

AOS-CX 10.16.xxxx Feature Pack Deployment Guide

**5420, 6300, 6400, 8xxx, 93xx, 100xx Switch
Series**



**Hewlett Packard
Enterprise**

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About this document	6
Applicable products	6
Latest version available online	6
Command syntax notation conventions	6
About the examples	7
HPE Aruba Networking CX Feature Pack Overview	9
AOS-CX Feature Pack Types and Supported Features	9
Feature Pack Modes	11
Cloud-Managed Mode	11
File-Based Mode	11
Honor mode	11
Evaluation vs Subscription Feature Pack Keys	12
Best Practices and Limitations	12
Viewing and Managing Subscription Pools	14
Viewing Feature Pack Subscription Pools and Feature Pack Orders	14
Adding a Subscription Pool	16
Renaming a Subscription Pool	17
Deleting a Subscription Pool	17
Moving a Subscription Block to a New Subscription Pool	17
Adding or Editing a Subscription Block Name	18
Viewing and Managing Feature Pack Subscriptions	19
Activating a Term Feature Pack Subscription	19
Activating a Perpetual Feature Pack Subscription for 10000 Switches	20
Monitoring Feature Pack Subscriptions	21
Revoking a Feature Pack Subscription	22
Transfer Feature Pack Subscriptions Between Accounts	23
Cloud-Managed Feature Pack Use Cases and Workflows	26
Deploying a Cloud-managed Feature Pack Solution on a Standalone Switch	26
Revoking and Reinstalling a Feature Pack Subscription on a Standalone Switch	28
Deploying a Cloud-Managed Feature Pack Solution on a VSF Stack	28
Replacing a VSF Stack Member Using a Cloud-Managed Feature Pack Subscription	30
File-based Feature Pack Use Cases and Workflows	33
Deploying a File-Based Feature Pack Solution on a Standalone Switch	33
Setting a File-Based Switch to Honor Mode	36
Deploying a File-Based Feature Pack Solution on a VSF Stack	37
Replacing a VSF Stack Member Using a File-Based Feature Pack subscription	40
Replacing a VSF Stack Conductor Using a File-Based Feature Pack subscription	43
Viewing Feature Packs on Switches Managed by Central	47
Feature pack commands	48
erase feature-pack	48
feature-pack mode	49

feature-pack server	51
feature-pack validate	52
show feature-pack	53
Frequently Asked Questions (FAQs)	58
General Feature Pack FAQs	58
Advanced Feature Pack FAQs	59
10000 Switch Series Feature Pack FAQs	60
Subscription Management FAQs	60
Feature Pack Domain/Subaccount FAQs	61
Feature Pack Revocation FAQs	61
Feature Pack Expiration and Renewal FAQs	61
VSF and VSX FAQs	61
Troubleshooting Feature Pack Issues	63
How do I know there is a feature pack issue?	63
Warning Logs from Subscription Features	63
Feature-Pack Show Commands	63
Reasons for Feature Pack Issues	63
Feature is blocked by missing feature pack	63
The Switch is Out of Sync with the HPE Aruba Networking Support Portal	64
HPE Aruba Networking Support Portal account is locked after changing the password	64
Missing Feature Pack Profile Fields	65
Connection Failure to the HPE Aruba Networking Feature Pack Support Portal Server	65
Mode Mismatch	66
Invalid Block	67
Not Enough Feature Packs	67
Feature Pack Already Assigned	68
Feature Pack Revoked	68
Feature Pack Removed	69
Serial/MAC mismatch	69
Aruba Central Disconnected	70
Some Features are Allowed but Others are Blocked	70
Features are Blocked after Zeroization	71
Feature Pack events	72
Queue Monitoring events	76
Support and Other Resources	77
Accessing HPE Aruba Networking Support	77

This document describes features of the AOS-CX network operating system. It is intended for administrators responsible for installing, configuring, and managing HPE Aruba Networking switches on a network.

Applicable products

This document applies to the following products:

- HPE Aruba Networking 5420 Switch Series (S0U67A, S0U55A, S0U63A, S0U64A, S0U65A, S0U75A, S0U72A, S0U78A, S0U58A, S0U73A, S0U74A, S0U71A, S0U76A, S0U70A, S0U77A, S0U60A, S0U61A, S0U62A, S0U66A, S0U68A)
- HPE Aruba Networking 6300 Switch Series (JL658A, JL659A, JL660A, JL661A, JL662A, JL663A, JL664A, JL665A, JL666A, JL667A, JL668A, JL762A, R8S89A, R8S90A, R8S91A, R8S92A, S0E91A, S0X44A, S3L75A, S3L76A, S3L77A, S4P41A, S4P42A, S4P43A, S4P44A, S4P45A, S4P46A, S4P47A, S4P48A)
- HPE Aruba Networking 6400 Switch Series (R0X31A, R0X38B, R0X38C, R0X39B, R0X39C, R0X40B, R0X40C, R0X41A, R0X41C, R0X42A, R0X42C, R0X43A, R0X43C, R0X44A, R0X44C, R0X45A, R0X45C, R0X26A, R0X27A, JL741A, S0E48A, S0E48A #0D1, S1T83A, S1T83A #0D1)
- HPE Aruba Networking 8100 Switch Series (R9W94A, R9W95A, R9W96A, R9W97A)
- HPE Aruba Networking 8320 Switch Series (JL479A, JL579A, JL581A)
- HPE Aruba Networking 8325 Switch Series (JL624A, JL625A, JL626A, JL627A)
- HPE Aruba Networking 8325H Switch Series (S4B20A, S4B21A, S4B22A, S4B23A, S2T42A, S2T46A, S2T47A, S2T48A)
- HPE Aruba Networking 8325P Switch Series (S0G12A, S4A48A)
- HPE Aruba Networking 8360 Switch Series (JL700A, JL701A, JL702A, JL703A, JL706A, JL707A, JL708A, JL709A, JL710A, JL711A, JL700C, JL701C, JL702C, JL703C, JL706C, JL707C, JL708C, JL709C, JL710C, JL711C, JL704C, JL705C, JL719C, JL718C, JL717C, JL720C, JL722C, JL721C)
- HPE Aruba Networking 8400 Switch Series (JL366A, JL363A, JL687A)
- HPE Aruba Networking 9300 Switch Series (R9A29A, R9A30A, R8Z96A, S0F81A, S0F82A, S0F83A)
- HPE Aruba Networking 9300S Switch Series (S0F81A, S0F82A, S0F83A, S0F84A, S0F85A, S0F86A, S0F88A, S0F95A, S0F96A)
- HPE Aruba Networking 10000 Switch Series (R8P13A, R8P14A)

Latest version available online

Updates to this document can occur after initial publication. For the latest versions of product documentation, see the links provided in [Support and Other Resources](#).

Command syntax notation conventions

Convention	Usage
<code>example-text</code>	Identifies commands and their options and operands, code examples, filenames, pathnames, and output displayed in a command window. Items that appear like the example text in the previous column are to be entered exactly as shown and are required unless enclosed in brackets ([]).
example-text	In code and screen examples, indicates text entered by a user.
Any of the following: <ul style="list-style-type: none"> ▪ <code><example-text></code> ▪ <code><example-text></code> ▪ <code>example-text</code> ▪ <code>example-text</code> 	Identifies a placeholder—such as a parameter or a variable—that you must substitute with an actual value in a command or in code: <ul style="list-style-type: none"> ▪ For output formats where italic text cannot be displayed, variables are enclosed in angle brackets (< >). Substitute the text—including the enclosing angle brackets—with an actual value. ▪ For output formats where italic text can be displayed, variables might or might not be enclosed in angle brackets. Substitute the text including the enclosing angle brackets, if any, with an actual value.
	Vertical bar. A logical OR that separates multiple items from which you can choose only one. Any spaces that are on either side of the vertical bar are included for readability and are not a required part of the command syntax.
{ }	Braces. Indicates that at least one of the enclosed items is required.
[]	Brackets. Indicates that the enclosed item or items are optional.
... or ...	Ellipsis: <ul style="list-style-type: none"> ▪ In code and screen examples, a vertical or horizontal ellipsis indicates an omission of information. ▪ In syntax using brackets and braces, an ellipsis indicates items that can be repeated. When an item followed by ellipses is enclosed in brackets, zero or more items can be specified.

About the examples

Examples in this document are representative and might not match your particular switch or environment.

The slot and port numbers in this document are for illustration only and might be unavailable on your switch.

Understanding the CLI prompts

When illustrating the prompts in the command line interface (CLI), this document uses the generic term **switch**, instead of the host name of the switch. For example:

```
switch>
```

The CLI prompt indicates the current command context. For example:

```
switch>
```

Indicates the operator command context.

```
switch#
```

Indicates the manager command context.

```
switch(CONTEXT-NAME) #
```

Indicates the configuration context for a feature. For example:

```
switch(config-if)#
```

Identifies the **interface** context.

Variable information in CLI prompts

In certain configuration contexts, the prompt may include variable information. For example, when in the VLAN configuration context, a VLAN number appears in the prompt:

```
switch(config-vlan-100)#
```

When referring to this context, this document uses the syntax:

```
switch(config-vlan-<VLAN-ID>#
```

Where *<VLAN-ID>* is a variable representing the VLAN number.

HPE Aruba Networking CX Feature Pack

AOS-CX 6300, 6400, 8xxx, 9300, and 10000 Switch series running AOS-CX 10.13 or later support optional add-on feature packs that enhance the base AOS-CX operating system and allow users to activate and manage advanced features on the switches through a subscription. Depending upon the requirements for their networks, network administrators may choose to purchase a subscription for these features that provide enhanced traffic visibility and troubleshooting, and support advanced security.

This section includes the following information about HPE Aruba Networking CX feature packs.

- [AOS-CX Feature Pack Types and Supported Features](#)
- [Feature Pack Modes](#)
- [Evaluation vs Subscription Feature Pack Keys](#)
- [Best Practices and Limitations](#)

AOS-CX Feature Pack Types and Supported Features

The AOS-CX software preinstalled on all HPE Aruba Networking CX switches includes an active, perpetual set of AOS-CX native enterprise features at no additional cost. The AOS-CX native enterprise features include everything needed to deploy, connect, and troubleshoot an enterprise network. For those networks that require enhanced visibility and assurance, the HPE Aruba Networking CX Advanced feature pack enables Edge Insights for AOS-CX 6300 and 6400 Switch series, offering application-based policies, from OSI Layer 2 to Layer 7. The HPE Aruba Networking CX Advanced feature pack for 5420 switches supports application-based policies, and the HPE Aruba Networking CX Advanced feature pack for 8xxx, 9xxx and 10040 switches includes the ability to Host HPE certified applications for flexible and reliable IT services. The HPE Aruba Networking CX premium feature pack is supported on 10000 Switch Series only, and enables scalable Network Address Translation (NAT) and IPsec VPN services.



For networks managed by HPE Aruba Networking Central, the HPE Aruba Networking Central Advanced license enables all features supported by the CX Advanced feature pack, so no additional purchase of an CX Advanced feature pack is necessary. For more information on HPE Aruba Networking Central licensing, see the [HPE Aruba Networking Central SaaS Subscription Ordering Guide](#).

The following table describes the features supported by the different types of HPE Aruba Networking feature packs.

Table 1: Features Supported by Each Feature Pack Type

Feature Pack Type	Availability	Supported Features
AOS-CX native enterprise features	Automatically included with AOS-CX switch hardware)	While switch software features will vary per product family, the following are generally included in the AOS-CX native enterprise features: switch series) <ul style="list-style-type: none"> ▪ Multiprotocol Label Switching (MPLS) (6400, 8360 Switch Series)

Feature Pack Type	Availability	Supported Features
AOS-CX 5420 Switch advanced feature pack	Subscription: 1 year 3 year 5 year 7 year 10 year 90-day eval	<ul style="list-style-type: none"> ▪ Basic and advanced routing, including static routes, Routing Information Protocol (RIPv2 and RIPv3), Open Shortest Path First (OSPFv2 and OSPFv3), Border Gateway Protocol (BGP), and IS-IS ▪ Protocol Independent Multicast (PIMv4, PIMv6) ▪ Software-Defined Environments: VXLAN, User-Based Tunneling (UBT) ▪ IP Flow Information Export (IPFIX) ▪ Precision Time Protocol (PTP), Transparent Clocks (TCs), and Boundary Clocks (BCs) ▪ High Availability, including In-Service Software Upgrades (ISSU) and hot patching ▪ Full layer-2 support, including STP, VLANs, and IGMP ▪ Network Analytics Engine (NAE) ▪ Layer-2 MACsec Security (6300, 8360 Switch series)
AOS-CX 6300 Switch advanced feature pack	Subscription: 1 year 3 year 5 year 7 year 10 year 90-day eval	<ul style="list-style-type: none"> ▪ Application-based policies ▪ Reflexive policies for port access GBP clients ▪ Reflexive policies for port access policy clients ▪ MACsec extensions for the WAN ▪ Drop Exceptions
AOS-CX 6400 Switch advanced feature pack	Subscription: 1 year 3 year 5 year 7 year 10 year 90-day eval	<ul style="list-style-type: none"> ▪ Application-based policies ▪ Reflexive policies for port access GBP clients ▪ Reflexive policies for port access policy clients ▪ MACsec extensions for the WAN
AOS-CX 8xxx/9xxx/10040 Switch advanced feature pack	Subscription: 1 year 3 year 5 year 7 year 10 year 90-day eval	<ul style="list-style-type: none"> ▪ Host HPE certified applications for flexible and reliable IT services** ▪ MACsec extensions for the WAN (8360, 9300S and 10040 Switch series only) ▪ Queue Statistics Monitoring (8325, 8325H and 9xxx Switch series only) ▪ Inband Flow Analyzer and Flow Telemetry (9xxx Switch series only) ▪ Queue Congestion Monitoring (8325, 8325H and 8325P Switch series only)

Feature Pack Type	Availability	Supported Features
AOS-CX10000 Switch advanced feature pack	Subscription: 1 year 3 year 5 year 7 year 10 year 90-day eval perpetual	<ul style="list-style-type: none"> Drop Exceptions (8325, 8325H and 8325P Switch series only) Host HPE certified applications for flexible and reliable IT services** Accelerated stateful firewall for east-west traffic Firewall logging and per-packet IPFIX telemetry streaming Queue Statistics Monitoring
Aruba 10000 Switch premium feature pack	1 year 3 year 5 year 90-day eval perpetual	<ul style="list-style-type: none"> All features included in the AOS-CX10000 Switch advanced feature pack IPSec VPN services Scalable NAT, including stateful NAT for dual-stack IPv4/IPv6 deployments Advanced DDoS protection

** AOS-CX does not enforce the requirement to own a feature pack prior to using the container feature to host HPE certified applications.

Feature Pack Modes

CX Advanced and Premium feature packs can be managed in either **cloud-managed mode**, **file-based mode**, or **honor mode**.

Cloud-Managed Mode

The centralized management of HPE Aruba Networking CX Advanced and Premium feature packs allows a group of switches using feature pack subscriptions in **cloud-managed mode** to share a pool of one or more feature pack subscriptions managed through the HPE Aruba Networking support portal. By default, a switch using a CX feature pack in cloud mode will contact the HPE Aruba Networking support portal once a day to automatically synchronize with the feature pack subscription management database.

When you use a cloud-managed deployment type, the HPE Aruba Networking support site can automatically distribute and manage feature pack subscriptions for all devices in a group, making it a scalable solution for larger deployments and for global accounts across geographies.

File-Based Mode

Networks with a single switch or with multiple switches on isolated networks that cannot contact the HPE Aruba Networking support site can use feature pack subscription keys in **file-based mode**, where a feature pack is manually enabled on a switch using a non-sharable subscription key file tied to that individual switch's serial number or MAC address. When a switch upgrades to 10.13.0001, existing features that require feature packs in 10.13 will remain operational in honor mode, even if that feature is not yet part of a feature pack. File-based mode is the default operation mode of feature pack management for AOS-CX switches.

Honor mode

Honor mode is intended for cases where a valid feature pack for advanced features has been purchased, but is not yet installed on the device. Advanced features on this device will be operational in Honor mode, but a warning message may be seen until a valid feature pack is installed.



HPE Aruba Networking may remove support for honor mode in a future release. If support for honor mode is removed, advanced features will only be operational if the applicable subscription fees are paid and a valid feature pack is installed

Evaluation vs Subscription Feature Pack Keys

Each Aruba CX Advanced or Aruba CX Premium feature pack key is available as either a 90-day evaluation subscription or a standard subscription that is valid for a term from 1-10 years. An evaluation feature pack allows you to evaluate the functionality of a software feature pack for a period of 90 days. Evaluation and standard subscription feature packs can be added to and made sharable within a subscription pool.

Feature pack subscription keys cannot be renewed. Once a feature pack subscription key expires, a new feature pack subscription key must be generated and installed on the switch. To determine the remaining time on an evaluation feature pack, issue the **show feature-pack** command in the switch command-line interface. An expired feature pack will remain on the switch until it is removed using the command **erase feature-pack**.

For more information on obtaining an evaluation subscription key, contact your authorized HPE Aruba Networking reseller.

Best Practices and Limitations

The following best practices and limitations apply to Aruba CX Advanced and Premium feature pack subscription keys.

- A single user account in the HPE Aruba Networking support portal can manage Aruba CX advanced and premium feature packs in cloud mode (supporting cloud-managed mode on the AOS-CX switch) *or* local mode (supporting file-based mode on the AOS-CX switch), but not in both modes simultaneously. If your global deployment must support both file-based and cloud-managed feature pack subscriptions, you must manage these subscription types separately using two different user accounts.
- Feature pack keys in cloud mode can only be associated to a switch via the HPE Aruba Networking support portal. Cloud-managed feature pack keys cannot be added directly to a switch via the switch CLI.
- Multi-Factor Authentication (MFA) is supported on HPE user accounts and MFA is compatible with all feature pack modes and management methods. MFA is both supported and recommended.
- 6300, 6400, 8xxx, and 9300 Switch series managed via HPE Aruba Networking Central and using an HPE Aruba Networking Central Advanced license do not need HPE Aruba Networking CX Advanced feature packs, as the HPE Aruba Networking Central Advanced license automatically enables all advanced feature pack features on that switch. However, 10000 Switch series managed with an HPE Aruba Networking Central Advanced subscription does require a HPE Aruba Networking CX Advanced Feature Pack when ordering the switch. For more information on HPE Aruba Networking Central licenses, refer to the [HPE Aruba Networking Central online help](#).
- When allocating feature pack subscriptions for a VSF stack, best practice is to keep subscriptions for all members in dedicated subscription block.

