

AOS-CX Switch Simulation Software OVA Release Notes 10.08.0001



a Hewlett Packard
Enterprise company

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Description

The AOS-CX Simulation Software OVA is a virtual platform to enable simulation of the AOS-CX Network Operating System. Simulated networks can be created using many of the protocols in the AOS-CX operating system like OSPF and BGP. Key features like the Aruba Network Analytics Engine and the REST API can be simulated, providing a lightweight development platform for building the modern network. This software can be easily implemented in the EVE-NG or GNS3 simulation platforms to enable drag and drop network design for building complex simulated topologies.

Important information

This section contains important information about the OVA.

Verifying the package using GPG

You should verify, through GPG/RPM, that the code you received has been signed with digital private keys only held by Hewlett Packard Enterprise Company. In addition, this ensures that a third party has not manipulated the file. To verify the GPG digital signature of the OVA package, perform these steps:

1. Download and install public keys. This is a one-time Installation.
 - a. Download the HPE-GPG-Public-Key.tar.gz file from <https://myenterpriselicence.hpe.com/cwp-ui/free-software/HPLinuxCodeSigning>.
 - b. Extract the public key 9A7241F1.pub.



For Linux and Ubuntu systems, the GPG utility may come as part of the OS. For Windows, you must download and install GPG software if it has not already been installed.

2. Import the 9A7241F1.pub key into the GPG ring.

```
gpg --import /tmp/9A7241F1.pub
gpg: keyring `/users/fred/.gnupg/secring.gpg' created
gpg: key 9A7241F1: public key "Hewlett Packard Enterprise Company RSA-2048-51
<signhp@hpe.com>" imported
gpg: Total number processed: 1
gpg: imported: 1 (RSA: 1)
```

3. List the newly-installed key.

```
gpg --list-keys
/users/fred/.gnupg/pubring.gpg
-----
```

```
pub 2048R/9A7241F1 2016-08-03 [expires: 2026-08-01]
uid Hewlett Packard Enterprise Company RSA-2048-51
<signhp@hpe.com>
```

4. Set the public key 9A7241F1.pub to "trust ultimately".

```
gpg --edit-key 9A7241F1
gpg (GnuPG) 1.4.20; Copyright (C) 2015 Free Software Foundation, Inc.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

pub 2048R/9A7241F1 created: 2016-08-03 expires: 2026-08-01 usage: SCEA
trust: unknown validity: unknown
[ unknown] (1). Hewlett Packard Enterprise Company RSA-2048-51
<signhp@hpe.com>

gpg> trust
pub 2048R/9A7241F1 created: 2016-08-03 expires: 2026-08-01 usage: SCEA
trust: unknown validity: unknown
[ unknown] (1). Hewlett Packard Enterprise Company RSA-2048-51
<signhp@hpe.com>

Please decide how far you trust this user to correctly verify other users'
keys
(by looking at passports, checking fingerprints from different sources, etc.)

 1 = I don't know or won't say
 2 = I do NOT trust
 3 = I trust marginally
 4 = I trust fully
 5 = I trust ultimately
 m = back to the main menu

Your decision? 5
Do you really want to set this key to ultimate trust? (y/N) y

pub 2048R/9A7241F1 created: 2016-08-03 expires: 2026-08-01 usage: SCEA
trust: ultimate validity: unknown
[ unknown] (1). Hewlett Packard Enterprise Company RSA-2048-51
<signhp@hpe.com>
Please note that the shown key validity is not necessarily correct
unless you restart the program.

gpg> quit
```

```
gpg --edit-key 9A7241F1
gpg (GnuPG) 1.4.20; Copyright (C) 2015 Free Software Foundation, Inc.
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

pub 2048R/9A7241F1 created: 2016-08-03 expires: 2026-08-01 usage: SCEA
trust: unknown validity: unknown
[ unknown] (1). Hewlett Packard Enterprise Company RSA-2048-51
<signhp@hpe.com>

gpg> trust
pub 2048R/9A7241F1 created: 2016-08-03 expires: 2026-08-01 usage: SCEA
```

```

trust: unknown      validity: unknown
[ unknown] (1). Hewlett Packard Enterprise Company RSA-2048-51 <signhp@hpe.com>

Please decide how far you trust this user to correctly verify other users' keys
(by looking at passports, checking fingerprints from different sources, etc.)

  1 = I don't know or won't say
  2 = I do NOT trust
  3 = I trust marginally
  4 = I trust fully
  5 = I trust ultimately
  m = back to the main menu

Your decision? 5
Do you really want to set this key to ultimate trust? (y/N) y

pub 2048R/9A7241F1 created: 2016-08-03 expires: 2026-08-01 usage: SCEA
trust: ultimate   validity: unknown
[ unknown] (1). Hewlett Packard Enterprise Company RSA-2048-51 <signhp@hpe.com>
Please note that the shown key validity is not necessarily correct
unless you restart the program.

gpg> quit

