

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**.
- Version 5.4.8-1.1 subscription licensing for UTM Offload available on the AR4050S

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: Obtaining and applying a new feature license

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 23).

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:

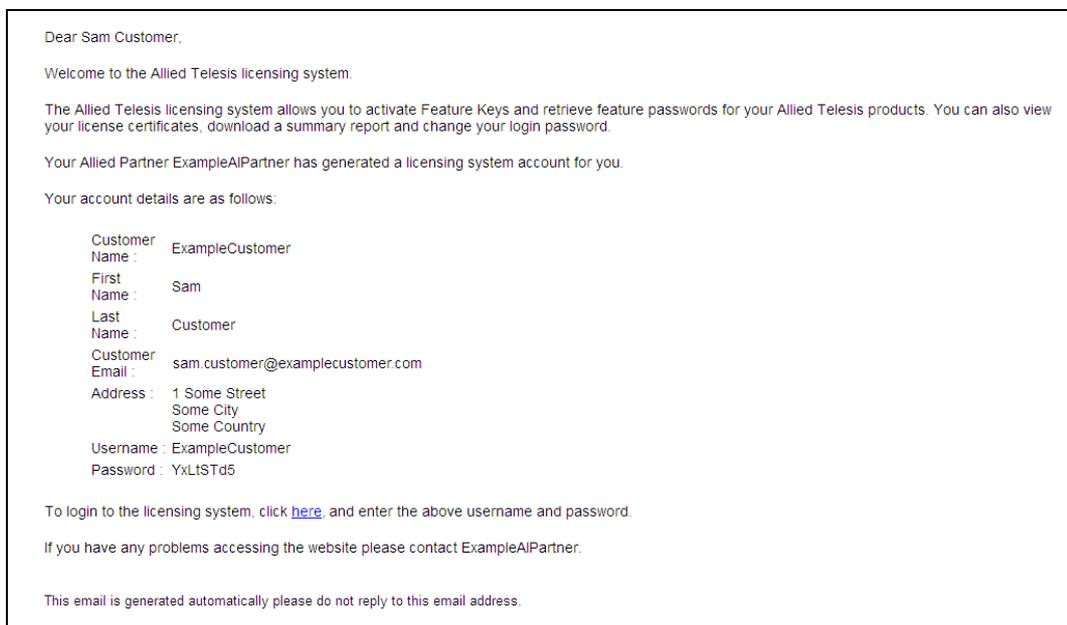
1. "[Purchase a feature license for your switch](#)"
2. "[Activate the feature key](#)"
3. "[Apply the feature license on your switch](#)"
4. "[Confirm the feature license application on your switch](#)"

Purchase a feature license for your switch

To request a feature key, contact your Allied Partner (your local Allied Telesis sales office, distributor, or reseller). Please provide the following information:

- the first time you request a feature key: your company, your name, and your contact details, including an email address
- the switch model or models that you want to use the feature on
- the name of the feature license that you want to use. Each feature license contains a group of related features. For available licenses, see the [switch's Datasheet](#).
- for each model, the number of switches you want to use each feature on
- whether you want a full (permanent) license or a 30-day trial license for testing purposes.

The first time you request a feature key, your Allied Partner will create an account for you in the Allied Telesis Licensing System. The system will send you an email when this happens, like the following example.



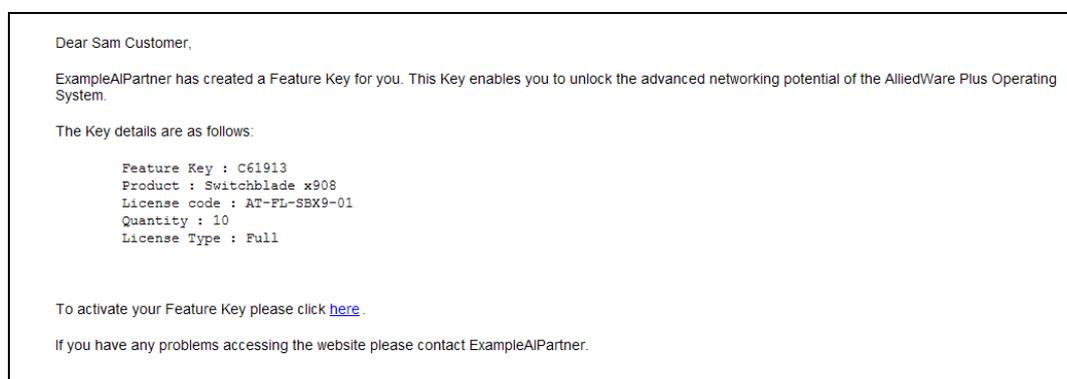
Note the username and password—you need these to log on and activate the feature key.

