REDCOM SIGMA® XRI-PCIe

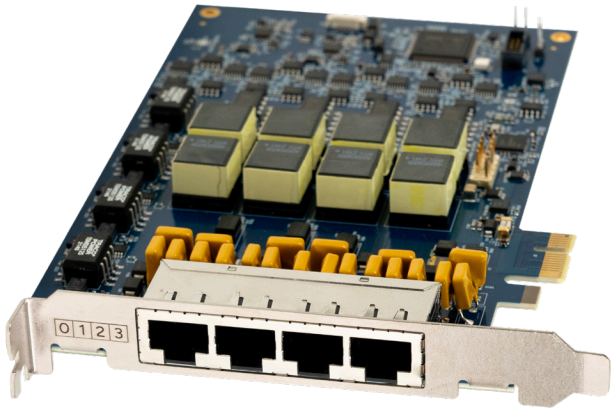
4-port Intelligent radio gateway expansion module

REDCOM Sigma® XRI-PCIe is a 4-port radio gateway card that installs into an available PCIe expansion slot on a PC or server. The XRI-PCIe is an intelligent radio gateway that bridges the gap between disparate radio systems used by military units, government agencies, and public safety organizations. By leveraging existing radio assets, Sigma XRI-PCIe enables these organizations to instantly connect to each other, regardless of radio network, endpoint, or frequency used.

Together with REDCOM Sigma software on the host compute platform, the XRI-PCIe allows radio users to communicate directly with users on any SIP endpoint, and can be controlled and patched together on-the-fly via the REDCOM C2 Console app.

XRI-PCIe key benefits

- **Adds radio interoperability to existing server platforms**
- **Supports 4 radio nets per card**
- **Bridges disparate devices in real time**
- **Agnostic to network, waveform, & device**
- **Reduces the complexity of installing & maintaining comms**



Intelligent radio interoperability

- Features 4 built-in analog ports for donor radios.
- Agnostic to radio make, model, encryption, and waveform.
- Works with virtually any public safety or tactical radio.
- Communicate seamlessly over multiple nets, including VHF, UHF, HF, SATCOM, and TSM.
- Configurable PTT signaling modes per port and per caller.
- Supports patches, dialed calls, and independent monitoring.

IP-based PTT voice integration

- Interoperable with unicast and multicast RTP-capable radios and PTT apps — including radios from Silvus Technologies, Persistent Systems, DTC, and Thales.
- Simultaneous access to multiple talk groups on a single radio network via individual Sigma radio lines — such as a TSM RF mesh network.
- IP-connected radio nets connect to the XRI via ethernet and do not use up any of the 4 analog radio ports.
- IP-connected radio nets and talk groups can be bridged together (as a channel, patch, or conference) with other IP-connected radio nets, analog-connected radio nets, SIP endpoints, and a console operator.

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Support for various C2 ecosystems

- Gives the warfighter flexibility to connect numerous disparate RF comms endpoints.
- Provides warfighters with a C2 platform (voice, video, chat) for lower echelons that does not rely on higher HQ.
- Enables stand-alone comms in DIL (disconnected, intermittent, and limited) environments.
- Providers warfighters with the ability to interoperate in the CJADC2 (Combined Joint All Domain Command & Control) theater.

Powered by REDCOM Sigma® software

- The C2 platform of choice for the U.S. Army and USAF.
- Built for tactical communicators; software is easy to learn without the need for field service reps and IT experts.
- C2 Console app enables an operator to monitor and control all tactical comms from a single pane of glass.
- Lightweight selectable video conferencing is ideal for chaotic, congested, or contested environments.

