Release Notes for Cisco IoT Field Network Director (FND), Release 5.1.x

Cisco IoT Field Network Director, Release 5.1.x

Cisco IoT FND 5.1.0 introduces enhanced firmware upgrade options for cellular modems and routers, advanced scheduling for image uploads and installs, and template versioning for improved configuration management. This release also features improved logging and expanded 5G standalone PIM support. Enhanced telemetry and deeper network insight provide greater visibility and control over your IoT infrastructure. These updates are designed to streamline operations and support efficient network management.

Table 1. Updates to Release notes

Date	Description
10/23/2025	Cisco IoT FND Release 5.1.0

New software features

This section provides a brief description of the new software features introduced in this release.

Table 2. New software features for IoT Field Network Director, Release 5.1.0

Product Impact	Feature	Description
Upgrade	Automatic bootflash space cleanup for Cisco IOS XE Devices	Cisco IoT FND automatically removes unused firmware images from both bootflash: and bootflash:/managed/images directories during every firmware upload, install, and during registration post the reload, ensuring optimal use of storage space without any manual intervention. This proactive cleanup not only simplifies the upgrade process but also helps prevent storage-related issues, allowing upgrades to proceed smoothly.
	Bundle Boot and Install Boot modes for Cisco Catalyst IR8100	You can select between Bundle Boot and Install Boot Modes in the router firmware upgrade process.
	Scheduled upload and install of firmware images	Schedule the uploading and installing firmware images to a router group.
	Upgrade firmware of cellular modems	Upgrade firmware of the cellular modems based on cellular technologies like LTE and 5G for Cisco Catalyst IR1100, Cisco Catalyst IR8100, and Cisco Catalyst IR1800 using Cisco IoT FND.

Product Impact	Feature	Description
	Enable firmware upload progress percentage	Cisco IoT FND displays the firmware upload progress for Cisco IoT routers running Cisco IOS-XE namely: • Cisco Catalyst IR1100 • Cisco Catalyst IR8100 • Cisco Catalyst IR1800
Ease of use	Abort StackMode jobs	Abort the StackMode jobs using Cisco IoT FND. You can abort the operations you performed using **Push StackMode**, **Push StackMode Time**, and **Cancel StackMode** options.
	Abort backup and reload	Abort both the **Schedule Install and Reload** and **Set as Backup** operations.
	Export firmware and configuration group data	Export the firmware group update information from the **Firmware Update** page and export the configuration group update information from the **Device Configuration** page. The export option is available only for routers and endpoints.
	Manage data retention of open issues	Cisco IoT FND retrieves open issues and prunes them based on a configurable retention period. By default, open issues are retained for 31 days, and older items are automatically removed. You can control this period using the **Keep Open Issues data for** field.
	Feature-Specific and Heartbeat Logs	In Cisco IoT FND, errors, startup events, and heartbeat logs are recorded in dedicated logs instead of a single consolidated server log. A predefined list of feature-specific logs provides quick access, allowing you to efficiently monitor system activity.
	RPL Tree Update from both Mesh and Routers Nodes	You can collect endpoint metrics from both mesh nodes as well as routers independent of RPL tree settings.
	WPAN reboot in Cisco IoT FND	**Reboot WPAN** button is added to the **Device info** page in Cisco IoT FND for these routers running: ▪ Cisco IOS XE: Cisco Catalyst IR8140, ▪ Cisco IOS: Cisco CGR1000.

Product Impact	Feature	Description
	Support for Enabling or BBUs in Cisco IoT FND with BBU Firmware Upgrade	You can use the Enable BBU and Disable BBU options in Cisco IoT FND to enable or disable Battery Backup Units (BBUs) for these routers: • Cisco CGR 1000 Series router CGR1240. • Cisco Catalyst IR8140. Additionally, you can upgrade the BBU firmware images for these routers at the router group level by uploading and installing them in Cisco IoT FND.
	Add or Delete Customer User Properties Using Cisco IoT FND	You can use the **Custom User Property option** in Cisco IoT FND to easily add or delete user defined properties of connected devices, instead of editing the userPropertyTypes.xml file.
	Endpoint outage or restoration event message	Cisco IoT FND captures the endpoint outage or restoration in the **Events** page. The Cisco IoT FND outage/restoration received time is included in outage/restoration event message.
	Delete existing third-party generic endpoints device type	You can delete the existing third-party generic endpoints device type from Cisco IoT FND.
	Install and retain custom certificates	You can install and retain custom certificates from an older Cisco IoT FND version to the latest Cisco IoT FND version.
Ease of setup	Template Versioning	Template versioning allows you to create new Cisco IoT FND templates with unique version numbers from both existing as well as newly created templates. You can create, edit, save or delete templates using template versioning in Cisco IoT FND.
Software reliability	Modified GC and memory settings	Use a script that automatically configures optimal Java heap and GC settings for large-scale Cisco IoT FND deployments, streamlining memory tuning and enhancing performance for environments with 25,000 or more routers.
	Telemetry	Cisco IoT FND supports flexible telemetry data integration with Cisco DNA Center (CDNA), enabling seamless data transfer in both online and offline modes.

