Software License Solution

This document describes the software restructuring that the Cisco ASR 1000 Series Aggregation Services Routers has undergone to achieve consistency in software solution packaging across Enterprise Routing platforms.

The software license solution for Cisco ASR 1000 Series Aggregation Services Routers provides the following features:

- Creates consistent enterprise WAN routing structure by aligning software license packaging across ASR1000, ISR and CSR1000v product lines for deployment models.

- Simplifies the licensing structure for Smart Licensing.

- Creates consistency between Cisco ASR 1000 fixed and modular systems by providing multiple licenses instead of individual feature licenses.

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Prerequisites for Software License Solution

- A Cisco user login account is mandatory.

- Advanced IP Services (AIS) is a prerequisite license before the Software License Solution can be enabled on an ASR1000 device.

- Before installing the Software License Solution, obtain the device certificate from Cisco licensing infrastructure.

- Universalk9.xml and features.xml files changes are required to support the Right-To-Use and the bundling requirements.

Restrictions for Software License Solution

Cisco ONE Suite has an overlap of features with the Software License Solution. For example, the Cisco Application Visibility and Control (AVC) feature is a part of both the Foundation Suite and the AppX Solution License Package. Although, you can simultaneously configure both the Cisco ONE Suite and the Software License Solution on a device, the Cisco ONE Suite would always have a precedence over the Software License Solution.

```
Device# show version output in CSL mode

show version output in CSL mode
-------------------
License Type: EvalRightToUse
License Suite: FoundationSuiteK9
Next reload License Suite: FoundationSuiteK9
show run output for solution bundle
-----------------------------------

Device#sh lic run | sec license solution

license solution level appxk9
license solution level securityk9
show license output
--------------------
Index 27 Feature: FoundationSuiteK9
Period left: 8 weeks 4 days
Period Used: 0 minute 0 second
License Type: EvalRightToUse
License State: Active, In Use
License Count: Non-Counted
```

Information About Software License Solution

Overview of Software License Solution

The Software License Solution feature for Cisco ASR 1000 Series Aggregation Services Routers (ASR1K) helps to align with technology-based license model (a non Cisco-ONE suite), which is similar to a model used in Integrated Services Routers (ISR) and CSR 1000v Series Cloud Services Routers (CSR).

The following table shows the Solution Licenses Product Identifiers (PIDs) and their functional features:

Table 1: Solution Licenses PIDs and Functional Features

Software License Solution	Licenses	Customized Licenses
SL-ASR1K-SEC	FLSASR1K-FW, FLSASR1K-IPSEC	FLASR1K-NAT64
		FLASR1K-CGN
SL-ASR1K-SED-HX	FLSASR1K-FW, FLSA1-2HXIPS8G	FLSASR1K-FW-GTP
		FLSASR1-FPI
SL-ASR1K-APP	FLSASR1K-AVC	FLSASR1K-IOSRED
		FLSASR1-LI
		FLSASR1-FWNAT-R
		Performance Upgrade Licenses

Note Software license structure ensures backward compatibility of the existing licenses for smooth installed-base customer migration while aligning with ISR/CSR.

Platforms	Solution Level Licenses (Bundle)	Existing Boot-level Licenses
ASR1001-X	AppX and SEC(100 Sessions)	IPB, AIS
ASR1002-X	AppX and SEC-8G (100 Sessions)	
RP2 Universal		
RP3 Universal		
ASR1001-HX		
ASR1002-HX		

Software License Solution is a bundle of licenses where all licenses within a bundle are active, but are not individually used when the license solution is enabled. For example, for the ASR1001-HX and ASR1002-HX routers, due to the introduction of performance-based crypto-license model, a specific HX-specific SEC license needs to be created to include the 8G crypto performance level. As a result of standardization, the following could be a customer's shopping experience when they choose the right technology solution license between an ISR and ASR:

The table below shows a software license solution on a Cisco ASR1K:

Platforms	New Solution Level Licenses (Bundle)	Existing Boot-level Licenses
Technology Solution Package	IPB	AIS
Software License Solution	• AppX	• AppX
Additional customized licences		• Security

Note SEC-8G license is for HX platforms. Includes 8G Crypto throughput license and FW license.

For the solution level license bundles, there is no impact on the boot-level licenses, such as Advanced IP Services (AISK9) or IP Base (IPBK9).

