Release Notes for Cisco Embedded Service 6300 Series Router – Release 17.2.1

Revised June 26, 2020

The following release notes support the Cisco ESR6300 router. These release notes are updated to describe new features, limitations, troubleshooting, recommended configurations, caveats, and provide information on how to obtain support and documentation.

Note: More on the PC/104 standard can be found on the PC/104 Consortium website at https://pc104.org/

Table 1 provides the hardware product IDs and brief descriptions for the boards.

Table 1 Cisco ESR 6300 SKUs

SKU	Description	Ports/Module Interfaces
ESR-6300-NCP-K9	Embedded Router Board without a cooling plate. (NCP = No Cooling Plate)	4 GE LAN ports 2 combo GE WAN ports 1 USB 3.0 port 1 mSATA module interface
ESR-6300-CON-K9	Embedded Router Board with cooling plate. (CON = Conduction cooled).	4 GE LAN ports 2 combo GE WAN ports 1 USB 3.0 port 1 mSATA module interface

Contents

This publication consists of the following sections:

- General Description, page 2
- Image Information and Supported Platforms, page 2
- Interface Naming Conventions, page 3
- Related Documentation, page 6
- Caveats, page 6

General Description

The ESR6300 is a compact form factor embedded router module with a board size of 3.0" x 3.775" (76.2mm x 95.885mm). This module *may* fit in an enclosure that was *originally designed* for PC/104 modules with some additional adaptation. The more compact design simplifies integration and offers system integrators the ability to use the Cisco ESR 6300 in a wide variety of embedded applications. The ESR card 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.

Image Information and Supported Platforms

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

Cisco IOS-XE Release Schedule

Cisco IOS-XE releases generally follow the schedule as follows:

- Standard Maintenance (SM) Release - Defect fixes for 6 months.
- Extended Maintenance (EM) Release - Defect fixes for 24 months.

There are typically 3 major releases each year:

- End of March - Standard Maintenance
- End of July - Extended Maintenance
- End of November - Standard Maintenance

Cisco IOS-XE Release 17.2.1

Cisco IOS-XE Release 17.2.1 includes the following Cisco image:

- c6300-universalk9.17.02.01.SPA.bin

The latest software downloads for the ESR6300 can be found at:

https://software.cisco.com/download/home/286323493/type

Click on the ESR6300 link to take you to the specific software you are looking for.

Interface Naming Conventions

The following table shows the naming conventions.

Table 2 Hardware Interface Naming Convention

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

Known Limitations

The following features are not supported on the ESR6300 with software release 17.2.1:

- No support for MacSec or DLEP in this release. (MQC: modular quality of service command line).
- Layer 2 COS to DSCP mapping does not work due to no ASIC chipset support for the feature.
- Copper FE SFPs are not supported on the ESR6300.
- Copper GE SFPs are only supported in config terminal > service internal > service unsupported-transceiver mode.
- Cisco does not claim IP Mobility for Ethernet support on the ESR6300.
- Auto-negotiation for 10Mbps, 100Mbps, 1000Mbps in full-duplex mode is supported. For half duplex, support is only on 10Mbps and 100Mbps.
- IOx Application access to serial port or USB-serial is not supported.
- Refer to the Cisco Approved Vendor List (AVL]) for Cisco USBs. Kingston USB 3.0 works as well. Ensure the USB has a single partition and ext2, Fat16, or Fat32 format only.
- Cellular functionality is not supported.
- Radio Aware Routing is not supported.
- There is no WebUI support for Day 0 or Day 1 configuration
- For Security: No support for TLS, TrustSec, MacSec , CWS [Cloud Web Security], IDS/IPS.

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

- The WebUI Licensing Page is unsupported for release 17.2.1. For all licensing configuration, please use CLI mode or CSSM.
- In the Web User Interface (WebUI), there are two known issues where erroneous information is displayed. In both of these cases, the information is present in the WebUI even though the functionality is **NOT** supported on the ESR6300.
  - Under **Configuration > Security > Threat Defense > snort** there is a RAM and DISK size prerequisite check that fails.
  - Under **Configuration > Security >** there is a category for Trustsec.

These are both cosmetic issues due to the features being unavailable in the 17.2.1 release.

- The IOS boot system setting allows users to specify any flash-based storage URL for IOS image booting.

  The rommon on the ESR6300 does not expose the non-IOX msata partition, therefore auto-booting from mSATA will not work even if it is configured in IOS.

  Example: Users must not configure a boot system setting as follows:

  ```
  (config)#boot system flash msata:ios-image
  ```

- Receive a message 'unable to open bootflash:golden.bin (14)' during bootup.

  Example: Pushing the reset button displays the unable to open message.

  ```
  ESR-6300-CON-K9 platform with 4194304 Kbytes of main memory

  MCU Version - Bootloader: 4, App: 10

  MCU is in application mode.

  Reset button push detected

  unable to open bootflash:golden.bin (14)
  ```

  This message is intended by design to inform the user they have not setup a golden.bin config file.

Major Enhancements

The following features are included in the Cisco IOS-XE release 17.2.1:

MTU Support

From this release on, an interface MTU can be configured for 64 - 9216.