```

5. Verify your OVA image.
 - a. Unzip the ArubaOS-CX_10_08_0001_ova.zip file.
 - b. Run the `verify` command.

```

gpg --verify ArubaOS-CX_10_08_0001.ova.sig ArubaOS-CX_10_08_0001.ova
gpg: Signature made Day dd Mon yyyy 08:12:46 AM PDT using RSA key ID 9A7241F1
gpg: Good signature from "Hewlett Packard Enterprise Company RSA-2048-51
<signhp@hpe.com>"

```

End User License Agreement (EULA) and Additional License Authorization (ALA)

The End User License Agreement (EULA) and Additional License Authorization (ALA) documents are available at https://www.arubanetworks.com/assets/support/ArubaOS-CX_OVA_EULA.pdf and https://www.arubanetworks.com/assets/support/ArubaOS-CX_OVA_ALA.pdf, respectively.

By downloading, copying, or using the AOS-CX OVA you agree to both the End User License Agreement and the Additional License Authorization.

Feature caveats

The AOS-CX OVA is a simulation environment and is not designed to be fully feature-compatible with AOS-CX running on switching hardware in the Aruba 4000, 6000, or 8000 series of switches. The following features may be configurable in the AOS-CX Simulation environment, but are non-functional:

CoPP	Link detection (link is always on)	Classifier policy
ECMP	MAC ACLs	QoS
ADC (NAE)	UDLD	Mirroring

ERPS	Firmware upgrade	DCBx
PBR	VXLAN support with L3 VTEPs	UBT
VSF	VLAN translation	Watchdog
PBT	MAC Lockdown/Lockout	Captive Portal
VXLAN support with VSX		

The OVA is a virtual switch and unable to determine the link status of interfaces, so a simulated status is used. You may need to manually adjust the status of an interface using the `shutdown` or `no shutdown` commands from the CLI to get the desired results.

Version history

All released versions are fully supported by Hewlett Packard Enterprise, unless noted in the table.

Version number	Release date	Remarks
10.08.0001	2021-08-13	Initial release of AOS-CX 10.08 OVA. Released and posted on the web.
10.07.0010	2021-06-10	Second release of AOS-CX 10.07 OVA. Released and posted on the web.
10.07.0004	2021-04-20	Initial release of AOS-CX 10.07 OVA. Released and posted on the web.
10.06.0001	2021-02-04	Initial release of AOS-CX 10.06 OVA. Released and posted on the web.
10.05.0020	2020-09-23	Initial release of AOS-CX 10.05 OVA. Released and posted on the web.
10.04.3000	2020-06-11	Third release of AOS-CX 10.04 OVA. Released and posted on the web.
10.04.1000	2020-03-17	Second release of AOS-CX 10.04 OVA. Released and posted on the web.
10.04.0001	2019-10-31	Initial release of AOS-CX 10.04 OVA. Released and posted on the web.
10.03.0020	2019-08-01	Initial release of AOS-CX 10.03 OVA. Released and posted on the web.
10.02.0010	2019-01-29	Initial release of AOS-CX 10.02 OVA. Released and posted on the web.
10.01.0001	2018-07-13	Initial release of AOS-CX 10.01 OVA. Released and posted on the web.

