



New Features for Cisco IOS XE 17.9.1

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Cellular Boot Time Improvements

Numerous improvements have been made in the Cellular link up-time with IOS-XE release 17.9.1. In previous releases, the cellular interface was taking approximately two and a half minutes to come up and pass traffic after the router booted up. The Cellular link up-time has been improved by approximately 20% in this release.

IOS XE Downgrade Warning

This feature will present a warning when issuing a **boot system flash** command followed by a file name of an image which has a version number lower than the one of the running image. The downgrade operation will still be possible by ignoring the warning message presented to the user. Booting an image with the same or higher version of the running image is allowed without warning. The feature is only intended for images already loaded on the bootflash of the router, this means only for the **boot system flash <file_name>** CLI (excluding other sources/devices like ftp, mop, rpc, tftp, rom).

The following are examples of how the system compares versions:

When comparing two version numbers as follows:

- 17.7.1
- 17.7.1c

The version with the letter (17.7.1c) will be considered the most updated one.

When comparing two version numbers as follows:

- 17.7.3a

- 17.7.3f

The comparison will be made taking into consideration the alphabetical order. In the case above 17.7.3f will be considered the most updated one.

SNMP Polling of Temperature OID

Support has been added for SNMP MIB to be able to return values from temperature sensors. The output should look similar to the **show environment** CLI.

The output of a **show environment** on an IR1101:

```
IR1101#show environment

Number of Critical alarms: 0
Number of Major alarms: 0
Number of Minor alarms: 0

Slot      Sensor      Current State  Reading
Threshold (Minor, Major, Critical, Shutdown)
-----
R0         Temp: TS1    Normal         42    Celsius    (75 ,80 ,90 ,na ) (Celsius)
R0         Temp: TS2    Normal         37    Celsius    (75 ,80 ,90 ,na ) (Celsius)
```

The output from an snmpwalk would look similar to this:

```
[root@sg-centos-hv ~]# snmpwalk -v 2c -c public 33.33.33.204 1.3.6.1.4.1.9.9.13.1.3.1
SNMPv2-SMI::enterprises.9.9.13.1.3.1.2.1 = STRING: "Sensor 1"
SNMPv2-SMI::enterprises.9.9.13.1.3.1.3.1 = Gauge32: 48
SNMPv2-SMI::enterprises.9.9.13.1.3.1.4.1 = INTEGER: 93
SNMPv2-SMI::enterprises.9.9.13.1.3.1.5.1 = INTEGER: 0
SNMPv2-SMI::enterprises.9.9.13.1.3.1.6.1 = INTEGER: 1
SNMPv2-SMI::enterprises.9.9.13.1.3.1.7.1 = INTEGER: 0
```

The ciscoEnvMonTemperatureStatusEntry oid is 1.3.6.1.4.1.9.9.13.1.3.1:

- ciscoEnvMonTemperatureStatusIndex (.1)
- ciscoEnvMonTemperatureStatusDescr (.2)
- ciscoEnvMonTemperatureStatusValue (.3)
- ciscoEnvMonTemperatureThreshold (.4)
- ciscoEnvMonTemperatureLastShutdown (.5)
- ciscoEnvMonTemperatureStatus (.6)

GPS Mode Enabled By Default

In IOS XE versions prior to 17.9.1, GPS was enabled by default, however, GPS Mode was disabled by default. This required that the user perform an additional modem power-cycle after the router came up in order to use GPS.

Starting with IOS XE 17.9.1, GPS Mode will be enabled by default, and will be set to standalone mode. This will help reduce the cellular link up time.



Note This only applies to the cellular based GPS. This does not apply to the GPS/GNSS module in IR1800 (DR module), IR8140 (native GPS) and IR8340 (Timing module).

Use the following command to check cellular GPS status:

```
Router# show cellular <slot> gps
auto-reset Enable reset modem automatically after configuring GPS enable or mode
```

Install Mode Support

The following table describes the differences between Bundle mode and Install mode:

Cisco IOS XE running on IoT routers has typically made use of the Bundle boot mode. Bundle boot mode is also known as Consolidated boot, and uses a single compressed image. The typical naming convention is <product>-universalk9.<release>.SPA.bin.

This mode provides a consolidated boot process, using local (hard disk, flash) or remote (TFTP) .bin image. Booting via a .bin image means that the router would first have to uncompress the image before booting from it. This led to a longer period of time for the router to boot.

To upgrade the router to a new version of IOS XE, you would point the "boot system" to a new software image. This method is well known and details are available in your products configuration guide.