- Subscriptions blocks cannot be split after activation. Consider creating subscription blocks with a smaller number of subscriptions, as this provides greater flexibility in managing subscription blocks and moving them across subscription pools.
- Rebooting the switch or removing a cloud-based feature pack subscription profile does not affect its existing feature pack subscription. However, issuing the **erase all zeroize** command resets the device to a factory default state and deletes all local or cloud-managed feature packs. If you reset a switch to its factory default state, you must reinstall the previously-installed file-based feature pack. To reinstall a cloud feature pack after zeroizing the switch, the former feature pack needs to be revoked in the HPE Aruba Networking support portal, and the feature pack profile on the switch needs to be re-configured to connect to the support portal.
- Tampering with a downloaded feature pack file in local mode will cause installation failure.
- If there is a possibility that a device may be added to a VSF stack sometime in future, consider maintaining a buffer of additional feature pack subscriptions when creating a block.
- Setting the clock to past the expiration date will cause it to become expired.
- A file-based feature pack can be revoked and re-used on a different switch a limited number of times. if this the limit has been exceeded, contact HPE Aruba Networking technical support for assistance in revoking the feature pack.



CX feature pack management provides the ability to move a feature-pack from one switch to another, for maximum flexibility in managing an organization's network and to minimize an RMA impact. HPE Aruba networking monitors and detects feature pack fraud. Abnormally high volumes of feature pack transfers for the same feature pack subscription to multiple devices can indicate a breach of the HPE Aruba Networking end user software license agreement and will be investigated.

Viewing and Managing Subscription

Feature packs can be grouped into one or more feature pack *subscription pools* on the HPE Aruba networking support portal. You can manage all of your feature pack orders using the single pre-existing **Default** pool, but best practices is to create separate pools for different feature pack types or network segments according to your feature pack deployment strategy. It is helpful to name pools in a standard pattern for easy recognition, for example, by floors, buildings or departments.

The subscriptions in each pool are further grouped into individual *subscription blocks*, which are comprised of a single type of subscription from a single order.



Each user account with the HPE Aruba Networking support portal can manage CX feature packs in cloud mode *or* in local (file-based) mode, but not in both modes simultaneously. When you first access your CX feature pack pools, you are asked if you want to manage feature packs in either **Cloud** mode or **Local** mode. Choose carefully, as you will not be able to change your management mode. If you want to manage feature packs in both cloud-managed and file-based modes, you must use two separate HPE Aruba Networking support accounts, one for each mode. For more information on feature pack modes, see [Feature Pack Modes](#)

This section describes the following workflows:

- [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#)
- [Adding a Subscription Pool](#)
- [Viewing and Managing Subscription Pools](#)
- [Deleting a Subscription Pool](#)
- [Renaming a Subscription Pool](#)
- [Adding or Editing a Subscription Block Name](#)

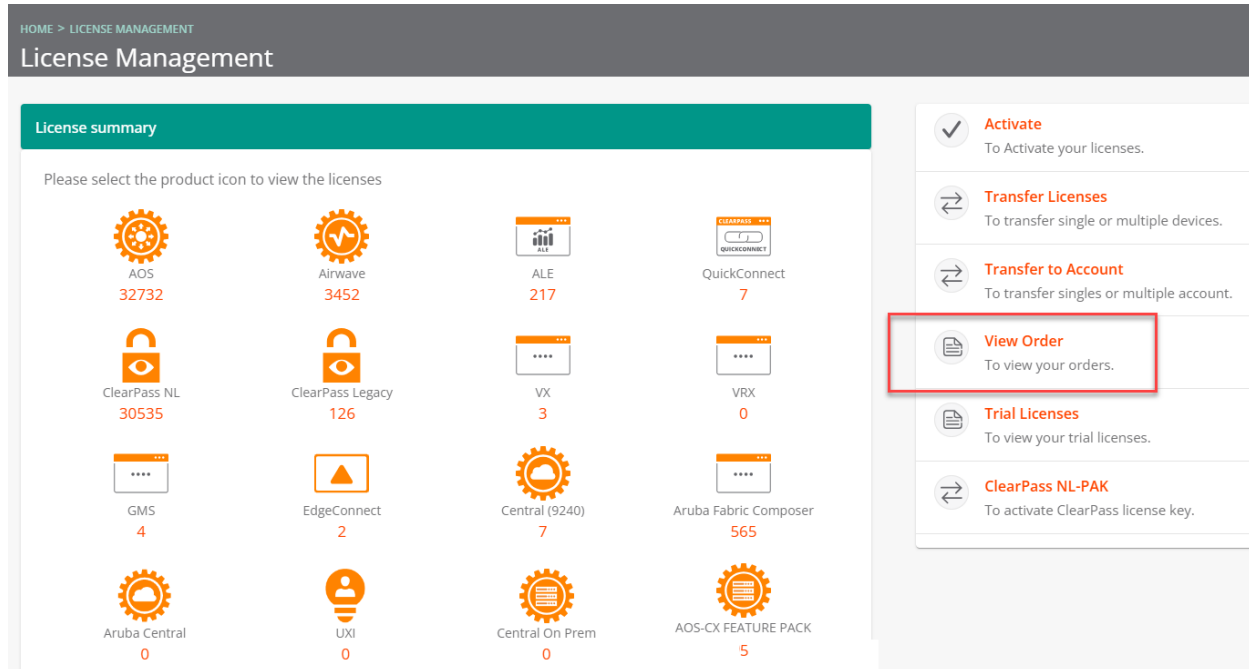
Viewing Feature Pack Subscription Pools and Feature Pack Orders

The **Orders** page on the HPE Aruba Networking support portal displays your HPE Aruba Networking CX subscription pools and information about all feature pack orders. To view your feature pack orders and subscription pools:

1. Navigate to <https://licensemanagement.hpe.com>, and log in with your HPE Aruba Networking support user name and password.

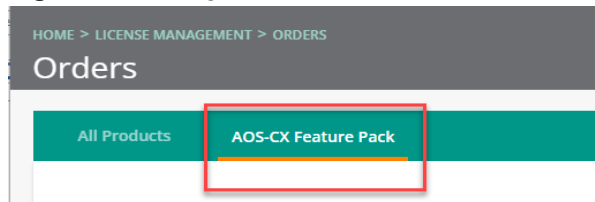
2. From the **License Management** page, select **View Order**.

Figure 1 Viewing Current Orders on the HPE Aruba Networking Support Portal



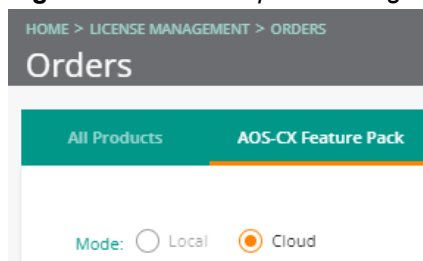
3. Select the **AOS-CX Feature Pack** tab at the top of the **Orders** page to display the **Default** feature pack pool, and any user-created pools.

Figure 2 Viewing Aruba CX Feature Pack Orders



4. The first time you view this page, you will be prompted to select either **local** or **cloud** mode for your CX feature pack management mode. Once selected, this mode cannot be changed, and will display at the top of the **Orders** page.

Figure 3 CX feature pack management mode



The **Orders** page also displays the following information about the subscription orders in each subscription pool.

- Order number
- Subscription key

- Block name (optional)
- Subscription term start date
- Subscription term end date
- Subscription pack part number description
- Order quantity (total number of subscriptions in the feature block)
- Available quantity (number of subscriptions in that feature block that are not yet used)

Figure 4 Orders Page Showing CX Feature Packs

HOME > LICENSE MANAGEMENT > ORDERS

Orders

All Products AOS-CX Feature Pack

Mode: Local Cloud

Subscription Pool: Default

[+ Add Subscription Pool](#) [Manage Subscription Settings](#)

Order Number	Subscription Key	Block Name	Start Date	End Date	Part Description	Order Quantity	Available Quantity	Actions
			Sep 19, 2023, 7:48 PM	Dec 18, 2023, 7:48 PM	Aruba CX Soft 64xx Sw Adv Eval E-LTU	1	1	⋮
		Block_2	Sep 19, 2023, 7:48 PM	Dec 18, 2023, 7:48 PM	Aruba CX Soft 10xxx Sw Adv Eval E-LTU	1	1	⋮
		Block_3	Sep 19, 2023, 7:44 PM	Dec 18, 2023, 7:44 PM	Aruba CX Soft 64xx Sw Adv Eval E-LTU	1	1	⋮

1 - 3 of 3

Adding a Subscription Pool

All new feature pack subscription orders automatically appear in the **Default** subscription pool. You can create additional pools to help you identify and organize individual subscriptions blocks.

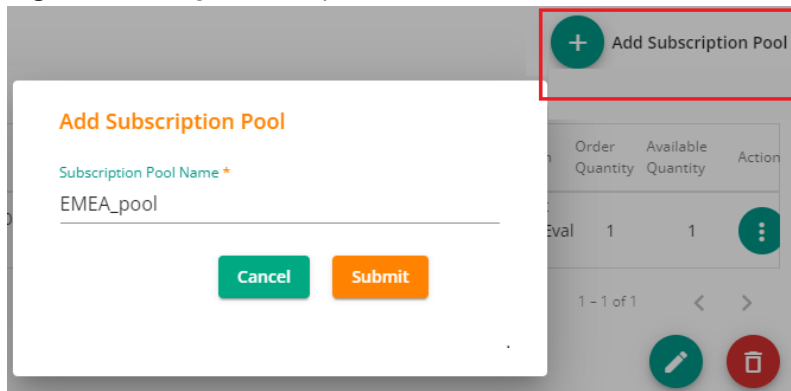


Subscriptions blocks cannot be split after activation. Consider creating subscription blocks with a smaller number of subscriptions, as this provides greater flexibility in managing subscription blocks and moving them across subscription pools.

To add a new subscription pool:


1. Navigate to the AOS-CX **Orders** page as described in [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).
2. Click the **(+) Add Subscription Pool** icon at the top of the page.
3. Enter a name for the new subscription pool.

Figure 5 Adding a Subscription Pool



Renaming a Subscription Pool

You can assign a different name to any user-created subscription pool. The **Default** pool can not be deleted.

1. Navigate to the AOS-CX **Orders** page as described in [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).
2. Click the green edit icon  by the subscription pool you want to rename.
3. Enter the new name for the pool, then click **OK**.


Deleting a Subscription Pool

If you delete a user-created subscription pool, any subscription blocks in that pool are automatically transferred back to the **Default** pool. The **Default** pool cannot be deleted.

A pool cannot be deleted if switches are using feature pack subscriptions in that pool. All the feature packs need to be revoked before the pool can be deleted. The switch can then be assigned feature packs from a new pool.




For more information on revoking a feature pack subscription, see [Revoking a Feature Pack Subscription](#)

1. Navigate to the Aruba CX **Orders** page as described in [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).
2. Click the red delete icon  by the subscription pool you want to delete. A dialog box opens and asks you to confirm that you want to delete that pool.
3. Click **OK**.

Moving a Subscription Block to a New Subscription Pool

To move a subscription block to a different subscription pool:

1. Navigate to the Aruba CX **Orders** page as described in [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).

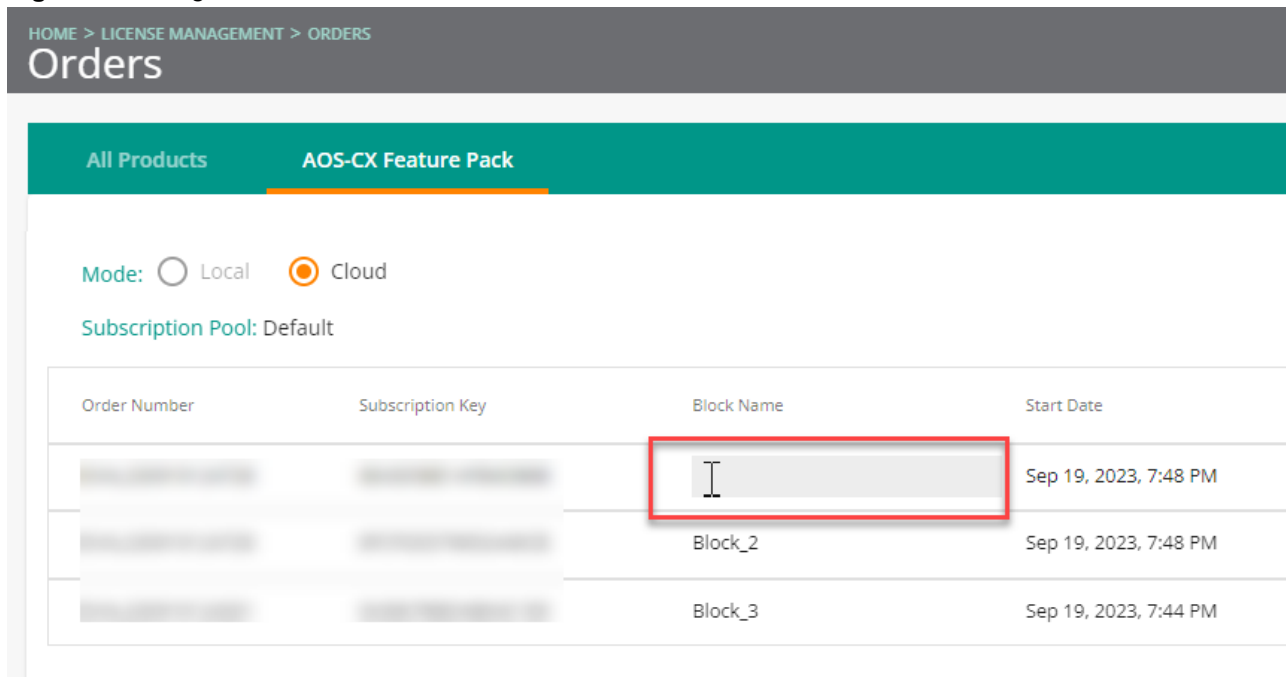
2. Click the green actions icon  by the subscription block to be moved, and select **Move**. A dialog box opens that allows you to select a new subscription pool for that subscription block.
3. Select the new pool for the subscription block, then click **Submit**.

Adding or Editing a Subscription Block Name

To add or change the name of a subscription block:

1. Navigate to the AOS-CX **Orders** page as described in [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).
2. Click in the **Block Name** column for any order to add or edit a block name.

Figure 6 *Editing a Block Name*



Viewing and Managing Feature Pack

This chapter topic describes how to activate a feature pack so it can be used by an AOS-CX switch, view and monitor purchased feature packs, revoke a feature pack subscription so it can be assigned to another switch, and transfer feature packs between user accounts on the HPE Aruba Networking support portal.

- [Monitoring Feature Pack Subscriptions](#)
- [Activating a Term Feature Pack Subscription](#)
- [Revoking a Feature Pack Subscription](#)
- [Transfer Feature Pack Subscriptions Between Accounts](#)

Activating a Term Feature Pack Subscription

When you activate an evaluation or 1-year to 10-year term subscription feature pack subscription for 6xxx, 8xxx, 9xxx or 10000 switches:

- The subscription term for that feature pack begins.
- That feature pack subscription can be assigned to an AOS-CX switch.

The feature block for that feature pack order updates to show that one less subscription is available only after a feature pack is generated for a specific switch. For feature packs in file-based mode, this happens after a user downloads a feature pack from the HPE Aruba Networking support portal. For feature packs in cloud-managed mode, this happens happen after a switch contacts the support portal to reserve a feature pack.




A feature pack does not appear on the **Subscription Monitoring** page until it is both activated *and* assigned to a switch. The feature block for that feature pack order update to show that one less subscription is available.

To activate a feature pack subscription:

1. Navigate to the AOS-CX **Orders** page as described in [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).
2. Identify the feature pack order with the subscription to be activated. Orders with unactivated subscriptions appear in the **Orders** table highlighted in green.

Figure 1 AOS-CX Orders Page Showing Unactivated Subscriptions

Order Number	Subscription Key	Block Name	Start Date	End Date	Part Description	Order Quantity	Available Quantity	Actions
		6300_block_3	Sep 7, 2023, 7:40 PM	Sep 7, 2024, 7:40 PM	Aruba CX Soft 63xx Sw Adv 1y E-LTU	4	0	⋮
		6300_block_2	Aug 28, 2023, 3:49 PM	Aug 28, 2024, 3:49 PM	Aruba CX Soft 63xx Sw Adv 1y E-LTU	4	0	⋮
			Jul 28, 2023, 3:31 PM	Jul 28, 2023, 3:31 PM	Aruba CX Soft 10xxx Pre Eval E-LTU	1	1	⋮
		testing	Jul 28, 2023, 3:31 PM	Jul 28, 2024, 3:31 PM	Aruba CX Soft 10xxx Sw Adv 1y E-LTU	1000	995	⋮
			Jul 28, 2023, 3:31 PM	Jul 28, 2024, 3:31 PM	Aruba CX Soft 10xxx Sw Adv 1y E-LTU	1000	1000	⋮
			Jul 28, 2023, 3:31 PM	Jul 28, 2024, 3:31 PM	Aruba CX Soft 8/9xxx Sw Adv 1y E-LTU	100	87	⋮
			Jul 28, 2023, 3:31 PM	Jul 28, 2024, 3:31 PM	Aruba CX Soft 8/9xxx Sw Adv 1y E-LTU	1000	1000	⋮
			Jul 28, 2023, 3:31 PM	Jul 28, 2024, 3:31 PM	Aruba CX Soft 63xx Sw Adv 1y E-LTU	1000	1000	⋮
			Jul 28, 2023, 3:31 PM	Jul 28, 2024, 3:31 PM	Aruba CX Soft 63xx Sw Adv 1y E-LTU	1000	1000	⋮
			Jul 28, 2023, 3:31 PM	Jul 28, 2024, 3:31 PM	Aruba CX Soft 63xx Sw Adv 1y E-LTU	100	92	⋮

3. Click the green actions icon  by the order with a subscription to be activated, then click **Activate**. A dialog box opens and displays the number of available subscriptions within that feature pack order block.
4. Enter the number of feature pack subscriptions you want to activate.
5. (Optional) Enter the name of a feature block for the activated feature packs.
6. Click **Submit**. Each activated feature pack subscription is now available to be associated to an AOS-CX switch. For details on associating a feature pack to a switch, see also [Deploying a Cloud-managed Feature Pack Solution on a Standalone Switch](#) and [Deploying a File-Based Feature Pack Solution on a Standalone Switch](#).

Activating a Perpetual Feature Pack Subscription for 10000 Switches

When you activate a perpetual feature pack subscription:

- The subscription term for that feature pack begins.
- That feature pack subscription can be assigned to an AOS-CX switch.
- Other feature packs within the feature pack block cannot be split into different blocks.

The feature block for that feature pack order updates to show that one less subscription is available only after a feature pack is generated for a specific switch. For feature packs in file-based mode, this happens after a user downloads a feature pack from the HPE Aruba Networking support portal. For feature packs in cloud-managed mode, this happens after a switch contacts the support portal to reserve a feature pack.