Resilient, future-proof design

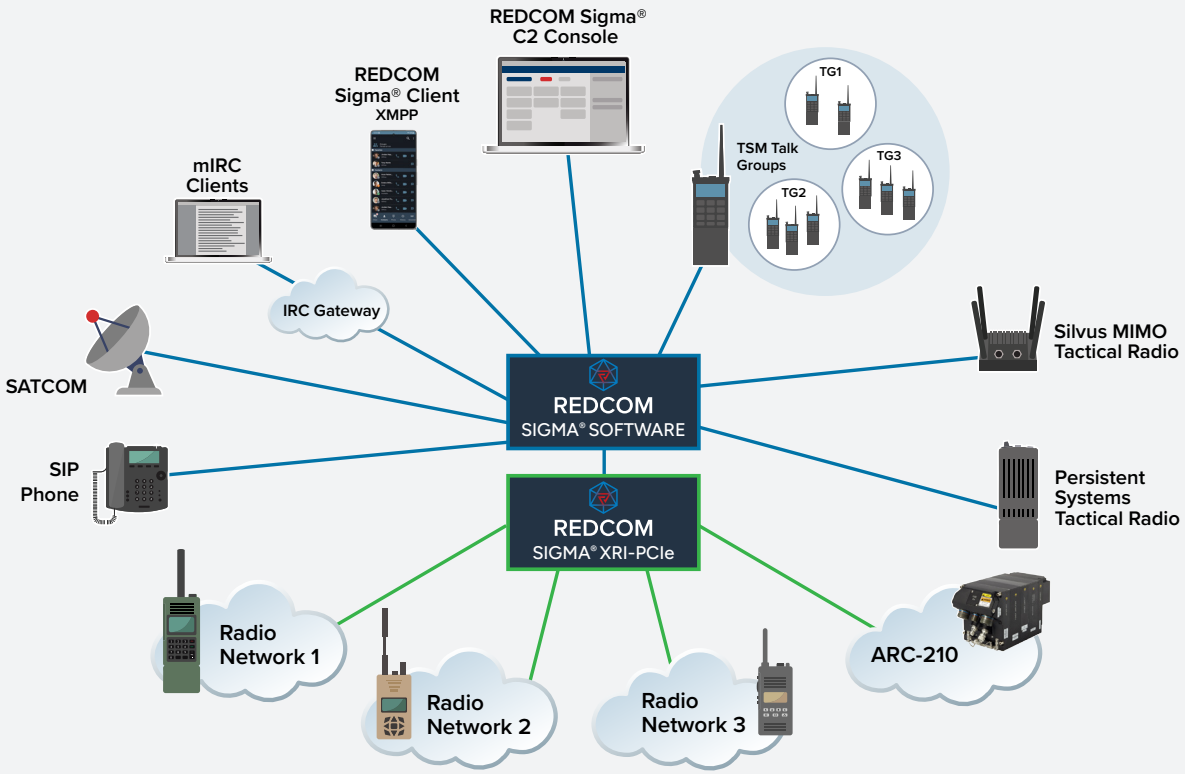
- Resilient to hard shutdowns.
- Built to MIL-STD specs.
- No rip and replace — interoperates with legacy or existing technology.
- Enables tactical users to pivot to new C2 tech quickly and efficiently.

Improves tooth-to-tail ratio

- Solves Coalition and Joint interoperability challenges — connecting radios to Sigma XRI-PCIe reduces the need for liaison officers.
- Flexible and scalable — supports IP phones, analog radios, TSM radios, and the REDCOM Sigma Client for ATAK, Android™ & Windows®

BRIDGE DISPARATE RF & IP ENDPOINTS WITH REDCOM

REDCOM Sigma XRI platforms greatly increase the C2 interoperability of your Sigma deployments. Sigma software delivers best in class voice, video, and chat, while the XRI-PCIe card bridges up to four disparate radio nets with the rest of the C2 network.



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Radio Features

Unless noted otherwise, the radio features listed below apply to both the radio ports and to TSM talk group connections.

- **Dynamic (dialed) call sessions —** incoming and outgoing, with support for radios with and without DTMF dialpads including three-click seize/answer and automatic dialing.
- **Dynamic and static patches —** for patching a radio port to another radio port or a conference or even a speakerphone. Dynamic patches are managed by the C2 Console app, while static patches are managed by the Channels app.
- **Tunable 4-wire TX/RX audio interface —** for connection to radios or other devices with balanced or unbalanced audio via the 4 analog radio ports. Transmit and receive audio gains are independently configurable, and each radio port is selectable for line or mic levels. All audio is transformer-coupled to provide DC isolation of external signals and reduce noise.
- **Flexible PTT/PTS controls:**
  - Configurable Push-To-Talk (PTT) mode and Push-To-Signal (PTS) trigger mode per radio port to support any mix of discrete PTT/COR signals, tone-based signals, and voice detection. DTMF-based PTS trigger mode allows radio users to choose which portions of a conversation to share with other patched radio ports.
  - Smart PTS modes are per caller rather than per radio port and allow configurable RFC2833 events and/or DTMF digits as manual PTS control, with an automatic voice-operated transmit (VOX) function when no PTS is provided by the caller. The VOX noise threshold can also be configured per caller.
  - Bi-directional PTS signaling for radio-to-radio patches.
  - PTS forwarding through conferences and patches — allows PTS to traverse a conference to key connected radios.
  - Block VOX-based PTT/transmission to a radio line while the receiver is active, preventing a user from talking over the radio net when another party is already talking.
  - Support for REDCOM's patented RTP-based PTS with positive acknowledgements.
  - **Mobile clients —** PTT interoperability between radio users and smartphone users with REDCOM's Secure Client app.
- **Voice queuing —** Configurable PTT assertion timing/validation modes per radio port, with automatic store & forward audio queuing to prevent lost syllables at the beginning of each transmission:
  - Timer based
  - Trunk radio grant tone
  - Secure radio tone burst (to confirm secure fill)
- **Audio monitoring —** Monitor callers hear all of the audio transmitted/received from the target radio port, regardless whether the radio port is in an active call/patch. Each radio port can be monitored by multiple callers from the network and/or other local radio ports or even a conference.
- **Secure radio over IP —** TLS/SRTP encryption for privacy of signaling and audio information over IP networks.
- **Repeater squelch tail suppression —** to prevent tail noise bursts from oscillating between bridged repeater nets.
- **Optional inactivity timeout**
- **Optional RX audio suppression —** to blank out receive audio when saturated by a nearby transmitter or when transmit audio is echoed by a radio with handset sidetone.
- **User-programmable radio line templates**
- **Auto and manual answer modes**
- **Notification tones**
- **Radio ports status dashboard with realtime signal tracking**
- **Detect attached donor/gateway radio** — when enabled, the radio line's maintenance status will automatically track the presence or absence of the attached radio.

