Spark Flex" (with a red '1' badge) and "6_APJGC Demo". Below these are buttons for "Synchronization", "Reports", and "Administration".

The main area shows a "1 - Spark Flex" section with a "Major" alert and "Hide Alerts" button. There are tabs for "General", "Licenses", "Product Instances", and "Event Log". The "Licenses" tab is active, showing a search bar and a table:

License	Quantity	In Use	Surplus (+) / Shortage (-)	Alerts
IOS XRv 9000 License for 1 vRouter Instantiation	0	1	-1	Insufficient Licenses
IOS XRv 9000 Route scale license for upto 4m Route	1	0	1	

At the top of the license table, there is a yellow warning banner: "Version Compatibility Note - Temporarily, this satellite will only be able to register Product Instances that are using the multi-level certificate hierarchy feature (use 'show license' on the Product Instance to ensure that the agent version is 1.5+). To enable registration of Product Instances using older versions of the agent, wait two business days after the satellite's initial registration and then synchronize." with a "Dismiss" button.

Transfer Required License to the Related Virtual Account

You must transfer the required license to the related smart account and virtual account to be able to use it.

Step 1. In case you ordered a license and it is in different virtual account, you can login to your Smart Software Licensing account and transfer it to the virtual account where you've generated token for XRV9k router and then click in **Transfer**, as shown in the image:

Smart Software Licensing

[Feedback](#) [Support](#) [Help](#)[Alerts](#) | [Inventory](#) | [License Conversion](#) | [Reports](#) | [Email Notification](#) | [Satellites](#) | [Activity](#)Questions About Licensing? 
Try our Virtual Assistant

Virtual Account:

20 Minor | [Hide Alerts](#)6_APJGC Demo  Satellite Virtual Account (SYD-XR-LAB-Satellite)

License	Quantity	In Use	Surplus (+) / Shortage (-)	Alerts	Actions
IOS XRv 9000 License for 1 vRouter Instantiation	1	0		1	Transfer..
IOS XRv 9000 License for vRR functionality with 1m...	1	0		1	Transfer..


Showing All 2 Records

Step 2. Enter the information about correct virtual account and the quantity of the license, then click in **Complete Transfer**, as shown in the image.

Cisco Software Central > Smart Software Licensing English [Change] Hello, Maryam Naseri Cisco Demo Smart Account

Smart Software Licensing

Feedback Support Help

Questions About Licensing? 

Transfer Licenses

License: IOS XRv 9000 License for 1 vRouter Instantiation In 6_APJGC Demo (Qty: 1, Surplus : 1)

Transfer: To

Quantity: Expire 2018-Apr-07 Qty: 1

Click Preview to see resulting license counts.

[Complete Transfer](#) [Preview](#) [Cancel](#)

IOS XRv 9000 License for vRR functionality with 1m...	1	0	1	Transfer..
---	---	---	---	----------------------------

Showing All 2 Records

Step 3. When License is transferred, you can manually synchronise the Satellite and the Major alarm is cleared.

Cisco Smart Software Manager

Last Synchronization: 2017-Apr-10 03:24:17 UTC

Synchronize Now

SYD-XR-LAB-Satellite

Virtual Accounts

1 - Spark Flex

6_APJGC Demo

Synchronization

Reports

Administration

1 - Spark Flex

General

Licenses

Product Instances

Event Log

Type text to begin searching

Filter

License	Quantity	In Use	Surplus (+) / Shortage (-)	Alerts
IOS XRv 9000 License for 1 vRouter Instantiation	1	1	0	
IOS XRv 9000 License for vRR functionality with 1m Route	1	0	1	
IOS XRv 9000 Route scale license for upto 4m Route	1	0	1	

Step 4. You can also verify on the Smart Software Licensing and ensure the number of In-use licenses.

Cisco Software Central > Smart Software Licensing

English [Change] Hello, Maryam Naseri Cisco Demo Smart Account

Smart Software Licensing

Feedback Support Help

Alerts Inventory License Conversion Reports Email Notification Satellites Activity

Questions About Licensing? Try our Virtual Assistant

Virtual Account: 1 - Spark Flex Satellite Virtual Account (SYD-XR-LAB-Satellite)

General

Licenses

Product Instances

Event Log



Search by License



License	Quantity	In Use	Surplus (+) / Shortage (-)	Alerts	Actions
IOS XRv 9000 License for 1 vRouter Instantiation	1	1	0		Transfer..
IOS XRv 9000 License for vRR functionality with 1m ...	1	0	1		Transfer..
IOS XRv 9000 Route scale license for upto 4m Route	1	0	1		Transfer..