Compatibility/interoperability

The switch web agent supports the following web browsers:

Browser	Minimum supported versions
Edge (Windows)	38
Chrome (Ubuntu)	54 (desktop)

Browser	Minimum supported versions
	56 (mobile)
Firefox (Ubuntu)	52
Safari (MacOS, IOS Only)	10



Internet Explorer is not supported.

The following table provides information on the minimum hardware resources needed on the host to be made available to the OVA appliance:

Feature	Requirement
RAM	4 GB
CPU	2 core, 2100 Mhz

The switch OVA requires the following software:

Hypervisor	Minimum supported versions
Oracle Virtual Box	5.2.8, release 121009
Oracle Virtual Box with GNS3	5.2.8, release 121009 2.1.4
VMWare Workstation Pro	12.5.8, build 7098237
VMWare FusionHPE recommends running only one OVA at a time on VMWare Fusion	10.0.1-6754183
VMWare ESXi	6.0.0, build 5224934

The number of OVAs supported is dependent on the amount of RAM available to the virtual machine.

Enhancements

This section lists enhancements added to this branch of the software.

Software enhancements are listed in reverse-chronological order, with the newest on the top of the list. Unless otherwise noted, each software version listed includes all enhancements added in earlier versions.

Version 10.08.0001

Category	Description
Auto VLAN creation	Automates VLAN creation on access switches for authenticated clients.

Category	Description
Inclusive terminology	As part of advancing HPE's and Aruba's commitment to racial justice, we are taking a much-needed step in overhauling engineering terminology to reflect our belief system of diversity and inclusion. See https://blogs.arubanetworks.com/spectrum/our-responsibility-to-stand-up-to-racism-and-inequality/ for Aruba's stand on inclusivity.
IP sub-interface	Allows multiple IP addresses on a single routed interface. Supports unicast and multicast routing for both IPv4 and IPv6. Supports OSPF, BGP and PIM for both IPv4 and IPv6. Supported on RoP and L3 lags.
Job Scheduler	Added the ability to execute required CLI commands at a specific time and date. This can be repeated at periodic intervals.
Loopback IP redistribution in OSPF	Allows redistribution of IPv4 and IPv6 addresses of loopback interfaces in OSPFv2 and OSPFv3.
Security	Ensures configuration integrity. Limit concurrent users for web access.

Fixes

This section lists released builds that include fixes found in this branch of the software. Software fixes are listed in reverse-chronological order, with the newest on the top of the list. Unless otherwise noted, each software version listed includes all fixes added in earlier versions.

The Symptom statement describes what a user might experience if this is seen on the network. The Scenario statement provides additional environment details and trigger summaries. When available, the Workaround statement provides a workaround to the issue for customers who decide not to update to this version of software.



The bug ID is used for tracking purposes.

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Category	Bug ID	Description
Central	169308	<p>Symptom: A message similar to the following displays in the event log:</p> <pre> Jul 20 17:56:02 switch hpe-restd[715]: debug LOG_ ERR Certificate with subject: CN = central.lan, OU = For testing purposes only, O = "Sloth, Inc.", ST = CA, C = US failed to be validated by TA with subject: CN = Test PKI - Aruba Devices CA 51, OU = For Non-Production Use Only, O = Hewlett Packard Enterprise Development, ST = CA, C = US Jul 20 17:56:02 switch hpe-restd[715]: debug LOG_ ERR Failure reason: unable to get local issuer certificate Jul 20 17:56:02 switch hpe-restd[715]: Event 7709 LOG_ WARN AMM 1/1 Certificate central.lan rejected due to verification failure (30) </pre> <p>Scenario: When Central on Premise is configured to serve a valid certificate only when connecting to FQDN, a message is logged implying a failure in the</p>

