



# Release Notes for Cisco IOx Release 1.4.0

**October 23, 2017**

These release notes provide information for Cisco IOx Release 1.4.0.

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## Documentation Links

- **DevNet**
  - Cisco IOx: Getting Started with the Cisco 809 or 829 Industrial Integrated Services Router  
<https://developer.cisco.com/site/iox/docs/index.gsp#getting-started-with-iox>
  - Cisco IOx Application Developer Guide  
<https://developer.cisco.com/site/iox/docs/#application-development-concepts>
  - Cisco IOx Services documentation  
<https://developer.cisco.com/docs/iox/#iox-services-architecture>
  - Application Networking  
<https://developer.cisco.com/site/iox/docs/index.gsp#application-networking>
  - ioxclient  
<https://developer.cisco.com/docs/iox/#what-is-ioxclient>
  - Cisco IR8x9 and Cisco IE4000 Docker Support  
<https://developer.cisco.com/site/iox/docs/index.gsp#docker-images-and-packages-repository>

- USB  
<https://developer.cisco.com/site/iox/docs/index.gsp#usb-device-usage>
- Visualization  
<https://developer.cisco.com/site/iox/docs/index.gsp#app-visualization-dashboard>
- Fog Director API  
<https://developer.cisco.com/site/iox/docs/index.gsp#fog-director-api-documentation>
- Cisco IOx Data Sheet  
<https://www.cisco.com/c/en/us/products/collateral/cloud-systems-management/iox/datasheet-c78-736767.html>
- Cisco Fog Director  
<https://www.cisco.com/c/en/us/support/cloud-systems-management/fog-director/tsd-products-support-series-home.html>
- Cisco IOx Local Manager Reference Guide  
<https://www.cisco.com/c/en/us/support/cloud-systems-management/iox/products-technical-reference-list.html>

## Edge Computing with Cisco IOx

Learn how to develop, deploy, and manage applications at the network edge with Cisco IOx:

<https://learninglabs.cisco.com/tracks/Cisco-IOx>

## Overview

Cisco IOx provides uniform and consistent hosting capabilities for various types of apps across various Cisco platforms. This platform brings together Cisco IOS, the industry-leading networking operating system, and Linux, the leading open source platform. Linux-based applications can run on Cisco devices in the Cisco IOx framework, so using this platform, you can bring custom applications and interfaces to the network.

With Cisco IOx, developers can create a wide variety of IoT apps, such as data aggregation system and control systems.

## New Features in Release 1.4.0

This release provide new features, including the following:

- Manage IOx Services from Cisco Fog Director—Lifecycle management of IOx microservices from the Fog Director
- Docker Image Layering Support—Incremental upgrade of IOx apps with Docker image layering
- IOx App Signing and Verification—Support for deploying trusted IOx apps using app-signing and verification tools
- IE4000: Docker Support—Packaging of IOx apps using Docker tooling on IE4000 platforms
- Store and Forward Service—Data caching to local storage when there is no WAN connectivity
- Cisco Fog Director Upgrade—Procedure for upgrading Fog Director version 1.3.0 to version 1.4.0

The following features are not fully tested and may not be fully stable in Release 1.4.0:

- IOx/Fog Director IPv6—Support for IOx and Fog Director deployment in IPv6-only network
- On-device User Authentication for CAF Using RADIUS Server—User authentication on-device using credentials from an enterprise RADIUS server
- IOx Services for Accelerometer/Gyroscope—New platform IOx micro-services to easily consume accelerometer/gyroscope data on IR8x9 platforms
- Local Manager Data Visualizer—Visualization of incoming sensor data in the Local manager for debugging and demo purposes
- IE4000 Host Mode Support—Port mirroring (span port) of network data to IOx application container (IE4000 platform only)

## Supported Platforms

Cisco IOx Release 1.4.0 is supported on the following platforms:

- IR809
- IR829
- IE4000
- Enterprise—ISR4K running on Cisco Polaris network operating system
- Utility—Pluggable CGR compute module for CGR1120 and CGR1240

## Image Information

Download the Cisco IOx images from the following DevNet page:

<https://developer.cisco.com/docs/iox/#downloads>

**Note:** IOx Fog Node images cannot be randomly loaded with any IOS images. Please do not make any changes without the guidance of a Cisco Technical Support representative.