After creating an account, your Allied Partner will create the feature key. You will receive an email when the key has been created, as the next section describes.

Activate the feature key

Step 1: Access the URL from the email

When an Allied Partner creates a feature key for you, you receive an email like the following example.



Click on the link in the email to go to the Allied Telesis Licensing system.

Step 2: Log into the system

Log in using the username and password provided by your Allied Partner. The system opens at your Home Page, as the following figure shows.

The screenshot shows the 'Customer Home Page' for 'ExampleCustomer'. The page has a left-hand navigation menu with two main sections: 'Control Panel' and 'Feature Key'. The 'Control Panel' section includes links for Home, Contact Us, Help, Change Details, Change Password, and Logout. The 'Feature Key' section includes a link for Find Feature Key. The main content area is titled 'ExampleCustomer' and contains a paragraph explaining that the page allows users to activate new Feature Keys to retrieve the Password necessary to enable features. Below this is an 'Activate Feature Key' section with a text input field labeled 'Feature Key Number' and an 'Activate' button. The 'Previously Activated Feature Keys' section states that no keys have been activated for this account. The 'Available Reports' section includes a link for 'Customer Feature Key Summary Report - View summary of all Feature Keys assigned to this Customer Account.' The footer contains the text 'Connecting The IP World' and a list of links: 'INVESTOR RELATIONS | PARTNER PORTAL | PRIVACY POLICY | CONTACT' along with a copyright notice: '© Copyright 2007 Allied Telesis Labs Ltd. All Rights Reserved.'

Step 3: Activate the feature key

Enter the feature key number from the email into the Feature Key Number field and click on the Activate button.

The system displays a summary of the details of the feature key, like the following figure shows.

Tip:

If you lose the email, use the Find Feature Key option to find the feature key number. This option is available from the left-hand menu.

Licensing

Control Panel

- > Home
- > Contact Us
- > Help
- > Change Details
- > Change Password
- > Logout

Feature Key

- > Find Feature Key

Activate Feature Key

Customer Home | Activate Feature Key

This page gives you the opportunity to review the Feature Key details before activation. Click the Activate Feature Key button below and you will be given access to the Password needed to enable the feature on the Product itself and the License Certificate.

Feature Key Number	C61913
Customer Name	ExampleCustomer
Feature Key Status	NOT ACTIVATED
Product	Switchblade x908
License	Advanced L3 SBx908
Quantity	10
License Type	Full
Customer Email	rebecca.officer@alliedtelesis.co.nz
Comments	
End User License Agreement	<div style="border: 1px solid gray; padding: 5px;"><p>End User License Agreement</p><p>IMPORTANT: PLEASE READ THIS END USER LICENSE AGREEMENT CAREFULLY. DOWNLOADING, INSTALLING OR USING ALLIED TELESIS OR ALLIED TELESIS SUPPLIED SOFTWARE CONSTITUTES ACCEPTANCE OF THIS AGREEMENT.</p></div>

I have read and accepted the End User License Agreement

Activate Feature Key Cancel

Connecting The World

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Read the EULA, click on the checkbox to accept it, then click on the Activate Feature Key button.

This opens the Feature Key Details page, which includes the command for you to enter on your switches, like the following figure shows.

Feature Key Details
Customer Home | Feature Key Details

The Feature Key is now activated. See below for the Password required to enable the functionality on the product.

C61913

This page displays the details for the selected Feature Key.

If you have just activated the Feature Key, you can enable the feature by copying the command in the "Enabling Command" field and entering it on your device.

If you are viewing a previously-activated Key, you can retrieve the password by clicking on "View Enabling Command" in the Available Actions section.