Category	Bug ID	Description
		certificate validation process. Workaround: Configure Central on Premise to serve a valid certificate with the IP address rather than FQDN.
Certificates	149882	Symptom: CertManager does not accept CA certificates as expected. Scenario: When sending a CA certificate that does not have the CertSign flag set, the CA is not accepted by CertManager. Workaround: Ensure that the CertSign flag is set in the Key Usage field.
NTP	176256	Symptom/Scenario: NTP does not take into account its source IP when the loopback interface is used. Scenario: When the <code>ip source-interface ntp interface loopback1</code> command is used to configure a single source IP address for NTP, NTP does not take into account its source IP address. Workaround: Use the IPv4 address of the NTP server.
Secure Roles	160325	Symptom: In a dual stack network with an IPv4 RADIUS source address configured and an IPv6 RADIUS server configured with FQDN, downloadable user roles will not work with role status as: Failed, Internal Error. Scenario: If the RADIUS server is configured with an FQDN that resolves to an IPv6 address, and the source address is configured as an IPv4 address, the role status will fail. Workaround: Configure the source address as an IPv6 address or do not configure a source address.
SNMP	162528	Symptom: SNMPv3 requests with duplicate request IDs are not dropped within the 60 second window. Scenario: While performing SNMP operations (get, get-next, walk, and so forth) by setting duplicate request IDs, the requests are not dropped within the 60 second window. Workaround: Ensure the SNMP client uses unique request IDs in every packet created within a 60 second window.

Using Network Analytics Engine (NAE) scripts on the OVA

The OVA allows you to use NAE. This section describes how to enable the HTTPS user interface and log into the switch, download and install an NAE script from ASE, and install an NAE script from a local directory.

For more information on NAE, see the *Network Analytics Engine Guide*.

Enabling the switch HTTPS user interface and logging in

In order to use and configure NAE scripts, you must enable the WebUI on the switch.

1. Log in to the switch console as the admin user. There is no password.
2. Enable the management interface of the switch.

The management interface is enabled for DHCP by default. If you want to use a static IP address, do the following:

```
switch# config
switch(config)# int mgmt
switch(config-int-mgmt)# ip static <IP_ADDRESS>
switch(config-int-mgmt)# default-gateway <GATEWAY_IP_ADDRESS>
```

```
switch(config-int-mgmt)# exit
```

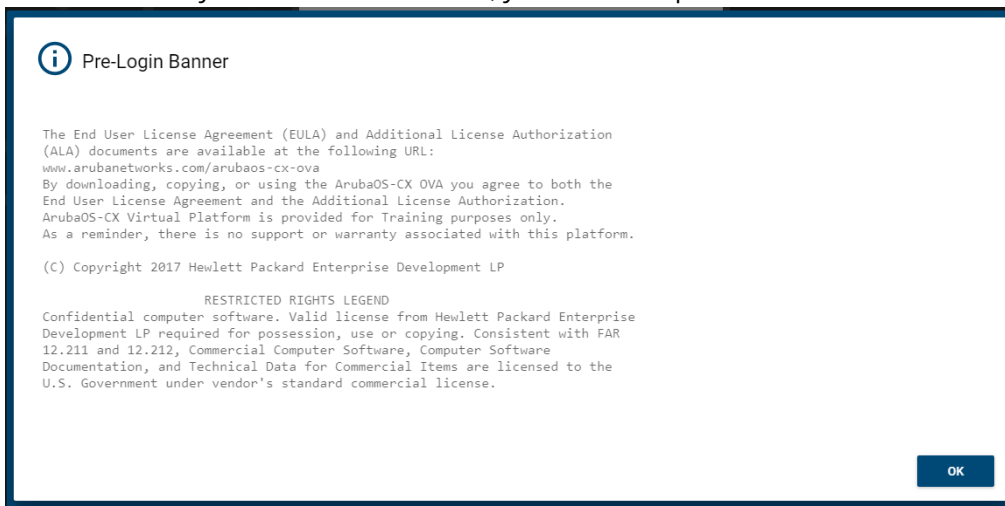
3. Set the admin password.

```
switch(config)# user admin password
Changing password for user admin
Enter password: *****
Confirm new password: *****
```