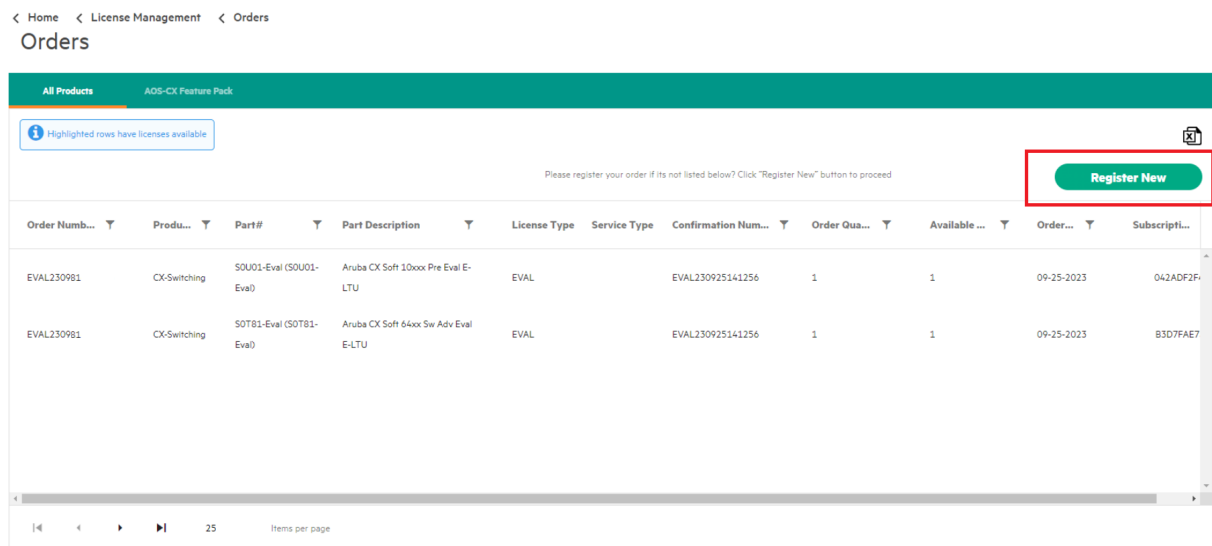
A feature pack does not appear on the **Subscription Monitoring** page until it is both activated *and* assigned to a switch. The feature block for that feature pack order update to show that one less subscription is available.

To activate a feature pack subscription:

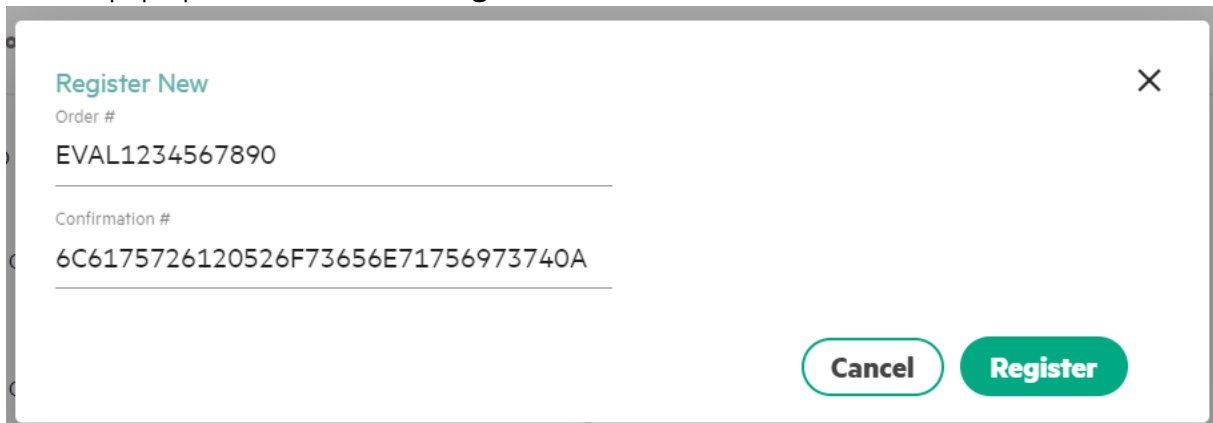
1. Navigate to the Aruba CX **Orders** page as described in [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).

2. Click the **All Products** tab.
3. Click the green button on the right side labeled "Register New"

Figure 1 Aruba CX Orders Page



4. Input the order number and confirmation number received from the order management system into the pop-up window, then click **Register**.



5. Now click the **AOS-CX Feature Pack** tab. The order will be activated in the **Default** subscription pool.

The activated feature pack subscription is now available to be associated to a 10000 switch. For details on associating a feature pack to a switch, see also [Deploying a Cloud-managed Feature Pack Solution on a Standalone Switch](#) and [Deploying a File-Based Feature Pack Solution on a Standalone Switch](#).

Monitoring Feature Pack Subscriptions

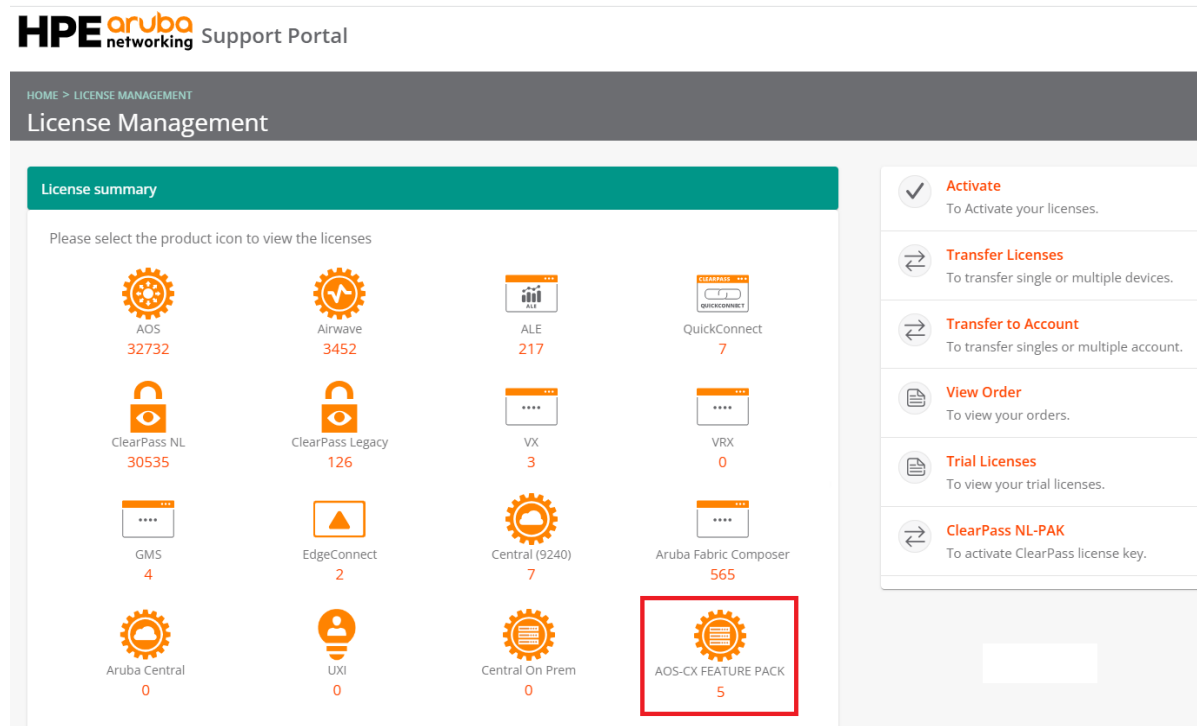
The **Subscription Monitoring** page of the HPE Aruba Networking support portal allows you to review CX feature pack subscriptions that have been associated to an AOS-CX switch.

To view feature pack subscriptions currently in use by an AOS-CX switch:

1. Navigate to <https://licensemanagement.hpe.com>, and log in with your HPE Aruba Networking support user name and password.

- From the **License Management** page, select the AOS-CX Feature Pack icon to open the **Subscription Monitoring** page.

Figure 1 Viewing Active CX feature Pack subscriptions



The **Subscription Monitoring** dashboard displays information for each feature pack subscription:

- Order ID: The order ID number is also sent in an email at the time of the feature pack subscription purchase.
- Host Name: The host name of the switch using the feature pack subscription.
- Serial Number: Serial number unique to that feature pack.
- MAC Address: MAC address of the switch using the feature pack subscription
- UUID: A Universally Unique Device Identifier (UUID) for the feature pack subscription.
- Feature Pack Pool: Pool containing the feature pack subscription. By default, all new orders appear in the Default feature pack pool, but feature pack blocks can be moved to other pools if desired. For more information, see also [Viewing and Managing Subscription Pools](#)
- Block Name: This field displays any block name assigned to the feature pack when it was activated.
- Activation date: The date that the subscription order was activated.
- Expiry date: Date that the subscription term expires.

You can sort the feature pack subscriptions table on this page by clicking on any column heading to sort the list by that column criteria, or enter an order ID, host name, serial number, UUID, or feature pack pool name into the search bar at the top of the page.

Revoking a Feature Pack Subscription

You can use the HPE Aruba Networking support site remove a feature pack subscription from a switch managing feature packs in cloud mode, and reuse that feature pack on another switch of the same model.

When you revoke a feature pack subscription on the HPE Aruba Networking support site:

- The feature pack subscription appears as available on the CX **Orders** page, indicating that it can be reassigned.
- The feature block for that feature pack order will update to show that an additional subscription is available.
- A switch in cloud-managed mode will synchronize with the HPE Aruba Networking support site and will go into honor mode.
- A switch in file-based mode is not notified that the subscription has been revoked. Manually remove the subscription from the switch using the **erase feature-pack** CLI command.



Each HPE Aruba Networking support feature pack account domain managing feature packs in file-based mode can revoke a feature pack up to 50 times per domain. If is limit is exceeded, the user will not be able to revoke the feature pack and the system will display an error message.


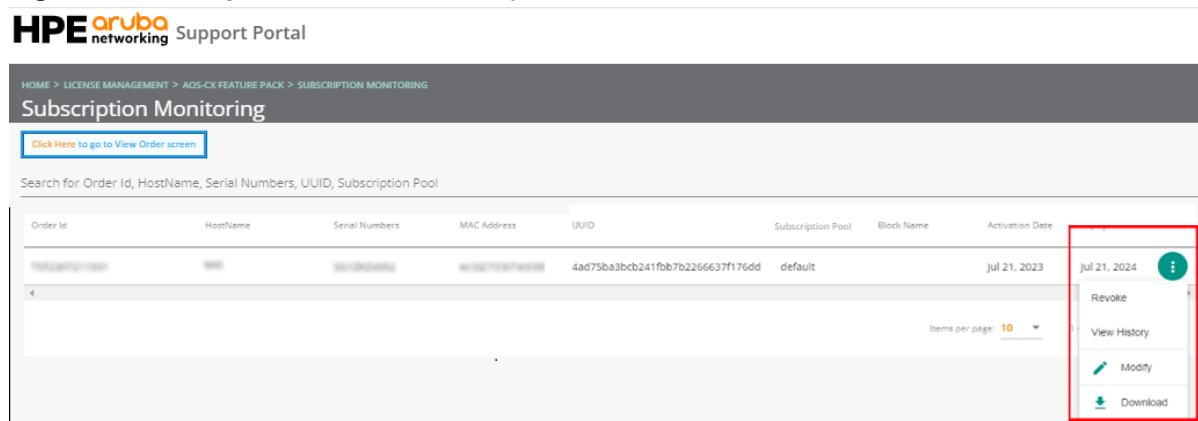
1. Navigate to the **Subscription Monitoring** page as described in [Monitoring Feature Pack Subscriptions](#).
2. Identify the feature pack subscription to be revoked. For large feature pack deployments, you can use the search bar at the top of this page to search for the switch MAC address, the feature pack subscription serial number or the feature pack pool.
3. Select the feature pack to be revoked, click the green actions icon  and select **Revoke**.

Figure 1 Revoking a Feature Pack Used by a Switch



Transfer Feature Pack Subscriptions Between Accounts

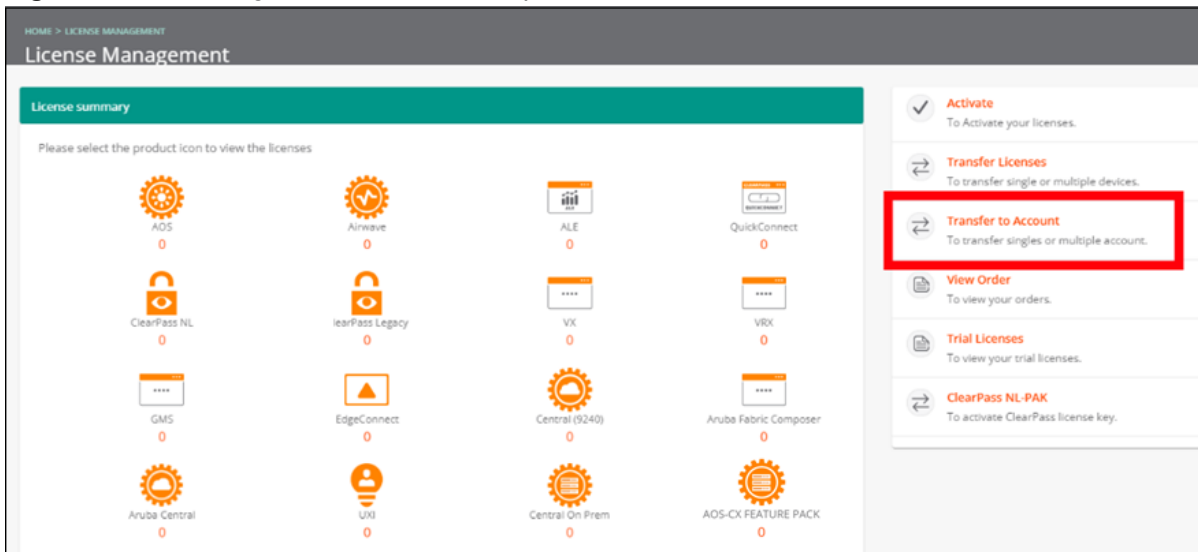
You can use the HPE Aruba Networking Support portal to transfer any unused feature pack subscriptions orders to another HPE Aruba Networking Support account.



Any transfer between accounts must move all subscriptions within that feature pack subscription block. A single order with multiple feature pack subscriptions cannot be split between two accounts.

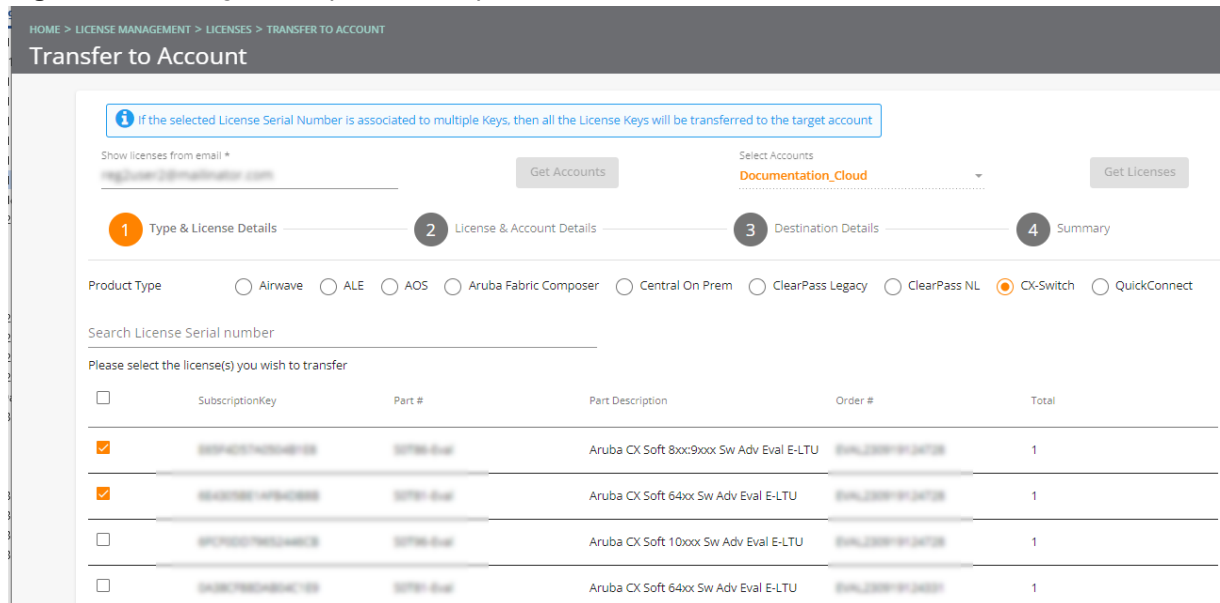
1. Navigate to <https://licensemanagement.hpe.com>, and log in with your HPE Aruba Networking support user name and password.
2. From the **License Management** page, select **Transfer to Account**. The **Transfer to Account** page opens.

Figure 1 Transferring Feature Pack Subscriptions Between Accounts



4. Enter the email address of the account that currently contains the feature pack subscriptions you want to transfer, then select **Get Accounts**.
5. Select the account that contains the feature pack subscriptions you want to transfer, and click **Get Licenses**.
6. Click the **CX-Switch** button to list all CX feature pack subscriptions available for transfer.
7. Select the feature pack subscriptions to transfer and click **Next**.

Figure 2 Selecting feature pack subscriptions to be transferred



8. You will be prompted to verify your selection. Click **Next** again.
9. Now, enter the email address associated with the HPE Aruba Networking Support account to receive the feature pack subscriptions and click **Get Accounts**.
10. Use the **Select Accounts** drop-down menu to select the account that should receive the feature pack subscriptions.
11. In the **Enter reason for transfer** field, specify why the feature pack subscriptions are being transferred.

12. Click **Next** to display the transfer summary page. Validate all the information about the transfer, then click **Submit**.

Figure 3 Validating the Feature Pack Transfer

HOME > LICENSE MANAGEMENT > LICENSES > TRANSFER TO ACCOUNT

Transfer to Account

i If the selected License Serial Number is associated to multiple Keys, then all the License Keys will be transferred to the target account.

Show licenses from email *
◀email@hpe.com Get Accounts Select Accounts
NTL_Local Get Licenses

- 1 Type & License Details
- 2 License & Account Details
- 3 Destination Details
- 4 Summary

Product Type : CX-Switch

Selected licenses to be transfer

SubscriptionKey	Part #	Part Description	Order #	Total
LIC2307271230	SOT80AAE	Aruba CX Soft 63xx Sw Adv 7y E-LTU	TST2307271230	2

Items per page: 25 1 - 1 of 1 |< > >>

Selected Licenses

i You have selected 2 licenses for transfer. [View Selected Licenses](#).
To include more licenses click back to select licenses.

