Release Notes for Cisco IOx Release 1.5.0

January 11, 2018

These release notes provide information for Cisco IOx Release 1.5.0.

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  - Cisco IOx Application Developer Guide

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Cisco Systems, Inc.   www.cisco.com

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■ 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 1.5.0

This release provide new features, including the following:

■ Overhaul debuggability from LM/FD

■ Run diagnostics from LM/FD

■ Docker templates with various programming languages run times and libraries using Docker tooling

■ App monitoring and troubleshooting

■ Smart Licensing for IOx Ordering—Available on the IR809 and IR829

■ Secure Storage—Available on the IR809, IR829, and IE4000

- GPS over serial interface
- IPV6 support

IOx Services

Cisco provides micro services which are a set of pre-built protocol handlers that help provide data acquisition capabilities from various devices into the IOx Services ecosystem. Applications can be built for these services to do edge computing and to send data to the cloud.

These micro services

- are built using the IOx Services SDK (only supported on IR8xx platforms).
- provide RESTful APIs to configure the service.
- can access normalized data from the configured device through REST and Web Socket URIs provided by the north bound interface (NBI) gateway.

The following services are supported:

- IOx Modbus
- IOx DNP3
- IOx GPS
- IOx Motion

Supported Platforms

Cisco IOx Release 1.5.0 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

Note: If you have a new production IR809 or IR829, ensure you reboot the system after adding the basic IOx configurations.

Image Information

Note: Before attempting a bundle image installation, stop the guest operating system by using following command on IOS:

guest-os 1 stop

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
ir800-ioxvm.1.5.0-T.bin	Cisco IOx Fog Node image for Cisco IR809 Integrated Services Router and Cisco IR829 Integrated Services Router.
cisco-iox-fog-director-1.5.0.ova	Cisco IOx Fog Director software.
iox-core-services-1.5.0.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. **Note:** This tool is used for building containers not using the Docker Tool chain. IOx SDK should be considered deprecated.
ioxclient_1.5.0.0_darwin_386.zip ioxclient_1.5.0.0_darwin_amd64.zip ioxclient_1.5.0.0_linux_386.tar.gz ioxclient_1.5.0.0_linux_amd64.tar.gz ioxclient_1.5.0.0_windows_386.zip ioxclient_1.5.0.0_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 1.5	CAF 1.4	CAF 1.3
Fog Director 1.5	Yes	Yes	No
Fog Director 1.4	No	Yes	Yes
Fog Director 1.3	No	No	Yes

Upgrading Cisco Fog Director

You can upgrade Cisco Fog Director Release 1.4 to Cisco Fog Director Release 1.5. When you do so, your current Cisco Fog Director data is migrated to the new release.

Procedure

1. In the existing Fog Director 1.4 (from which you want to migrate to 1.5), navigate to the Settings tab.

2. Click Backup.

3. Provide a password with which the backup file will be encrypted. A backup file is generated.

4. Copy the backup file to your PC.

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

5. From a client PC, take these actions to obtain the VM OVA image for Cisco Fog Director 1.5:

   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.

6. Use the VM OVA image that you downloaded to deploy a VM for Cisco Fog Director 1.5.

7. Take these actions to update Cisco Fog Director 1.5 with the information in the backup file that you create:

   a. Start and log in to Cisco Fog Director Release 1.5.

   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 downloaded to the client PC.

      The system updates Cisco Fog Director 1.5 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 1.5 Log In page displays.

In Release 1.5 of Fog Director, there are a few IOx Services that are pre-packaged with Fog Director. When you upgrades from 1.4 to 1.5 using the above procedure, these pre-packaged services will no longer be present in the upgraded Fog Director.

To restore these pre-packaged services:

1. Go to the /opt/cisco/iox_services directory in the Fog Director 1.5 VM where the pre-packaged services are presented as tar files.

2. Copy these tar files to your computer.

3. Log in to the upgraded Fog Director, and click the Apps tab.

4. Complete the following tasks for each tar file that you copied in Step 1:

   a. Click on Add New App, choose Upload from my computer, and select the tar file.

   b. After the file finishes uploading, click Publish.

Limitations and Restrictions

■ Client ID configuration on IOS must be changed to dhclient format after migrating from the IOx 1.3.0 bundle image to IOx 1.4.0 or later versions of the Docker styled app. Without changing this format, the Docker app will not get an IP address in bridge networking mode after the migration.

■ Uploading and installing an app that requires more than one serial device is not supported.

■ If the IOx Core service bundle is corrupted and does not get into the RUNNING state, the bundle's dependent services and apps also will not get into the RUNNING state. To resolve this issue, reactivate the dependent services.

■ To reflect the latest status of the IOx Core services container on the FD GUI, perform a device refresh. For example, if you install the GPS service, the core service automatically gets started. However, the status will not be reflected on FD GUI unless you refresh the device.

■ If you perform an FD Backup and Restore from FD 1.4.0 to FD 1.5.0, all of the prepackaged apps (IOx Core and IOx GPS) will be cleared and not available.

■ If CAF crashes abruptly, CAF comes back up with limited functionality. If app management services are down you can download the tech support logs and verify the reason from the CAF logs or in syslog files. An example for app management going down is a CAF abrupt crash.

The workaround is to reboot the device. If the app management services are down after the device reboots, collect the tech support logs from the device before contacting the support team.

Caveats

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

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 in IOx Release 1.5.0

ID	Description
CSCvf07667	USB device shows as null:null for model:product in LM after unplugging and plugging back in.
CSCvf12737	IOx will not be accessible due to VDS communication failure.
CSCvg24429	IOx APIs will not be accessible after IOS "write erase" command followed by system reboot.
CSCvg02970	Uninstall of unmanaged docker app failed.
CSCvg59315	Failures faced for actions triggered using "re-try" flow -- are not getting re-tried automatically.
CSCvg60299	Issue is seen with "Querying for the last known event sequence number from InfluxDB."
CSCvg60308	App resource edit from app config page fails after the device is deleted and added back to FD.
CSCvg64527	Existing app upgrade with special files fails after bundle image upgrade to 1.5.x.
CSCvg65190	IPv6 networking needs IOS reload for bring up.
CSCvg66363	FDUI: All apps in running mode loose the IP address when one app in the device details page stops.
CSCvg68291	Log level of the device is not shown correctly on the device details page.
CSCvg72250	The resolv.conf is not getting updated with DNS entries for paas app static IP address assignment.
CSCvg83095	FD places the device in incompatibility bucket, stating that the IOx core is not available.
CSCvg83338	App in running with USB device consumed will fail during activation after rebooting the router.
CSCvg83427	If CAF crashes abruptly, CAF comes back up with limited functionality.

Resolved Caveats

Table 4 describes resolved caveats in this release.

Table 4   Resolved Caveats in IOx Release 1.5.0

ID	Description
CSCve84160	App fails to start with too many open files.
CSCve95338	IR8x9 Guest OS file system gets corrupted.
CSCvf24757	If load.ini file is corrupted, PAAS app will not come back to RUNNING state after restart.
CSCvf30715	App does not come to RUNNING state after 1.2.0.0 to 1.4.0.0 bundle IOS upgrade.

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.
- 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.