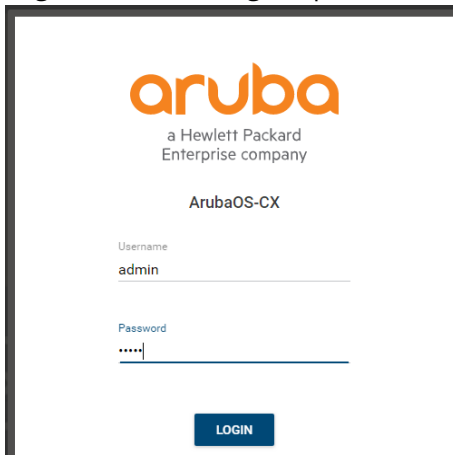
4. The HTTPS server is enabled by default on `vrf mgmt`.
5. Save the switch config to startup-config.

```
switch(config)# do copy running-config startup-config
Success
```

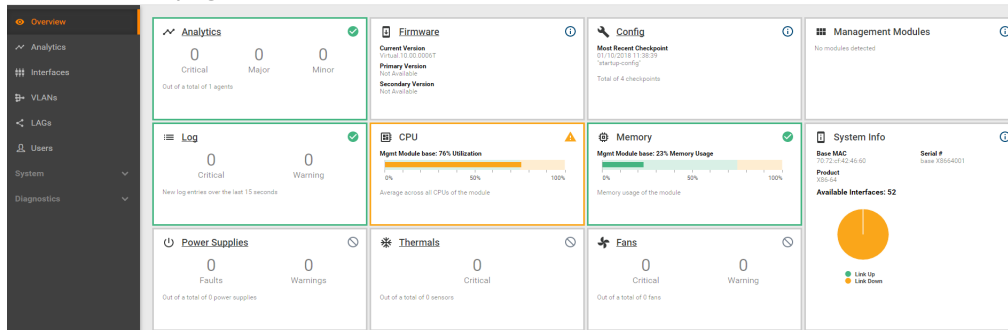
6. Log in to the switch WebUI at `https://<SWITCH_IP_ADDRESS>`.
7. Once the security certificate is confirmed, you must accept the EULA.



8. Log in as admin using the password created earlier.

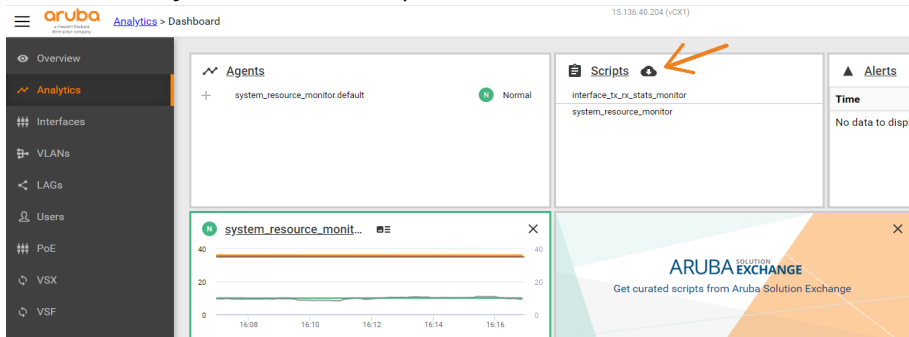


The Overview page should now be available.