Starting with IOS XE release 17.9.1, a new boot mode called Install mode has been added to the IoT routers. Install mode uses packages loaded into bootflash, which are read by a packages.conf file. This method provides more control over the software installation process.



Note SMU installation was supported in both bundle boot and install mode. From Cisco IOS XE Release 17.9.x, SMU installation will be stopped if the router is booted up in bundle mode. If the router is booted up in install mode, SMU installation will keep working as it is in previous releases.

Table 1: Bundle Mode vs Install Mode

Bundle Mode	Install Mode
This mode provides a consolidated boot process, using local (hard disk, flash) or remote (TFTP) .bin image.	This mode uses the local (bootflash) packages.conf file for the boot process.
This mode uses a single .bin file.	.bin file is replaced with expanded .pkg files in this mode.
CLI: Router(config)#boot system bootflash:<filename>	CLI: #install add file bootflash: [activate commit]
To upgrade in this mode, point the boot system to the new image.	To upgrade in this mode, use the install commands.

Bundle Mode	Install Mode
Image Auto-Upgrade: When a new Field-Replaceable Unit (FRU) is inserted in a modular chassis, manual intervention is required to get the new FRU running with the same version as the active FRUs.	Image Auto-Upgrade: When a new FRU is inserted in a modular chassis, the joining FRU is auto-upgraded to the image version in sync with the active FRUs.
Rollback: Rollback to the previous image with multiple Software Maintenance Updates (SMUs) may require multiple reloads.	Rollback: Enables rollback to an earlier version of Cisco IOS XE software, including multiple patches in single reload.

For additional information, please see [Cisco IOS XE Installation Methods](#).

Cisco WebUI Access Point Name (APN)

IOS XE 17.9.1 added the ability to add, edit, or delete the APN from the Cisco WebUI Interface. The following provides an overview of how to perform this function.



Note This section only describes new functionality and is not a complete overview of the WebUI.

Adding the APN

From the WebUI, navigate to **Configuration > Interface > Cellular**. Double click on the cellular interface based upon your platform.

The screenshot displays the Cisco WebUI Configuration page for Cellular interfaces. The left pane shows a table of cellular interfaces with columns for Name, Admin Status, Operational Status, and IP Address. The right pane shows the configuration for Cellular0/4/0, including IPv4 Type (Easy IP), Admin Status (UP), Description, WAN (None), NAT (DISABLED), and Profile (1).

On the Cellular window, click on the **Profiles** tab.

Cellular

Basic Advanced

Interface **Profiles** Details

* - Data Profile ** - LTE attach profile

In Use	Profile No.	APN	Authentication Type	User Name	Password	PDN Type	Actions
	2	test3	None			IPv4	
*	**	1	nutaq3			IPv4	

1 - 2 of 2 items

[+ Add](#)

[Cancel](#) [Update & Apply to Device](#)

From the **Profiles** tab, you can Add, Delete, or Edit the APN. Once the profile is modified, click on **Update & Apply to Device** at the bottom of the window.

Changing the SIM Slot

By default, the APN is attached to SIM slot 0. You can change the APN to SIM slot 1 by using the WebUI.

From the WebUI, navigate to **Configuration > Interface > Cellular**. Click on the **Advanced** radio button on the top of the window.

Cellular ✕

Basic Advanced

Interface Controller Profiles Details

Cellular Interface	Cellular0/4/0	Data Profile	1
IPv4 Type	Easy IP (IP Negotiated)	Attach Profile	1
Admin Status	UP	Dialer In-Band	ENABLED
Description	<input type="text"/>	Dialer Idle Timeout	0
WAN	None	Dialer Group	1
NAT	DISABLED	Pulse Time	1
		Load Interval	30

✕ Cancel Update & Apply to Device

Click on the **Controller** tab at the top of the window.

The screenshot shows the 'Cellular' configuration window in the Cisco WebUI. The window has a title bar with 'Cellular' and a close button. Below the title bar, there are two radio buttons: 'Basic' (unselected) and 'Advanced' (selected). The main content area is divided into four tabs: 'Interface', 'Controller' (selected), 'Profiles', and 'Details'. Under the 'Controller' tab, there are three configuration items: 'Primary SIM Slot' with a dropdown menu showing '0', 'Changing the link recovery' with a dropdown menu showing '0', and 'Link Recovery' with a dropdown menu showing '1'. A 'Cancel' button is located at the bottom left, and an 'Update & Apply to Device' button is at the bottom right.

Click on the Primary SIM Slot pull-down and select slot 1. Click on **Update & Apply to Device** on the bottom of the window.

