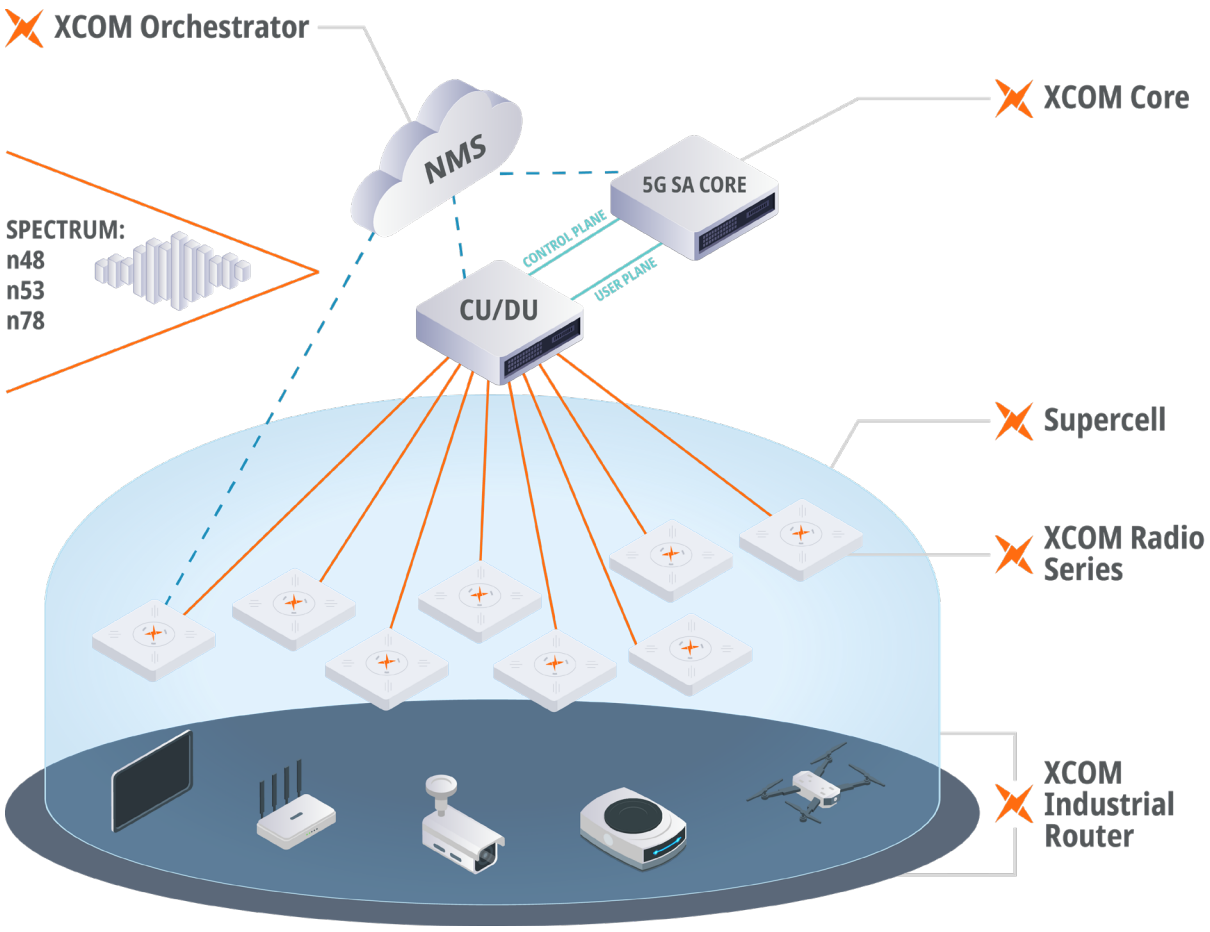
XCOM RAN™ by Globalstar

XCOM RAN: Private 5G Wireless Reimagined

XCOM RAN by Globalstar reimagines private wireless for the next generation of industrial connectivity. Designed to deliver unprecedented performance, XCOM RAN increases network capacity by up to 4x compared to traditional private 5G solutions, enabling flawless connectivity in the densest automation environments.

XCOM RAN End-to-End Solution



The result is a high-performance, easy-to-deploy private 5G solution built to support mission-critical operations with reliability, scale, and full operational control. The XCOM RAN end-to-end solution combines a software-based CU/DU that manages RAN processing, the XCOM Radio Series portfolio for high-performance indoor and outdoor private 5G connectivity, and the XCOM Core, a 3GPP Release 16-compliant 5G standalone core that handles mobility, authentication, and data routing.

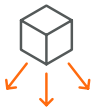
The solution is centrally managed through the XCOM Orchestrator, a cloud-based platform that provides a single pane of glass for network visibility and control, while the XCOM Industrial Router serves as a ruggedized, secure gateway connecting edge devices and applications. Together, these components create a fully integrated private 5G system that simplifies deployment and enables reliable, high-performance connectivity across complex operating environments, providing the following benefits

Unprecedented Performance

XCOM RAN delivers unprecedented performance by taking a new approach to private 5G, increasing capacity by 4x over current private 5G offerings for flawless connectivity in the densest automation environments.

