

Licensing

Feature Overview and Configuration Guide

Introduction

This guide describes AlliedWare Plus™ product licensing and how to configure it. Licensing is used to control access to software features and software versions.

The following license types are described:

- Permanent licenses to enable **features**
- Permanent licenses to enable software **release versions**
- Subscription licenses to allow access to **services**, including AMF, OpenFlow and Unified Threat Management services

Products and software version that apply to this guide

This guide applies to all AlliedWare Plus™ products, running version **5.4.4** or later.

Version 5.4.6-2.1 simplified subscription licensing by introducing the command **license update online**.

Feature support may change in later software versions. For the latest information, see the following documents:

- The [product's Datasheet](#)
- The [AlliedWare Plus Datasheet](#)
- The product's [Command Reference](#)

These documents are available from the above links on our website at alliedtelesis.com.

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Licensing Terminology

See the table below for descriptions of licensing terms:

Table 1: Licensing Terminology and descriptions

TERM	DESCRIPTION
Activation	<p>This is the process of using a command to enter a valid license into your switch. Once the license has been entered, the software version or features of the license are fully valid and usable on your switch.</p> <p>Activating a software version entitles you to technical support, and means your switch will not output console or log messages requesting activation.</p>
Feature	<p>A particular software capability function or protocol that is enabled with a valid software license. Examples of capabilities that are licensable features are OSPF, L3 Multicast routing and VRRP. A software feature license key enables one or more features on a device. Allied Telesis provides feature license keys that enable a specified bundle of features. Activating the license will simultaneously enable that full bundle of features but will ignore features that are not included in the bundle.</p>
License	<p>A particular software object that enables features or releases on a device. A license is a combination of an identifying license label and a license key.</p>
License Certificate (SwitchBlade x908 and SwitchBlade x8100 only)	<p>A plain text file containing a table of license keys in CSV format. Each line of the file contains a MAC address, a license name, and a license key.</p>
License key	<p>An encrypted string of characters associated with a particular license that when activated on a device enables a specific feature or release on your switch. License keys are long encrypted strings from which the device can extract information such as issue date, expiration interval, release identifier, MAC address, and customer name.</p>
License Label	<p>A descriptive name associated with a license. The license generation process initially assigns a default label for each license. However, this label is user editable.</p>
Software release version	<p>A version of the software that runs on a device. A release is typically identified by a version number that comprises the following components: product number, major release number, minor release number, or maintenance release number. For example, 5.4.6 is a major release, 5.4.6-0.3 is the third maintenance release of the 5.4.6 major release, and 5.4.6-1.2 is the second maintenance release of the first minor release of 5.4.6. The software release file will have the suffix .rel at the end of the filename. The product number is prefixed before the software version number.</p> <p>Example: SBx908-5.4.6-0.1.rel is the major 5.4.6 software release file for SBx908 series switches. A series of maintenance and minor releases will typically be released during the lifetime of a given major software version. These software releases can include:</p> <ul style="list-style-type: none"> ■ Maintenance releases, numbered in the format SBx908-5.4.6-0.x.rel. Each time a new maintenance release in the series is created, the number for the release is formed by incrementing the last digit. ■ Minor version files, numbered by incrementing the first digit after the dash. For example: <ul style="list-style-type: none"> ■ SBx908-5.4.6-1.1.rel is the first minor release that contains new functionality after the initial 5.4.6 release, and ■ SBx908-5.4.6-1.2.rel is the second maintenance release of the first minor release, and ■ SBx908-5.4.6-2.1.rel is the second minor release.

Licensing Overview

Permanent licenses for features

These licenses fall into two categories: base licenses and further feature licenses.

■ **Base licenses**

You can view the base license features by running the **show license** command. Base licenses are not user configurable. A sample output is shown below.

Output 1: Example from **show license**

```

Index                               :0
License name                         :Base License
Customer name                        :ABC Consulting
Quantity of licenses                 :1
Type of license                       :Full
License issue date                   :15-Jan-2015
License expiry date                   :N/A
Features include                      :VRRP OSPF-64 RADIUS-100 Virtual-MAC

```

■ **Further feature licenses**

Purchasing feature license keys provides you with access to additional software features that are not included with a base license. These enable advanced features such as Layer 3 routing.

Permanent licenses for software release versions

For some products, a release license is required in order to upgrade to a new major software version. These licenses are quite separate to those that enable specific features. A release license is simply an additional certificate that is linked to a licensed device.

Subscription licenses

Subscription licenses enable you to subscribe to services, including AMF, OpenFlow and Unified Threat Management.

Subscription licenses maintain the feature's continued operation, and also enable you to access definition updates for Unified Threat Management services on AR-series UTM firewalls. For example, the web control and antivirus features depend on third parties regularly supplying updated signature files that are used to block new URLs or filter out new viruses.

