



Release Notes for Cisco IOS Release 15.6(1)T for the Cisco IR800 Industrial Integrated Services Routers

The following release notes support Cisco IOS Releases 15.6(1)T and higher releases. These releases support the Cisco IR800 Industrial Integrated Services Routers. These release notes are updated to describe new features, limitations, troubleshooting, recommended configurations, caveats, and how to obtain support and documentation.

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Image Information and Supported Platforms


Note

You must have a Cisco.com account to download the software.

Cisco IOS Release 15.6(1)T includes the following Cisco IOS images:

- ir800-universalk9-bundle.SPA.156-1.T.bin

Cisco IOS Release 15.6(1)T includes support for the following IR800 series routers:

- IR829GW-LTE-GA-EK9
- IR829GW-LTE-GA-ZK9
- IR829GW-LTE-NA-AK9
- IR829GW-LTE-VZ-AK9
- IR809G-LTE-NA-K9
- IR809G-LTE-VZ-K9
- IR809G-LTE-GA-K9

The latest image file for the IR809 and IR829 can be found at:

<https://software.cisco.com/download/navigator.html?mdfid=286287045&flowid=75322>


Note

The ir800-universalk9-bundle.SPA.156-1.T.bin bundle must be copied via tftp to the IR800, and then installed using the `bundle install flash:<image name>` command. The ir800-universalk9-bundle.SPA.156-1.T.bin file can NOT be directly booted using the `boot system flash:/image_name`. Detailed instructions are found in the Cisco IR829 and IR809 Integrated Services Router Hardware Installation Guides.


Note

Do not configure ip ssh version 1, otherwise the bundle installation will fail.

Related Documentation

The following documentation is available:

- Cisco IOS 15.6(1)T cross-platform release notes:
http://www.cisco.com/c/en/us/td/docs/ios/15_6m_and_t/release/notes/15_6m_and_t.html
- All of the Cisco IR800 Industrial Integrated Services Router documentation can be found here:
<http://www.cisco.com/c/en/us/support/routers/800-series-industrial-routers/tsd-products-support-series-home.html>
- Software manuals - all of the 800 series router documentation
<http://www.cisco.com/c/en/us/support/routers/800-series-routers/tsd-products-support-series-home.html>

- Most of the Cisco IR800 configuration tasks are available in the Cisco 800 Series Integrated Services Routers Software Configuration Guide
<http://www.cisco.com/c/en/us/td/docs/routers/access/800/software/configuration/guide/SCG800Guide.html>
- Configuring Wireless Devices - common tasks between C800 and IR800 series
http://www.cisco.com/c/en/us/td/docs/routers/access/800/software/configuration/guide/SCG800Guide/SCG800_Guide_BookMap_chapter_01001
- Cisco 4G LTE Software Installation Guide - common tasks between C800 and IR800 series
<http://www.cisco.com/c/en/us/td/docs/routers/access/interfaces/software/feature/guide/EHWIC-4G-LTESW.html>

Major Enhancements

This release adds the following enhancements:

- [Alarm port functionality on the IR809](#)
- [Change in reset button behavior on the IR809 and IR829](#)
- [Guest OS enhancements on the IR829](#)
- [Serial Line Internet Protocol \(SLIP\) encapsulation support](#)

Alarm port functionality on the IR809

Previous versions of software for the IR809 did not support the alarm port. With 15.6(1)T, the alarm port is now functional. When an alarm is triggered or cleared, an error message is seen on the console, as well as SNMP message generated. The alarm LED is activated or deactivated with a trigger or a clear. Note that on 15.6(1)T, `show platform led` doesn't provide the ALM led status

Alarm Input Port wiring is documented in the IR809 Hardware Installation Guide, Connecting the Router section.

<http://www.cisco.com/c/en/us/td/docs/routers/access/800/809/hardware/install/guide/809hwinst.html>

New CLIs have been implemented for the alarm port:

```
IR809#show environment alarm-contact
```

```
Alarm contact information:
```

```
ALARM CONTACT 1
  Status:      Asserted
  Description: external alarm contact 1
  Severity:    Major
  Trigger:     Closed
```

```
IR809(config)#alarm-contact ?
```

```
<1-1> Alarm contact number
all   Configure all alarm contacts
```

```
IR809(config)#alarm-contact 1 ?
```

```
description Set alarm description
severity     Set the severity level reported
trigger      Set the alarm trigger
```

```

IR809(config)#alarm-contact all severity ?
    critical  Critical alarm severity
    major     Major alarm severity
    minor     Minor alarm severity
    none      No alarm severity

IR809(config)#alarm-contact all trigger ?
    closed   Assert alarm when contact is closed
    open     Assert alarm when contact is open

IR809(config)#alarm-contact 1 ?
    description  Set alarm description
    severity     Set the severity level reported
    trigger      Set the alarm trigger

IR809(config)#alarm-contact 1 description ?
    LINE        Alarm description string