Serial Port Support

Additional protocol capabilities have been added to the ESR6300 to bring it into feature compatibility with the IR1101. These include:

- SCADA Gateway functionality (IEC10x and DNP3)
- Raw Socket (TCP and UDP)
- Line Relay

- Reverse Telnet

All of the configuration and show commands will be the same as are available on the IR1101 platform.
https://www.cisco.com/c/en/us/td/docs/routers/access/1101/software/configuration/guide/b_IR1101config.html

Booting from IOS

The following configuration steps need to be taken in order to boot from the USB.

To display the boot options:

```
Router(config)#boot config ?
  bootflash:  URL of the config file
  flash:      URL of the config file
  msata:      URL of the config file
  nvram:      URL of the config file
  usbflash0:  URL of the config file
  webui:      URL of the config file
```

The syntax for the boot command is:

boot config usbflash0:*<file name>*

For example:

```
Router(config)#boot config usbflash0:startup-config
Router(config)#

Router#write memory
Building configuration...

[OK]
*Feb 10 10:20:11.990: %SYS-2-PRIVCFG_ENCRYPT: Successfully encrypted private config file
```

The environment variable CONFIG_FILE in the following example confirms that the startup-config is set to boot from usbflash0.

```
Router#show boot
BOOT variable =
CONFIG_FILE variable = usbflash0:startup-config
BOOTLDR variable does not exist
Configuration register is 0x1820

Standby not ready to show bootvar
```

Booting from ROMMON

The following configuration steps need to be taken in order to boot from the USB.

From the ROMMON prompt, execute **set CONFIG_FILE=usbflash0:*<filename>***

For example:

```
rommon 2 > set CONFIG_FILE=usbflash0:my_startupcfg
rommon 3 > sync
rommon 4 > set
PS1=rommon ! >
MCU_UPGRADE=SKIP
THRPUT=
```

```
LICENSE_BOOT_LEVEL=
RET_2_RTS=
MCP_STARTUP_TRACEFLAGS=00000000:00000000
BSI=0
RANDOM_NUM=1275114933
BOOT=flash:Jun5_1.SSA,12
RET_2_RCALTS=951454376
CONFIG_FILE=usbflash0:my_startupcfg
```

Continue booting the IOS image as usual from the ROMMON prompt.

Booting from the USB Feature Summary

- Once the CONFIG_FILE is set to a non-default value, the **nvram:startup-config** command is aliased to this new location.
- Any change made to the config file in usbflash will be reflected in nvram:startup-config as well.
- The EXEC command **erase nvram:startup-config** erases the contents of NVRAM, and deletes the file referenced by CONFIG_FILE variable.
- If the USB is unplugged after setting the **boot config usbflash0:*<filename>*** variable, then the day 0 default configuration will take effect.
- When the configuration is saved using the **copy system:running-config nvram:startup-config** command, the device saves a complete version of the configuration file to the location specified by the CONFIG_FILE environment variable, and a distilled version to NVRAM. A distilled version is one that does not contain access list information.

Related Documentation

The following documentation is available:

- All of the Cisco ESR6300 documentation can be found here:

  https://www.cisco.com/c/en/us/support/routers/6300-series-embedded-service-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 resolved.

Note: You must have a Cisco.com account to log in and access the Cisco Bug Search Tool. If you do not have one, you can register for an account.

For more information about the Cisco Bug Search Tool, see the Bug Search Tool Help & FAQ.

Open Caveats

- **CSCvu75971**

  Benign bootup warning messages appear on the console.

  Symptom: The following messages are seen during bootup:

  ```
  WARNING: Loaded FDT at random address 0xB87D2000.
  WARNING: There is a risk of accidental overwriting by other code/data.
  ```

Workaround: Ignore these messages. They are not indicating any problem, and will be removed in a future release.

- **CSCvt35500**

  Warning and Critical thresholds are incorrect, and no syslog is generated.

  Symptoms: There are two issues to this defect:

1. The platform resources thresholds are wrong, for example:

```
ESR 6300#show platform resources
**State Acronym: H - Healthy, W - Warning, C - Critical
Resource          Usage          Max       Warning     Critical        State
-------------------------------------------------------------------------------------------
RP0 (ok, active)
C
Control Processor   82.24%        100%       80%         85%             W
DRAM                3471MB(88%)   3939MB     80%         85%             C
bootflash           1767MB(64%)   2798MB     70%         90%             H
```

   The limits for Warning thresholds must be [80%, 88%, 70%] instead of [80%, 80%, 70%].

   The limits for Critical thresholds must be [90%, 93%, 90%] instead of [85%, 85%, 90%].

2. When the threshold limits (at the currently incorrect threshold values) have been reached or exceeded, the ESR 6300 never generates PLATFORM_ELEMENT syslogs to indicate that the WARNING or CRITICAL thresholds have been reached.

   Workaround: There is no workaround.

Resolved Caveats

None at this time.

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Model Driven Telemetry - gRPC Dial-Out: Expands existing Model Driven Telemetry capabilities with the addition of gRPC protocol support and Dial-Out (configured) telemetry subscriptions.

YANG Data Models: For the list of Cisco IOS XE YANG models available with this release, navigate to:

https://github.com/YangModels/yang/tree/master/vendor/cisco/xe

Revision statements embedded in the YANG files indicate if there has been a model revision. The README.md file in the same GitHub location highlights changes that have been made in the release.

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