Permanent licenses for features

This section describes AlliedWare Plus feature licensing and its configuration. Feature licenses enable support of advanced features on AlliedWare Plus devices.

In versions 5.4.6-x.x, licensing changed for AMF masters and controllers (version 5.4.6-1.x) and OpenFlow (version 5.4.6-2.x). These changed from being offered as permanent feature licenses to subscription-based licenses (see "[Subscription Licenses](#)" on page 17).

Applying a new feature license on a stand-alone switch

Feature licenses are applied with the **license** command and displayed with the **show license** and **show license brief** commands.

Follow these steps to apply feature licenses:

1. "Purchase a feature license for your switch"
2. "Apply a feature license on your switch"
3. "Confirm the feature license application on your switch"

Step 1. Purchase a feature license for your switch

Purchase a feature license from your authorized distributor or reseller. See the AlliedWare Plus datasheet for a list of licenses available by device.

Step 2. Apply a feature license on your switch

Use the license command to apply to a feature license to your switch.

Note: If the feature license contains a license for a protocol, then that protocol will restart. This action may result in a brief loss of network traffic. We recommend only installing licenses during scheduled maintenance on devices operating in a live environment. After adding a feature license, the feature may need to restart. The console displays a warning message before the feature restarts.

Step 3. Confirm the feature license application on your switch

You can display which feature licenses are applied by running either the **show license** or **show license brief** command.

Output 2: Example from **show license brief**

```
awplus#show license brief
Board region: Global
Software Release Licenses
-----
1 Base License          1 Base License
   Full                  N/A
Current enabled features for displayed licenses:
EPSR-MASTER, IPv6Basic, LAG-FULL, MLDSnoop, OSPF-64, RADIUS-100, RIP,
VRRP
```

Feature licensing for VCStack™ and VCStack Plus™

It is important for the integrity of the stack that all stack members have the same feature licenses. However, the stack will still form even if the members of the stack do not have the same feature licenses installed. In this situation, the features available to stack members is defined by those licensed on the Master.

However, if the licenses installed on the stack members are not identical, then a stack Master failover can cause features to stop operating. If a stack member that lacks a particular license becomes the new stack Master, then that particular feature will not operate on the stack.

Note: If you try to stack switches together that are from different OEM territories (for example, a Japanese switch and a European switch), the switches may have different base feature licenses. In this situation, a stack may form, but a warning message may be generated to inform you that the feature licenses do not match on all stack members. Contact Allied Telesis support to resolve this situation.

For step-by-step instructions on configuring licensing on stacked switches, see the section "[Configuring release licensing on VCStack and VCStack Plus](#)" on page 16.

Configuring feature licensing on VCStack and VCStack Plus

This section describes the licensing configuration for stacked switches. As explained above, it is important for the integrity of the stack that all stack members have the same feature licenses, although a stack can still form if its members have differing feature licenses.

If you introduce a new stack member that lacks a certain feature license that is possessed by the other stack members, a warning message will be generated to inform you that the stack may not operate to its full potential.

The key point is that to maintain consistent behavior across the stack, all member switches must have the same feature licenses enabled.

See the [Overview of Virtual Chassis Stacking \(VCStack\)](#) guide for a stacking overview and more information on the stack formation process. This is available on alliedtelesis.com.

Adding a new switch to a stack

Prior to the 5.4.4 software release, stacks could form only if all members of the stack had the same features licensed. In practice, when a new switch was to be added to an existing stack, it first had to have feature licenses applied to it before it could be connected to the stack.

In version 5.4.4 that restriction was lifted, so that there is no requirement for a newly added stack member to have exactly the same set of feature licenses installed as the existing members.

If there is a feature licensing mismatch, a warning message will inform you that the stack may not operate to its full potential. In this case you should follow the instructions in [“Adding a new feature license to a stack”](#) below, to correct the problem.

Note: If there is a release license mismatch, wait until the new switch boots, then login and update the license by following the process described in [“Applying a Release License \(SBx8100 only\)”](#) on page 14 or [“Applying a release license \(SBx908 only\)”](#) on page 12. If there is a release license mismatch, the new switch will successfully join the stack, but it will operate in the unsupported unlicensed mode.

Adding a new feature license to a stack

Follow this section to add a new feature license to all members of a VCStack, including any newly installed unlicensed members. If you need to license a single stack member then follow the steps in [“Adding a new switch to a stack”](#) on page 6.

Perform the following tasks to add a new feature license to a VCStack:

1. [“Apply a feature license to all members of a VCStack”](#)
2. [“Reboot the stack \(optional\)”](#) on page 8

Step 1: Apply a feature license to all members of a VCStack

Use the **license** command to apply the required feature license to the VCStack, as shown in the following output example. The **license** command will add a license to all stack members and the **no license** command will remove a license from all stack members.