```

Configuring the Alarms

```

IR809#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
IR809(config)#alarm-contact 1 description Test Input Alarm
IR809(config)#alarm-contact 1 severity critical
IR809(config)#alarm-contact 1 trigger closed
IR809#

```

No Alarm

```

IR809#show environment alarm-contact
ALARM CONTACT
  Status:      Not Asserted
  Description: Test Input Alarm
  Severity:    Critical
  Trigger:     Closed

```

Alarm

```

IR809#show environment alarm-contact
ALARM CONTACT
  Status:      Asserted
  Description: Test Input Alarm
  Severity:    Critical
  Trigger:     Closed

```

Message generated by the Alarm

```

IR809#
*Nov 27 14:54:52.573: %IR800_ALARM_CONTACT-0-EXTERNAL_ALARM_CONTACT_ASSERT: External alarm
asserted, Severity: Critical

```

Message generated by the Alarm being cleared

```

IR809#
*Nov 27 14:55:02.573: %IR800_ALARM_CONTACT-0-EXTERNAL_ALARM_CONTACT_CLEAR: External alarm
cleared
IR809#

```

LED Status

```
IR809#show platform led
```

```
LED STATUS:
```

```
=====
```

```
GE PORTS : GE0      GE1
LINK LED  : GREEN    OFF
```

```
=====
```

```
Cellular PORTS: Cellular0
```

```
RSSI LED 1 : Green
```

```
RSSI LED 2 : Off
```

```
RSSI LED 3 : Off
```

```
GPS LED   : Off
```

```
SIM0 LED  : Off
```

```
SIM1 LED  : Off
```

```
=====
```

```
VPN LED   : OFF
```

```
System LED: amber, blinking
```

```
IR809#
```

For more information see the Cisco 809 Integrated Services Router Hardware Installation Guide:

<http://www.cisco.com/c/en/us/td/docs/routers/access/800/809/hardware/install/guide/809hwinst.html>

Change in reset button behavior on the IR809 and IR829

The IR809 and IR829 have changed the way the reset button works. With 15.6(1)T, the IR800 series performs in the same manner as the C819. The high level description of the functionality works like this:

- The IR800 will perform both image and configuration recovery
- Press and hold the reset button while powering up the router
- During warm reboot this button has no impact on performance
- Simply pressing the button at any time does not reset the router
- The router will not react to the reset button if it is pressed after power-up because the button needs to be pushed before turning ON/inserting power – to make sure that the condition is detected.
- The push-button cannot be used to boot a IOS image from network. The golden image has to be on flash: only

**Note**

For the location of the reset button see the appropriate IR809 or IR829 Hardware Installation Guide.

Perform the following steps to use this feature:

Step 1 Unplug power.

Step 2 Press the reset button on the router.

Step 3 Power up the system while holding down the reset button.

The system LED blinks four times indicating that the router has accepted the button push.

**Note**

To simplify the boot process, the IR800 routers do not support the ROMMON configuration register and the associated CLI commands. The IR800 either boots the pre-configured images, or stops at the ROMMON prompt for user intervention.

More details can be found in the Hardware Installation Guides for both devices found under:

<http://www.cisco.com/c/en/us/support/routers/800-series-industrial-routers/tsd-products-support-series-home.html>

Guest OS enhancements on the IR829

Guest OS enhancements include:

- Cisco distribution is based on Yocto Project 1.8 Reference Distro, with basic services enabled:
 - IPv4/IPv6
 - DHCP
 - NTP
 - AAA (Radius)
 - Python 2.7
 - Basic debugging tools (tcpdump, top, etc)
 - bash
- Serial relay for Guest OS control of the Serial Interface
 - Async 0 and Async 1 respectively reserve line 1/5 and 1/6 to relay serial data to the corresponding Guest OS /dev/ttyS1 and /dev/ttyS2

Serial Relay Configuration

```
IR829#conf term
Enter configuration commands, one per line. End with CNTL/Z.
IR829(config)#inter asyn 0
IR829(config-if)# encaps relay-line
IR829(config-if)# end

IR829(config)# line 1
transport preferred none
transport input all
stopbits 1
speed 115200
IR829(config)# relay line 1 1/5

IR829# show line 1/5
```

Guest OS output for /dev/tty

GOS is installed through the IOX bundle install process and can be started/stopped and upgraded from IOS CLI

Verification for digitally-signed GOS image distributed via Cisco DevNet must be installed using the `guest-os image install` command only. Details on this command and additional information can be found in the Guest Operating System chapters of the respective Hardware Installation Guides for the routers found under:

<http://www.cisco.com/c/en/us/support/routers/800-series-industrial-routers/tsd-products-support-series-home.html>