You can also download the License Certificate as a permanent record of the Key and password.

Available Actions

- View License Certificate.
- View Enabling Command.
- Return to Customer Page.

Feature Key Number	C61913
Customer Name	ExampleCustomer
Feature Key Status	ACTIVATED
Product	Switchblade x908
License Name	Advanced L3 SBx908
Quantity	10
License Type	Full
Customer Email	rebecca.officer@alliedtelesis.co.nz
Comments	
Enabling Password	license AT-FL-SBx9-01 lgsk6aidqr2XLf0bm5u4Gay39vD42Gp3GEgk8lpfj59C/

Connecting The IP World

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Step 4: Save the license certificate (recommended)

You can save and print a copy of the license certificate for later reference. This provides a permanent record of the license key.

Click on the View License Certificate link in the Available Actions section. This downloads the certificate as a PDF file.

Step 5: Copy the enabling command

From either the Feature Key Details page or the license certificate, copy the command, which takes the form:

```
license <license-name> <password>
```

You need to enter this command on each switch that the feature key applies to, as the next section describes.

Apply the feature license on your switch

To activate the feature on the switch, enter Privileged Exec mode, then enter the command from the Feature Key Details page or the license certificate:

```
awplus#license <license-name> <password>
```

The license name can be an arbitrary alpha-numeric string. However, we recommend that you use the value from the Feature Key Details page, to make it easier to see which licenses you have installed.

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.

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
```

Display a summary of your feature keys

In the Allied Telesis Licensing System, from the Customer Home Page, you can get a report of the licenses you have bought in a specified time period—the current month by default.

To see the report, click on the Customer Feature Key Summary Report link under the Available Reports section of the Customer Home Page. The following figure shows an example of a report. You can export the report as a CSV file by clicking on the Export link underneath the report.



Customer Feature Key Summary Report

ExampleCustomer | Customer Report

Report showing summary of all Feature Keys assigned to this Customer Account.

Control Panel

- > Home
- > Contact Us
- > Help
- > Change Details
- > Change Password
- > Logout

Feature Key

- > Find Feature Key

Available Actions

- > Return to Customer Homepage.

Current Feature Keys

Feature Key Number	Quantity	License	Product	License Type	License Expiry	Purchase Date	Feature Key Creator
C61913	10	Advanced L3 SBx908	Switchblade x908	Full		28/08/2007	ExampleAIPartner

[\[Export\]](#)

Troubleshooting

If the license does not make the feature available, make sure that:

- **no extra characters were pasted in** when the key was copied to the switch's command line. For example, make sure that you did not copy a carriage return from the licensing site or the certificate PDF.

Use the following command to see the key value:

```
awplus#show license
```

- **the license applies to the appropriate switch model**, by checking the board ID.

Use the following command to see the board ID:

```
awplus#show system
```

- **the switch's time matches the time on the license**. For example, if you create a license on 20 January, but the switch's time is 19 January, then the license will only become valid a day later.

Use either of the following commands to see the switch's time:

```
awplus#show system
```

```
awplus#show clock
```

Use the following command to change the switch's time:

```
awplus#clock set <hh:mm:ss> <day> <month> <year>
```

Permanent licenses for features: Licensing on 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 22.

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 20 or [“Applying a release license \(SBx908 only\)”](#) on page 18. 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 13.

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

1. [“Purchase the license and activate the license key”](#)
2. [“Apply a feature license to all members of a VCStack”](#)
3. [“Reboot the stack \(optional\)”](#) on page 15

Step 1: Purchase the license and activate the license key

Follow the instructions in [“Purchase a feature license for your switch”](#) on page 5 and [“Activate the feature key”](#) on page 6.

Step 2: 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
Qd0NvZJ8DutyLAYbsM8pCpYld8Ho9mzygweBp+paBqVu7BylbTZ+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 3: 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 ]

      /\      /\      /\      /\      /\      /\      /\      /\      /\      /\
     /  \    /  \    /  \    /  \    /  \    /  \    /  \    /  \    /  \
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      \/            \/            \/            \/            \/            \/            \/

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 17.

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: f7AFZiAA4p9OROHNBjghPyxwThvaUYNdgn8RpCUaVbfbk22nw==

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 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 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-rl
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 21

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 18](#) or ["Applying a Release License \(SBx8100 only\)" on page 20](#). 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
- UTM Offload subscription licenses available on the AR4050S only (from 5.4.8-1.1)

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 rules

Subscription licensing originating from firewall

Most firewalls block all traffic by default, so in order for the 'license update online' command to function correctly, you may need to configure your firewall to allow outbound DNS lookups and HTTPS connections. The following figure shows a recommended example configuration for an Allied Telesis AR-Series firewall, when the WAN interface to the Internet is configured as a ppp0 interface and the subscription licensing is being performed from the firewall itself.

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

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

These rules permit 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 via 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. The traffic that is involved in the connection to the Download Center originates from the IP address of the PPP interface.

Subscription licensing through the firewall

AlliedWare Plus devices configured with features such as AMF and OpenFlow also use subscription-based licensing. These devices could be located within a private firewall zone, accessing the subscription service located in the Internet, via the AR-Series firewall.

In order to allow access to the subscription licensing services from a private zone to the Internet, firewall permit rules need to be created.