Output 3: Example from **license** to add a feature license to a stack

```
awplus#license IPv6
Qd0NvZJ8DutyLAYbsM8pCpY1d8Ho9mzygweBp+paBqVu7By1bTZ+Jipo57
A restart of affected modules may be required.
Would you like to continue? (y/n): y

Stack member 1 installed 1 license

1 license installed.
```

Prior to version 5.4.4, you needed to apply feature licenses to each stack member using the **license member** command. Since version 5.4.4, the **license** command applies feature licenses to all stack members. You do not need to use the **remote-login** command to log into stack members from a Master to individually apply the license to each stack member.

If a stack member already has the new license installed, the **license** command will be ignored for that stack member and no action will take place. This means a license will only be applied to devices that need it. This allows you to easily bring an individual stack member into sync with the other members of the stack.

Step 2: Reboot the stack (optional)

You may choose to reboot the stack after installing a new license, by using either the **reboot** command or the **reload** command.

Note: Rebooting is optional and it is good practice, as it enables you to check the stack's operation. However, if you choose not to reboot, the newly licensed features will still run on the stack.

Output 4: Example from **reboot** showing a valid license console message

```
reboot system? (y/n): y
URGENT: broadcast message:
System going down IMMEDIATELY!
    ... Rebooting at user request ...
Flushing file system buffers...
Unmounting any remaining filesystems...
Restarting system.
Bootloader 2.0.13 loaded
Press <Ctrl+B> for the Boot Menu
Verifying release... OK
Booting...
Starting base/first...           [ OK ]
Mounting virtual filesystems...  [ OK ]

      /\ \_____ / /_____ \
     /  \ \_  / / |_____ |
    /    \ | / / |_____ |
   /      \ \ / / |_____ |
  /_____/ \ \ \ / /_____ /

Received event network.initialized
Received event standalone
10:17:31 awplus IMI[1718]: SFL: The current software is licensed. Exiting unlicensed
mode.
12:11:23 awplus-2 VCS[1865]: Member 1 (eccd.6d48.e560) has joined the stack
12:11:24 awplus-2 VCS[1865]: Member 3 (eccd.6d5e.2614) has joined the stack
12:11:26 awplus-2 VCS[1865]: Member 1 (eccd.6d48.e560) has become the Active Master

Received event network.activated

Loading default configuration
.
done!
Received event network.configured
awplus login: manager
Password: awplus>
```

Permanent licenses for software release versions (SwitchBlade x908 and SwitchBlade x8100 only)

This section describes AlliedWare Plus release licensing on the SBx908 and SBx8100.

The SBx908 and SBx8100 switches require their operating system software to be licensed. You cannot upgrade these switches to a new major version unless they have a release license installed for that software version.

Release licenses are linked to MAC addresses, so each SwitchBlade device has a different release license.

To make it easier for you to apply licenses to devices, Allied Telesis supplies all your licenses in the form of a single file called a license certificate. This file contains multiple release licenses listed in Comma Separated Value (CSV) format. You can load this file onto multiple devices. The device's software searches the file to find any license(s) that match MAC addresses existing on the device, and then applies the matching license. For more information about license certificate files, see ["License certificate files" on page 10](#).

Unlicensed operation

The switch will operate in an unlicensed mode if:

- it does not have a release license key for the currently running software release file, or
- you install a new software release file before installing an appropriate release license.

Unlicensed restrictions

If the device is in unlicensed mode, operation is limited in the following ways. Console and log messages are produced every hour to indicate that the device is unlicensed. The **boot system** and **boot system backup** commands are rejected until a release license is applied. This restriction prevents you from setting the device to boot with unlicensed software. Licensed mode operation enables unrestricted usage.

Devices without a valid release license will display the following console message at startup and login:

Output 5: Example displaying a release license error message

```
11:04:56 awplus IMI[1696]: SFL: The current software is not licensed.
awplus login: manager
Password:
ERROR: No valid release license found for current software version. This
violates the End User License Agreement (EULA) for AlliedWare Plus.
Please contact Allied Telesis to obtain a valid release license and
ensure continued support.
```

Software versions

Each major software release file is specified by a three-digit, period-separated reference number, for example, 5.4.4A or 5.4.4. The release license key enables you to use associated minor and maintenance releases, and earlier releases.

For example, to use a 5.4.4-0.3 maintenance release or a 5.4.4-1.4 minor release you only need a 5.4.4 major release license key. A 5.4.5 release license key will allow you to use a 5.4.5 software release file, and would also allow you to use a 5.4.4 software release file.

License certificate files

A license certificate is a file that is used to install release license keys in a convenient manner and can contain release license keys for multiple devices.