Enter Reason for transfer : transfer demo
Reassign selected licenses to email : nimalan.manimaran@hpe.com
Target Account : Documentation_Local

<< Cancel Back Submit

This chapter section describes the following workflows for deployments using feature pack subscriptions in [cloud-managed mode](#).

- [Deploying a Feature Pack Solution on a Standalone Switch](#)
- [Removing a Feature Pack Subscription from a Standalone Switch](#)
- [Deploying a Feature Pack Solution on a VSF stack Switch](#)
- [Replacing a VSF Stack Member Using a Cloud-Managed Feature Pack Subscription](#)

Deploying a Cloud-managed Feature Pack Solution on a Standalone Switch

The following section describes the procedure to install an HPE Aruba Networking CX advanced feature pack on a single standalone AOS-CX switch using feature pack subscriptions in [cloud-managed mode](#).

Prerequisites

- The user has created a user account on the HPE Aruba Networking support portal.
- The user has already ordered their feature pack subscriptions from HPE Aruba Networking reseller.
- The **Orders** page on the HPE Aruba Networking support portal has been updated to indicate that the subscriptions for the user account will be managed in cloud-managed mode. For details, see [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).

Procedure

1. Log on to the switch command-line interface.
2. Enter the feature pack server configuration sub-mode.

```
switch(config)# feature-pack server
```

3. Configure the location URL of the HPE Aruba Networking feature pack management server in the corresponding VRF

```
switch(config-feature-pack-server)# location https://cx-feature-pack.arubanetworks.com vrf mgmt
```

4. Configure the switch with the account credentials for your HPE Aruba Networking support account.

```
switch (config-feature-pack-server)# credentials user <username> password
plaintext <password>
```

5. Configure the subscription block and subscription pool, then exit the feature pack server context

```
switch(config-feature-pack-server)# block 6300_test_block_2
switch(config-feature-pack-server)# pool default
switch(config-feature-pack-server)# exit
```

6. Specify that the switch will manage feature packs in cloud-managed mode.

```
switch (config)# feature-pack mode cloud-managed
```

7. (Optional) Once the feature pack is installed in the device, the **show feature-pack server** and **show feature-pack** commands can be used to verify the LMS connectivity and feature pack subscription status.

```
switch# show feature-pack server
Profile
=====
Location URL           : https://cx-feature-pack.arubanetworks.com
Location VRF          : mgmt
User account          : customer@example.com
Subscription Pool     : default
Subscription Block    : 6300_test_block_2
Connection
=====
Status                : Validation success
Reason                : --
Last validation time  : Tue Sep 12 09:27:42 UTC 2023
Success validation time : Tue Sep 12 09:27:42 UTC 2023

switch# show feature-pack
Feature Pack Summary

=====
Name                   : CX Software Advanced Feature Pack
Expiration Date       : Wed Aug 28 2024
Serial Number(s)     : SG2ZL50166
MAC Address          : 18:7a:3b:1b:f6:40
Hostname              : 6300
Mode                  : Cloud Managed
State                  : Feature pack installed and valid
Error Reason         : none

-----
Feature                                     Subscription   Feature
Status                                       Status         Status
-----
Application Based Policy                   active         allowed
MACsec extensions for WAN                  active         allowed
Reflexive Policies for Port Access GBP Clients active         allowed
Reflexive Policies for Port Access Clients active         allowed
```

Changing the password for your HPE Aruba Networking Support Portal account

A network admin using feature packs in cloud mode may experience a lockout of their HPE account after changing their password due to the switches syncing with the old password. When changing the password of the user account credentials configured on switches for cloud-managed subscriptions, use the following procedure to avoid unexpected account lockouts.

1. Configure all switches into file-mode using the command **feature-pack mode file-based**. This will prevent the switches from syncing with the HPE Networking Support Portal during the password change process.



Note: This will cause the switches to move into honor mode due to a mismatch between feature-pack type and configured mode, but subscription features will remain operational.

2. Proceed with the password change on the HPE user account.
3. Configure the new password on each switch using the secure prompt or ciphertext options.

Using secure prompt:

```
switch (config-feature-pack-server)# credentials user <USER> password  
<enter>".
```

Using ciphertext :

```
switch (config-feature-pack-server)# credentials user <USER> password  
ciphertext <CIPHERTEXT>"
```

4. Configure each switch into cloud-managed mode using the command **feature-pack mode cloud-managed**, then verify subscriptions are validated using **show feature-pack server** and **show feature-pack**.

Revoking and Reinstalling a Feature Pack Subscription on a Standalone Switch

Before you replace a standalone switch using a cloud-mode feature pack subscription, the feature pack subscription needs to be revoked.

Procedure

1. Access the HPE Aruba Networking support portal and revoke the feature pack subscription from the switch to be replaced. For details, see [Revoking a Feature Pack Subscription](#)
2. Once the replacement switch is installed on the network, use the **feature-pack server** commands to reinstall the cloud-based feature pack on the new switch. For details, see [Deploying a Cloud-managed Feature Pack Solution on a Standalone Switch](#).

Deploying a Cloud-Managed Feature Pack Solution on a VSF Stack

The following section describes the procedure to install an HPE Aruba Networking CX Advanced Feature Pack on a VSF stack using feature pack subscriptions in [cloud-managed mode](#).

Prerequisites

- The user has created a user account on the HPE Aruba Networking support portal.
- The user has already ordered their feature pack subscriptions from HPE Aruba Networking reseller.
- The HPE Aruba Networking support portal contains a subscription block activated with a number of feature pack subscriptions equal to or greater than the number of devices in the VSF stack.
- The **Orders** page on the HPE Aruba Networking support portal has been updated to indicate that the subscriptions for the user account will be managed in cloud-managed mode. For details, see [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).

Procedure

1. Log on to the switch command-line interface.
2. Enter the feature pack server configuration sub-mode.

```
switch(config)# feature-pack server
```

3. Configure the location URL of the feature pack management server in the corresponding VRF.

```
switch(config-feature-pack-server)# https://cx-feature-pack.arubanetworks.com vrf mgmt
```

4. Configure the switch with the account credentials for your HPE Aruba Networking Support account.

```
switch(config-feature-pack-server)# credentials user <username> password plaintext <password>
```

5. Configure the feature pack block and feature pack pool, then exit the feature pack server context.

```
switch(config-feature-pack-server)# block VSF_test
switch(config-feature-pack-server)# pool 6300_VSF
switch(config-feature-pack-server)# exit
```

6. Specify that the switch should manage feature packs in cloud-managed mode.

```
switch (config)# feature-pack mode cloud-managed
```

7. Once the feature pack is installed in the device, the **show feature-pack server** and **show feature-pack** commands can be used to verify the LMS connectivity and feature pack subscription status. Note that the **Serial Number(s)** field in the output of the **show feature-pack** command includes the serial numbers for all devices in the in the VSF stack.

```
switch# show feature-pack server
Profile
=====
Location URL           : https://cx-feature-pack.arubanetworks.com
```

```

Location VRF          : mgmt
User account         : customer@example.com
Subscription Pool    : 6300_VSF
Subscription Block   : VSF_test
Connection
=====
Status              : Validation success
Reason              : --
Last validation time : Mon Sep 18 19:09:55 UTC 2023
Success validation time : Mon Sep 18 19:09:55 UTC 2023

```

```

6300# show feature-pack
Feature Pack Summary
=====
Name                : CX Software Advanced feature pack
Expiration Date     : Sat Sep 07 2024
Serial Number(s) : SG1ZL53061 SG2ZL50131 SG2ZL50145
MAC Address        : 18:7a:3b:1b:b6:c0
Hostname           : 6300
Type               : Floating
Mode              : Cloud Managed
State            : feature pack installed and valid
Error Reason       : none

```

Feature	Subscription Status	Feature Status
Application Based Policy	active	allowed
MACsec extensions for WAN	active	allowed
Reflexive Policies for Port Access GBP Clients	active	allowed
Reflexive Policies for Port Access Clients	active	allowed

Replacing a VSF Stack Member Using a Cloud-Managed Feature Pack Subscription

Use the following workflow to replace a VSF stack member with a switch that does not yet have a feature pack subscription.

Procedure

1. Log on to the command-line interface of the VSF stack member.
2. Verify that the advanced feature pack is being consumed by all switch members.

switch # show feature-pack

```

Feature Pack Summary
=====
Name                : CX Software Advanced Feature Pack
Expiration Date     : Sat Sep 07 2024
Serial Number(s) : SG1ZL53061 SG2ZL50131 SG2ZL50145
MAC Address        : 18:7a:3b:1b:b6:c0
Hostname           : 6300
Type               : Floating
Mode              : Cloud Managed
State            : Feature Pack installed and valid
Error Reason       : none

```

Subscription	Feature
active	allowed
active	allowed
active	allowed
active	allowed

Feature	Status	Status
Application Based Policy	active	allowed
MACsec extensions for WAN	active	allowed
Reflexive Policies for Port Access GBP Clients	active	allowed
Reflexive Policies for Port Access Clients	active	allowed

3. Remove the VSF stack member.

```
switch (config)# no vsf member 3
The specified switch will be unconfigured and rebooted
Do you want to continue (y/n)? y
switch # show feature-pack
Feature Pack Summary
=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Sat Sep 07 2024
Serial Number(s) : SG2ZL50131 SG2ZL50145  << Member 3 serial number is gone
MAC Address    : 18:7a:3b:1b:b6:c0
Hostname       : 6300
Type           : Floating
Mode          : Cloud Managed
State        : Feature Pack installed and valid
Error Reason   : none

Subscription   Feature
Feature       Status   Status
-----
Application Based Policy    active   allowed
MACsec extensions for WAN   active   allowed
Reflexive Policies for Port Access GBP Clients active   allowed
Reflexive Policies for Port Access Clients   active   allowed
```

- If you are replacing a VSF conductor, reboot the VSF stack so that it no longer uses the MAC address of the former conductor. The former conductor (now a standalone switch) and the remaining VSF stack will continue to use the MAC address until the VSF stack reboots. If you attempt to add a feature pack to the standalone switch before you reboot the VSF stack, you may get an error saying that is already using a feature pack subscription, because the MAC address is the same as the existing VSF stack.
- When a new device is added to the VSF stack, the feature pack information for that stack member is automatically updated.

```
switch # show feature-pack
Feature Pack Summary
=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Sat Sep 07 2024
Serial Number(s) : SG2ZL50131 SG2ZL50145 SG1ZL78993 << New Stack Serial Number
MAC Address    : 18:7a:3b:1b:b6:c0
Hostname       : 6300
Type           : Floating
Mode          : Cloud Managed
State        : Feature Pack installed and valid
Error Reason   : none

Subscription   Feature
Feature       Status   Status
-----
Application Based Policy    active   allowed
```

MACsec extensions for WAN	active	allowed
Reflexive Policies for Port Access GBP Clients	active	allowed
Reflexive Policies for Port Access Clients	active	allowed



If you replace a VSF stack member with a standalone switch that is already using a cloud-managed feature pack subscription, the HPE Aruba Networking support portal will automatically extend the existing VSF feature pack subscription to cover the new member, but it will not revoke the former standalone feature pack. This results in an extra feature pack being consumed by what has become single standalone switch that is no longer being used. As a result, you must revoke the standalone feature pack to make it available for other switches to use.

This chapter section describes the following workflows for deployments using feature pack subscriptions in [file-based mode](#).

- [Deploying a File-Based Feature Pack Solution on a Standalone Switch](#)
- [Setting a File-Based Switch to Honor Mode](#)
- [Deploying a File-Based Feature Pack Solution on a VSF Stack](#)
- [Replacing a VSF Stack Member Using a File-Based Feature Pack subscription](#)

Deploying a File-Based Feature Pack Solution on a Standalone Switch

The following section describes the procedure to install an HPE Aruba Networking CX Advanced feature pack or a CX Premium feature pack on single standalone AOS-CX switches with feature pack subscriptions in [file -based mode](#).

Prerequisites

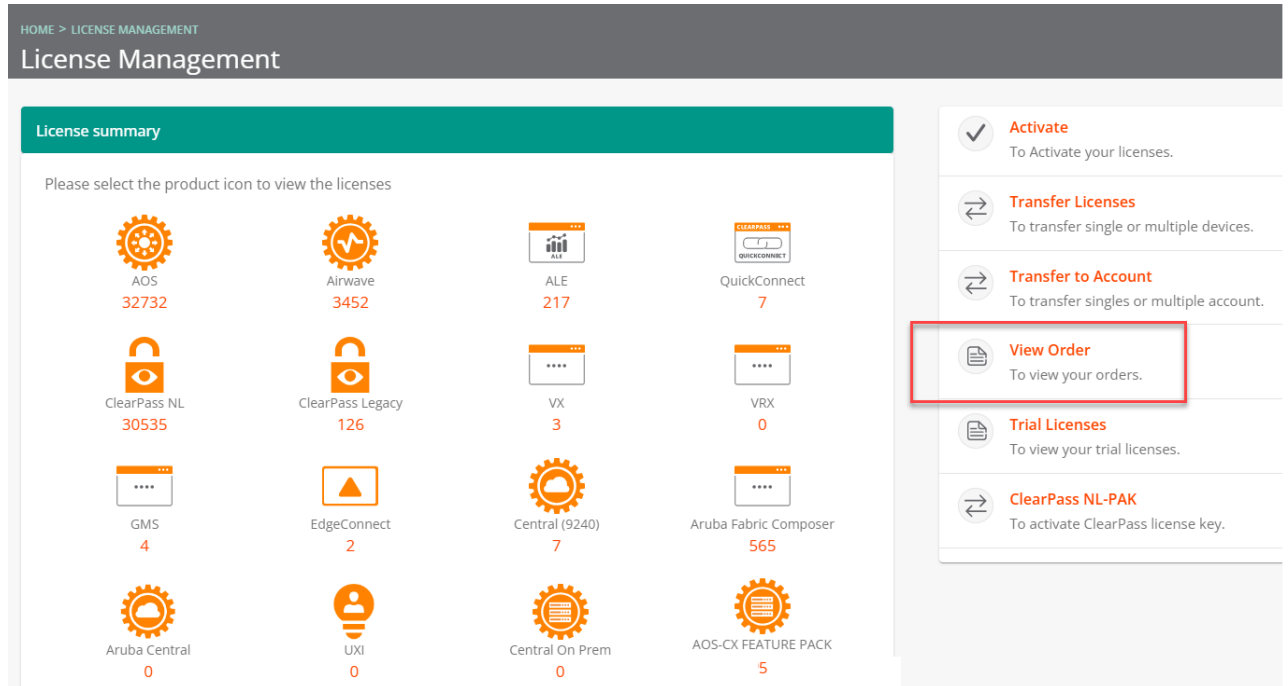
- The user has created a user account on the HPE Aruba Networking support portal.
- The user has already ordered their feature pack subscriptions from HPE Aruba Networking reseller.
- The **Orders** page on the HPE Aruba Networking support portal has been updated to indicate that the subscriptions for the user account will be managed in file-based mode. For details, see [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).

Procedure

1. Navigate to <https://licensemanagement.hpe.com>, and log in with your HPE Aruba Networking support user name and password.

- From the **License Management** page, select **View Order**.

Figure 1 Viewing Current Orders on the HPE Aruba Networking Support Portal




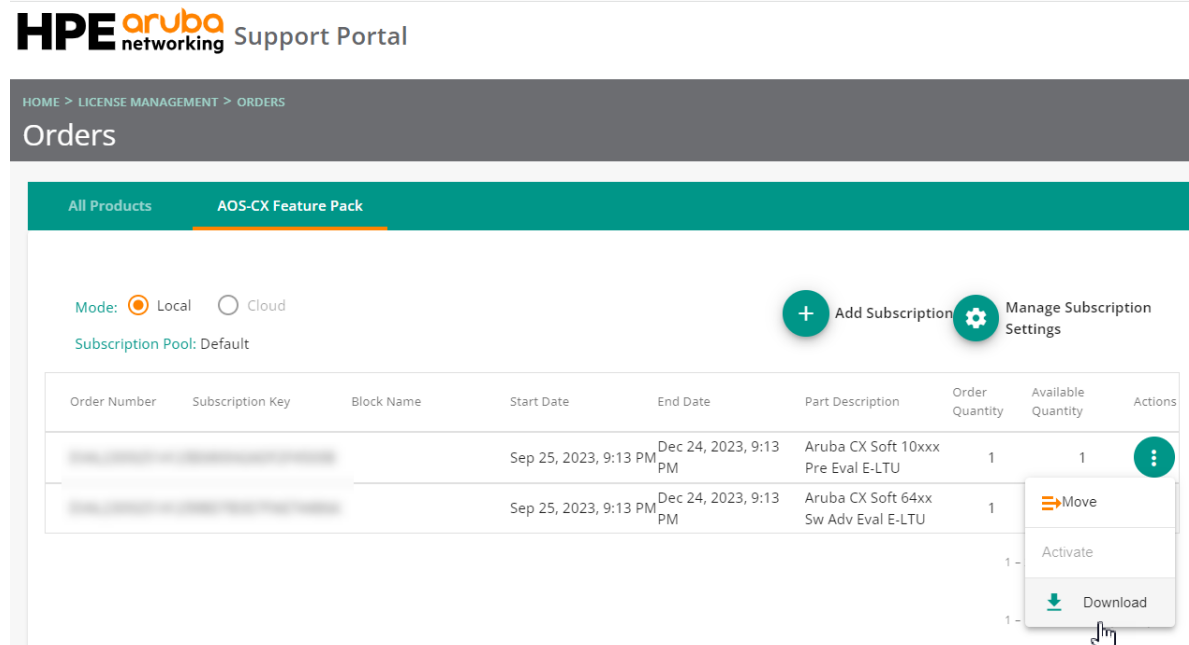
- On the **Orders** page, identify the feature pack you want to download and install on the switch.
- Click the green actions icon  by the feature pack you want to download, and select **Download**. The **Download File** window opens.

