New Features for Cisco IOS XE 17.12.1a

This chapter contains the following sections:

Support for P-LTE-450

The P-LTE-450 is a 450MHz Category-4 LTE PIM, which addresses LTE use cases primarily targeting utility, public safety, and critical infrastructure maintained by public organizations in Europe and other world regions. The module supports only Band 31 and 72 for LTE 450MHz networks.

Note   Throughout the user documentation, you will see the module referred to as P-LTE-450, which is the Cisco product name. The module is designed and manufactured by Intelliport, which refers to it as the IPS-701. Both names will be present in documentation.

Unlike regular LTE modules, there are some differences with regards to the P-LTE-450MHz on IOS-XE platform. Some of the key differences are:

- IP pass through will be on Gigabit Ethernet interfaces rather than cellular interface

- Troubleshooting commands are from web interface of third-party hardware

See the Cellular Pluggable Interface Module Configuration Guide for complete details.

For additional information, see the LTE 450MHz Alliance.

HDLC Support for SCATS Overview

The Sydney Coordinated Adaptive Traffic System (SCATS), is an intelligent transportation system that manages the dynamic (on-line, real-time) timing of signal phases at traffic signals, meaning that it tries to find the best phasing (i.e. cycle times, phase splits and offsets) for a traffic situation (for individual intersections as well as for the whole network). SCATS is based on the automatic plan selection from a library in response to the data derived from loop detectors or other road traffic sensors. SCATS uses sensors at each traffic signal to detect vehicle presence in each lane and pedestrians waiting to cross at the local site. The vehicle sensors

are generally inductive loops installed within the road pavement. The pedestrian sensors are usually push buttons. Various other types of sensors can be used for vehicle presence detection, provided that a similar and consistent output is achieved. Information collected from the vehicle sensors allows SCATS to calculate and adapt the timing of traffic signals in the network.

High-Level Data Link Control (HDLC) is a group of data link (Layer 2) protocols used to transmit synchronous data packets between point-to-point nodes. Data is organized into addressable frames. This format has been used for other multipoint-to-multipoint protocols, and inspired the HDLC-like framing protocol described in RFC 1662. HDLC uses a zero-insertion/deletion process (bit stuffing) to ensure that the bit pattern of the delimiter flag does not occur in the fields between flags. The HDLC frame is synchronous and therefore relies on the physical layer (Layer 1) to clock and synchronize frame transmission and reception.

This feature is being developed as an IOx app which integrates with the existing virtualization layers available in IOS XE based IoT routers. The intended application is to have a SCATS controller connected to the router via serial cable. The SCATs protocol the app will follow is documented in specification TSI-SP-068.

The following figure is an example of a typical SCATS traffic control network application:
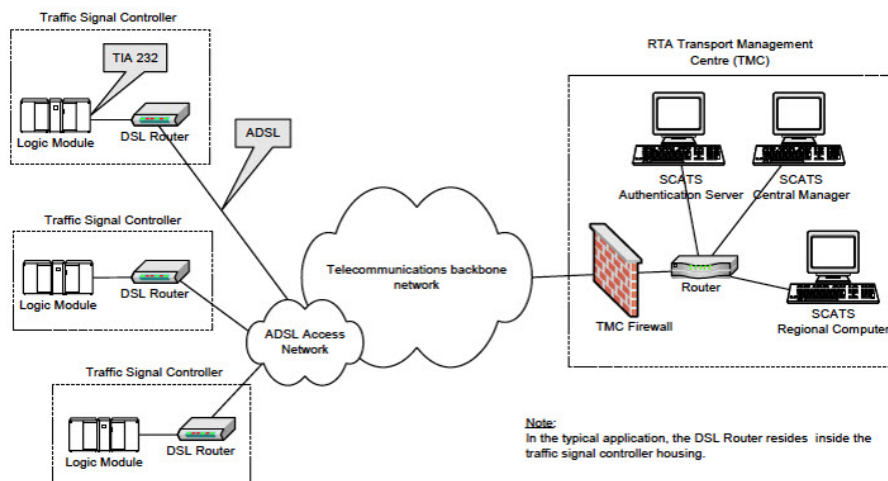
In the above figure, an IR1101 plays the role of the DSL Router to which the Traffic Signal Controller (TSC) is connected via a serial interface. Upon connection to the TSC, the router obtains a Site ID from the controller, which it will then forward to the SCATs Authentication Server. The authentication servers will be provided to the IOx app through a JSON file including IP and port and there can be up to three authentication servers that the IOx app can cycle through.