The certificate file is accessed by the device using the **license certificate** command. This instructs the device to search through the file and apply a license that matches its MAC address.

License certificates are a convenient way to apply release licenses to multiple devices. The same certificate file can be loaded onto multiple different devices, and each device will find its license within the file. This is more convenient than having a set of device-specific files and having to carefully load the right file onto the right device.

You can store the certificate file on a central TFTP server and issue each device in the network with an identical **license certificate** command.

Output 6: Example of the license certificate file contents

```
# Release licenses for ABC Consulting
0000-5e00-5318, 544-SBx908,
f7AFZiAA4p9OROHNBjghPyxwThvaUYNdGn8RpCUaVbfk22nw==
```

A license certificate file is an ASCII-encoded text file in CSV format. It consists of a number of lines of text with each line terminated by an end of line character. The file may also contain comment lines preceded by a hash (#) character. Each non-comment line consists of three, comma-separated fields, as described in the following table.

Table 2: Contents of a license certificate file

FIELD	DESCRIPTION
MAC address	A switch's MAC address, encoded as a set of 12 hexadecimal characters (numerals 0 to 9 and characters A to F) with a dash (-) separating every four hexadecimal characters. Example: 0000-5e00-5318.
Name	A license label that describes the contents of the license. This field is a string of letters and numbers up to 15 alphanumeric characters in length, typically of the form: <i>xyz-<modelname></i> where <ul style="list-style-type: none"> ■ <i>xyz</i> are the three numbers in the release version name (e.g. for release 5.4.4, the <i>xyz</i> value is 544). ■ <i><modelname></i> is an abbreviation of the part name for the target device. Example: If the target device is a Switchblade x908, the name is 544-SBx908.
License key	It can contain the following symbolic characters: underscore (_) characters, plus (+) signs, forward slash key (/) characters, and equal (=) signs. You cannot change the license key. The license key is generated by an algorithm implemented in the Allied Telesis license generation system. Example: f7AFZiAA4p9OROHNBjghPyxwThvaUYNdgn8RpCUaVbFk22nw==

Release licensing for VCStack and VCStack Plus

In order for a stack to form, each switch within the stack and each module within a chassis, needs to be running the same version of AlliedWare Plus software. In the case of SBx908 and SBx8100 switches, this has implications for the presence of release licenses for the software version you are running.

The points to note regarding missing release licenses are:

- If a stack member within a switch, or a module within a stack member chassis, lacks a release license for the software version it is running, the switch or module is deemed to be operating in unlicensed mode.
- The stack will form successfully, even if one or both of the switches in the stack is operating in unlicensed mode. However, unlicensed mode should be considered a temporary operating mode, and we strongly advise that you upgrade your software version as soon as possible.

Applying a release license (SBx908 only)

Release licenses are applied with the **license certificate** command, then validated with the **show license** or **show license brief** commands. Follow these steps:

1. “Record the MAC address for the switch”
2. “Obtain a release license for the switch”
3. “Apply the release license on the switch”
4. “Confirm release license application”

Step 1: Record the MAC address for the switch

A release license is tied to the MAC address of the switch.

Switches may have several MAC addresses. Use the **show system mac license** command to show the switch MAC address for release licensing:

Output 7: Example from show system mac license

```
awplus# show system mac license
MAC address for licensing:
0000.5e00.5310
```

Step 2: Obtain a release license for the switch

Contact your authorized Allied Telesis support center to obtain a release license for the MAC address you displayed in step 1.

Step 3: Apply the release license on the switch

Use the **license certificate** command to apply a release license to the switch.

Note: The license certificate file can be stored on internal Flash memory, or an external SD card, or on a server accessible by the TFTP, SCP or HTTP protocols.

Entering a valid release license changes the console message displayed about licensing:

Output 8: Example from **license certificate**

```

11:04:56 awplus IMI[1696]: SFL: The current software is not licensed.
awplus#license certificate demo1.csv
A restart of affected modules may be required.
Would you like to continue? (y/n): y
11:58:14 awplus IMI[1696]: SFL: The current software is licensed.
Exiting unlicensed mode.

Stack member 1 installed 1 license

1 license installed.

```

Step 4: Confirm release license application

On a stand-alone switch, use the commands **show license** or **show license brief** to confirm release license application.

On a stacked switch, use the command **show license member** or **show license brief member** to confirm release license application.

The **show license** command displays the contents of the base feature license and any other feature and release licenses installed on the switch.