```

zone private
network lan
  ip subnet 10.1.1.0/24 interface vlan1

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

firewall
rule 30 permit https from private to public
rule 40 permit dns from private to public.wan
protect

```

These rules permit DNS and HTTPS packets to any destination IP address, to allow devices located within a private zone to access subscription-based services located on the Internet through the AR-Series firewall. If the firewall is also performing NAT, then corresponding NAT-based masquerade rules for HTTPS and DNS will also need to be configured. For more information about firewall and NAT rules, see the [Firewall and Network Address Translation \(NAT\) Feature Overview and Configuration Guide](#).

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 28
3. "Verify your CRF activation" on page 29

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.

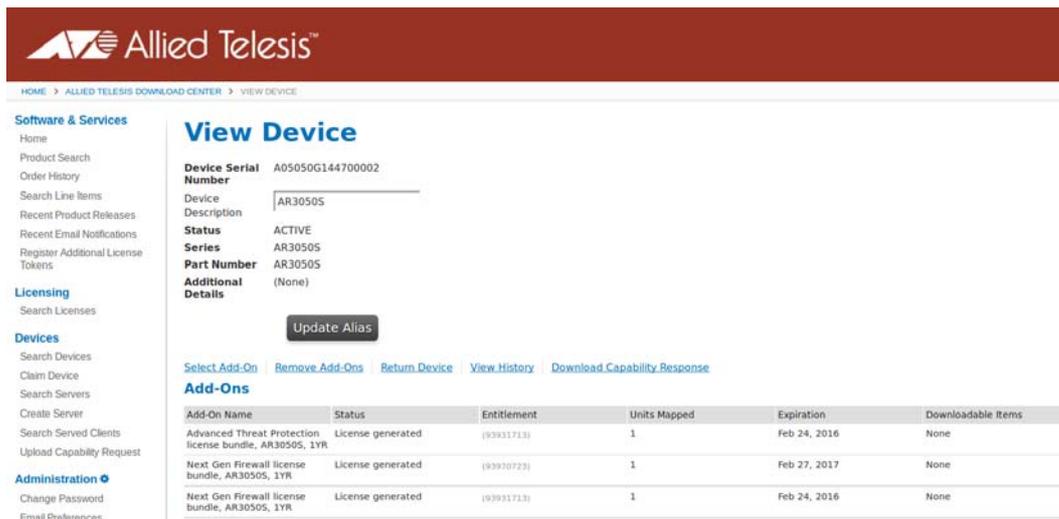
Once you have reached the **Download Central Homepage**, you can locate your device type by clicking **Search Devices** from the **Devices** menu on the left as shown in [Figure 1](#) below. You can select your specific device by clicking the serial number from the **Serial Number** list as shown in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

Figure 1: The Search Devices page

The screenshot shows the 'Search Devices' page in the Allied Telesis portal. The page has a dark red header with the Allied Telesis logo. Below the header is a navigation menu with categories like 'Software & Services', 'Licensing', and 'Devices'. The 'Search Devices' page is active, showing a search form with fields for 'Serial Number', 'Activation Code', 'Device Description', and 'Status' (set to 'ACTIVE'). A 'Filter' button is present. Below the search form is a table of results with columns for 'Serial Number', 'Device Description', 'Status', and 'Add-Ons'. The table lists 8 devices, all with a status of 'ACTIVE'.

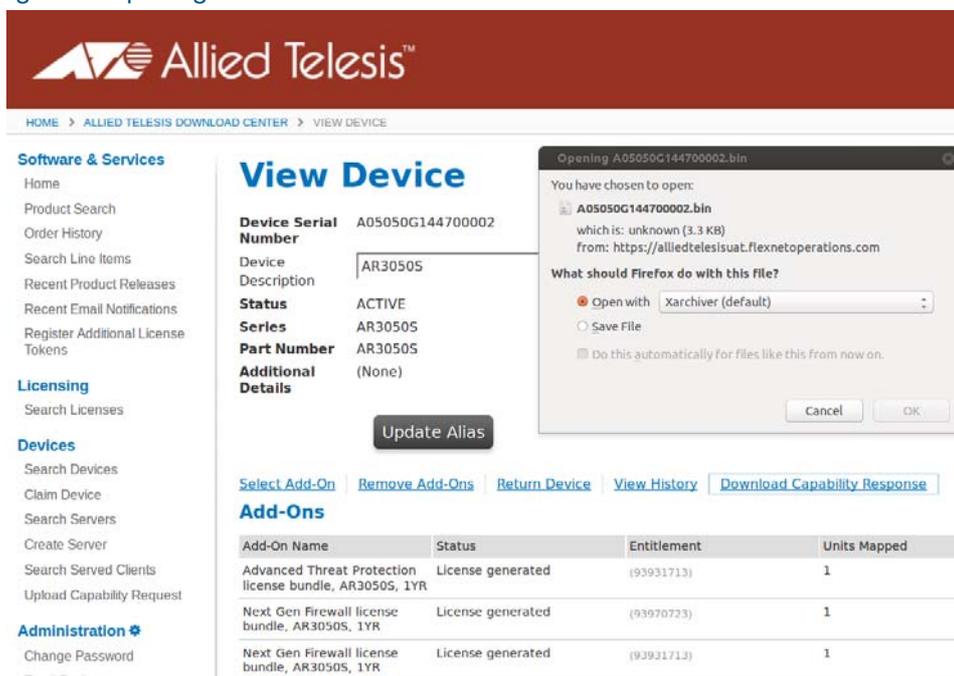
Serial Number	Device Description	Status	Add-Ons
A05049G143600031		ACTIVE	<input type="checkbox"/>
A05049G150300005	AR4050S	ACTIVE	<input type="checkbox"/>
A05050G143600015	AR3050S	ACTIVE	<input type="checkbox"/>
A05050G144700002	AR3050S	ACTIVE	<input type="checkbox"/>
AR3050S-GW		ACTIVE	<input type="checkbox"/>
AR3050S-GW2		ACTIVE	<input type="checkbox"/>
G27N123451234567	AR3050S	ACTIVE	<input type="checkbox"/>
G27N123451234567	AR4050S	ACTIVE	<input type="checkbox"/>

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 27 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



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:

```
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 need to activate it. To activate it on software version 5.4.6-2.x or later, use the following command:

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

To activate it on versions prior to 5.4.6-2.x, use the following command:

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

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 17: 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
```

Transferring a subscription license to a new device

If you RMA a device and receive a replacement device, you need to transfer the license to the replacement device. To do this, use the following steps:

1. The replacement device must exist in the Allied Telesis Download Center before you can transfer the license. So when you receive the replacement device, advise your Allied Telesis representative of the serial number. Your representative will attach the device to your account in the Allied Telesis Download Center.
2. Once that has been done, log into the Allied Telesis Download Center, and choose the device you wish to replace on your Download Central page.
3. In the menu item, select "Return Device", and enter the serial number of the replacement device and the RMA number.
4. Confirm that page, to transfer the license to the new device.

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 18: 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 19: 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 20: 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.