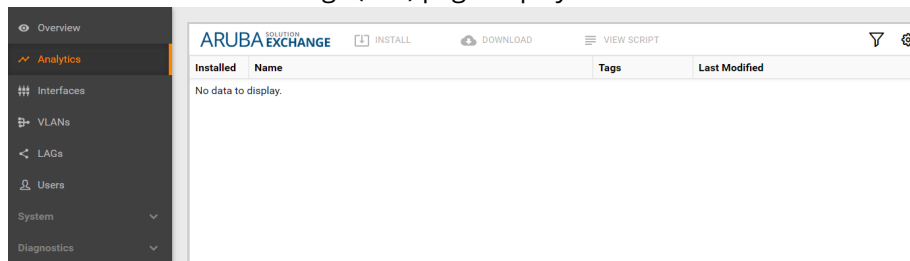


Installing a Network Analytics Engine (NAE) script from ASE

1. From the Analytics tab, in the Scripts tile, click the Cloud icon.

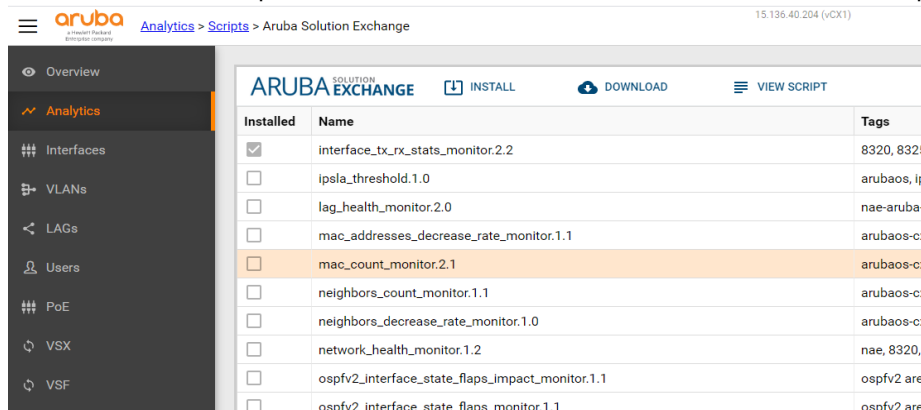


The Aruba Solution Exchange (ASE) page displays.

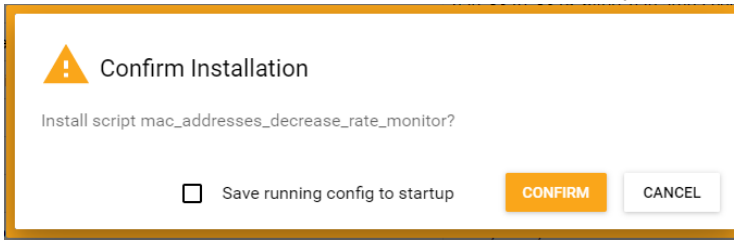


After a few moments, content from the ASE will be downloaded to the OVA.

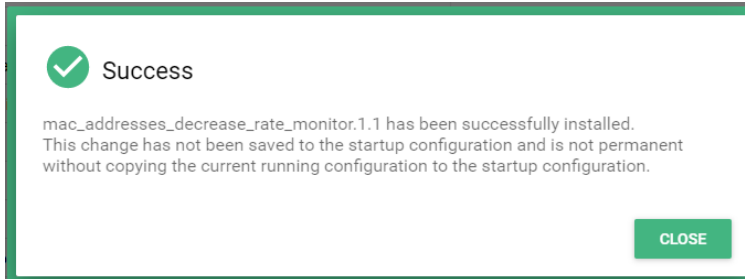
2. Click ACCEPT to accept the license agreement.
3. Select the desired script to be installed and click the INSTALL button at the top of the screen.