Output 9: Example from **show license**

```

awplus# show license
OEM Territory : ATI USA
Software Licenses
-----
Index                : 1
License name         : Base License
Customer name        : ABC Consulting
Quantity of licenses : 1
Type of license      : Full
License issue date   : 20-Mar-2015
License expiry date  : N/A
Features included    : EPSR-MASTER, IPv6Basic, MLDSnoop,
OSPF-64,RADIUS-100, RIP, VRRP
Index                : 2
License name         : 5.4.5-r1
Customer name        : ABC Consulting
Quantity of licenses : -
Type of license      : Full
License issue date   : 20-Mar-2015
License expiry date  : N/A
Release              : 5.4.5

```

Applying a Release License (SBx8100 only)

New switches are supplied with the software and release license pre-loaded. However, if you wish to upgrade your switch's software, you can obtain and load the current release software license. Release licenses are applied with the **license certificate** command, then validated with the **show license** or **show license brief** command. Follow these steps:

1. "Record the MAC addresses of the Control cards"
2. "Obtain the release license for the Control cards"
3. "Apply the release license on the Control cards"
4. "Confirm release license application" on page 15

If your Control card is in a stacked chassis, you do not need to perform these steps on each chassis in the stack, only on the stack Master.

If your license certificate contains release licenses for each Control card present in a stacked chassis, entering the **license certificate** command on the stack Master will automatically apply the release licenses to all the Control cards within the stack.

Step 1: Record the MAC addresses of the Control cards

The release licenses are tied to each Control card's MAC address in a chassis.

A chassis and its modules may have their own MAC addresses. Use the **show system mac license** command to see the Control card MAC addresses to use for release licensing. Note that on the SBx8100 the chassis MAC address is not used for release licensing.

Output 10: Example from show system mac license

```
awplus#show system mac license
MAC address for licensing:

Card          MAC Address
-----
1.5           0000.5e00.5310
1.6           0000.5e00.5317
Chassis MAC Address 0000.5e00.5325
```

Step 2: Obtain the release license for the Control cards

Contact your authorized Allied Telesis support center to obtain a release license for the MAC addresses you displayed in step 1.

Step 3: Apply the release license on the Control cards

Use the **license certificate** command to apply the release license to each Control card installed in your chassis or stack.

Note: The license certificate file can be stored on internal Flash memory, a USB device or on a server accessible by the TFTP, SCP or HTTP protocols.

Installing a valid release license changes the console licensing message:

Output 11: Example from license certificate

```
11:04:56 awplus IMI[1696]: SFL: The current software is not licensed.
awplus# license certificate demol.csv
A restart of affected modules may be required.
Would you like to continue? (y/n): y
11:58:14 awplus IMI[1696]: SFL: The current software is licensed.
Exiting unlicensed mode.

Stack member 1 installed 1 license

1 license installed.
```

Step 4: Confirm release license application

On a stand-alone chassis, use the **show license** or **show license brief** command to confirm release license application.

On a stacked chassis, use the command **show license member** or **show license brief member** to confirm release license application.

The **show license** command displays the base feature license and any other feature and release licenses installed on AlliedWare Plus chassis:

Output 12: Example from show license

```
awplus# show license
OEM Territory : ATI USA
Software Licenses
-----
Index                : 1
License name         : Base License
Customer name        : ABC Consulting
Quantity of licenses : 1
Type of license      : Full
License issue date   : 20-Mar-2015
License expiry date  : N/A
Features included    : IPv6Basic, LAG-FULL, MLDSnoop,RADIUS-
100, Virtual-MAC, VRRP
Index                : 2
License name         : 5.4.5-r1
Customer name        : ABC Consulting
Quantity of licenses : -
Type of license      : Full
License issue date   : 20-Mar-2015
License expiry date  : N/A
Release              : 5.4.5
```

Configuring release licensing on VCStack and VCStack Plus

This section describes what to do after adding a new switch to a stack, or if you are upgrading switches in a stack.

First confirm whether a new release license is needed on the stack, by using the **show license member brief all** command to display release licenses.

If the stack does not have an appropriate release license, follow the procedure in ["Applying a release license \(SBx908 only\)" on page 12](#) or ["Applying a Release License \(SBx8100 only\)" on page 14](#). The same procedure applies for both adding and upgrading release licenses on stand-alone and stacked switches.

The **license certificate** command applies release licenses in the certificate file to any devices in the stack that match the MAC addresses shown in the license certificate file. Therefore, if the license certificate file contains all the required release licenses for all stack members, you can run the **license certificate** command once on the stack Master to apply release licenses to all stack members automatically.

A **reboot** or **reload** is unnecessary after updating the release license on an existing stack.

Subscription Licenses

This section describes subscription licenses. These licenses include:

- Unified Threat Management security feature subscriptions on AlliedWare Plus UTM Firewalls
- AMF master and controller subscriptions
- OpenFlow licenses

Subscription licenses are managed through the [Allied Telesis Download Center](#).

