Release Notes for Cisco ESR 6300 Router - (Cisco IOS XE 17.13.1)

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Introduction to this Document

This Release Notes document provides information about the Cisco ESR6300 Embedded Series Router running Cisco IOS XE 17.13.1.

This document describes the new features, limitations, troubleshooting, besides providing recommended configurations, caveats, and information on how to obtain support and documentation.

Note The documentation set for this product strives to use bias-free language. For purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. Exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

Cisco ESR6300 Embedded Series Router

The ESR6300 is a small form factor embedded router module with a board size of 3.0 in. x 3.775 in. (76.2 mm x 95.885 mm).

The more compact design simplifies integration, and offers system integrators the ability to use the Cisco ESR6300 in a wide variety of embedded applications. The ESR module is available with a Cisco-designed cooling plate customized to the ESR, as well as without the cooling plate for system integrators who want to design their own custom thermal solution.

There are two ESR6300 SKUs:

- ESR-6300-NCP-K9: Embedded Router Board without a cooling plate (NCP = No Cooling Plate)

- ESR-6300-CON-K9: Embedded Router Board without a cooling plate (NCP = No Cooling Plate)

Both of the SKUs offer the following port and module interfaces:

- Four GE LAN ports

- Two combo GE WAN ports

- One USB 3.0 port

- One mSATA module interface

Interface Naming Conventions

Port	Naming Convention
Gigabit Ethernet combo port WAN Layer3	GigabitEthernet0/0/0 GigabitEthernet0/0/1
Gigabit Ethernet LAN Layer 2 ports	GigabitEthernet0/1/0 GigabitEthernet0/1/1 GigabitEthernet0/1/2 GigabitEthernet0/1/3
USB Port	usbflash0: (IOS and rommon)
Console Port	Line console 0

Software Images for Cisco IOS XE Release 17.13.1

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

Image Type	Filename
Universal	c6300-universalk9.17.13.1.SPA.bin

The latest software downloads for the routers can be found at:

https://software.cisco.com/download/home/286323433

New Features in Cisco IOS XE 17.13.1

The following sections describe the major enhancements available in this release:

IPv4 and IPv6 Multicast Over DLEP

DLEP Multicast is now supported with IOS XE 17.13.1. See the following configuration examples:

IPv4 Multicast

Global Command Examples:

```
ip multicast-routing distributed
ip pim rp-address <rp ip addr>  [access-list for group]
```

Physical Interface Command Examples:

```
interface GigabitEthernet0/0/1
  ip address 28.28.28.1 255.255.255.0
  ip pim sparse-mode
  ip igmp version 3
  negotiation auto
  ipv6 address 1111::3/120
ipv6 enable
```

VMI Command Examples:

```
interface vmi 5
ip pim sparse-mode
```

Loopback Command Examples:

```
interface Loopback0
ip address 7.7.7.7 255.255.255.255
ip pim sparse-mode
ipv6 address 2000::2/128
ipv6 enable
```

IPv6 Multicast

Global Command Examples:

```
ipv6 pim
ipv6 multicast-routing
ipv6 pim rp-address <rp ipv6 addr> [access-list for group]
```

Physical Interface Command Examples:

```
interface GigabitEthernet0/0/2
ip address 38.38.38.1 255.255.255.0
ip igmp version 3
ipv6 mld version 2
negotiation auto
ipv6 address 1111::3/120
ipv6 enable
ipv6 pim register-source loopback0
```

VMI Command Examples:

```
interface vmi 5
ip pim sparse-mode
```

Loopback Command Examples:

```
interface Loopback0
ip address 7.7.7.7 255.255.255.255
ip pim sparse-mode
ipv6 address 2000::2/128
ipv6 enable
```

Remove Commands

Remove Command Examples:

```
Router(config-if)# no ip dlep vtemplate 1
Router(config-if)# no int vmi 1
Router(config-if)# no int Virtual-Template 1
```

Show Commands

Show Command Examples:

```
show ip interface brief
show dlep config
show dlep clients
show dlep neighbors
```

SD-WAN Remote Access (SD-WAN RA)

SD-WAN RA is now supported on the IoT routers with IOS XE 17.13.1. SD-WAN RA is a combination of two features:

- IOS-XE SD-WAN

- IOS-XE FlexVPN Remote Access Server

✎

Note   All IoT devices only support the SD-WAN RA Client.