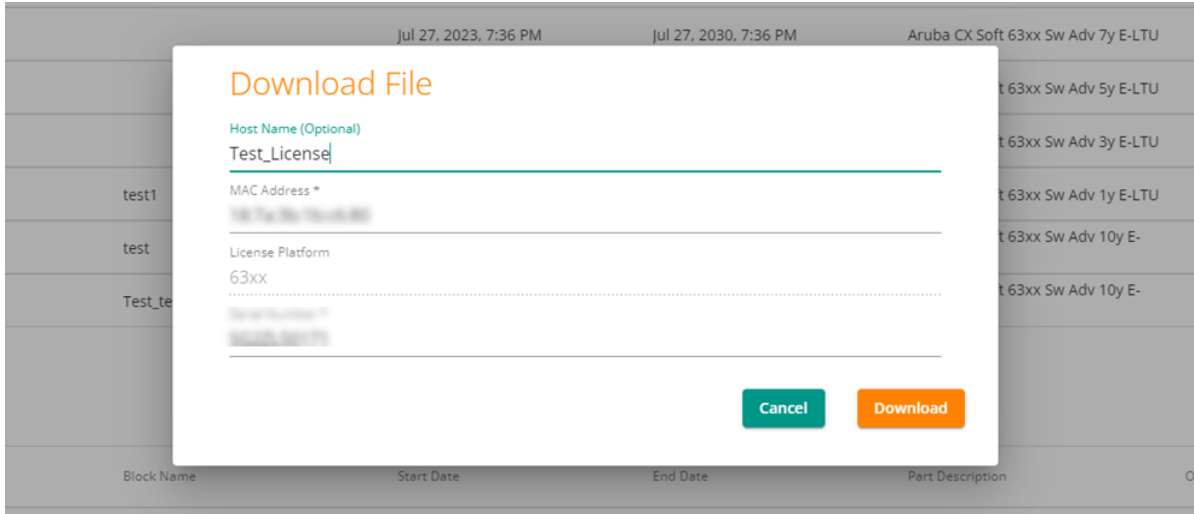
Figure 2 Downloading Feature Pack Subscriptions from the Orders Page



- In the **Download File** window, enter the host name, MAC address, and the serial number of the device. Verify that the feature pack platform on this window matches the platform of the switch that will use this feature pack.

- Click **Download**.

Figure 3 Downloading a Feature Pack File



- Access the switch command-line interface and ensure that the device is configured to use file-based mode.

```
switch(config)# feature-pack mode file-based
```

- Use the **copy** command to copy the feature pack file to the switch.

```
switch# copy tftp://192.168.1.1/feature-pack feature-pack vrf mgmt
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           %             0         0  7111k           0  --:--:--  --:--:--  --:--:--  7111k
writing feature-pack
```

- Use the **show feature-pack** command to validate the the feature pack mode is **File based**, that the feature pack state shows **Feature pack installed and valid** and that all features are **allowed**.

```
6300# show feature-pack
Feature Pack Summary
=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Thu Jul 27 2028
Serial Number(s) : SG2ZL50171
MAC Address    : 18:7a:3b:1b:c6:80
Hostname       : Test_FP
Type           : Device specific
Mode          : File based
State         : Feature pack installed and valid
Error Reason   : none

Feature                               Subscription  Feature
-----                               -
Application Based Policy               active       allowed
MACsec extensions for WAN              active       allowed
Reflexive Policies for Port Access GBP Clients active       allowed
```

```
Reflexive Policies for Port Access Clients      active      allowed
```

10. Next, access the HPE Aruba Networking Support portal and verify that the feature pack appears to have been activated.
 - a. Navigate to <https://licensemanagement.hpe.com>, and log in with your HPE Aruba Networking support user name and password.
 - b. From the **License Management** page, select the CX-Switch icon to open the **Subscription Monitoring** page.
 - c. Check the details on this page to verify that the HPE Aruba Networking support portal correctly reflects that the feature pack is associated with the correct device.



For more details on monitoring feature Packs, refer to [Monitoring Feature Pack Subscriptions](#) .

Setting a File-Based Switch to Honor Mode

In **honor** mode, the features supported by CX Advanced or CX Premium feature packs are enabled without the presence of a active feature pack. Honor mode is intended for cases where a valid feature pack for advanced or premium features has been purchased, but is not yet installed on the device. A warning message may appear until a valid feature pack is installed.

Procedure

1. Access the switch command-line interface and use the **feature-pack mode honor** command to set the switch to honor mode.

```
switch(config)# feature-pack mode honor
```

2. Once honor mode is configured, check the switch state using the show feature-pack command. The output of this command should show that the feature pack mode is set to **honor** mode, and that features are **allowed** and the feature pack subscription status is marked **honor** mode.

```
switch# shpw feature-pack
Feature Pack Summary
=====
Name           : --
Expiration Date : --
Serial Number(s) :
MAC Address    : --
Hostname       : --
Type           : --
Mode           : Honor
State          : Feature pack mode honor configured
Error Reason   : none

          Subscription  Feature
Feature   Status       Status
-----
Application Based Policy      honor mode    allowed
MACsec extensions for WAN     honor mode    allowed
Reflexive Policies for Port Access GBP Clients honor mode    allowed
```

Deploying a File-Based Feature Pack Solution on a VSF Stack

The following section describes the procedure to install an Aruba CX premium or advanced feature pack on a VSF stack with feature pack subscriptions in [file-based mode](#).

Prerequisites

- The user has created a user account on the HPE Aruba Networking support portal.
- The user has already ordered their feature pack subscriptions from HPE Aruba Networking reseller.
- The HPE Aruba Networking support portal contains a [feature pack pool](#) with a number of feature pack subscriptions equal to or greater than the number of devices in the VSF stack.
- The **Orders** page on the HPE Aruba Networking support portal has been updated to indicate that the subscriptions for the user account will be managed in file-based mode. For details, see [Viewing Feature Pack Subscription Pools and Feature Pack Orders](#).

Procedure

1. Navigate to <https://licensemanagement.hpe.com>, and log in with your HPE Aruba Networking support user name and password.
2. From the **License Management** page, select **View Order**.

Figure 1 Viewing Current Orders on the HPE Aruba Networking Support Portal

The screenshot displays the 'License Management' interface. At the top, there is a navigation bar with 'HOME > LICENSE MANAGEMENT' and 'License Management'. Below this is a 'License summary' section with a green header. A message says 'Please select the product icon to view the licenses'. The main area contains a grid of product icons with their counts:

Product	Count
AOS	32732
Airwave	3452
ALE	217
QuickConnect	7
ClearPass NL	30535
ClearPass Legacy	126
VX	3
VRX	0
GMS	4
EdgeConnect	2
Central (9240)	7
Aruba Fabric Composer	565
Aruba Central	0
UXI	0
Central On Prem	0
AOS-CX FEATURE PACK	5

On the right side, there is a list of actions:

- ✓ **Activate**: To Activate your licenses.
- ↔ **Transfer Licenses**: To transfer single or multiple devices.
- ↔ **Transfer to Account**: To transfer singles or multiple account.
- View Order**: To view your orders. (This option is highlighted with a red box in the original image.)
- 📄 **Trial Licenses**: To view your trial licenses.
- ↔ **ClearPass NL-PAK**: To activate ClearPass license key.

3. On the **Orders** page, identify the feature pack you want to download and install on the switch.



Take care to verify that the available subscriptions in the block are equal or greater than the members in the VSF stack.


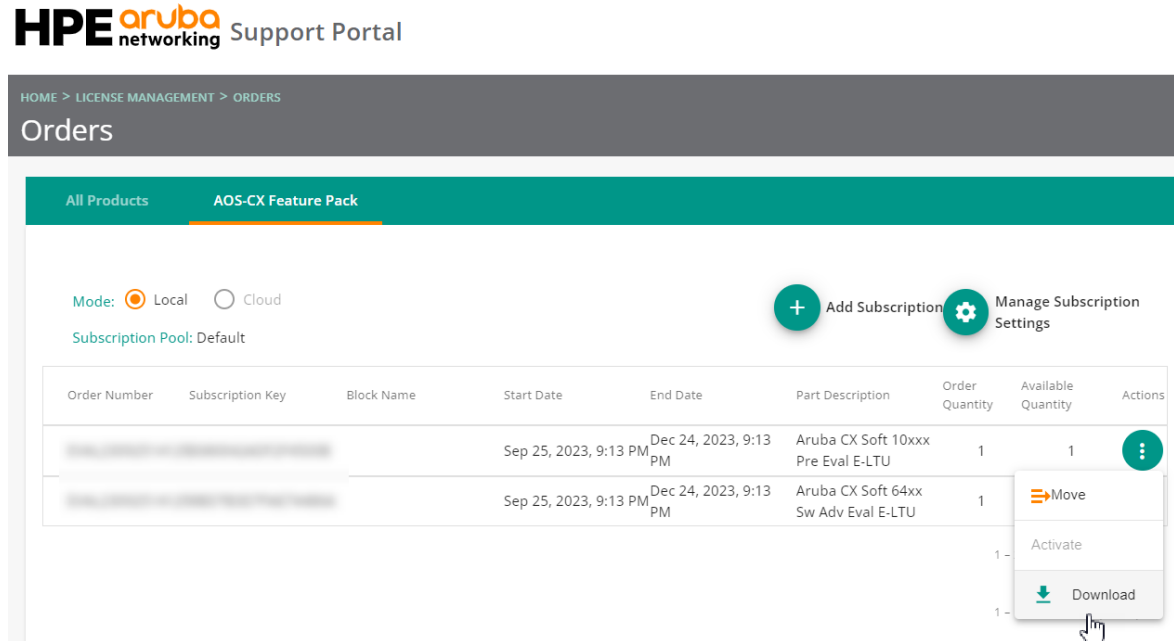
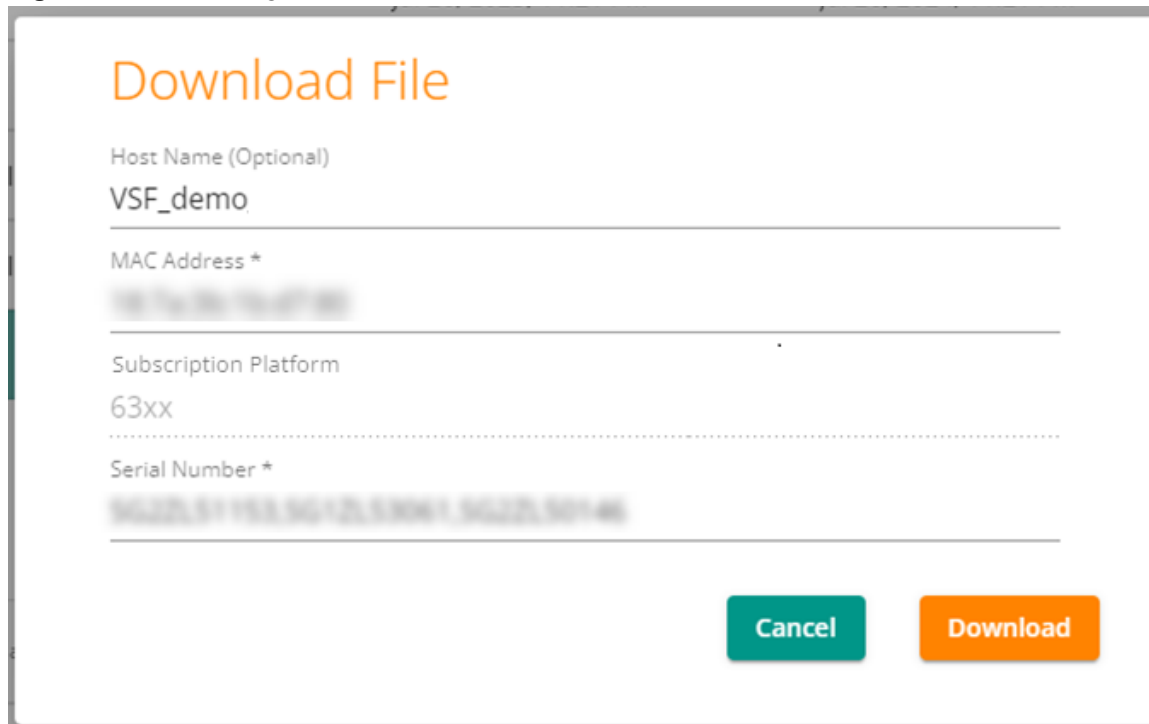
- Click the green actions icon  by the feature pack you want to download, and select **Download**. The **Download File** window opens.

Figure 2 Downloading Feature Pack Subscriptions from the Orders page.



- In the **Download File** window, enter the VSF conductor MAC address (available in the output of the **show vsf** command on the switch), the serial numbers of all the devices in the VSF stack in comma-separated format. Verify that the feature pack platform displayed in this window matches the platform of the switch that will use this feature pack.
- Click **Download**.

Figure 3 Downloading a Feature Pack File



7. Access the switch command-line interface and ensure that the device is configured to use file-based mode.

```
switch(config)# feature-pack mode file-based
```

8. Use the **copy** command to copy the feature pack file to the switch.

```
switch# copy tftp://192.168.1.1/feature-pack feature-pack vrf mgmt
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           %         0         0      7111k         0  --:--:--  --:--:--  --:--:--  7111k
writing feature-pack
```

9. Use the **show feature-pack** command to check the status of the feature pack on the conductor or the standby switch. Verify that the feature pack mode is **File Based**, the feature pack is installed and all features are allowed, and that the serial numbers listed represent all VSF members.

```
6300# show feature-pack
Feature Pack Summary
=====
Name           : CX Software Advanced feature pack
Expiration Date : Thu Sep 05 2024
Serial Number(s) : SG1ZL530661 SG2ZL504146 SG2ZL511853
MAC Address     : 18:7a:3b:1b:d7:80
Hostname       : VSF_demo
Type           : Device specific
Mode           : File Based
State          : feature pack installed and valid
Error Reason   : none

-----
Feature                               Subscription  Feature
Status                                Status      Status
-----
Application Based Policy               active      allowed
MACsec extensions for WAN               active      allowed
Reflexive Policies for Port Access GBP Clients active      allowed
Reflexive Policies for Port Access Clients active      allowed
```

10. Next, access the HPE Aruba Networking Support portal and verify that the feature pack appears to have been activated.
 - a. Navigate to <https://licensemanagement.hpe.com>, and log in with your HPE Aruba Networking support user name and password.
 - b. From the **License Management** page, select the CX-Switch icon to open the **Subscription Monitoring** page.
 - c. Check the details on this page to verify that the HPE Aruba Networking support portal correctly reflects that the feature pack is associated with all serial numbers in the VSF stack.



For more details on monitoring feature packs, refer to [Monitoring Feature Pack Subscriptions](#).

Adding a Switch with a Feature Pack to a VSF Stack

When you add a standalone switch with an existing floating feature pack subscription to a VSF stack with a floating feature pack subscription, the HPE Aruba Networking support portal will automatically extend the existing VSF feature pack to cover the new member, but it will not revoke the former standalone feature pack. This will result in an extra feature pack subscription being consumed in the HPE Aruba Networking support portal, as the single standalone subscription that is no longer being used. You must revoke the standalone subscription in the support portal to make it available for other switches to use.

Replacing a VSF Stack Member Using a File-Based Feature Pack subscription

The following section describes the procedure to replace a VSF stack member in a VSF stack with a file-based feature pack. This example installs the feature pack for all members of the stack,

Procedure

1. Log on to the switch command-line interface.
2. Use the **no vsf member <member>** command to remove the member you want to replace from the VSF stack. The following example removes the stack member with the serial number SG2ZL50146.

```
switch(config)# no vsf member 3
The specified switch will be unconfigured and rebooted
Do you want to continue (y/n)? y
```

3. After you remove the device from the VSF stack, features supported by the feature packs are still active. The **show feature-pack** command still includes the serial number of the device which was removed. The following example output shows that there are two members in the VSF stack, but three members are still associated with the feature pack subscription.

```
6300(config)# show vsf

Force Autojoin           : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address              : 18:7a:3b:1b:d7:80
Secondary                : 2
Topology                 : Chain
Status                   : No Split
Split Detection Method   : None

Mbr Mac Address          type          Status
ID
-----
1  18:7a:3b:1b:d7:80  R8S90A      Conductor
2  ec:02:73:f7:ec:c0  R8S92A      Standby    <<-Only 2 VSF Members in stack

switch(config)# show feature-pack
Feature Pack Summary
=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Thu Sep 05 2024
Serial Number(s) : SG1ZL53061 SG2ZL50146 SG2ZL51153 <<-Old VSF Member still listed
```



```

MAC Address      : 18:7a:3b:1b:d7:80
Hostname        : VSF_demo
Type            : Device specific
Mode            : File Based
State           : Feature pack installed and valid
Error Reason    : none

```

Feature	Subscription Status	Subscription Status
Application Based Policy	active	allowed
MACsec extensions for WAN	active	allowed
Reflexive Policies for Port Access GBP Clients	active	allowed
Reflexive Policies for Port Access Clients	active	allowed


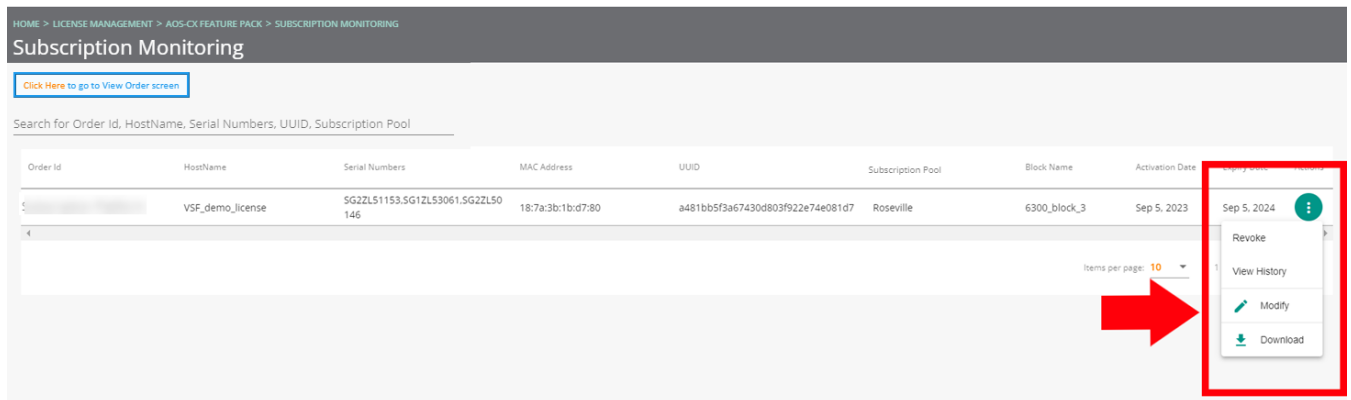
- Before adding the device, note the serial number of the new replacement device. Next, navigate to the **subscription Monitoring** page of the HPE Aruba Networking Support portal, as described in [Monitoring Feature Pack Subscriptions](#).
- In the **Subscription Monitoring** page, locate the feature pack subscription allocated to the VSF stack by entering the serial number of the VSF stack conductor into the search bar at the top of the page.
- Click the green actions icon  and select **Modify**. The **Download File** window opens.

Figure 1 *Modify a Feature Pack Subscription*



- Replace the serial number of the old VSF stack member with the serial number of the new VSF stack member.
- Click **Download** to re-download the updated feature pack.