Subscription licenses maintain the feature's continued operation and also enable you to access definition updates for Unified Threat Management services on AR-series UTM firewalls. For example, the web control and antivirus features depend on third parties regularly supplying updated signature files that are used to block new URLs or filter out new viruses.

Capability Response File

Subscription licenses are contained in a Capability Response File (CRF). Each CRF is tied to a device serial number and contains all the information about the subscription licenses that have been allocated to the device. A single CRF contains all of the subscription licenses for a device. Each CRF is created by the Allied Telesis Download Center as part of the licensing process and can be loaded onto the device and processed to activate a subscribed service. You can obtain the CRFs from the [Allied Telesis Download Center](#).

Automatically obtaining and activating licenses - for software versions 5.4.6-2.x and later

Software version 5.4.6-2.x introduced simplified installation of licenses. Simply run the following command:

```
awplus#license update online
```

When the command **license update online** is entered, the device will

1. Connect to the Download Center
2. Check if new or changed licenses are available for the device, keyed to the device's serial number
3. For each such license it finds, download and install the license.

Note that AlliedWare Plus devices do not automatically connect to the Download Center and check whether licenses are available. They only check when you run the **license update online** command.

On VCStacks, running **license update online** updates all stack members. Each stack member individually checks for licenses on the Download Center and installs any that are found.

On SBx8100 systems, running **license update online** updates all CFCs that are present, including all CFCs on both chassis in a stack. Each CFC individually checks for licenses on the Download Center and installs any that are found.

Firewall rule

AR-series firewalls block all traffic by default, so you need to configure a firewall rule to allow the licensing connection attempt to pass through the firewall. The following figure shows a recommended example configuration, when the WAN interface to the Internet is configured as a ppp0 interface:

```
zone public
network wan
  ip subnet 0.0.0.0/0 interface ppp0
  host ppp0
  ip address dynamic interface ppp0

firewall
rule 10 permit dns from public.wan.ppp0 to public.wan
rule 20 permit https from public.wan.ppp0 to public.wan
protect
```

This rule permits DNS and HTTPS packets to any destination IP address, if:

- the source IP address of the packets is the IP address of the ppp0 interface, and
- the packets are egressing the firewall through interface ppp0.

DNS packets are permitted so that the device can look up the address of the Download Center. HTTPS packets are permitted so the secure communication session with the Download Center can proceed.

The rule uses a subnet of 0.0.0.0/0 to match on any destination IP address.

The “from” part of the rule uses “public.wan.ppp0” because the firewall itself is originating the connection to the Download Center, rather than allowing traffic to flow through it, as is the case for most firewall rules. Hence, the traffic that is involved in the connection to the Download Center originates from the IP address of the PPP interface.

Verifying the update

The update process normally takes approximately 5 seconds.

If the console does not respond for 10 or more seconds after typing the command, a network, routing or firewall configuration error is probably preventing the connection from establishing. If this happens, you can abort the command by pressing Ctrl-C, or wait for the command to time out after 30 seconds.

If the connection to the Download Centers fails and times out, an error message will be generated on the CLI to indicate the problem. If you abort the command, no error message is displayed.

If the update is successful, the device will produce log messages to say which features have had their licensing state updated (activated, deactivated, or expiration/count changed). If the command completes successfully but there are no licenses available for the device, or no change in the licenses already on the device, no log messages will be produced.

You can also use the **show license external** command to confirm which licenses are active on the device after the update has been applied.

Manually obtaining and activating licenses

If the device to be licensed does not have Internet access, or is running version 5.4.6-1.x and earlier, you cannot use automatic licensing installation as described in the previous section. Instead, you need to download the CRF file and activate it manually.

Prior to undertaking the process described in this section, you must have first purchased one or more service subscriptions. Contact your authorized Allied Telesis distributor or reseller for information about how to purchase subscriptions.

Once your CRF purchase has been successfully processed, the CRF file containing the license(s) for the service(s) you have subscribed to will be available for download from the Allied Telesis Download Center.

The following steps show how to configure subscription licensing manually:

1. ["Download your CRF"](#)
2. ["Activate your CRF" on page 21](#)
3. ["Verify your CRF activation" on page 22](#)

Step 1: Download your CRF

You can download a CRF from the [Allied Telesis Download center](#) by logging into your account. To obtain an account, contact your customer support representative.

Once you have reached the **Download Central Homepage**, you can locate your device type by clicking **Search Devices** from the **Devices** menu on the left as shown in [Figure 1](#) below. You can select your specific device by clicking the serial number from the **Serial Number** list as shown in [Figure 1](#) below.

