

Cisco ISSI Gateway

The Cisco® IP Interoperability and Collaboration System (IPICS) solution now has a direct IP connection to Project 25 (P25) radio networks using standard TCP/IP communications. Cisco IPICS also connects smart devices such as the Apple iPhone® with mission-critical users on the same P25 radio network. The Cisco Inter-RF Subsystem Interface (ISSI) Gateway provides communications interoperability, regardless of technology and jurisdiction boundaries.

The Cisco ISSI Gateway uses TCP/IP standardized communications to bridge P25 networks to Cisco IPICS. The Cisco ISSI Gateway connects to the first open IP radio network standard. Customers no longer have to be locked into a proprietary interface between their communications dispatch system and the radio network. The Cisco ISSI Gateway is based on the Inter-RF Subsystem interface (ISSI) standard, issued by the Telecommunications Industry Association (TIA) as the TIA-102.BACA specification.

The Cisco ISSI Gateway can be deployed on the Cisco Physical Security Multiservices Platform or virtualized on the Cisco Unified Computing System™, which represents the start of a new generation of virtualized appliances for use with the Cisco IPICS product line.

Figure 1. Cisco ISSI Gateway on 2-RU Cisco Physical Security Multiservices Platform



Figure 2. Cisco Unified Computing System for Virtualized ISSI Gateway



Product Specifications

Table 1 describes some of the features of the Cisco ISSI Gateway,

Table 1. Cisco ISSI Gateway Features and Descriptions

Feature	Description
Standard network-level communications	Provides TIA standard network-level communications between P25 trunking radio systems, regardless of radio system manufacturer
Authorized roaming	Allows authorized roaming between P25 systems
Radio controller	Coordinates calls and traffic from a common database of all subscribers in the system

Feature	Description
Radio signaling	<p>Users can communicate using P25 supplemental services, including:</p> <ul style="list-style-type: none"> • Group Calls • Individual Calls • Emergency Calls • Call Alert • Radio Check • Radio Detach • Radio Inhibit/Uninhibit • Radio Unit Monitor • Short Message • Status Query
Secure Communications	<p>Encrypts and decrypts P25 audio in two different modes. Gateway P25 mode allows for system-level encryption coming from G.711/G.729 audio streams, and End to End P25 mode allows for end-to-end encryption from radios to the dispatchers without transcoding.</p>

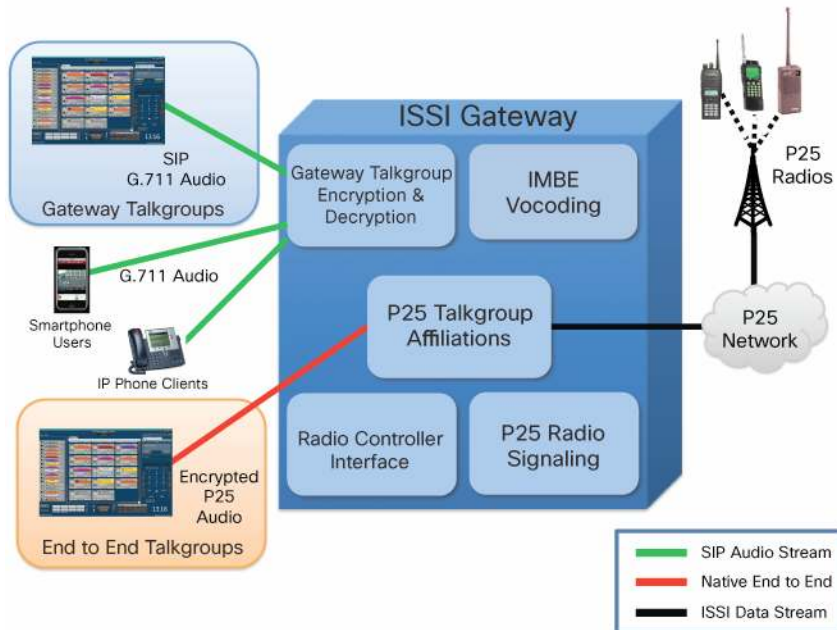
The Cisco ISSI Gateway comprises two functional parts: a radio controller and a subsystem interface. The radio controller manages P25 subscribers, allowing for the administration of user and group IDs for the home and affiliated radio system. This ensures talkgroup communications while radio users roam away from their home P25 network onto an affiliated P25 network without a console patch. The Console Subsystem Interface (CSSI) allows the IPICS dispatch console, Cisco IP Phones, and Cisco mobile clients on Apple iPhone phones to communicate with multiple P25 systems. Customers are no longer tied to a radio manufacturer's proprietary dispatch solution or proprietary mobile or portable radios.