4. Click CONFIRM to confirm the installation of the script.

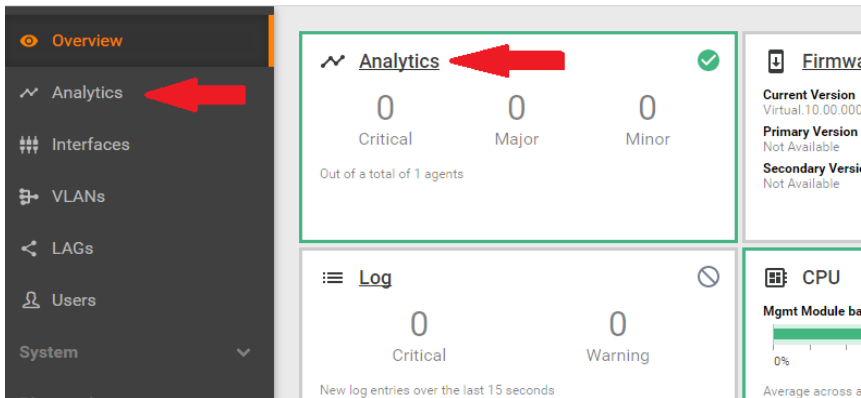


5. After the script is installed, click CLOSE.

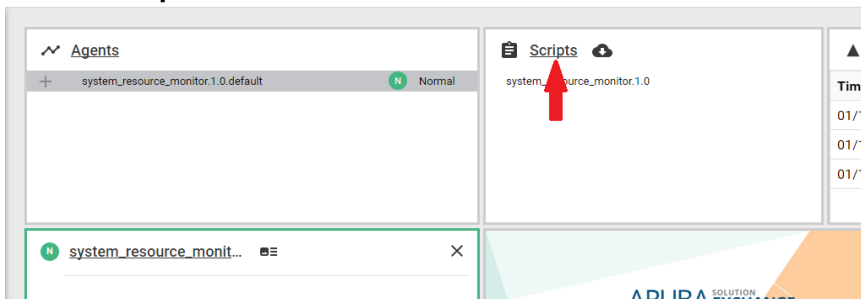


Installing a Network Analytics Engine (NAE) script from a local directory

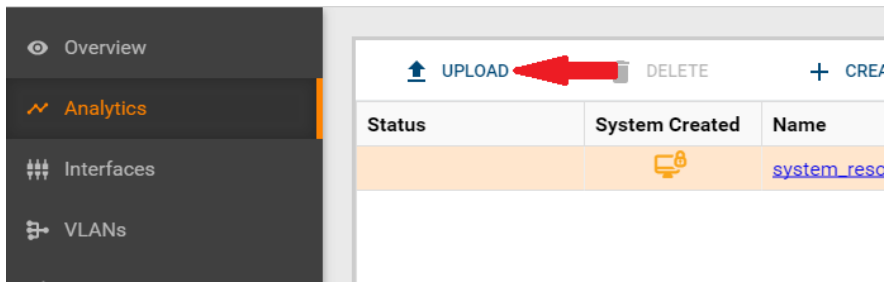
1. Click either of the **Analytics** links from the Overview page.



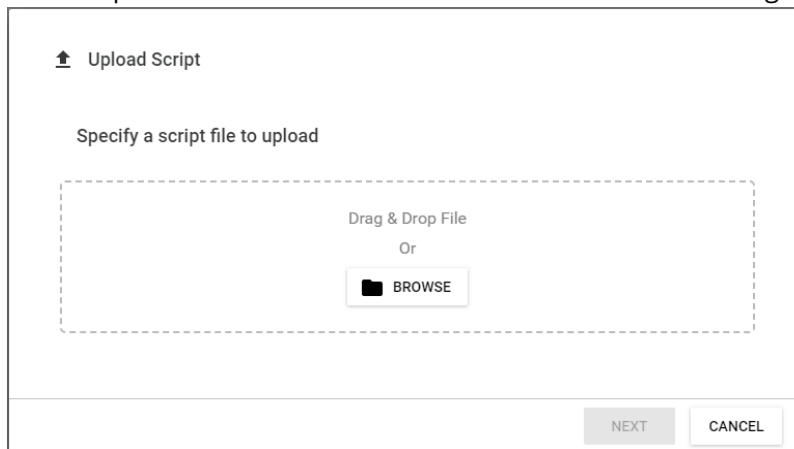
2. Click the **Scripts** link.