Figure 1: The Search Devices page

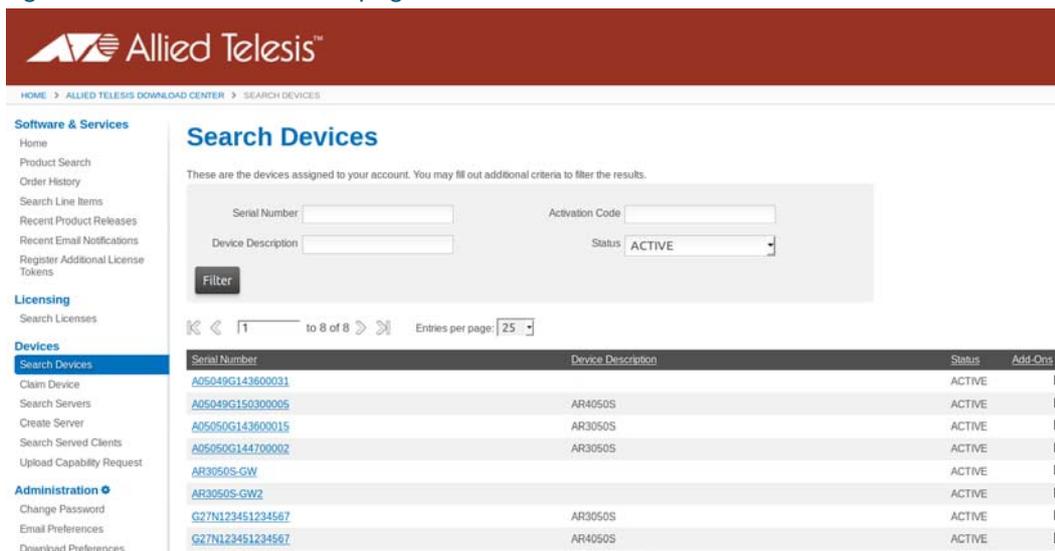
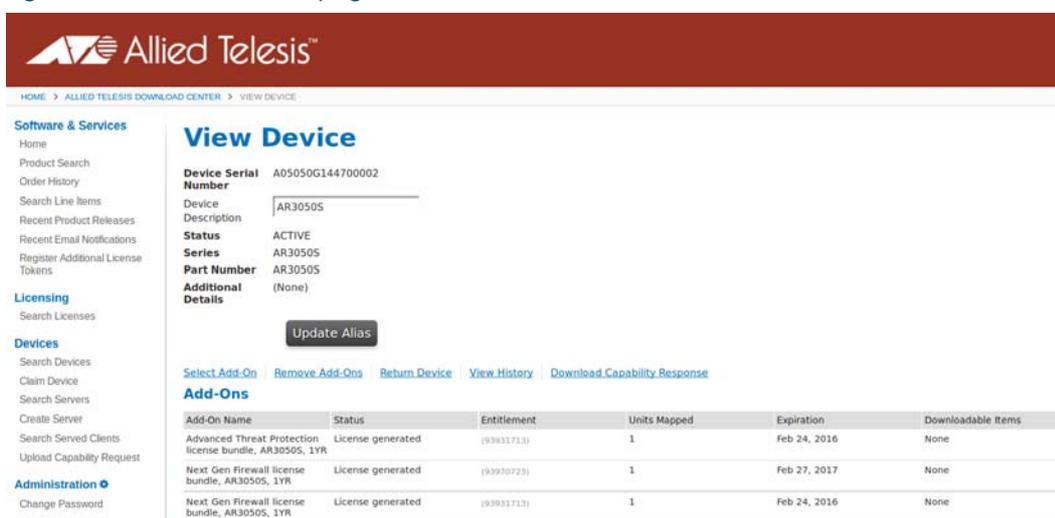


Figure 2: The View Device page



From the **View Device** page, you can download a CRF file by clicking the **Download Capability Response** link. You should see a pop-up window as shown in [Figure 3, “Opening a CRF,”](#) on page 21 which allows you to either open or download a CRF file. CRFs are saved as .bin files that can be renamed for convenience. If you cannot see the pop-up window, you may need to check your web browser’s settings to ensure the pop-up window is not blocked by the web browser.

Figure 3: Opening a CRF

The screenshot shows the Allied Telesis website interface. The main content area is titled 'View Device' and displays the following information for device A05050G144700002:

- Device Serial Number:** A05050G144700002
- Device Description:** AR3050S
- Status:** ACTIVE
- Series:** AR3050S
- Part Number:** AR3050S
- Additional Details:** (None)

Below the device details, there is an 'Update Alias' button and a row of navigation links: 'Select Add-On', 'Remove Add-Ons', 'Return Device', 'View History', and 'Download Capability Response'. The 'Download Capability Response' link is highlighted. Below these links is an 'Add-Ons' table:

Add-On Name	Status	Entitlement	Units Mapped
Advanced Threat Protection license bundle, AR3050S, 1YR	License generated	(93931713)	1
Next Gen Firewall license bundle, AR3050S, 1YR	License generated	(93970723)	1
Next Gen Firewall license bundle, AR3050S, 1YR	License generated	(93931713)	1

An overlay window from Firefox is open, titled 'Opening A05050G144700002.bin'. It displays the file name 'A05050G144700002.bin', its size '3.3 KB', and the source URL 'https://alliedtelesisua.t.flexnetoperations.com'. The window asks 'What should Firefox do with this file?' and provides two options: 'Open with Xarchiver (default)' (selected) and 'Save File'. There are 'Cancel' and 'OK' buttons at the bottom right of the dialog.