New hardware features

This section provides a brief description of the new hardware features introduced in this release.

Table 3. New hardware features for IoT Field Network Director, Release 5.1.0

Product impact	Feature	Description
Hardware reliability	Cisco IRM-1100-4S8I expansion module	You can boost your network flexibility and industrial integration using Cisco IRM-1100-4S8I expansion module featuring 4x SFP L2/L3 ports and 8x GPIO ports.
	P-5GS6-GL PIM support for Cisco Catalyst IR1800 and Cisco Catalyst IR1100 routers	Adds support for P-5GS6-GL 5G stand-alone PIM for the Cisco Catalyst IR1800 and Cisco Catalyst IR1100 routers.
	P-5GS6-R16SA-GL and P-5GS6-GL PIMs support for Cisco Catalyst IR8100 routers	Adds support for P-5GS6-GL and P-5GS6-R16SA-GL 5G stand-alone PIMs for Cisco Catalyst IR8100 router.

Changes in behavior

Table 4. Changes in behavior, Release 5.1.0

Bug ID	Description
NA	When Cisco IoT FND uploads an image to the router, it automatically removes unused firmware images from bootflash in the background, and the system disables the Remove unused firmware images from bootflash check box by default.

Resolved issues

This table lists the resolved issues in this specific software release.

Note: This software release may contain bug fixes first introduced in other releases. To see additional information, click the bug ID to access the Cisco Bug Search Tool.

Table 5. Resolved issues for IoT Field Network Director, Release 5.1.0

Bug ID	Description
CSCwn78745	Radius user not authorized error when accessing Firmware Groups

Bug ID	Description
CSCwo79489	FND - Security Scan Issue Apache CXF 3.6.x < 3.6.4
CSCwo71758	FND cluster env | FND service startup slowness issue in nodes.
CSCwo68835	Image type not applicable to element. Will not upload Firmware images
CSCwp05534	Extended UI load times for Firmware Groups and Images
CSCwp31980	FND does not update the newly rotated device password in the net properties table
CSCwo06804	FND displays SD Card Removal Event for IR8140 with no SD Card
CSCwo69148	FND 4.9: Available database connections are running out
CSCwo96714	Events CSV export have net element ID instead of EID
CSCwq91865	FND 5.0: Unable to Install Custom Browser Certificates on FND with Different Keystore Password
CSCwo84049	Device export is not working in edge browser
CSCwo59217	Adding new license file causing existing devices to become unmanaged
CSCwp97466	Unable to push stack mode on panid with more than 1000 endpoints

Open issues

This table lists the open issues in this specific software release.

Note: This software release may contain open bugs first identified in other releases. To see additional information, click the bug ID to access the Cisco Bug Search Tool.

Table 6. Open issues for IoT Field Network Director, Release 5.1.0

Bug ID	Description
CSCwr70005	Incorrect Values Displayed in Receive Speed (bits/sec) column for IR8100 Device Endpoints

Known issues

This table lists the limitations for this release. Click the bug ID to access the Cisco Bug Search Tool and see additional information

Table 7. Known issues for IoT Field Network Director, Release 5.1.0

Bug ID	Description
CSCwo51810	In the server.log file, the RestNotificationJob task logs errors every 10 seconds due to a connection failure between backend services. Either an out-of-order

Bug ID	Description
	sequence startup of a backend service or duplicate JAR files in the filesystem during an upgrade of Cisco IoT FND can trigger the errors.
NA	When export of device details fails in the **Field Devices** page, you get logged out of Cisco IoT FND for a few times, intermittently. The issue gets resolved when you clear the browser cache and log in again.

Compatibility

This section lists compatibility information

Validated browsers

Here is the list of validated browsers:

- Microsoft Edge
- Firefox 3.5 or greater

Supported deployment methods

Here is the list of supported deployment methods:

- Bare Metal with Oracle DB
- OVA with Oracle DB
- OVA with Postgres + Influx DB
- QCOW2 with Postgres+Influx DB

OpenSSH Version

Since Cisco IoT FND is supported on a variety of Red Hat Enterprise Linux (RHEL) 5 update releases, the OpenSSH version that comes with a given release might be an older version with known security holes. Consequently, we recommend ensuring that OpenSSH on the RHEL Cisco IoT FND server is up-to-date. On initial installation, upgrade the OpenSSH package in the Cisco IoT FND server to RHEL version 8.8 and later versions.