Showing All 3 Records

Verify the License Status in XRv9k

You can verify the license status of the XRv9k router by using these commands:

```
RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license all
RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license platform summary
```

The status of the license is changed to **Authorized** after communicating with Satellite and finding required license.

 **Note:** You can register the license by using existing token, in case the status hasn't been changed.

```
RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license status
Mon Apr 10 03:58:12.175 UTC

Smart Licensing is ENABLED
Initial Registration: SUCCEEDED on Mon Apr 10 2017 03:58:10 UTC
Last Renewal Attempt: SUCCEEDED on Mon Apr 10 2017 03:55:37 UTC
Failure reason:
Next Renewal Attempt: Sat Oct 07 2017 03:58:10 UTC
Registration Expires: Tue Apr 10 2018 03:14:27 UTC

License Authorization:
Status: OUT OF COMPLIANCE on Fri Apr 07 2017 12:49:21 UTC
Last Communication Attempt: SUCCEEDED on Mon Apr 10 2017 00:49:35 UTC
Next Communication Attempt: Mon Apr 10 2017 12:49:35 UTC
Communication Deadline: Sat Apr 07 2018 12:11:34 UTC
RP/0/RP0/CPU0:SYD-XRV9k-LAB#show license all
Mon Apr 10 03:58:26.510 UTC

Smart Licensing Status
=====

Smart Licensing is ENABLED

Registration:
Status: REGISTERED
Smart Account: Cisco Demo Smart Account
Virtual Account: 1 - Spark Flex
Initial Registration: SUCCEEDED on Mon Apr 10 2017 03:58:10 UTC
Last Renewal Attempt: SUCCEEDED on Mon Apr 10 2017 03:55:37 UTC
Failure reason:
Next Renewal Attempt: Sat Oct 07 2017 03:58:09 UTC
Registration Expires: Tue Apr 10 2018 03:14:26 UTC

License Authorization
Status: AUTHORIZED on Mon Apr 10 2017 03:58:18 UTC
Last Communication Attempt: SUCCEEDED on Mon Apr 10 2017 03:58:18 UTC
Next Communication Attempt: Wed May 10 2017 03:58:17 UTC
Communication Deadline: Tue Apr 10 2018 03:14:26 UTC

License Usage
=====

IOS XRV 9000 License for 1 vRouter Instantiation (IOS-XRV-9000-vRouter-VM):
Description: IOS XRV 9000 License for 1 vRouter Instantiation
Count: 1
Version: 1.0
Status: AUTHORIZED ←
Product Information
=====
UDI: PID:R-IOSXRV9000-IMG,SN:2651B9AEF31,SUVI:R-IOSXRV9000-IMG2651B9AEF31,UUID:423F5DA9-773D-43AC-56FB-A6656291FE6B

Agent Version
=====
Smart Agent for Licensing: 2.2.0_rel/5
```

Your XRV9k Router is using the license and the Satellite will synchronize itself with Smart software account.

Related Information

- You can refer to this link for more information about provisioning the VM:

[Cisco IOS XRv 9000 Router Installation and Configuration Guide-Chapter: Preparing for Installation](#)

- You can refer to this link for more information about system requirements for XRv 9000 release 6.0.0:

[Release Notes for Cisco IOS XRv 9000 Router for Cisco IOS XR Software Release 6.0.0-System Requirements](#)

- You can refer to this link to get more information about Cisco IOS XRv 9000 Router Installation and Configuration Guide:

[Cisco IOS XRv 9000 Router Installation and Configuration Guide- Chapter: Installing the Cisco IOS XRv 9000 Router in VMware ESXi Environments](#)

- You can refer to this link for further information:

[Cisco IOS XRv 9000 Router Installation and Configuration Guide- Chapter: Cisco IOS XRv 9000 Router Smart Licensing](#)

- You can refer to these links for further information:

[Smart Account Manager Satellite](#)

[Cisco Smart Software Manager Satellite Data Sheet](#)