Step 2: Activate your CRF

Now you will need to activate your CRF. After you have downloaded your CRF, you can transfer it onto the device's Flash storage by any preferred method. For example, you can use the **copy** command to copy the CRF file from a USB device to your Flash storage.

To list the non-hidden files in the root of the USB device, use the command below:

```
awplus#dir usb
```

Output 13: Example from **dir usb**

```
awplus#dir usb
2386 -rwx Apr 24 2015 10:11:46 A05050G144700002.bin
```

To copy your CRF file from a USB device into your Flash storage, use the command below:

```
awplus#copy usb flash
```

Output 14: Example from **copy usb flash**

```
awplus#copy usb flash
Enter source path with file name[:A05050G144700002.bin
Copying...
Successful operation
```

Alternatively, you can copy your CRF file from a TFTP server into your Flash storage. For example, you can copy a CRF file from the TFTP server with IP address 192.168.1.254 into the Flash storage by using the following command:

```
awplus#copy tftp flash
```

Output 15: Example from `copy tftp flash`

```
awplus#copy tftp flash
Enter source host name []:192.168.1.254
Enter source path with file name[]:A05050G144700002.bin
Enter destination file name[A05050G144700002.bin]:
Copying...
Successful operation
```

To display the URL of the CRF file in the Flash storage, use the command below:

```
awplus#dir *.bin
```

Output 16: Example from `dir *.bin`

```
awplus#dir A05050G144700002.bin
2386 -rwx Apr 24 2015 10:20:53 flash:/A05050G144700002.bin
```

Once your CRF is present in the device's local storage, you can activate it by using the following command.

```
awplus#license update <CRF-url>
```

Output 17: Example from `license update`

```
awplus#license update A05050G144700002.bin
```

For this command to successfully activate the device, your CRF must be valid and be tied to the serial number of the device.

Note: No messages will print if your CRF is imported successfully.

Step 3: Verify your CRF activation

You can verify the license by using the following command.

```
awplus#show license external
```

Note: The time shown in the example is local time, which is automatically converted from UTC time. Also note that the **show license external** command only shows licenses that are currently activated.

Output 18: Example from `show license external`

```
awplus#show license external
Licensed features:

Application Control (Procera)
  Start date           : 24-Feb-2015 12:00AM
  Expiry date          : 24-Feb-2016 11:59PM
Web Control (Digital Arts)
  Start date           : 24-Feb-2015 12:00AM
  Expiry date          : 24-Feb-2016 11:59PM
```

Log messages for subscription licensing

The following types of log message types can be printed for subscription licensing:

- warnings that a license is due to expire soon.
- indications that a license has expired.
- indications that a (future-dated) license has now become active.

Licenses start at 00:00:00 UTC on the start date and expire at 23:59:59 UTC on the expiry date. License checks occur on boot and at 23:59:59 UTC daily.

You may see these log messages after the initialization processes when you boot up the device. You can also set up appropriate syslog monitoring to look for these messages. For more information about log messages, see the [Logging Feature Overview and Configuration Guide](#) available on alliedtelesis.com.

Log message for license expiry warnings

License expiry times are displayed in the local time that is configured on each switch. Unless a license is renewed, its licensed function will cease to operate after the license expiry time.

Output 19: Example log message when a subscription license is due to expire

```
licensing[1204]: License 'IP Reputation (Proofpoint)' is due to expire
in 7 days at Wed Feb 24 20:59:59 2016
```

Warning messages will be printed in the log 28 days, 21 days, 14 days, 7 days, and 1 day prior to a license expiring. The Allied Telesis Download Center will also send you an email reminder prior to your license expiring.

Log message for license expiry notifications

Output 20: Example log message when a subscription license has expired

```
licensing[1212]: License IP Reputation (Proofpoint) expired. All features associated with this license have been deactivated
```

Your subscription license has now expired and its features are no longer operational. Contact your authorized Allied Telesis distributor or reseller for further licensing.

Log message for license activation

Output 21: Example log message when a subscription license has been successfully activated

```
licensing[1208]: License IP Reputation (Proofpoint) activated. All features associated with this license have been started.
```

Your license has reached its activation date and its features are now configurable.