Supported RHEL versions

Here are the supported RHEL versions on Cisco IoT FND running Cisco IoT FND Release 5.1:

- RHEL 8.8
- RHEL 9.6

Supported PostgresSQL versions

As part of the component upgrade, starting from Cisco IoT FND 5.1 release, the integrated PostgreSQL 16.7 will be supported in the following versions:

- Fresh Cisco IoT FND 5.1 installations running RHEL 9.6

- Upgraded VMs running RHEL 8.x and later versions

Note: There is no upgrade for PostgreSQL 12.12 if the base OS is RHEL 7.x.

System requirements

Table 8. Mesh deployment Using Bare Metal with Oracle

Nodes (routers/endpoints)	CPU (virtual cores)	Memory (RAM GB)	Disk Space (GB)
500/50,000	4	16	250
1,000/1,000,000	8	16	250
2,000/2,000,000	8	16	500
6,000/6,000,000	8	16	500
8,000/8,000,000	8	32	500

Note:

- If there is a firewall in the path, set the TCP timeout on the firewall for the connection between the FND application server and the Oracle database to 4 hours or more.
- Four application servers are recommended for 8,000/ 8,000,000 routers/endpoints.
- We recommend you use the cluster method for application server if you are using over 2,000/20,000 routers/endpoints.
- Cisco IoT FND can process approximately 90 CSMP packets per second per node.
- Set the Java Heap memory to 12 GB to achieve a 25,000 scale and increase the heap memory to 18 GB for anything greater than a 25,000 scale. For more information see, Achieve Scale Beyond 25,000 Routers.

Table 9. Using Oracle database server

Nodes (routers/endpoints)	CPU (virtual cores)	Memory (RAM GB)	Disk Space (GB)
500/50,000	8	32	500
1,000/1,000,000	12	48	1000
2,000/2,000,000	16	64	1000
6,000/6,000,000	20	96	1000
8,000/8,000,000	32	160	2000

Table 10. Mesh deployments using VMs with Oracle

Nodes (routers/endpoints)	CPU (virtual cores)	Memory (RAM GB)	Disk Space (GB)
2,000/20,000,000	24	96	1500

Table 11. Router-only deployments using BareMetal with Oracle: Using Cisco IoT FND Application Server

Nodes (routers/endpoints)	CPU (virtual cores)	Memory (RAM GB)	Disk Space (GB)
25,000	32	64	500
10,000	16	48	500

Table 12. Using Oracle database server

Nodes (routers/endpoints)	CPU (virtual cores)	Memory (RAM GB)	Disk Space (GB)
25,000	32	96	1000
10,000	16	96	1000

Table 13. Router-only deployment using VMs with Postgres

Nodes (routers/endpoints)	CPU (virtual cores)	Memory (RAM GB)	Disk Space (GB)
50,000	24 (cores per socket:4 and sockets:6)	96	800
25,000	24 (cores per socket:4 and sockets:6)	96	800
15,000	16	64	500

Scalability

Table 14. Release upgrade matrix

Current release	Target release
5.0.0-117, 4.12.0-69 (OVA), 4.12.0-69 (ISO)	5.1.0-155
4.12.0-56 (OVA), 4.12.0-56 (ISO), 4.11.0-69 (OVA), and 4.11.0-69 (ISO)	5.0.0-117
4.11.0-69 (OVA), 4.11.0-69 (ISO), 4.10.0-45 (OVA), and 4.10.0-46 (ISO)	4.12.0-56
4.10.0-45 (OVA), 4.10.0-46 (ISO), 4.9.0-62 (ISO, OVA), 4.9.1-8 (Postgres OVA), and 4.9.2-	4.11.0-69

Current release	Target release
4 (ISO)	
4.9.1-8, 4.9.0-62, 4.8.1-72, 4.8.0-130 (ISO), and 4.8.0-133(OVA)	4.10.0-xxx
4.9.0-62, 4.8.1-72, 4.8.0-130 (ISO), 4.8.0-133 (OVA), 4.7.2-8, 4.7.1-60, and 4.7.0-100	4.9.1-xxx Note: this release is only for Postgres OVA deployment.
4.8.1-72, 4.8.0-130 (ISO), 4.8.0-133 (OVA), 4.7.2-8, 4.7.1-60, and 4.7.0-100	4.9.0-xxx
4.8.0-xxx, 4.7.2-8, 4.7.1-60, and 4.7.0-100	4.8.1-xxx
4.7.2-8, 4.7.1-60, 4.7.0-100, 4.6.2-16, and 4.6.1-61	4.8.0-xxx
4.7.1-60, 4.7.0-100, and 4.6.1-61	4.7.2-8
4.7.0-100 and 4.6.1-61	4.7.1-60
4.6.1-61 and 4.5.1-11	4.7.0-100

Note:

- Sometimes, firmware images are not displayed in the Cisco IoT FND while upgrading the Cisco IoT FND from earlier versions to 4.8.x. To resolve this issue, we recommend that you clear the browser cache.
- The target release versions allow upgrades from the two prior major releases and its maintenance releases unless the maintenance release was released after the target version.
- If the current version is not within the two prior versions of the target release, then multiple upgrade hops are required to get to the target release. Use the table above to plan your upgrade. Upgrade each intermediate version(s) and initiate the Cisco IoT FND application. If you can login to Cisco IoT FND, it is the best indication that your upgrade is successful.