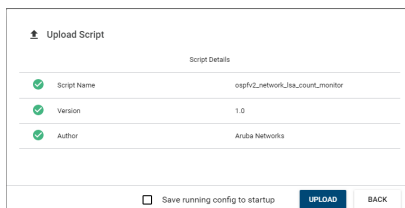
3. Click the **UPLOAD** link.



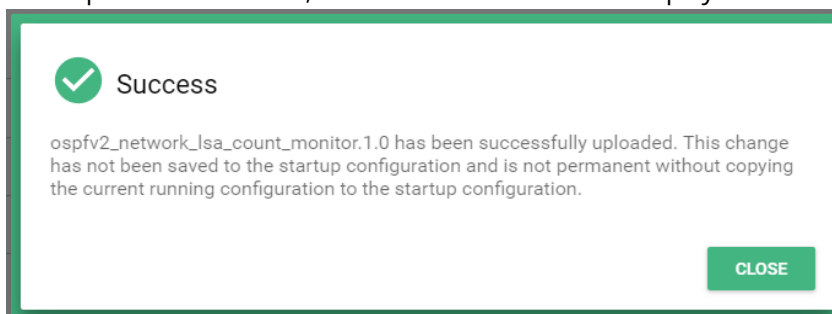
4. Select the NAE script to upload.
 - a. Either drop a file onto the screen or browse for a select a file using the BROWSE button.



- b. Click the Next button.
- c. (Optional) Check the **Save running config to startup** checkbox.
- d. Click the **UPLOAD** button.



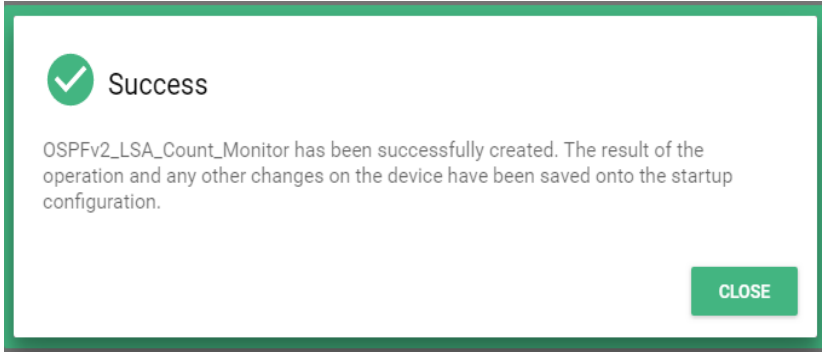
5. If the upload is successful, a confirmation box will be displayed. Click the **CLOSE** button.



6. Select the uploaded script by clicking in the Status or System Created column for that script; do not click the name of the script.
7. Create a new agent by clicking the **CREATE AGENT** link.
 - a. Enter a name for the agent in the **Agent Name** field.
 - b. Modify any default values populated by the script.

- c. (Optional) Check the **Save running config to startup** checkbox.
- d. Click the **CREATE** button.

- 8. If the CREATE agent is successful, a confirmation box will be displayed. Click the **CLOSE** button.



- 9. Click the link for the agent that was just created to see the agent status.

CREATE EDIT DELETE DISABLE

System Created	Name	Status
	ospfv2_packet_mismatch_int-1-0	N Normal
	system_resource_monitor.1.0.default	M Minor

The agent details are displayed along with any alerts that are generated.