Interoperability Features

- **Flexible 4W audio ports —** The 4W audio ports on Sigma XRI-PCIe can be used to connect to almost any audio device (full-duplex or half-duplex; transmit-only, receive-only, or bi-directional). Supported devices include intercoms, speakers, PA systems, microphones, PTT headsets/handsets, or an always-open audio channel.
- **Discrete input/output analog interfaces** — Sigma XRI includes general purpose sensor/driver interfaces which can be wired up to virtually anything. For example: calling a special dial code can lock a door; or a sensor can trigger a blast announcement or preset conference when a condition passes a critical threshold.

Sigma C2 Console Features

- Works with any Sigma XRI-reachable endpoint, such as a SIP device, an analog phone via a SIP trunk, or radio net.
- Provides the operator with visibility of all endpoint connections from a single pane of glass.
- Operator can listen and PTT to any conversations across multiple devices and talk groups.
- Operator can build patches on-the-fly simply by dragging and dropping connections together.
- TSM support: monitor and control multiple TSM talk groups simultaneously. A TSM talk group can be patched together with other TSM talk groups, non-TSM radio nets, and SIP devices.

REDCOM Sigma® XRI-PCIe Specifications

PHYSICAL

Form factor	Full height, half length PCIe card
Dimensions (WxDxH)	0.9 in x 7.2 in x 5.0 in 2.3 cm x 18.3 cm x 12.7 cm
Weight	0.4 lbs. / 0.18 kg
Power Input	12V from the PCIe interface 2.0 complaint or later
Warranty	5 year limited hardware warranty

REDCOM SIGMA® SOFTWARE

Minimum version required	4.2.1
Sigma features	Controlled by software license
Supported servers	Sigma must be installed on the host compute platform server. This can be bare metal or on a hypervisor.

ENVIRONMENTAL

Temperature (operational)	-40 to 70 °C (MIL-STD-810H, Methods 502.7 and 501.7, Procedure II)
Temperature (storage)	-40 to 85 °C (MIL-STD-810H, Methods 502.7 and 501.7, Procedure I)
Emissions	FCC Part 15 Sub-part B Class B compliant (validated)

PORTS

Analog	4x RJ45

ANALOG PORT DETAILS

Receive audio interface	2-wire transformer coupled input for noise reduction and DC isolation Supports balanced 600 ohm or unbalanced connections Software-selectable input gain Maximum audio input signal voltage is 5 volts peak-to-peak
Transmit audio interface	2-wire transformer coupled output for noise reduction and DC isolation Supports balanced 600 ohm or unbalanced connections Software-selectable output gain with line-level and microphone-level modes
Discrete interfaces for PTT and general-purpose output functions	GPIO A: solid-state relay, dedicated return, output limits: 56 VDC, 100 milliamps
Discrete interfaces for COR/Retrans and general-purpose input functions	GPIO D: input with on/off sense and voltage sense, 0-58 VDC
Common ground isolated per port	Allows ground plane variations between the XRI and each attached radio

Note: some features, such as TSM talk group integration, require a feature license.
Please consult with your REDCOM solution advisor for pricing and configuration options.

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