Information on SD-WAN Remote Access can be found in the following guide:

Cisco Catalyst SD-WAN Remote Access

Additional Documentation

Additional documentation for SDWAN/vManage is available at the following links:

- User Documentation for Cisco IOS XE Catalyst SD-WAN Release 17

- Cisco Catalyst SD-WAN

- Cisco SD-WAN Support Information

- Cisco vManage Monitor Overview

- Managing the SD-Routing Device Using Cisco SD-WAN Manager

Change in CLI Output for the FN980 5G Modem

This release has a different output to the **show cellular 0/x/0 radio band** command. The module will no longer display the 5G-SA band information by default. However, once the 5G-SA has been enabled, the band information will then be displayed.

See the following command examples using an IR1101 running IOS XE 17.13.1 with an FN980 modem:

```
IR1101#show cellular 0/1/0 radio band

LTE bands supported by modem:
- Bands 2 4 5 12 14 26 29 30 46 48 66.
LTE band Preference settings for the active sim(slot 1):
- Bands 2 4 5 12 14 26 29 30 46 48 66.

NR5G NSA bands supported by modem:
- Bands 2 5 12 66 77.
NR5G NSA band Preference settings for the active sim(slot 1):
- Bands 2 5 12 66 77.
```

```
3G bands supported by modem:
Index: <none>
3G band Preference settings for the active sim(slot 1):
Index: <none>


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Band index reference list:

For LTE and 5G, indices 1-128 correspond to bands 1-128.

For 3G, indices 1-64 maps to the 3G bands mentioned against each above.

IR1101#

IR1101#show cellular 0/1/0 hard

*Nov  8 12:13:31.969: Graphit 5G RSRP/RSRQ LTE modem:[1]
Modem Firmware Version = M0H.030202
Host Firmware Version = A0H.000302
Device Model ID =  FN980
International Mobile Subscriber Identity (IMSI) = 001010123456789
International Mobile Equipment Identity (IMEI) = 359661100035795
Integrated Circuit Card ID (ICCID) = 89860000502000180722
Mobile Subscriber Integrated Services
Digital Network-Number (MSISDN) =
Modem Status = Modem Online
Current Modem Temperature = 40 deg C
PRI version = 1080-114, Carrier = Generic GCF
OEM PRI version = 1080-114
IR1101#

IR1101#show cellular 0/1/0 radio band

LTE bands supported by modem:
- Bands 1 2 3 4 5 7 8 12 13 14 17 18 19 20 25 26 28 29 30 32 34 38 39 40 41 42 43 46 48 66
 71.
LTE band Preference settings for the active sim(slot 0):
- Bands 1 2 3 4 5 7 8 12 13 14 17 18 19 20 25 26 28 29 30 32 34 38 39 40 41 42 43 46 48 66
 71.

NR5G NSA bands supported by modem:
- Bands 1 2 3 5 7 8 12 20 25 28 38 40 41 48 66 71 77 78 79.
NR5G NSA band Preference settings for the active sim(slot 0):
- Bands 1 2 3 5 7 8 12 20 25 28 38 40 41 48 66 71 77 78 79.

NR5G SA bands supported by modem:
- Bands <none>
NR5G SA band Preference settings for the active sim(slot 0):
- Bands <none>

3G bands supported by modem:
Index:
  23 - UMTS Band 1: 2100 MHz (IMT)
  24 - UMTS Band 2: 1900 MHz (PCS A-F)
  26 - UMTS Band 4: 1700 MHz (AWS A-F)
  27 - UMTS Band 5: US 850 MHz  (CLR)
  50 - UMTS Band 8: 900 MHz  (E-GSM)
  51 - UMTS Band 9: Japan 1700 MHz
  61 - UMTS Band 19: 800 MHz (800 Japan)
3G band Preference settings for the active sim(slot 0):
Index:
  23 - UMTS Band 1: 2100 MHz (IMT)
  24 - UMTS Band 2: 1900 MHz (PCS A-F)
  26 - UMTS Band 4: 1700 MHz (AWS A-F)
```

```
   27 - UMTS Band 5: US 850 MHz  (CLR)
   50 - UMTS Band 8: 900 MHz  (E-GSM)
   51 - UMTS Band 9: Japan 1700 MHz
   61 - UMTS Band 19: 800 MHz (800 Japan)

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Band index reference list:

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For 3G, indices 1-64 maps to the 3G bands mentioned against each above.

IR1101#
```

IPv6 Control Plane for DLEP

IOS-XE 17.13.1 supports DLEP control plane session support on an IPv6 network. When both the router and radio are running an IPv6 stack, the router can initiate DLEP session setup over IPv6. Both manual mode and auto discovery mode are supported. When the router is configured with an IPv6 address and transport layer port details of listening radio, the router initiates DLEP session setup in manual mode.