Table 15. Upgrade Hardware Security Module (HSM)

Release	HSM client	HSM software
5.1.0	10.2 with software patch	7.4
5.0.0	10.2 with software patch	7.4
4.7.x to 4.12.x	10.2	7.4
4.6	10.2	7.4
4.5	7.3 with software patch	7.4
4.4	7.3 with software patch	7.0

Supported hardware

Table 16. Supported device types and versions

Device type	Release
FARs	
Cisco Catalyst IR1800 Rugged Series Routers	• Cisco IOS XE Release 17.18.1a • Cisco IOS XE Release 17.17.01 • Cisco IOS XE Release 17.16.1 • Cisco IOS XE Release 17.15.03 • Cisco IOS XE Release 17.12.6 • Cisco IOS XE Release 17.9.8 • Cisco IOS XE Release 17.9.5b
Cisco IR8140 Heavy-Duty Series Routers	• Cisco IOS XE Release 17.18.1a • Cisco IOS XE Release 17.17.01 • Cisco IOS XE Release 17.16.1 • Cisco IOS XE Release 17.15.03 • Cisco IOS XE Release 17.12.6 • Cisco IOS XE Release 17.9.8 • Cisco IOS XE Release 17.9.5b
Cisco Catalyst IR1100 Rugged Series Routers	• Cisco IOS XE Release 17.18.1a • Cisco IOS XE Release 17.17.01 • Cisco IOS XE Release 17.16.1 • Cisco IOS XE Release 17.15.03 • Cisco IOS XE Release 17.12.6 • Cisco IOS XE Release 17.9.8 • Cisco IOS XE Release 17.9.5b

Device type	Release
Cisco CGR1000 Series Connected Grid Router (CGR1120 and CGR1240)	• Cisco IOS Release 15.9.3M10(MD) • Cisco IOS Release 15.9-3.M11(MD)
Cisco 800 Series Industrial Integrated Services Router (IR800)	• Cisco IOS Release 15.9-3M11(MD) • Cisco IOS Release 15.9-3M10(MD)
Cisco 800 Series Access Points (AP800) are integrated with IR829 platforms.	• AP803: 15.3.3-JK10 • AP802: 15.3.3-JF15
HERs	

Device type	Release
Cisco 8000 Series Routers	• C8000V: Cisco IOS XE 17.15.03a, Cisco IOS XE 17.18.1a • C8500L: Cisco IOS XE 17.15.03a , Cisco IOS XE 17.18.1a
Cisco ASR 1001 or 1002 Aggregation Services Router (ASR) serving as a head-end router	Cisco IOS XE Release 17.6.7 (MD)
Cisco 4000 Series Integrated Services Router (ISR)	• Cisco IOS Release 15.4(3)M • Cisco IOS Release 15.4(2)T
Cisco Cloud Services Router 1000V Series (CSR)	Cisco IOS XE Release 17.3.4a(MD)

Device type	Release
Compute Gateway	
Cisco IC3000 Industrial Compute Gateway	• 1.5.1 • 1.4.2
Mesh Endpoints	• Wi-SUN firmware version 6.8.0 • Dual stack supported version 6.2.35 (MR) • Non-Wi-SUN firmware version 5.6.42
Cisco 500 Series Wireless Personal Area Network (WPAN) Industrial Routers (IR500)	The firmware versions supported for the following router series are: • Cisco IR510 (DA Gateway device) – 6.8.0 and 6.2.35 (MR) • Cisco IR530 (Range Extender) – 6.8.0 and 6.2.35 (MR)

Related resources

- Cisco IoT Field Network Director User Guide, Release 5.1.x
- Migrate Cisco IoT FND Postgres and Influx DB from RHEL 7.5 to RHEL 8.10

- Cisco IoT FND 4.3.1 and Later Postgres and Influx DB Deployment with Integrated Application Management on OVA
- Cisco IoT FND Deployment on an Open Virtual Appliance, VMware ESXi 5.5/6.0
- Cisco IoT Field Network Director Installation Guide-Oracle Deployment, Releases 4.3.x and Later
- Cisco IoT Field Network Director–Oracle DB Installation and Upgrade Guide
- North Bound API User Guide for Cisco IoT Field Network Director, Release 4.x
- Troubleshooting Guide for Cisco IoT Field Network Director

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