How to Configure Software License Solution

Configuring Software License Solution

Similar to the Cisco ONE suite license, the **license solution level** command triggers a request for the license solution to the licensing component or Smart License Agent. Additionally, all licenses within the software license solution are active; however, the licenses cannot be used individually when the license solution is enabled.

Note The **show license detail** command shows the details of the software license solution, which are similar to Cisco ONE suite licenses. The **license solution level** command is not a boot-level license, hence no sub-module repackaging or ROMMON changes are required.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **license solution level appxk9** | **securityk9**
4. **exit**
5. **show license detail**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> enable`	Info • Enables the privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Device# configure terminal`	Enters the global configuration mode.
Step 3	**license solution level appxk9** | **securityk9** **Example:** `Device(config)# license solution level appxk9`	Enables the software license solution. **Note** Use the ? command with the license solution package command to see the software packages and features supported on your router.

	Command or Action	**Purpose**
Step 4	**exit** **Example:** `Device(config)# exit`	Exits the global configuration mode.
Step 5	**show license detail** **Example:** `Device# Show license detail`	Displays the details of the license that is configured.

Configuration Examples for Software License Solution

Example: Software License Solution is not configured

The following is a sample output when software license is not configured:

```
Device#show version

Cisco IOS XE Software, Version
BLD_V165_THROTTLE_LATEST_20170206_193029_V16_5_0_192_2 Cisco IOS Software [Everest], ASR1000
 Software (X86_64_LINUX_IOSDUNIVERSALK9-
M), Experimental Version 16.5.20170206:195244
[v165_throttle-BLD-BLD_V165_THROTTLE_LATEST_20170206_193029 152]
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The software code licensed under GPL Version 2.0 is free software
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modify such GPL code under the terms of GPL Version 2.0. For more
details, see the documentation or "License Notice" file accompanying
the IOS-XE software, or the applicable URL provided on the flyer
accompanying the IOS-XE software.
ROM: IOS-XE ROMMON
Device uptime is 7 hours, 12 minutes
Uptime for this control processor is 7 hours, 13 minutes
System returned to ROM by reload at 05:08:45 IST Wed Feb 22 2017
System image file is "bootflash:asr1000
universalk9.BLD_V165_THROTTLE_LATEST_20170206_193029_V16_5_0_192_2.SS
A.bin"
Last reload reason: Reload Command
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply thirdparty
authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product
you agree to comply with applicable laws and regulations. If you are
unable to comply with U.S. and local laws, return this product
immediately.
A summary of U.S. laws governing Cisco cryptographic products may be
found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email
```

```
to export@cisco.com.
License Type: EvalRightToUse
License Level: advipservices
Next reload license Level: advipservices cisco ASR1001-HX (1SR) processor (revision 1SR)
with 3763929K/6147K
bytes of memory.
Processor board ID FXS2002Q1RC
Crypto Hardware Module present
8 Gigabit Ethernet interfaces
8 Ten Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
29401087K bytes of eUSB flash at bootflash:.
0K bytes of SATA hard disk at harddisk:.
0K bytes of WebUI ODM Files at webui:.
Configuration register is 0x2102
```

Example: Show license output in CSL mode

The following is sample output of the **show license detail** command without configuring the software license solution:

```
Device#Show license detail

Index 35 Feature: appxk9
<<<<<<<<<<<<<<<< APPX is not In,
Use Period left: Not Activated
Period Used: 0 minute 0 second
License Type: EvalRightToUse
License State: Active, Not in Use, EULA not accepted
License Count: Non-Counted
License Priority: None
Index 36 Feature: securityk9
<<<<<<<<<<<<<<<< Sec is not In, Use
Period left: Not Activated
Period Used: 0 minute 0 second
License Type: EvalRightToUse
License State: Active, Not in Use, EULA not accepted
License Count: Non-Counted
License Priority: None
```

Example: Show license output after configuring the license solution in Cisco Software License (CSL) mode

Show license output after configuring the license solution in Cisco Software License (CSL) mode

```
Device# show version
Cisco IOS XE Software, Version
BLD_V165_THROTTLE_LATEST_20170206_193029_V16_5_0_192_2
Cisco IOS Software [Everest], ASR1000 Software (X86_64_LINUX_IOSDUNIVERSALK9-
M), Experimental Version 16.5.20170206:195244
[v165_throttle-BLD-BLD_V165_THROTTLE_LATEST_20170206_193029 152]
Copyright (c) 1986-2017 by Cisco Systems, Inc.
Compiled Mon 06-Feb-17 16:35 by mcpre
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```