New Command Line Interface

You can choose auto discovery mode by using the following new CLI:

<no> **ip dlep set peer-discovery-mode ipv6**

When Auto discovery mode is set using the above command, the router starts sending peer discovery signals as in the following example:

```
Destination IP6 address: FF02::1:7
Destination UDP Port   : 854
Source IPv6 address.    : Global IPv6 address configured on DLEP interface or sub-interface
Source UDP Port.        : 55555
```

Upon receipt of discovery signals the radio responds with offer signals that consist of IPv6 connection point TLV as defined in DLEP RFC 8175.

The router uses the received IPv6 address and transport port number to further establish a DLEP TCP session with the radio node. Once the TCP connection is established, rest of DLEP state machine is common between manual mode and IPv6 auto discovery mode.

When the router DLEP interface is configured with dual stack, DLEP auto discovery starts depending on the configured mode. By default, the router starts with IPv4 discovery mode.

Current IOS-XE implementation assumes the IPv6 DLEP offer signal consists of IPv6 connection point TLV or nothing. When the IPv6 connection point TLV is missing in the offer signal, the router picks radio IPv6 address and transport layer port number from foreign socket from which offer signal is received.

The IPv6 address offered by the radio can be link local address of radio interface or any configured global Ipv6 address. The router can establish DLEP session with either of them.

Note Any IPv4 connection point TLV received in IPv6 offer signal is ignored by the router.

DLEP session mode on the router interface is independent of session mode configured on other interfaces. The router can simultaneously support any of following modes on different interfaces:

• IPv4 manual configuration

• IPv4 auto discovery

• IPv6 manual configuration

• IPv6 auto discovery

The following example shows adding a sample manual mode ipv6 control plane configuration:

```
ip dlep vtemplate 1 port 11813 tcp port 11913 client ipv6 193::104 port 913
```

Switching DLEP Session Mode on the Router Interface

The following are Guidelines/Limitations:

• Changing the DLEP session mode due to a configuration change on the interface requires a virtual template reconfiguration on the interface to force the mode change.

• Changing the IPv6 address on the router DLEP interface when there is active session is not recommended. Any such change needs to be followed by virtual template reconfiguration on the interface.

• Ensure global IPv6 address is configured on the interface prior to enabling DLEP.

• A valid virtual template and vmi interface mapped to the physical interface needs to be present.

• Configuration for auto discovery needs to be in the following order:

```
interface GigabitEthernet <x/x/x>
    ip dlep set peer-discovery-mode ipv6
    ip dlep vtemplate 1
```

• The command **ip dlep set peer-discovery-mode ipv6** gets removed when removing the dlep vtemplate configuration from the interface, for example, **no ip dlep vtemplate 1** and has to be reconfigured to enable it again.

Auto Discovery Mode Fallback

The default DLEP session auto discovery mode is IPv4. There is no fallback from IPv4 to IPv6 or vice versa depending on failure of the current mode. Ensure both the router and radio are configured so that auto discovery mode is same.

Related Documentation

Cisco ESR6300 Embedded Series Router

ESR6300 documentation landing page

Product Independent Documentation

Cisco Industrial Routers and Industrial Wireless Access Points Antenna Guide

Cisco IOS XE 17.x

Cisco SD-WAN

Cisco IoT Field Network Director

Cisco Industrial Network Director

Known Limitations

This release has the following limitations or deviations from expected behavior. These limitations are listed below by router type.

Smart Licensing

Starting with Cisco IOS XE 17.6.1, with the introduction of Smart Licensing Using Policy, even if you configure a hostname for a product instance or device, only the Unique Device Identifier (UDI) is displayed. This change in the display can be observed in all licensing utilities and user interfaces where the hostname was displayed in earlier releases. It does not affect any licensing functionality. There is no workaround for this limitation.

The licensing utilities and user interfaces that are affected by this limitation include only the following: Cisco Smart Software Manager (CSSM), Cisco Smart License Utility (CSLU), and Smart Software Manager On-Prem (SSM On-Prem).

Caveats

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

The Cisco Bug Search Tool (BST) is a gateway to the Cisco bug-tracking system, which maintains a comprehensive list of defects and vulnerabilities in Cisco products and software. The BST provides you with detailed defect information about your products and software.

Open Caveats in Cisco IOS XE 17.13.1

There are no open caveats with this release.

Resolved Caveats in Cisco IOS XE 17.13.1

To view the details of a caveat, click on the identifier.

Identifier	Description
CSCwf30344	ESR6300: combo port media-type rj45 is going down at some interval.
CSCwf36225	ESR6300: RJ45 interface is going down when we change auto negotiation.

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