Architecture

The Cisco ISSI Gateway comprises the following functional building blocks (see Figure 3).

- Radio Controller Interface
- IMBE Vocoding
- Gateway P25 talkgroup encryption/decryption
- P25 talkgroup affiliations
- P25 Radio signaling

Figure 3. Cisco ISSI Gateway functional diagram



Cisco's P25 solution allows for two modes of communications. Gateway P25 is a proxy mode that encodes/encrypts and decodes/decrypts P25 audio on the ISSI Gateway. In this mode, the ISSI Gateway transcodes multicast Real-Time Transport Protocol (RTP) streams using G.711 into Session Initiation Protocol (SIP), using IMBE, sending the streams throughout the IP network. Gateway P25 mode allows IP phones, mobile clients, and other SIP endpoints to talk with P25 radios. End to End P25 is a native mode that allows for end-to-end encryption of audio using IMBE. In End to End P25 mode, the ISSI Gateway routes the audio directly to the IPICS dispatch console, where it encodes/encrypts and decodes/decrypts the P25 audio.

Software System Capabilities

Table 2 describes some of the software features of the Cisco ISSI Gateway.

Table 2. Cisco ISSI Gateway Software Features

Maximum simultaneous P25 group calls	50
Maximum concurrent End to End P25 talkgroups	50
Maximum P25 talkgroups per ISSI Gateway	2000
Encryption	256-bit AES & 64-bit DES-OFB: contact Cisco for other encryption formats

Hardware Specifications and Hardware Part Numbers

See Cisco Multiservices Platform and Unified Computing System products.

Multiservices Platform:

http://www.cisco.com/en/US/prod/collateral/ps6712/ps10491/ps10823/datasheet_c78-584660.pdf

Unified Computing System:

http://www.cisco.com/en/US/products/ps10493/products_data_sheets_list.html

Table 3 lists ordering information for this solution,

Table 3. Ordering Information

Part Number	Description
CIS-ISSI-GWY-K9	IPICS P25 ISSI Gateway; includes (4)CIS-P25-TG licenses. Order as option to 2-RU MSP or as an option to the CIS-IPICS-VM.
CIS-P25-TG	IPICS P25 talkgroup; order one for each talkgroup in the ISSI Gateway.
CIS-NATIVE-IDC	IPICS dispatch console P25 dispatcher license; order one IPICS native license for each dispatcher that needs end-to-end secure communications.
CIS-IPICS-VM	Order this for a Virtualized version of the ISSI Gateway and structure all previous software as options to this part number.

Services and Support

Cisco and our certified partners can help you accelerate success and improve the return on your investment in a Cisco IPICS solution. The Cisco lifecycle approach to services defines the requisite activities at each phase of the solution lifecycle:

- Reduce deployment costs by identifying the features that will best meet your business requirements
- Accelerate migration by assessing the readiness of your network to support the system and by developing a sound design
- Support smooth implementation through effective planning and expert installation, configuration, and integration
- Increase operational efficiency and extend the value of your investment with award-winning technical support

For more information about Cisco services, visit <http://www.cisco.com/go/services>.

For More Information

For more information about Cisco IPICS, visit <http://www.cisco.com/go/ipics> or contact your local account representative.

For more information about APCO Project 25, visit <http://apcointl.org/spectrum-management/resources/interoperability/p25.html>



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