**Table 1** provides information about the available Cisco IOx images.

**Table 1** Cisco IOx Images

Image	Description
ie4000-iox-mz.1.4.0.bin	Cisco IOx image for the Cisco IE4000 Switch.
cisco-fog-director_1_4_0.ova	Cisco IOx Fog Director software.

**Table 1** Cisco IOx Images (continued)

Image	Description
iox-core-services-1.4.0.tar	The IOx services that act as gateways to allow developers to readily consume microservices via language agnostic REST API and Web sockets.
ioxsdk-1.2.0.0.bin	Cisco IOx SDK, which is a set of tools and software that developers can use to enable their applications to execute on Cisco IOx enabled platforms.  <b>Note:</b> This tool is used for building containers not using the Docker Tool chain. IOx SDK should be considered deprecated.
ioxclient_1.4.0.0_darwin_386.zip ioxclient_1.4.0.0_darwin_amd64.zip ioxclient_1.4.0.0_linux_386.tar.gz ioxclient_1.4.0.0_linux_amd64.tar.gz ioxclient_1.4.0.0_windows_386.zip ioxclient_1.4.0.0_windows_amd64.zip	IOxClient, which is a command line tool provided as part of the Cisco IOx SDK and which is meant primarily to assist with app development for Cisco IOx platforms.  IOxClient is available for Linux 32/64 bit, MAC OS 32/64bit, and Microsoft Windows 32/64bit platforms.

Table 2 provides support information for Cisco Fog Director and CAF in the IOx releases.

**Table 2** Cisco Fog Director and CAF Support Matrix

	CAF 1.4	CAF 1.3	CAF 1.2
<b>Fog Director 1.4</b>	Yes	Yes	No
<b>Fog Director 1.3</b>	No	Yes	Yes
<b>Fog Director 1.2</b>	No	No	Yes

## Upgrading Cisco Fog Director

You can upgrade Cisco Fog Director Release 1.3 to Cisco Fog Director Release 1.4. When you do so, your current Cisco Fog Director data is migrated to the new release.

### Procedure

1. Use the Cisco Fog Director 1.4 VM OVA to instantiate a Cisco Fog Director 1.4 VM.

Copy the file fd-util.deb from the /opt/cisco folder in the Cisco Fog Director 1.4 VM to a location of your choice in the Cisco Fog Director 1.3 VM.

2. Use an SSH client to access your Cisco Fog Director 1.3 VM and log in as the fogdir user.

3. On your Cisco Fog Director 1.3 VM, enter the following command to install the upgrade utility file:

```
[fogdir]# sudo dpkg -i d-util.deb
```

4. On your Cisco Fog Director 1.3 VM, take these actions to create an encrypted backup file that contains data and related information from your existing Cisco Fog Director:

- a. Enter the following command, replacing *backup-file* with a name for the backup file. You can include a path with the file name if you want to place the backup file in a directory other than the directory from which you run this command. This command stops Cisco Fog Director release 1.3 if it is running.

```
[fogdir]# sudo fd-util export backup-file
```

- b. When you see the “Encryption passphrase” prompt, enter a string of characters to be used for encryption and decryption of the backup file, and then press the **Enter** key.

Make sure to remember this passphrase.

- c. When you see the “Enter the encryption passphrase again” prompt, re-enter the passphrase, and then press the **Enter** key.

The system creates the backup file and then displays the “Export completed” prompt.

5. Copy the backup file that you created to a client PC.

You can place the backup file in any location on the client PC and give it any name.

6. From a client PC, take these actions to obtain the VM OVA image for Cisco Fog Director 1.4:

- a. Go to the following URL and click the **IOx Fog Director Software** link in the Select a Software Type box:

<https://software.cisco.com/download/type.html?mdfid=286290097&catid=null>

- b. Click the **Download** button that corresponds to the .ova file that you want.

- c. Follow the on-screen instructions to download the file to your local drive.

7. Use the VM OVA image that you downloaded to deploy a VM for Cisco Fog Director 1.4.

8. Take these actions to update Cisco Fog Director 1.4 with the information in the backup file that you create:

- a. Start and log in to Cisco Fog Director release 1.4.