Once the Authentication Server has received the Site ID, it will reply to the router with the corresponding SCATs regional computer IP and port that matches that Site ID. All further communication is then done transparently from TSC to Regional Computer.

The router will use two modes to communicate with the TSC (HDLC and non-HDLC). There are four available serial configurations, and the user can select which configurations will be used by enabling or disabling them through a second JSON file provided to the app.

Since this is an IOx app, the feature can be disabled by stopping, deactivating, or uninstalling the app. The application will mainly be deployed using Local Manager. App size is about 50 MB, CPU is 400 units and memory is 128 MB.

Uncapped License Implementation

The Cisco IOS XE 17.11.1 release introduced a new throughput level called "uncapped". This release extends the new throughput level to all of the Cisco IoT routing platforms. The following is a recap of the uncapped license implementation:

Licensing Throughput Levels

The throughput level determines the bandwidth limit which is applied to encrypted traffic. There is no limit applied to the non-encrypted (clear) traffic going through a device.

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Important   To comply with global export regulations, if more than 250Mbs of encrypted traffic is required, then an "uncapped" – platform dependent – selection must be done on CCW, as well as an HSEC license.

This limit is imposed bidirectionally. This means that if the throughput limit is set to 250Mbps then up to 250Mbps of encrypted traffic can flow through the device in either direction. For example, the device can both receive and transmit up to 250Mbps of encrypted traffic. There is no limit applied on unencrypted traffic.

When the throughput level on the device is set to "uncapped" there are no limits imposed on both encrypted and unencrypted traffic flowing through it.

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Note   To avoid confusion on throughput limits and IOS XE software releases, please note the following:

Cisco IOS XE release 17.11.1a and earlier running on the ESR6300, IR1800, and IR8140 platforms support boost, uncapped, and unlimited licenses. These are configured using the **platform hardware throughput level 2G** CLI.

Future Cisco IOS XE release 17.12.1a and later running on the ESR6300, IR1800, and IR8140 support the same licenses, but will be configured using the **platform hardware throughput level uncapped** CLI.

With Cisco IOS XE release 17.12.1a and later, the **platform hardware throughput level 2G** and the **platform hardware throughput level uncapped** CLIs will both provide the same throughput as the uncapped license.

The following table shows the throughput limits (also referred to as Tier license) supported on IoT devices.

Platform	25 Mbps bidirectional (Tier 0)	50 Mbps bidirectional	Up to 200 Mbps bidirectional (Tier 1)	250 Mbps bidirectional	2 Gbps	Uncapped (Tier 2)
ESR 6300	N/A	Yes	N/A	Yes	Yes	Supported starting with 17.12.1a
ESR-6300-LIC-K9	N/A	Yes	N/A	N/A	N/A	Yes
IR1101	N/A	N/A	N/A	Yes	N/A	Supported starting with 17.10.1.

Platform	25 Mbps bidirectional (Tier 0)	50 Mbps bidirectional	Up to 200 Mbps bidirectional (Tier 1)	250 Mbps bidirectional	2 Gbps	Uncapped (Tier 2)
IR1800	N/A	Yes	N/A	Yes	Yes	Supported starting with 17.12.1a
IR8100	N/A	Yes	Yes	Yes	Yes	Supported starting with 17.12.1a
IR8300	Yes	N/A	Yes	N/A	N/A	No