Prerequisites and Restrictions for Configuring the Cisco Cellular Pluggable Interface Module (PIM)

This chapter contains the following sections:

Prerequisites for Configuring a Cellular PIM

Note You must have the appropriate antennas and antenna accessories to complete your installation. Consult the Cisco Industrial Routers and Industrial Wireless Access Points Antenna Guide for suggestions on possible solutions.

- If the signal is not good at the router, place the antenna away from router in a better coverage area. Please refer to the RSSI/SNR values as displayed through **show cellular <x/x/x> all** or the LED of the pluggable modem.
- You must have cellular network coverage where your router is physically placed. For a complete list of supported carriers.
- You must subscribe to a service plan with a wireless service provider and obtain a Subscriber Identity Module (SIM) card. Only micro SIMs are supported.
- You must install the SIM card before configuring the Cellular PIM or router.
- The standalone antenna that supports GPS capabilities must be installed for the GPS feature to work when available on the PIM.

Restrictions for Configuring a Cellular PIM

- Currently, cellular networks support only user initiated bearer establishment.
- Due to the shared nature of wireless communications, the experienced throughput varies depending on the radio network capabilities, number of active users or congestion in a given network.
- Cellular bandwidth is asymmetric with the downlink data rate being greater than the uplink data rate, while on private cellular with TDD frequency band(s), it may be symmetrical.
- Cellular networks have higher latency compared to wired networks. Radio latency rates depend on the technology and carrier. Latency also depends on the signal conditions and can be higher because of network congestion.
- CDMA-EVDO, CDMA-1xRTT, and GPRS technology modes are not supported. 2G is only supported on the P-LTE-GB.
- Any restrictions that are part of the terms of service from your carrier.
- SMS—Only one text message up to 160 characters to one recipient at a time is supported. Larger texts are automatically truncated to the proper size before being sent.

Features Not Supported

The following features are not supported:

- On Cisco IOS-XE, TTY support or Line is not available on cellular interface as it was on IOS classic.
- On Cisco IOS-XE, explicit Chat script /Dialer string doesn't need to be configured for the cellular interface as it was on IOS classic.
- DM log output to USB flash is not supported
- Voice services

Cellular PIM Major Features

The PIM supports the following major features:

Feature	Description
SIM lock and unlock capabilities	SIM card with security mechanism requiring a PIN code is supported, see SIM Cards on the Cellular Pluggable Interface Module (PIM) for details.

Feature	Description
Dual SIM **Note** Not supported on the P-LTE-VZ pluggable	For backup purpose, a cellular PIM may support two SIM cards, enabling auto-switch failover between primary and backup (backup only) mobile carrier' services from a single Cellular PIM, see SIM Cards on the Cellular Pluggable Interface Module (PIM) for details.
Auto SIM	Cisco IOS-XE feature enabling a Cellular PIM to activate the appropriate firmware associated to a SIM card from a mobile carrier, see SIM Cards on the Cellular Pluggable Interface Module (PIM) for details.
Public Land Mobile Network (PLMN) selection	By default, a Cellular PIM will attach to its default network associated to the installed SIM card. In case of private Cellular network or to avoid roaming, a cellular interface can be configured to only attach to a given PLMN. See PLMN Search and Selection for details.
Private LTE **Note** Private 4G and private 5G networks are leveraging spectrum that can be obtained by enterprises to deploy the private cellular infrastructure. It can either be a subset of SP spectrum or a frequency band dedicated to private network in countries, for example 4G band 48 (CBRS) in U.S., 5G band n78 in Germany,	On appropriate Cellular PIM modules, for example, P-5GS6-GL frequency bands allowing connectivity to private LTE and/or private 5G infrastructure are supported. See Cellular Band Lock.
Two active PDN profiles	On Cellular interface, up to 16 PDN profiles can be defined, while two could be active, dependent of the SIM subscription and services, see Using Data Profiles for details.
IPv6	IPv6 data traffic is fully supported over Cellular network. See Configuring Cellular IPv6 Address.
Mobile Network IPv6 **Note** Not available on all mobile carriers.	Cellular attachment to an APN on a mobile network can be performed through IPv4 and IPv6, or IPv6 only.
Cellular serviceability	On Cisco IOS-XE, several features such as LTE Link recovery, firmware upgrade, DM logs collection can be configured to ease the operations and offer better serviceability, see Cellular Serviceability for details.

Feature	Description
Short Message Service (SMS)	A text message service with messages exchanged between a modem's device and a SMS service center in a store and forward mechanism. On Cisco IOS-XE router, outgoing SMS may be used to send dying gasp message to a management solution or operators. SMS on dying gasp is available on some cellular PIMs such as P-LTEA-EA and P-LTEA-LA See Short Message Service (SMS) and Dying Gasp for details
3G/4G Simple Network Management Protocol (SNMP) MIB	Cellular WAN MIBs and Traps sending management information through SNMP to a Management solution, see Management Information Base for details
GPS **Note** See Supported Modem Technology for GPS support.	Global Navigation Satellite System (GNSS) (requires a GNSS compliant antenna) and National Marine Electronics Association (NMEA) streaming.