Figure 2 Downloading the File for New VSF Switch Members

Download File

Host Name (Optional)
VSF_demo

MAC Address
18:7a:3b:1b:d7:80

Subscription Platform
63xx

Serial Number *
SG2ZL51153,SG1ZL53061,SG2ZL50172

Cancel Download

9. Use the **copy** command to copy the feature pack file to the switch.

```
switch# copy tftp://192.168.1.1/feature-pack feature-pack vrf mgmt
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           %             0         0  7111k      0  --:--:--  --:--:--  --:--:--  7111k
writing feature-pack
```

10. Use the **show feature-pack** command to validate that the new switch serial number is present in the updated feature pack.

```
6300# show feature-pack
Feature Pack Summary
=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Thu Sep 05 2024
Serial Number(s) : SG1ZL53061 SG2ZL50172 SG2ZL51153 << New member serial number
MAC Address     : 18:7a:3b:1b:d7:80
Hostname       : VSF_demo
Type           : Device specific
Mode           : File Based
State          : Feature pack installed and valid
Error Reason    : none

Feature                               Subscription  Feature
-----                               Status       Status
Application Based Policy               active       allowed
MACsec extensions for WAN               active       allowed
Reflexive Policies for Port Access GBP Clients active       allowed
Reflexive Policies for Port Access Clients active       allowed
```

11. Add the new device to the VSF stack. The new device is automatically enabled with the feature pack subscription.

- (Optional) Issue the **show vsf** command and the **show feature-pack** command a second time to verify that the new VSF member appears in the stack, and to verify the status of the feature pack on the stack.

```
switch# show vsf

Force Autojoin           : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address              : 18:7a:3b:1b:d7:80
Secondary                : 2
Topology                 : Ring
Status                   : No Split
Split Detection Method   : None

Mbr Mac Address          type          Status
ID
-----
1  18:7a:3b:1b:d7:80    R8S90A      Conductor
2  ec:02:73:f7:ec:c0    R8S92A      Standby
3  18:7a:3b:1b:b6:40    R8S89A      Member

switch(config)# show feature-pack
Feature Pack Summary
=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Thu Sep 05 2024
Serial Number(s) : SG1ZL53061 SG2ZL50172 SG2ZL51153 < New member serial number
MAC Address    : 18:7a:3b:1b:d7:80
Hostname       : VSF_demo
Type           : Device specific
Mode           : File Based
State          : Feature pack installed and valid
Error Reason   : none

Feature                               Subscription   Feature
Status                               Status        Status
-----
Application Based Policy              active        allowed
MACsec extensions for WAN              active        allowed
Reflexive Policies for Port Access GBP Clients active        allowed
Reflexive Policies for Port Access Clients active        allowed
```

- (Optional) Return to the **Feature Pack Monitoring** page on the HPE Aruba Networking support portal, and verify that the serial numbers for that order reflect the correct serial numbers for that stack.

Replacing a VSF Stack Conductor Using a File-Based Feature Pack subscription

The following section describes the procedure to replace a VSF stack conductor in a VSF stack with a file-based feature pack. This example installs the feature pack for all members of the stack,

Procedure

1. Log on to the switch command-line interface.
2. Trigger a switchover so member 1 is no longer the conductor.

```
switch# vsf switchover
This will cause an immediate switchover to the standby
and the conductor will reboot.

Do you want to continue (y/n)? y
switch#
```

1. Use the **no vsf member <member>** command to remove the conductor from the VSF stack. The following example removes the stack member with the serial number SG2ZL50146.

```
switch(config)# no vsf member 1
The specified switch will be unconfigured and rebooted
Do you want to continue (y/n)? y
```

2. After you remove the conductor from the VSF stack, features supported by the feature packs are still active. The **show feature-pack** command still includes the serial number of the device which was removed. The following example output shows that there are two members in the VSF stack, but three members are still associated with the feature pack subscription.

```
6300(config)# show vsf

Force Autojoin           : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address              : 18:7a:3b:1b:d7:80
Secondary                : 2
Topology                 : Chain
Status                   : No Split
Split Detection Method   : None

Mbr Mac Address          type          Status
ID
-----
1  18:7a:3b:1b:d7:80    R8S90A      Conductor
2  ec:02:73:f7:ec:c0    R8S92A      Standby  <<-Only 2 VSF Members in stack

switch(config)# show feature-pack
Feature Pack Summary

=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Thu Sep 05 2024
Serial Number(s) : SG1ZL53061 SG2ZL50146 SG2ZL51153 <<-Old VSF Member still listed
MAC Address    : 18:7a:3b:1b:d7:80
Hostname       : VSF_demo
Type           : Device specific
Mode           : File Based
State          : Feature pack installed and valid
Error Reason   : none

Subscription      Subscription
```

Feature	Status	Status
Application Based Policy	active	allowed
MACsec extensions for WAN	active	allowed
Reflexive Policies for Port Access GBP Clients	active	allowed
Reflexive Policies for Port Access Clients	active	allowed

3. Add the new conductor to the VSF stack.
4. Reboot the VSF stack so that it no longer uses the MAC address of the former conductor. The former conductor (now a standalone switch) and the remaining VSF stack will continue to use the MAC address until the VSF stack reboots. If you attempt to add a feature pack to the standalone switch before you reboot the VSF stack, you may get an error saying that it already has a feature pack, because the MAC address is the same as the existing VSF stack.
5. Note the serial number of the replacement device and the new MAC address of the stack.
6. Download the new feature pack using the procedure described in [Deploying a File-Based Feature Pack Solution on a VSF Stack](#).
7. Use the **show feature-pack** command to validate that the new switch serial number is present in the updated feature pack.

```
6300# show feature-pack
Feature Pack Summary

=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Thu Sep 05 2024
Serial Number(s) : SG1ZL53061 SG2ZL50172 SG2ZL51153 << New member serial number
MAC Address     : 18:7a:3b:1b:d7:80
Hostname       : VSF_demo
Type           : Device specific
Mode           : File Based
State          : Feature pack installed and valid
Error Reason    : none

Feature                               Subscription   Feature
-----                               -
Application Based Policy               active        allowed
MACsec extensions for WAN              active        allowed
Reflexive Policies for Port Access GBP Clients active        allowed
Reflexive Policies for Port Access Clients active        allowed
```

8. (Optional) Issue the **show vsf** command and the **show feature-pack** command a second time to verify that the new VSF member appears in the stack, and to verify the status of the feature pack on the stack.

```
switch# show vsf

Force Autojoin           : Disabled
Autojoin Eligibility Status: Not Eligible
MAC Address              : 18:7a:3b:1b:d7:80
Secondary                : 2
Topology                 : Ring
```

```
Status : No Split
Split Detection Method : None
```

Mbr ID	Mac Address	type	Status
1	18:7a:3b:1b:d7:80	R8S90A	Conductor
2	ec:02:73:f7:ec:c0	R8S92A	Standby
3	18:7a:3b:1b:b6:40	R8S89A	Member

```
switch(config)# show feature-pack
Feature Pack Summary
```

```
=====
Name : CX Software Advanced Feature Pack
Expiration Date : Thu Sep 05 2024
Serial Number(s) : SG1ZL53061 SG2ZL50172 SG2ZL51153 < New member serial number
MAC Address : 18:7a:3b:1b:d7:80
Hostname : VSF_demo
Type : Device specific
Mode : File Based
State : Feature pack installed and valid
Error Reason : none
```

Feature	Subscription Status	Status
Application Based Policy	active	allowed
MACsec extensions for WAN	active	allowed
Reflexive Policies for Port Access GBP Clients	active	allowed
Reflexive Policies for Port Access Clients	active	allowed

- (Optional) Return to the **Feature Pack Monitoring** page on the HPE Aruba Networking support portal, and verify that the serial numbers for that order reflect the correct serial numbers for that stack.

Viewing Feature Packs on Switches

You do not need to enable feature packs on AOS-CX switches managed by Aruba Central, as all features supported by these feature packs are enabled when the switch connects to Aruba Central. Aruba Central takes precedence over any other feature pack configured mode.



If you want to use the HPE Aruba Networking support portal for feature pack management instead of Aruba Central, disable Central on the switch. This will allow you to set up a new cloud server profile.

Issue the **show feature-pack** command to verify that the switch is currently connected to Aruba Central.

```
6300# show feature-pack
Feature Pack Summary
=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Fri Aug 12 2033
Serial Number(s) : SG2ZL50199
MAC Address     : 18:7a:3b:1b:c6:16
Hostname       : 6300M
Type           : Device specific
Mode           : File Based
State          : Aruba Central managed and connected
Error Reason    : none

Subscription   Feature                               Status      Status
-----
Application Based Policy           active      allowed
MACsec extensions for WAN          active      allowed
Reflexive Policies for Port Access GBP Clients active      allowed
Reflexive Policies for Port Access Clients active      allowed
```

The feature-pack on the switch will display the **Aruba Central managed and connected** state only if *all* the following are true:

- The switch has connection to Central.
- The switch is onboarded to the GreenLake for PrivateCloud (GLPC) device inventory .
- The switch is assigned to Central Application in GLPC.
- The switch has a valid Central License assigned in GLPC .

If a Central-managed switch is unable to reach Aruba Central, features supported by the feature pack are still allowed on the switch, even though the output of the **show feature-pack** command shows that the feature pack subscription is inactive. The mode field displays a default status of **File-Based**, but the mode does not apply as switch is managed by Central.

```
6300# show feature-pack
Feature Pack Summary
=====
```

```

Name           : CX Software Advanced Feature Pack
Expiration Date : Fri Aug 12 2033
Serial Number(s) : SG2ZL50199
MAC Address    : 18:7a:3b:1b:c6:16
Hostname       : 6300M
Type           : Device specific
Mode           : File Based
State          : Aruba Central managed and disconnected
Error Reason   : none

```

Feature	Subscription Status	Feature Status
Application Based Policy	inactive	allowed
MACsec extensions for WAN	inactive	allowed
Reflexive Policies for Port Access GBP Clients	inactive	allowed
Reflexive Policies for Port Access Clients	inactive	allowed

In addition, the following message is logged when the switch connects to Aruba Central.

```

2023-09-20T07:04:03.172885+00:00 6300 feature-pack-mgrd[4077]: Event|14407|LOG_
INFO|CDTR|1|Feature pack subscription through Aruba Central is connected

```

For more log messages related to feature pack events, see [Feature Pack events](#).

Feature pack commands

erase feature-pack

```
erase feature-pack [reset]
```

Description

Remove the installed feature pack and delete the feature pack file.

Parameter	Description
reset	<i>Optional.</i> Include this parameter if you do not want to use subscription features anymore and want to stop receiving honor mode warning logs messages. Running this command will disable all subscription features and stop honor warnings.

Example

Remove the feature pack. The switch will continue to operate in honor mode.

```
switch# erase feature-pack
```

Remove the feature pack and disable all subscription features.

```
switch# erase feature-pack reset
```


This operation will delete the feature pack subscription key and reset feature pack enforcement to a factory default state. This will disable advanced features that require a subscription to operate and may impact network operation if those features are in use.

After running this command, advanced features can only be re-enabled through one of the following:

1. Installing a new feature-pack subscription key.
2. Connecting to HPE Aruba Networking Central.
3. Configuring honor mode.

Continue (y/n)?

Command History

Release	Modification
10.14	The reset parameter is introduced.
10.13	Command introduced.

Command Information

Platforms	Command context	Authority
6300 6400 8100 8320 8325 8325H 8325P 8360 8400 9300 9300S 10000	manager	Administrators or local user group members with execution rights for this command.

feature-pack mode

```
feature-pack mode
  cloud-managed
  file-based
  honor
  no ...
```

Description

Set the operation mode for a feature pack deployment.

HPE Aruba Networking provides three modes for feature pack management: **cloud-managed**, **file-based**, and **honor**. In the event of a mismatch between the installed feature pack and the feature pack mode, the device will operate in honor mode.

Parameter	Description
cloud-managed	The device uses cloud-based feature pack management
file-managed	The device uses a manually installed feature pack file. This is the default feature pack mode.
honor	A valid feature pack has been obtained, but is not yet installed.
no ...	Resets the configuration back to the default file-based feature pack mode.

Usage

Switches using feature pack subscription keys in **cloud mode** share a pool of one or more feature pack subscription keys managed using the HPE Networking support portal. By default, a switch using an HPE Aruba Networking CX feature pack in cloud mode will contact the HPE Networking support portal once a day to automatically synchronize with the feature pack subscription key management database. With this deployment type, the HPE Networking support site can automatically distribute and manage feature packs for all devices in a group, making it a scalable solution for larger deployments and for global accounts across geographies.

Networks with a single switch, or with multiple switches on isolated networks that cannot contact the HPE Networking support site should use feature pack subscription keys in **file-based mode**, where a feature pack is manually enabled on a switch using a non-sharable subscription key tied to that individual switch's serial number or MAC address.

Honor mode is intended for cases where a valid feature pack for advanced features has been purchased, but is not yet installed on the device. Advanced features on this device will be operational in Honor mode, but a warning message may be seen until a valid feature pack is installed. Please note that HPE Aruba Networking will remove support for Honor mode in a future release and advanced features will only be operational if the applicable subscription fees are paid and a valid feature pack is installed.

Examples

```
switch(config)# feature pack mode cloud-managed
```

Command History

Release	Modification
10.13	Command introduced

Command Information

Platforms	Command context	Authority
6300 6400 8100 8320 8325 8325H 8325P	config	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.

Platforms	Command context	Authority
8360 8400 9300 9300S 10000		

feature-pack server

```
feature-pack server
  block <block>
  credentials user <USER> password [{plaintext <PASSWORD>}|{ciphertext <PASSWORD>}]
  location <LOCATION> [vrf <VRF>]
  pool <pool>
```

Description

If the switch is in cloud-managed feature pack mode, use this command to define the switch's feature pack profile. A switch in cloud-managed mode uses the information in this profile to contact the feature pack management server and download and install any allocated feature packs.

Parameter	Description
<code>block <block></code>	If the subscription pool for the profile contains more than one subscription block, specify the subscription block within that pool to be assigned.
<code>credentials</code>	Configures the credentials used by the device to contact and authenticate to the feature pack server.
<code>user <USER></code>	The user name of a feature pack server account.
<code>password</code>	Select a mode for entering the feature pack server password. If you press <enter> after the password parameter, you will enter a secure prompt that allows you to securely enter a hidden password. <i>This is the recommended method for entering a plaintext password.</i> You can include the optional plaintext parameter to configure a plain text password (not recommended), or use the optional ciphertext parameter to enter previously encrypted ciphertext password.
<code>plaintext <PASSWORD></code>	Optional. Enter a password in plain text without the secure prompt. <i>This option does not hide the password in the CLI, and is not recommended.</i>
<code>ciphertext <PASSWORD></code>	Optional. Enter a password as previously encrypted text. <i>This is the recommended method for entering an encrypted password.</i>
<code>location <LOCATION></code>	The FQDN of the feature pack server; <code>https://cx-feature-pack.arubanetworks.com</code>
<code>[vrf <VRF>]</code>	(Optional) Specify the VRF used to contact the feature pack server.
<code>pool <pool></code>	Configures the feature pack server subscription pool. This information is used by the feature pack server to properly identify the subscription to be assigned to the device.

Examples

Defining a feature pack server by entering a hidden plain text user password.

```
switch(config)# feature-pack server
switch(config-feature-pack-server)# location https://cx-feature-
pack.arubanetworks.com vrf mgmt
switch(config-feature-pack-server)# credentials user myLMSUser1234 password
Enter password: *****
Confirm password: *****
```

Defining a feature pack server with an encrypted ciphertext user password.

```
switch(config)# feature-pack server
switch(config-feature-pack-server)# location https://cx-feature-
pack.arubanetworks.com vrf mgmt
switch(config-feature-pack-server)# credentials user myLMSUser1234 password
ciphertext
AQBapcmUTsCVdaTGkLA3mN2sslLgsNOdqFUP0j+CaCxVdz7oEwAA2OmsmBmgPHavS+6Gkgm2twE4NU1Y=
```

Command History

Release	Modification
10.13.1000	Plaintext passwords should now be configured using the secure prompt, which can be accessed by pressing <enter> after the password keyword. This makes the plaintext and ciphertext keywords optional. It is recommended to use either the secure prompt or the ciphertext option.
10.13	Command introduced

Command Information

Platforms	Command context	Authority
6300	config	Operators or Administrators or local user group members with execution rights for this command. Operators can execute this command from the operator context (>) only.
6400	config-feature-pack-server	
8100		
8320		
8325		
8325H		
8325P		
8360		
8400		
9300		
9300S		
10000		

feature-pack validate

feature-pack validate

Description

Manually trigger a feature pack validation on the HPE Networking support portal. (By default, automatic validation happens once every day.) This command is only applicable for feature packs in cloud-managed mode.

Examples

```
switch# feature-pack validate
```

Command History

Release	Modification
10.13	Command introduced

Command Information

Platforms	Command context	Authority
6300 6400 8100 8320 8325 8325H 8325P 8360 8400 9300 9300S 10000	manager	Administrators or local user group members with execution rights for this command.

show feature-pack

```
show feature-pack [server]
```

Description

Display the current feature pack summary and status, and feature status of features that require a feature pack.

Parameter	Description
<i>server</i>	(Optional) For feature packs in cloud-managed mode, include this parameter to display configuration settings used to connect to the feature pack management server, and display the connection status information.