```
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modify such GPL code under the terms of GPL Version 2.0. For more
details, see the documentation or "License Notice" file accompanying
the IOS-XE software, or the applicable URL provided on the flyer
accompanying the IOS-XE software.
ROM: IOS-XE ROMMON
Device uptime is 7 hours, 13 minutes
Uptime for this control processor is 7 hours, 15 minutes
System returned to ROM by reload at 05:08:45 IST Wed Feb 22 2017
System image file is "bootflash:asr1000-
universalk9.BLD_V165_THROTTLE_LATEST_20170206_193029_V16_5_0_192_2.SS
A.bin"
Last reload reason: Reload Command
This product contains cryptographic features and is subject to United
States and local country laws governing import, export, transfer and
use. Delivery of Cisco cryptographic products does not imply thirdparty
authority to import, export, distribute or use encryption.
Importers, exporters, distributors and users are responsible for
compliance with U.S. and local country laws. By using this product
you agree to comply with applicable laws and regulations. If you are
unable to comply with U.S. and local laws, return this product
immediately.
A summary of U.S. laws governing Cisco cryptographic products may be
found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html
If you require further assistance please contact us by sending email
to export@cisco.com.
License Type: EvalRightToUse
License Level: advipservices
Next reload license Level: advipservices
--------------------------------------------------------------
License Solution Level Features
--------------------------------------------------------------
appxk9 avc
<<<<<<<<<<<< solution package information is present when it is
configured
securityk9 1HXIPS8G, firewall
--------------------------------------------------------------
cisco ASR1001-HX (1SR) processor (revision 1SR) with 3763929K/6147K
bytes of memory.
Processor board ID FXS2002Q1RC
Crypto Hardware Module present
8 Gigabit Ethernet interfaces
8 Ten Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
8388608K bytes of physical memory.
29401087K bytes of eUSB flash at bootflash:.
0K bytes of SATA hard disk at harddisk:.
0K bytes of WebUI ODM Files at webui:.
Configuration register is 0x2102
```

Example: Show running configuration when software license solution is configured

The following is a sample configuration of the Software License Solution feature:

```
Device# show run | sec license solution
```

```
license solution level appxk9
license solution level securityk9
-------------------------------------
```

Example: Show running configuration when software license solution is configured

The following is a sample configuration of the Software License Solution feature:

```
Device# show run | sec license solution

license solution level appxk9
license solution level securityk9
-------------------------------------
```

Example: Show an active evaluation license

The following example shows when an evaluation license is activated:

```
Device# show running

license udi pid MCP4RU sn NWG10490493
license accept end user agreement
license boot level advipservices
license solution level AppX
license solution level Sec
license solution level UC
Device#show license
Index 29 Feature: CUBE-Standard
Index 30 Feature: CUBE-Redundant
Index 31 Feature: cgnat
Index 32 Feature: appxk9
Period left: 8 weeks 3 days
Period Used: 21 hours 27 minutes
License Type: EvalRightToUse
License State: Active, In Use
License Count: Non-Counted
License Priority: Low
Index 33 Feature: securityk9
Period left: 8 weeks 3 days
Period Used: 21 hours 22 minutes
License Type: EvalRightToUse
License State: Active, In Use
License Count: Non-Counted
License Priority: Low
Index 34 Feature: uck9
Period left: 8 weeks 3 days
Period Used: 21 hours 26 minutes
License Type: EvalRightToUse
License State: Active, In Use
License Count: Non-Counted
License Priority: Low
Index 3 Feature: avc
Period left: Not Activated
Period Used: 0 minute 0 second
License Type: EvalRightToUse
License State: Active, Not in Use, EULA not accepted
```

```
License Solution: appxk9
License Count: Non-Counted
License Priority: None
```

Additional References for Software License Solution

Related Documents

Related Topic	Document Title
Cisco IOS commands	Cisco IOS Master Commands List, All Releases
Cisco Software Activation Configuration Guide	Cisco Software Activation Guide

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html

Feature Information for Software License Solution

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 2: Feature Information for Software License Solution

Feature Name	Releases	Feature Information
Software License Solution for Cisco ASR 1000 Series Aggregation Services Routers	Cisco IOS XE Everest 16.5.1	This document describes the software licensing restructuring that the Cisco ASR 1000 Series Aggregation Services Routers has undergone to achieve harmonisation in software packaging across Enterprise Routing platforms. The following commands were introduced by this feature: **license solution level**, **show license detail**