- b. Click the **Settings** tab and then click the **Settings** sub-tab.

The Settings page displays.

- c. In the Backup & Restore area on the Settings page, click the **RESTORE** button.

The Restore dialog box displays.

- d. In the Decryption password field in the Restore dialog box, enter the passphrase that you created for the backup file.

- e. Click **SELECT BACKUP ARCHIVE** in the Restore dialog box, and then navigate to and select the backup file that you copied to the client PC.

The system updates Cisco Fog Director 1.4 with the information in the backup file. This process can take some time, depending on how much data is in the backup file.

When the upgrade completes, the Cisco Fog Director 1.4 Log In page displays.

## Limitations and Restrictions

- IPv6 support is not available for apps.
- Client ID configuration on IOS must be changed to dhclient format after migrating from the IOx 1.3.0 bundle image for Docker to IOx 1.4.0. Without changing this format, the Docker app will not get an IP address in bridge networking mode after the migration.

## Caveats

The following sections provide information about caveats in this Cisco IOx release:

- [Using the Bug Search Tool, page 6](#)
- [Known Caveats, page 6](#)
- [Resolved Caveats, page 7](#)

## Using the Bug Search Tool

You can use the Bug Search Tool to find information about caveats for this release, including a description of the problems and available workarounds. The Bug Search Tool lists both open and resolved caveats.

To use the Bug Search Tool:

1. Go to <https://tools.cisco.com/bugsearch/>.
2. Log in with your Cisco.com user ID and password.
3. Enter information in the Search For, Product, and Releases field as needed, then press **Enter**.

For more information about the Bug Search Tool, click **Help** on the main Bug Search Tool page.

## Known Caveats

[Table 3](#) describes known caveats in this release.

**Table 3** Known Caveats

ID	Description
CSCve13676	GOS ntp.conf is not configured with DHCP server provided NTP server.
CSCve23559	TPMC connection to TPMS fails.
CSCve34097	GPS data not seen from WS from ioxclient cmd if iox core service bundle restarts.
CSCve34153	GPS service container does not fetch GPS data if Gig5 intf on 829 flaps.
CSCve84160	App fails to start with too many open files.
CSCvf02637	GOS ssh logins don't have idle timeout.
CSCvf07667	USB device shows as null:null for model:product in LM after unplugging and plugging back in.
CSCvf14705	File uploaded to /data dir not persisted sometimes after migration from 1.3.0.0 to 1.4.0.0.
CSCvf15965	GOS did not come up after router hard reload with PAAS app.
CSCvf23734	Loopback interface (lo) doesn't come up for Docker applications with static IP.

**Table 3** Known Caveats (continued)

ID	Description
CSCvf24757	If load.ini file is corrupted, PAAS app will not come back to RUNNING state after restart.
CSCvf30186	Service with out service.raml results in Core service error.
CSCvf30715	App does not come to RUNNING state after 1.2.0.0 to 1.4.0.0 bundle IOS upgrade.
CSCvf98652	Container cannot change resolv.conf on its own.

## Resolved Caveats

[Table 4](#) describes resolved caveats in this release.

**Table 4** Resolved Caveats

ID	Description
CSCux51965	IOx Fog Director: Sometimes “250x250” seen instead of application name.
CSCvd26926	Fog Director has a Bad error message on device discovery failure.
CSCvd45990	Kernel version compatibility check fails for valid scenario.
CSCvf01770	USB device cannot be used by IOx app after device reboot.

## Cisco Support

Use the following resources if you have any questions or require assistance with Cisco IOx:

- Go to DevNet Developer Support:  
<https://developer.cisco.com/site/devnet/support/>
- Go to Cisco Support:  
<https://www.cisco.com/c/en/us/support/index.html>
- Email Cisco Support at [tac@cisco.com](mailto:tac@cisco.com).
- Call Cisco Support at 1.408.526.7209 or 1.800.553.2447.

## Obtaining Documentation and Submitting a Service Request

For information about obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see [What's New in Cisco Product Documentation](#).

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the [What's New in Cisco Product Documentation RSS feed](#). The RSS feeds are a free service.

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