Examples

```
switch# show feature-pack  
Feature Pack Summary
```

```

=====
Name           : CX Software Advanced Feature Pack
Expiration Date : Thu May 4 2025
Serial Number(s) : TW13KM304V
MAC Address     : 90:20:c2:c4:98:00
Hostname        : 6405
Mode            : File based
Status          : feature pack installed and valid
Error Reason    : None

Feature                               Subscription   Feature
Status                               Status        Status
-----
Application Based Policy               active        allowed
MACsec extensions for WAN              active        allowed
Reflexive Policies for Port Access GBP Clients active        allowed
Reflexive Policies for Port Access Clients active        allowed

```

```

switch# switch# show feature-pack server
Profile
=====
Location URL       : https://cx-feature-pack.arubanetworks.com
Location VRF      : mgmt
User account       : customer@example.com
Subscription Pool  : default
Subscription Block : 6300_test_block_2
Connection
=====
Status           : Validation success
Reason            : --
Last validation time : Tue Sep 12 09:27:42 UTC 2023
Success validation time : Tue Sep 12 09:27:42 UTC 2023

```

The output of the **show feature-pack** command include the following information:

Value	Description
Name	Name of the feature pack
Expiration Date	The date that the feature pack subscription expires
Serial Numbers	Serial numbers for that feature pack. If the feature pack is used by multiple switches (for example, in a VSF deployment) then the Serial Number(s) field displays all the switch serial numbers for that feature pack.
MAC address	MAC address of the switch using the feature pack
Hostname	Host name of the switch using the feature pack
Type	Shows the feature pack file type: <ul style="list-style-type: none"> ▪ Device specific: Feature pack was manually downloaded from a feature pack server account in local mode. Use this feature pack with a switch in file-based mode.. ▪ Floating: The feature pack was automatically downloaded from a cloud mode feature pack account on the HPE Networking support portal. This feature pack should be used

Value	Description
Mode	<p data-bbox="756 184 1208 212">with the switch in cloud-managed mode.</p> <p data-bbox="721 247 1214 275">Shows the feature pack configuration mode:</p> <ul data-bbox="721 281 1455 1020" style="list-style-type: none"> <li data-bbox="721 281 1455 422">▪ Cloud management: Switches using feature pack subscriptions in cloud-managed mode share a pool of one or more feature pack subscriptions. These subscriptions are managed through the HPE Networking support portal. <li data-bbox="721 428 1455 590">▪ File Based: If a switch is using a feature pack in file-based mode, you must manually upload the feature pack using the copy command and enable it on a switch using a non-sharable subscription file tied to that individual switch's serial number or MAC address. <li data-bbox="721 596 1455 1020">▪ Honor: Honor mode is intended for cases where a valid feature pack for advanced features has been purchased, but is not yet installed on the device. Advanced features on this device will be operational in honor mode, but a warning message may be seen until a valid feature pack is installed. Please note that HPE Aruba Networking will remove support for Honor mode in a future release and advanced features will only be operational if the applicable subscription fees are paid and a valid feature pack is installed. This message is shown when the switch is configured to use a cloud-managed feature pack profile using the feature pack mode cloud-managed command.
Status	<p data-bbox="721 1056 1393 1083">This message displays the current status of the feature pack:</p> <ul data-bbox="721 1089 1455 1818" style="list-style-type: none"> <li data-bbox="721 1089 1455 1150">▪ No feature pack installed: No feature pack is detected on the switch. <li data-bbox="721 1157 1455 1218">▪ Feature pack installed and valid: Feature pack installed with no errors. <li data-bbox="721 1224 1455 1251">▪ Feature pack install error: The feature pack has invalid data. <li data-bbox="721 1257 1455 1318">▪ Feature pack expired: The feature pack subscription has expired. <li data-bbox="721 1325 1455 1386">▪ Feature pack removed: The feature pack was erased from the switch using the erase command. <li data-bbox="721 1392 1455 1818">▪ Subscription through HPE Aruba Networking Central is connected: Switch is actively connected to HPE Aruba Networking Central. Subscription features are operational. The feature-pack on the switch will display this state only if <i>all</i> the following are true: <ul data-bbox="756 1587 1455 1818" style="list-style-type: none"> <li data-bbox="756 1587 1455 1648">◦ The switch has a connection to HPE Aruba Networking Central. <li data-bbox="756 1654 1455 1715">◦ The switch is onboarded to the GreenLake for PrivateCloud (GLPC) device inventory . <li data-bbox="756 1722 1455 1818">◦ The switch is assigned to HPE Aruba Networking Central Application.

Value

Description

- The switch has a valid HPE Aruba Networking Central License assigned.
- **Subscription through HPE Aruba Networking Central is disconnected:** Switch is disconnected from HPE Aruba Networking Central. Subscription features are still operational. The switch will appear in this state if any of the requirements for the status is not currently true, A switch may also display this feature pack status if the switch has connection to HPE Aruba Networking Central, is assigned to the Central application, but has no Central License attached. In this case the switch will be in disconnected state even if it never was previously in connected state.
- **Feature pack mode honor configured:** The switch does not have a valid feature pack. Subscription features are operational, and is operating in honor mode until the feature pack is installed.
- **Cloud managed server is disconnected:** The switch is managing feature packs in cloud mode, but the switch is no longer able to reach the HPE Networking support portal. The switch will continue to operate in honor mode.
- **Cloud managed and subscription revoked from server:** The switch is managing the feature pack in cloud mode, but feature pack has been revoked from the switch through the HPE Networking support portal. The switch will continue to operate in honor mode until the feature pack is removed from the switch.
- **Cloud managed server validation error:** Server validation failed. Issue the command **show feature pack server** for more information.
- **Unexpected VSF member in stack:** A feature pack intended for a VSF stack is installed on a VSF member whose serial number is not covered under the current feature pack.
- **Mode does not match installed feature pack type:** The feature pack type (device-locked or floating) does not match the configured mode. Device-locked feature packs should be used in file-based deployments only, and floating feature packs should be used by cloud-managed deployments.

Error Reason

If the feature pack **Status** field displays an error status, this field displays details about possible causes for the issue.

- **Serial number mismatch:** The serial number in the installed feature pack does not match the switch's serial number.
- **MAC address mismatch:** The MAC address in the installed feature pack does not match the switch's serial number.
- **Feature pack file parsing error:** The feature pack file has an invalid format.
- **Feature pack file signature invalid:** The feature pack file was

Value	Description
	modified.
Feature	Name of the feature supported by the feature pack.
Subscription Status	Current subscription status; <ul style="list-style-type: none"> ▪ active: Subscription is active. ▪ inactive: Subscription is inactive or has expired. ▪ honor: Installed feature pack has expired or cloud managed feature pack has encountered an error. Warnings will be logged periodically.
Feature Pack Status	Current status of the feature pack: <ul style="list-style-type: none"> ▪ allowed: Feature is functional. ▪ blocked: Feature is not functional and will require a valid feature pack to be functional. ▪ not running: Feature is not configured on switch and daemon is not running ▪ unsupported on SKU: Feature is not supported on product SKU. ▪ unsupported with VSF: Feature is not supported on a VSF stack.

The output of the **show feature-pack** server command include the following information:

Location URL	Fully qualified domain name of the feature pack subscription server, for example, https://cx-feature-pack.arubanetworks.com
Location VRF	VRF used to access the feature pack subscription server.
User Account	User name of the user account at the HPE Networking support portal associated with the feature pack.
Subscription Pool	Name of the subscription pool associated with the feature pack. This can be the Default subscription pool, or a user-defined subscription pool.
Subscription Block	Subscription block associated with the feature pack.
Status	Indicates whether the switch was able to contact the feature pack server.
Reason	If the switch is unable to contact the feature pack server, this field can display information about the cause for the connection failure.
Last validation time	Timestamp showing the date and time the switch last contacted the feature pack server.
Success Validation time	Timestamp showing the date and time of the last successful feature pack installation or validation against the feature pack server

Command History

Release	Modification
10.16	The output of this command no longer displays the subscription status of the Application Recognition feature, as this feature no longer requires a feature pack subscription.
10.13	Command introduced

Command Information

Platforms	Command context	Authority
6300 6400 8100 8320 8325 8325H 8325P 8360 8400 9300 9300S 10000	<code>manager</code>	Administrators or local user group members with execution rights for this command.

Frequently Asked Questions (FAQs)

The following sections of this document answer frequently asked questions (FAQs) about AOS-CX feature packs and feature pack management. Select any category below to view FAQs and answers for that category type.

- [General Feature Pack FAQs](#)
- [Advanced Feature Pack FAQs](#)
- [10000 Switch Series Feature Pack FAQs](#)
- [Subscription Management FAQs](#)
- [Feature Pack Domain/Subaccount FAQs](#)
- [Feature Pack Expiration and Renewal FAQs](#)
- [VSF and VSX FAQs](#)

General Feature Pack FAQs

What type of feature packs do I need?

The choice of feature pack depends on your desired features. AOS-CX features are organized into a set of native enterprise features available in every CX switch at no cost, and an optional, term-based Advanced Feature Pack for 6300, 6400, 8xxx, and 9300 Switch series. Feature packs can be consumed standalone or combined with a Central Advanced subscription. The 10000 Switch series require a Advanced Feature Pack, which can be optionally replaced by a Premium Feature Pack to support additional features.

Will I receive switch software updates even if I do not purchase a Feature Pack?

AOS-CX software updates are not contingent upon whether a customer has purchased a feature pack. HPE Aruba Networking will continue to maintain and enhance the native functionalities of the AOS-CX operating system, making them available to customers through the regular AOS-CX software release cycle.

At any point of time, how many feature packs can a CX switch have?

A switch can have one single feature pack, or can operate with no feature pack installed. A switch cannot have more than one feature pack.

Does switch platform define the required type of feature packs for product?

The software feature set drives the requirement for Feature Pack. There is only one Advanced Feature Pack for 6300, 6400, 8xxx, and 9300 Switch series. Only 10000 switch series offers two options: an Advanced Feature Pack and a Premium Feature Pack.

How I know which features are strictly enforced and cannot be used without a subscription?

The output of the **show feature-pack** provides this information per switch platform.

Advanced Feature Pack FAQs

What will happen when I configure an advanced feature without a Feature Pack?

When a user configures an advanced feature the CLI will display a warning. In honor-based enforcement the user is warned that an advanced feature is in use, and it will operate normally. In Strict enforcement mode, the user is warned that a feature is advanced, and the feature will not operate until a valid feature pack is installed. Note: all configurations are accepted with warnings. Features become operational depending on the enforcement mode.

Can I upgrade to the CX Advanced Feature Pack once I have purchased a switch?

Yes. You can upgrade to a CX Advanced Feature Pack after a switch purchase.

If I already own an HPE Aruba Networking Central Advanced subscription, is there any need to purchase CX Software Advanced feature pack subscription?

If you have a Central Advanced subscription for 6300, 6400, 8xxx, and 9300 Switch series, there is no need to purchase a CX Advanced Feature Pack.

A Central Advanced subscription automatically enables CX features included in the CX Advanced Feature Pack. Note that the 10000 Switch series does require a feature pack, even if you already own a Central Advanced subscription for a CX 10000 switch.

If I purchased a 1-year CX Advanced Feature Pack for a switch, after one year can I alter my plan to 3-year subscription?

Yes. HPE Aruba Networking does allow you to alter subscription plans.

If I purchased 3-year CX Advanced Feature Pack for a 10000 Switch, can I upgrade after one year from the current CX Advanced subscription to the CX Premium Feature Pack?

Currently there is no automated upgrade option, but HPE Aruba Networking sales can provide a manual upgrade option.

Can I purchase an Advanced Feature Pack subscription for all the HPE Aruba Networking CX switch series?

No. The Advanced Feature Pack is only available for the 6300, 6400, 8100, 8320, 8325, 8360, 8400, 9300, and 10000 Series switches. There is no requirement or option to purchase any feature pack for 4100i, 6000, and 6100 platforms.

What features are supported in each CX series with purchase of CX Advanced and Premium feature packs?

For platform-specific advanced feature support, refer to the [HPE Aruba Networking Switch Feature Navigator](#).

How do I can get a temporary CX Advanced Feature Pack subscription to perform a demo for new advanced features?

Contact your HPE Aruba Networking sales representative for more information about a 90-day CX Advanced Feature Pack Eval subscription. Eval feature packs are intended for evaluation purposes only and are not meant for production deployments.

10000 Switch Series Feature Pack FAQs

Is there any Evaluation feature pack for the 10000 Switch series ?

Yes. There is a CX Advanced Feature Pack Eval subscription and a CX Premium Feature Pack Eval subscription for 10000 Switch series.

How are feature pack enforced on the 10000 Switch series platform, considering that some features are deployed from AMD Pensando PSM, and strict enforcement cannot be applied to them?

Since the policy features are deployed from AMD Pensando Policy and Services Manager (PSM), PSM-specific features on the 10000 Switch series are not enforced. Non-PSM features like *Container* are subject to enforcement in AOS-CX.

Are all AOS-CX 10000 features available under the CX Premium Feature Pack?

Yes. Several 10000 Switch series features are available in both the CX Advanced Feature Pack and the CX Premium Feature Pack, but some select features will only be available with CX Premium.

How do the feature pack warning message on 10000 Switch series differ from other CX platforms?

- All platforms log a warning message when an advanced feature is used without a valid feature pack while in honor mode. However, 10000 Switch series will also log a warning message if no feature pack is found, regardless of whether advanced features are used.
- A 10000 Switch series displays warning messages if a user configures advanced features while no feature pack file is installed.

Subscription Management FAQs

How do I place an order for the CX Software feature packs?

Orders are processed by an HPE Aruba Networking representative. You must have an account on the HPE Aruba networking licensing management portal to activate your orders.

Does the HPE Aruba Networking licensing management portal support Multi-Factor Authentication (MFA) for feature packs in cloud-managed mode?

Multi-Factor Authentication (MFA) is supported on HPE user accounts and MFA is compatible with all feature pack modes and management methods. MFA is both supported and recommended.

Feature Pack Domain/Subaccount FAQs

Can users with access to a subaccount of a feature pack domain view or access feature packs within another user account of that domain?

No. A user cannot create a feature pack pool in any domain or user account other than their own. However, if a user account is added to multiple domains in the HPE Aruba Networking support portal then that user account can view and access feature-packs in those multiple domains. It is important to note that a user account can only have one domain as its “primary account”. If a user account is part of multiple domains, then when that user account’s credentials are configured on the switch for cloud-managed feature-packs, the HPE Aruba Networking support portal will connect that switch to the domain assigned as the user’s primary account.

If I already created a subaccount for a feature pack domain, can I create another subaccount within the first subaccount?

No. You cannot create a subaccount within another subaccount.

Feature Pack Revocation FAQs

What user roles within a feature pack domain account have access to this view or revoke a feature pack?

Both Admin and standard users can view feature pack details, but only Admin users will be able to revoke a feature pack.

Feature Pack Expiration and Renewal FAQs

What happens if a feature pack expires? Do services stop?

When a feature pack expires, advanced features are not out of service immediately. These features will continue to work in honor mode. This mode provides a warning message that reminds users to renew, yet avoids strict enforcement that can disable a feature and potentially cause network disruptions.

How can I track feature pack expirations and renewals?

Feature pack renewal can be automated or done manually. The HPE Aruba Networking support portal allows users to monitor feature packs they have generated, and order a new feature pack to replace one about to expire. With automated renewal, if a feature pack has expired, the Support Portal will trigger an auto-renewal order available for the number of feature packs that must be renewed, if available. The Support Portal will then activate the new feature packs to allow the switch to undergo auto-renewal of its feature pack.

VSF and VSX FAQs

If I want to enable advanced features on a 6300 Switch series VSF stack, then how many feature packs do I need to purchase?

Stacked switches are required to have one feature pack per member,

I have a VSF stack of five members, each having its own feature pack. If I add a new member and there is no feature pack available in feature pack pool within LMS, then does entire stack stop working?

No, the stack continues to work. One of the key benefits of the HPE Aruba Networking subscription model is that a network is not impacted by a feature pack going invalid – this includes a feature pack expiring, or a scenario where a valid, subscribed stack is changed to include an unsubscribed member.

What happens if the MAC/serial of a device added to a VSF stack is not included in the feature pack file?

The feature pack file contains the MAC/serial of each subscribed member, so any MAC/serial in the stack but not present in the feature pack file is considered an unsubscribed device.

How frequently are critical event messages logged when a switch operates without a valid feature pack for a specific feature?

Critical event messages will be logged to indicate that the system is operating with an invalid feature pack. These messages will be generated twice a day for each feature used without a valid feature pack.

Can I manage a subscription from the conductor in a VSF stack?

Yes. The VSF stack conductor is responsible for all the feature pack management for that stack, and the feature pack is installed as a bundle for all the members.

Can I manage a subscription from primary device in a VSX cluster?

Feature packs on a VSX cluster are not managed only from the VSX primary node. In a VSX cluster, both nodes, primary and secondary, must manage their own feature packs independently.

Troubleshooting Feature Pack Issues

Use the following workflows to identify and fix problems with your Aruba CX feature pack deployment.

How do I know there is a feature pack issue?

Warning Logs from Subscription Features

Features that require a CX feature pack will generate warning event logs if a valid feature pack is missing.

For example, the Application Based Policy feature will generate the following log message if the feature is missing a valid feature pack, even though the feature is still operational. This log message can be triggered by scenarios such as feature pack expiration, or a loss of connection to the HPE Aruba Networking support portal.

```
Event|10536|LOG_WARN|CDTR|1|Policy policy1 is of type ABP and a valid feature pack is required to use the policy. The policy is currently in use without a valid feature pack.
```

If the Application Based Policy feature is blocked due to a missing or invalid feature pack, then the switch will generate the following log message. This issue can occur if the feature has never had a valid feature pack, or if the switch has been zeroized.

```
Event|10535|LOG_ERR|CDTR|1|Policy policy1 is of type ABP and a valid feature pack is required to use the policy. All clients associated with this policy will be unauthorized until a valid feature pack is installed.
```

If the switch displays warning logs for a subscription feature, refer to [Reasons for Feature Pack Issues](#) for help with identifying and resolving the issue.

Feature-Pack Show Commands

The switch command-line interface includes feature-pack show commands to display the status of the feature pack and subscription features on the switch. The [show feature-pack](#) and [show feature-pack server](#) commands will display an error message if there is a feature-pack related issue.

Reasons for Feature Pack Issues

If the event logs or show commands are showing errors on the switch. These commands will display an error message if there is a feature pack related issue.

Feature is blocked by missing feature pack

When a feature is blocked due to an invalid or missing feature pack, the **show feature-pack** command will display the **Subscription Status** as **inactive** and **Feature Status** as **blocked**. To resolve this issue, install a valid feature pack onto the switch. For more information, see [Deploying a Cloud-managed Feature Pack Solution on a Standalone Switch](#) or [Deploying a File-Based Feature Pack Solution on a Standalone Switch](#).

```
6300# show feature-pack
Feature Pack Summary
=====
Name           : --
Expiration Date : --
Serial Number(s) : --
MAC Address    : --
Hostname       : --
Type           : --
Mode           : File Based
State          : No feature pack installed
Error Reason   : --

Feature                               Subscription Status  Feature Status
-----
Application Based Policy              inactive           blocked
MACsec extensions for WAN              inactive           blocked
Reflexive Policies for Port Access    inactive           blocked
Reflexive Policies for Port Access    inactive           blocked
```

The Switch is Out of Sync with the HPE Aruba Networking Support Portal

If changes have been made on the switch or the HPE Aruba Networking support portal, and the switch feature pack state is out-of-date, issue the [feature-pack validate](#) command to force the switch to immediately synchronize with the support portal.

HPE Aruba Networking Support Portal account is locked after changing the password

A network admin using feature packs in cloud mode may experience a lockout of their HPE account after changing their password due to the switches syncing with the old password. When changing the password of the user account credentials configured on switches for cloud-managed subscriptions, use the following to avoid unexpected account lockouts:

1. Configure all switches into file-mode using the command **feature-pack mode file-based**. This will prevent the switches from syncing with the HPE Networking Support Portal during the password change process.



Note: This will cause the switches to move into honor mode due to a mismatch between feature-pack type and configured mode, but subscription features will remain operational.

2. Proceed with the password change on the HPE user account.
3. Configure the new password on each switch using the secure prompt or ciphertext options.