Serial Line Internet Protocol (SLIP) encapsulation support

SLIP defines a method of sending IP packets over standard asynchronous serial lines with minimum line speeds of 1200 baud. Serial ports may be assigned to the Guest OS, directly passing traffic to `/dev/ttySx`

- Show controller async 0 (or 1) to display associated line
- Supported IOS SCADA protocol translation
 - IEC 60870-5-101 to IEC 60870-5-104
 - DNP3 to DNP3/IP

More information can be found in the Configuring SLIP and PPP Configuration Guide:

http://www.cisco.com/en/US/docs/ios/11_0/access/configuration/guide/acslip.html

Known Limitations

This release has the following limitations or deviations for expected behavior:

- The IR800 series is feature equivalent to the C8xx series, however, support for this initial release has not implemented or validated for all features.

For example:

C8xx supports the following features under Ge0:

```
c819(config)#int gigabitEthernet 0
c819(config-if)#ethernet ?
  cfm      Ethernet CFM interface commands
  dot1ad   dot1ad port
  lmi      Ethernet LMI interface commands
  loopback Ethernet Dataplane Loopback
  oam      Operations, Administration and Maintenance
  uni      Configure Ether UNI
  vlan     Configure Ethernet vlan
```

IR8xx supports the following:

```
IR800_2(config)#int gigabitEthernet 0
IR800_2(config-if)#ethernet ?
  cfm  Ethernet CFM interface commands
  lmi  Ethernet LMI interface commands
```

- Show led command has a lag from the actual LEDs at first, then it stabilizes.
- Changing the default Guest OS CPU allocation may affect the router performance. Detailed instructions are found in the Cisco IR829 Integrated Services Router Hardware Installation Guide and the Cisco IR809 Integrated Services Router Hardware Installation Guide.

All of the Cisco IR800 Industrial Integrated Services Router documentation can be found here:
<http://www.cisco.com/c/en/us/support/routers/800-series-industrial-routers/tsd-products-support-series-home.html>

Caveats

Caveats describe unexpected behavior in Cisco IOS releases. Caveats listed as open in a prior release are carried forward to the next release as either open or closed (resolved).

Cisco IOS Release 15.6(1)T

The following sections list caveats for Cisco IOS Release 15.6(1)T:

Open Caveats

- **CSCuu86884**
 After the IR800 reloads, vlans are not added to vlan database.
Workaround:
 Add vlans manually after reload
- **CSCuu49331**
 LED status report is inconsistent across different commands.
Workaround:
 None
- **CSCut75469**
 IR829 is not getting GPS data after router bootup
Conditions: After router bootup, sometimes the modem is up but does not get GPS data.
Workaround: Power cycle the modem.
- **CSCuu49331**
 LED status report is inconsistent across different commands
Conditions: PoE LED will go back and forth between yellow and green when there is a PoE device in deny power state. Typing `show platform led` or `show platform led summary` will sometimes show yellow, sometimes shows green.
Workaround: Remove the device that has been denied for power allocation
- **CSCuu60617**
 Media-type rs485 is configurable under IR800 serial port 0 interface (async1), however the serial port 1 (async1) interface does not support media-type rs485.
Conditions: When you configure 'media-type rs485' under the async1 interface, the configuration is acceptable.
Workaround: None

Closed Caveats

- **CSCuv48606**

Permanent license was lost after reload

- **CSCuu45211**

Conditions: Originally GobiSerial was connected to ttyUSB1, ttyUSB2, and ttyUSB3 in this scenario. After re-inserting the SIM, GobiSerial is now connected to ttyUSB0, ttyUSB1, and ttyUSB2 with USB interface is still connected.

- **CSCuv53403**

IR829GW-LTE-GA-ZK9 P2B OS `show env cmd` crashed system at 70C

- **CSCuv67596**

IR 829 crash during http copy of 0 byte file

- **CSCuu86919**

Bundle image installation fails on unit with USB key is inserted

Conditions:

When IR829 unit is loaded with IOS image 15.5(2.25)M0.1, hypervisor 0.28, FPGA version 1.0.0 and BIOS version8 and boots up with USB inserted, bundle installation fails.

Workaround:

Remove USB key from an IR800 unit, reload unit and boot unit up. Unit is able to execute `bundle installation` to upgrade new image release.

- **CSCuu42865**

The `show environment temperature` command has high temperature threshold

Example:

```
IR800#show environment temperature
```

```
Temperature:
```

```
-----
Sensor          MajorThresh  MinorThres  CurTemp      Status
                (Celsius)   (Celsius)   (Celsius)
-----
Sensor 1       75, -25     60, -15     47           OK
-----
```

The IR8x9 data sheet and product specifications refer to ambient temperature while the temperature sensor on the IR8x9 is measuring internal temperature.

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■ Caveats