Using secure prompt:


```
switch (config-feature-pack-server)# credentials user <USER> password
<enter>".
```

Using ciphertext :

```
switch (config-feature-pack-server)# credentials user <USER> password
ciphertext <CIPHERTEXT>"
```

4. Configure each switch into cloud-managed mode using the command **feature-pack mode cloud-managed**, then verify subscriptions are validated using **show feature-pack server** and **show feature-pack**.

Missing Feature Pack Profile Fields

The feature pack profile on the switch requires a location, user account credentials, and subscription pool information. If any of those fields are missing, the output of the **show feature-pack server** command will indicate that there are missing profile fields. Configure the missing fields to resolve the error and connect to the support portal.

```
6405# show feature-pack server
Profile
=====
Location URL           : --
Location VRF          : default
User account           : --
Subscription Pool     : --
Subscription Block    : --

Connection
=====
Status                 : Invalid profile configuration
Reason                 : missing fields for profile configuration
Last validation time   : Wed Oct 18 22:06:09 UTC 2023
Success validation time : --
```

Connection Failure to the HPE Aruba Networking Feature Pack Support Portal Server

When the switch cannot connect to the support portal server, the **show feature-pack server** command displays the following output. Verify that the switch has internet access and DNS can resolve the HPE Aruba Networking support portal FQDN (<https://cx-feature-pack.arubanetworks.com>).

```
6405# show feature-pack server
Profile
=====
Location URL           : https://cx-feature-pack.arubanetworks.com
Location VRF          : mgmt
User account           : customer@example.com
Subscription Pool     : Default
Subscription Block    : 6300_block_4

Connection
=====
```

```
Status           : Connection failed
Reason           : connection to the feature pack server was attempted, but
failed
Last validation time : Wed Oct 18 22:16:34 UTC 2023
Success validation time : --
```

Connectivity issues can also be caused by internet access security rules, web-proxy issues, or DNS name resolution failures. Check your security settings and ensure that DNS is configured on the switch.

Mode Mismatch

The feature pack mode configured on the switch profile (cloud-managed or file-based) must match the feature pack type that is installed on the switch. If you configure the switch with the command **feature-pack mode cloud-managed**, the switch must use a **floating** feature pack. If you configure the switch with the command **feature-pack mode file-based**, the switch must use a **device specific** feature pack. if the switch has a floating feature pack installed while in file-based mode, the switch will display the following error in the output of the **show feature-pack** command.

```
6300# show feature-pack
Feature Pack Summary
=====
Name           : CX Advanced Feature Pack
Expiration Date : Sat Oct 12 2024
Serial Number(s) : SG2Zxxxxx1 SG9Zxxxxx2 SG9Zxxxxx3
MAC Address     : 38:21:c7:00:00:00
Hostname       : 6300
Type           : Floating
Mode           : File Based
State          : Mode does not match installed feature pack type
Error Reason    : none

-----
Feature                               Subscription Status  Feature
Status                                Status
-----
Application Based Policy               honor mode  allowed
MACsec extensions for WAN              honor mode  allowed
Reflexive Policies for Port Access GBP Clients honor mode  allowed
Reflexive Policies for Port Access Clients honor mode  allowed
```

if the switch has a device-specific feature pack installed while in cloud-managed mode, the switch will display the following error in the output of the **show feature-pack** command.

```
6300# show feature-pack server
Profile
=====
Location URL       : https://cx-feature-pack.arubanetworks.com
Location VRF      : mgmt
User account       : customer@example.com
Subscription Pool  : Default
Subscription Block : 6300_block_7
Connection
=====
Status           : File based feature pack installed
Reason           : file based feature packs are not validated against the
feature pack server
Last validation time : Mon Oct 16 21:24:49 UTC 2023
```

```
Success validation time : --
```

To resolve these errors:

1. Change the mode configuration to match the current installed feature type.
2. Erase the feature pack and reinstall a new feature pack of the correct type.

Invalid Block

When the block configured on the switch does not exist in the specified pool on the HPE Aruba Networking support portal, the output of the Reasons for Feature Pack Issues command will display a **Server invalid block** status.

```
6300# show feature-pack server
Profile
=====
Location URL       : https://cx-feature-pack.arubanetworks.com
Location VRF      : mgmt
User account       : plmtest@example.com
Subscription Pool  : Default
Subscription Block : 6300_block_7

Connection
=====
Status              : Server invalid block
Reason              : the feature pack block is not valid
Last validation time : Mon Oct 16 21:33:59 UTC 2023
Success validation time : --
```

To correct this issue, update the block configured on the switch to match a valid block in the configured pool.

Not Enough Feature Packs

If the subscription pool or block does not have enough feature packs for the switch after the switch synchronizes with the HPE Aruba Networking support portal, then the output of the show feature-pack server command displays the **Server not enough feature packs** status. To resolve this issue, change the configured block and/or pool on the switch to connect to a block that has feature packs available.

```
6300# show feature-pack server
Profile
=====
Location URL       : https://cx-feature-pack.arubanetworks.com
Location VRF      : mgmt
User account       : customer@example.com
Subscription Pool  : Default
Subscription Block : 6300_block_4

Connection
=====
Status              : Server not enough feature packs
Reason              : there are not enough feature packs for the device and/or
device stack
Last validation time : Thu Oct 12 18:20:59 UTC 2023
Success validation time : Thu Oct 12 18:15:15 UTC 2023
```

Feature Pack Already Assigned

If a switch that is already assigned a feature pack in the HPE Aruba Networking support portal, requests a new feature pack, the output of the `show feature-pack server` command on the switch will display the **Server feature pack already assigned to device** error after the switch connects to the portal. This issue can occur if a feature pack is erased from the switch but not revoked in the support portal. To resolve this issue and install a feature pack on the switch, revoke the existing feature pack in the support portal, then trigger a manual synchronization with the portal using the **feature-pack validate** CLI command.

```
6405# show feature-pack server
Profile
=====
Location URL       : https://cx-feature-pack.arubanetworks.com
Location VRF      : mgmt
User account      : customer@example.com
Subscription Pool  : Test1
Subscription Block : 6400_test_block_1

Connection
=====
Status             : Server feature pack already assigned to device
Reason            : the feature pack server has already assigned a feature
pack for this device
Last validation time : Wed Oct 18 23:11:36 UTC 2023
Success validation time : --
```

Feature Pack Revoked

If a cloud feature pack for a switch is revoked in the HPE Aruba Networking support portal, then the switch will display the following errors will operate with subscription features enabled in honor mode. To reinstall a feature pack on the switch, issue the [erase feature-pack](#) command to erase the existing feature-pack, verify that the feature-pack profile is configured as desired, and trigger a sync with the support portal using the command [feature-pack validate](#).

```
6300# show feature-pack
Feature Pack Summary
=====
Name           : CX Advanced Feature Pack
Expiration Date : Wed Aug 28 2024
Serial Number(s) : SG2xxxxx1 SG9Zxxxxx2
MAC Address     : 38:21:c7:5a:00:00
Hostname       : 6300
Type           : Floating
Mode           : Cloud Managed
State          : Cloud managed subscription revoked from server
Error Reason    : none

-----
Feature                               Subscription Status  Feature Status
-----
Application Based Policy              honor mode    allowed
MACsec extensions for WAN              honor mode    allowed
Reflexive Policies for Port Access GBP Clients honor mode    allowed
Reflexive Policies for Port Access Clients honor mode    allowed
```

```

6300# show feature-pack server
Profile
=====
Location URL           : https://cx-feature-pack.arubanetworks.com
Location VRF          : mgmt
User account           : customer@example.com
Subscription Pool      : Default
Subscription Block     : 6300_test1

Connection
=====
Status                 : Server feature pack revoked
Reason                 : the device feature pack was revoked from the feature
pack server
Last validation time   : Fri Oct 6 16:48:24 UTC 2023
Success validation time : Fri Oct 6 16:36:04 UTC 2023

```

Feature Pack Removed

If a feature-pack is erased from the switch using the [erase feature-pack](#) command, then the switch will display the following message and will operate with subscription features enabled in honor mode. The feature-pack can be reinstalled by following the same steps as the initial installation. See [Deploying a Cloud-managed Feature Pack Solution on a Standalone Switch](#) or [Deploying a File-Based Feature Pack Solution on a Standalone Switch](#).

```

6300# show feature-pack
Feature Pack Summary
=====
Name           : --
Expiration Date : --
Serial Number(s) :
MAC Address     : --
Hostname       : --
Type           : --
Mode           : File Based
State          : Feature pack removed
Error Reason   : none

Feature                               Subscription Status  Feature Status
-----
Application Based Policy               honor mode   allowed
MACsec extensions for WAN              honor mode   allowed
Reflexive Policies for Port Access GBP Clients honor mode   allowed
Reflexive Policies for Port Access Clients honor mode   allowed

```

Serial/MAC mismatch

When using device-specific feature packs, if the serial number or MAC address in the feature pack does not match the switch, then the output of the [show feature-pack](#) command displays the following error:

```

6300# show feature-pack
Feature Pack Summary
=====
Name           : CX Advanced Feature Pack
Expiration Date : Fri Jul 19 2024
Serial Number(s) : SG2Zxxxxx9 SG9ZxxxxxG SG9Zxxxxx5X

```

```

MAC Address      : 38:21:c7:00:00:00
Hostname        : 6300
Type            : Device specific
Mode            : File Based
State           : Feature pack install error
Error Reason    : Serial number mismatch

```

Feature	Subscription Status	Feature Status
Application Based Policy	inactive	blocked
MACsec extensions for WAN	inactive	blocked
Reflexive Policies for Port Access GBP Clients	inactive	blocked
Reflexive Policies for Port Access Clients	inactive	blocked

To resolve, install a feature-pack with the correct serial number and MAC address. The serial number of a feature pack can be edited in the HPE Aruba Networking support portal in the **Monitoring** page. The MAC address cannot be edited. If a MAC address must be changed for a feature pack, revoke the feature pack and re-downloaded it with the correct MAC address.

Aruba Central Disconnected

If a switch was previously managed by Aruba Central but is no longer managed by Central, subscription features will be operational in honor mode and the output of the [show feature-pack](#) command will display the following message:

```

(switch)# show feature-pack
Feature Pack Summary
=====
Name           : --
Expiration Date : --
Serial Number(s) : --
MAC Address    : --
Hostname       : --
Type           : --
Mode           : File Based
State          : No feature pack installed
Error Reason   : --

Feature                               Subscription Status  Feature Status
-----
Application Based Policy               inactive      blocked
MACsec extensions for WAN              inactive      blocked
Reflexive Policies for Port Access GBP Clients
Reflexive Policies for Port Access Clients

```

The switch may be in this state for the below reasons:

- The switch lost connectivity to the Aruba Central server. Check that the switch's uplink has connectivity to Central.
- The Aruba Central subscription or Aruba Central application assignment for the switch was removed in GLCP. Check that the switch is assigned to Central and has a valid Central license attached in GLCP.

Some Features are Allowed but Others are Blocked

The following example output of [show feature-pack](#) shows that some features are allowed in honor mode while some are blocked in strict mode. This will happen in a deployment where the feature was

not used until after the switch upgraded to AOS-CX 10.13 or later releases. If a subscription feature was in use before an upgrade to 10.13, then the feature will default to being allowed instead of blocked.

```
6300# show feature-pack
Feature Pack Summary
=====
Name           : --
Expiration Date : --
Serial Number(s) : --
MAC Address    : --
Hostname       : --
Type           : --
Mode           : File Based
State          : No feature pack installed
Error Reason   : --

Feature                               Subscription Status  Feature Status
-----
Application Based Policy               inactive  blocked
MACsec extensions for WAN              inactive  blocked
Reflexive Policies for Port Access GBP Clients  inactive  blocked
Reflexive Policies for Port Access Clients      inactive  blocked
```

Features are Blocked after Zeroization

After zeroizing a switch, any installed feature pack is erased and all subscription features become blocked. The output of **show feature-pack** will look like the following example:

```
6300# show feature-pack

switch(config)# sh feature-pack
Feature Pack Summary
=====
Name           : --
Expiration Date : --
Serial Number(s) : --
MAC Address    : --
Hostname       : --
Type           : --
Mode           : File Based
State          : No feature pack installed
Error Reason   : none

Feature                               Subscription Status  Feature Status
-----
Application Based Policy               inactive  blocked
Audio Video Bridging                  inactive  --
MACsec extensions for WAN              inactive  blocked
Reflexive Policies for Port Access GBP Clients  inactive  blocked
Reflexive Policies for Port Access Clients      inactive  blocked
```

To re-enable features, reinstall the feature pack. If a device-specific feature pack was being used, then the feature pack can be re-downloaded from the Monitoring page in the HPE Aruba Networking support portal. If a floating feature pack was being used, revoke the existing feature pack in the support portal, then re-configure the feature-pack server profile on the switch. Afterwards, the switch will reach out to the support portal and install a new feature pack.

Chapter 9

Feature Pack events

The following are the events related to CX Advanced and CX Premium feature packs.

Event ID: 14401

Message	{feature_pack_name} installed
Category	Feature Pack
Severity	Info
Description	Event raised when a feature pack is installed

Event ID: 14402

Message	{feature_pack_name} erased.
Category	Feature Pack
Severity	Info
Description	Event raised when a feature pack is erased.

Event ID: 14403

Message	{feature_pack_name} expired on {expiry_date}.
Category	Feature Pack
Severity	Warning
Description	Event raised when a feature pack expires

Event ID: 14404

Message	Feature pack {parameter_type} {subscription_parameter} does not match device {parameter_type} {device_parameter}
Category	Feature Pack
Severity	Warning
Description	Event raised when a feature pack serial number or MAC address does not match that of the device

Event ID: 14405

Message	Event raised when a feature pack file downloads successfully
Category	Feature Pack
Severity	Info
Description	Feature pack file download success

Event ID: 14406

Message	Feature pack file download failure
Category	Feature Pack
Severity	Warning
Description	Event raised when a feature pack file download fails

Event ID: 14407

Message	Feature pack subscription through HPE Aruba Networking Central is {connection_state}
Category	Feature Pack
Severity	Info
Description	Event raised when a feature pack subscription through HPE Aruba Networking Central becomes connected or disconnected

Event ID: 14408

Message	VSF member serial number {device_serial} not subscribed as part of installed feature pack
Category	Feature Pack
Severity	Warning
Description	Event raised when a VSF member is not subscribed as part of the installed feature pack

Event ID: 14409

Message	Feature {feature_name} is operating in honor mode without a valid feature pack.
Category	Feature Pack
Severity	Warning
Description	Periodic event raised to indicate that a feature is operating in honor mode

Event ID: 14410

Message	Connection to feature pack server lost and subscription for {feature_pack_name} cannot be validated. Subscribed features will continue to operate in honor mode.
Category	Feature Pack
Severity	Warning
Description	Event raised when a connection to the feature pack server has been lost and the feature pack subscription cannot be validated

Event ID: 14411

Message	No feature pack is installed. This device requires an Advanced or Premium feature pack to use advanced or premium features.
Category	Feature Pack
Severity	Warning
Description	Event raised to indicate that the device requires a feature pack

Event ID: 14412

Message	Advanced feature pack installed. This system requires a Premium feature pack to use all features.
Category	Feature Pack
Severity	Warning
Description	Event raised to indicate that a higher feature pack tier is available and necessary to enable higher tier features

Event ID: 14413

Message	Software feature pack {feature_pack_name} revoked by the server.
Category	Feature Pack
Severity	Info
Description	Event raised when a feature pack is revoked by the feature pack server.

Event ID: 14414

Message	Feature pack mode {feature_pack_mode} does not match installed feature pack type {feature_pack_type}.
Category	Feature Pack

Severity	Warning
Description	Event raised when the feature pack mode configured does not match the feature pack type installed on the device.

Event ID: 14415

Message	Cloud-managed mode is enabled. A feature pack server will be used for feature pack management.
Category	Feature Pack
Severity	Info
Description	Event raised when the feature pack management mode is set to cloud-managed

Event ID: 14416

Message	Cloud-managed mode is disabled. A feature pack server will no longer be used for feature pack management.
Category	Feature Pack
Severity	Info
Description	Event raised when the management mode is different than cloud-managed

Event ID: 14417

Message	The feature pack has been successfully validated by the server
Category	Feature Pack
Severity	Info
Description	Event raised when the feature pack was successfully validated by the server

Event ID: 14418

Message	Feature pack server failed to validate the installed feature pack
Category	Feature Pack
Severity	Error
Description	Event raised when there is an error validating a feature pack by the server

Event ID: 14419

Message	One or more advanced features have been blocked due to an invalid or missing feature-
---------	---

pack. Check show feature-pack for details.

Category	Feature Pack
Severity	Warning
Description	Event raised when an invalid or missing feature pack blocks one or more features from operating

Queue Monitoring events

The following are the events related to queue monitoring (QTP).

Event ID: 16101

Message	HONOR_MODE: Queue Monitoring is operating without a valid feature pack.
Category	QTP
Severity	Information
Description	Log event to indicate that the Queue Monitor feature is operating without a valid feature pack

Event ID: 16102

Message	STRICT_MODE: Queue Monitoring is blocked due to invalid or missing feature pack.
Category	QTP
Severity	Information
Description	Log event to indicate that the Queue Monitoring feature is blocked due to invalid or missing feature pack

Event ID: 16103

Message	
Category	QTP
Severity	Information
Description	ACTIVE_MODE: Queue Monitoring is operating with valid feature pack.

Accessing HPE Aruba Networking Support

HPE Aruba Networking Support Services	https://www.hpe.com/us/en/networking/hpe-aruba-networking-support-services.html
AOS-CX Switch Software Documentation Portal	https://arubanetworking.hpe.com/techdocs/AOS-CX/help_portal/Content/home.htm
HPE Aruba Networking Support Portal	https://networkingsupport.hpe.com/home
North America telephone	1-800-943-4526 (US & Canada Toll-Free Number) +1-650-750-0350 (Backup—Toll Number)
International telephone	https://www.hpe.com/psnow/doc/a50011948enw

Be sure to collect the following information before contacting Support:

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Other useful sites

Other websites that can be used to find information:

HPE Aruba Networking Developer Hub	https://developer.arubanetworks.com/hpe-aruba-networking-aoscx/docs/about
Airheads social forums and Knowledge Base	https://community.arubanetworks.com/
AOS-CX Software Technical Update channel on YouTube.	Videos on new features introduced in this release: https://www.youtube.com/playlist?list=PLsYGHuNuBZcbWPEjjHuVMqP-Q_UL3CskS

HPE Aruba
Networking
Hardware
Documentation
and Translations
Portal

<https://arubanetworking.hpe.com/techdocs/hardware/DocumentationPortal/Content/home.htm>

HPE Aruba
Networking
software

<https://networkingsupport.hpe.com/downloads>

Software
licensing and
Feature Packs

<https://licensemanagement.hpe.com/>

End-of-Life
information

<https://networkingsupport.hpe.com/end-of-life>