Spectrum Flexibility

XCOM RAN runs on shared spectrum allocated for private 5G (n48, n78), and leverages Globalstar's licensed Band n53 as a dedicated band for worry-free private 5G deployments – a unique differentiator.



Ease of Deployment/Management

XCOM RAN Supercell architecture reduces the need for site surveys and RF network design, for a private 5G solution that deploys quickly, is easy to manage, and provides full capacity and coverage in industrial environments.

XCOM RAN CU/DU

The XCOM RAN CU/DU is a software-defined Centralized Unit/Distributed Unit stack running on high-performance Intel® Xeon® COTS servers. This design leverages an O-RAN compliant 7.2x split over eCPRI to decouple hardware from software, providing data-center scalability to the private 5G radio edge, offering:

- **Massive Spectral Efficiency:** Implements a ground-breaking Distributed Multi-User MIMO (MU-MIMO) architecture. By jointly coordinating signal processing across multiple points, it achieves over 4x the spectral efficiency of conventional systems, maximizing throughput in congested industrial environments.
- **Supercell Architecture:** The CU/DU orchestrates 8 XCOM radios to operate in perfect harmony as a single logical entity. This eliminates the traditional cell edge, allowing connected devices to move freely throughout the coverage area.
- **Zero-Handoff Mobility:** Because the radios form a unified Supercell, end-user devices (AMRs, robots, ruggedized tablets) experience seamless connectivity without hand-offs. This removes the latency spikes and packet loss typically associated with moving between radio coverage zones.
- **Reliable Performance:** The combination of MU-MIMO and the Supercell architecture provide the consistent, high-capacity, low latency "wireless wire" required for mission-critical Industrial 4.0 applications.

XCOM RAN CU/DU Specifications

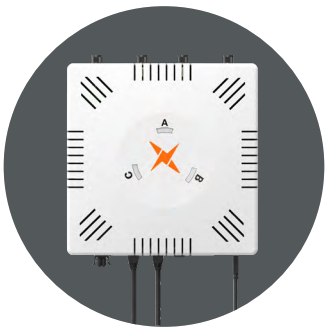
XCOM CU/DU	
3GPP compliance	Rel-16
O-RAN compliance	eCPRI Split 7.2x
Duplexing Mode	5G NR TDD
TDD UL-DL config	5DS4U, 7DS2U
Modulation	QPSK, 16QAM, 64QAM, 256QAM
Max number RUs per DU	8
Number of Tx/Rx Chains	32T32R
Number of MIMO Layers	MU-MIMO: 16 DL, 12 UL SU-MIMO: 4 DL, 2 UL
Number of RRC connected UEs	400 to 1,000
Primary Vertical Applications	eMBB, Real-time video, Industrial automation, AMR/AGV
Peak Supercell MU-MIMO Spectral Efficiency (ideal conditions)	DL - 64 bps/Hz UL - 24bps/Hz

XCOM Radio Series

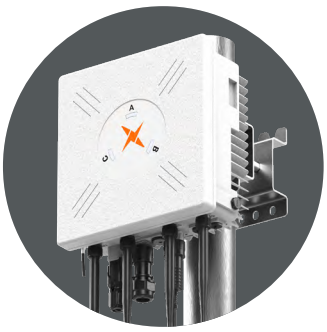
XCOM RAN includes a portfolio of private 5G radios to meet the specific requirements of an industrial enterprise, from inside a warehouse to the most rugged outdoor environments. The Open RAN (O-RAN) Radio Units (O-RUs) act as the high-performance edge of the network, translating software-defined intelligence into physical wireless coverage.

The 4T4R (4-Transmit, 4-Receive) O-RUs are high-capacity, fiber-connected radio heads designed for O-RAN 7.2x split architecture. These units provide specialized support for mission-critical private spectrum, including Band n48 in the US, Band n78 in Europe and parts of Asia, and Globalstar's licensed Band n53 that is available globally for dedicated use.

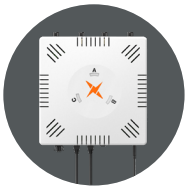
XCOM Radio 1000



XCOM Radio 3000



XCOM Radio 5000



XCOM Radio Series 1000

Compact, fanless, low power (1W conducted power) indoor radio optimized for warehouses and manufacturing facilities. These typically feature an IP20 rating for indoor environments and are designed for discreet ceiling or wall mounting.

XCOM Radio Series 3000

Ruggedized low power (1W conducted power) outdoor radio for campus-wide or large industrial yard coverage.

XCOM Radio Series 5000

Ruggedized medium power (20W conducted power) outdoor radio designed to meet the stringent demands of environments like mines and oil rigs that require extreme physical durability, high reliability, and superior security.

The XCOM RAN radio portfolio offers these specific benefits:

- **Industrial Ruggedization:** Built to withstand extreme conditions with ingress protection ranging from IP20 (indoor) to IP68 (submersible/heavy weather), ensuring reliability in everything from cleanrooms to offshore oil rigs.
- **High-Speed Fiber Fronthaul:** Utilizes eCPRI over 10G/25G fiber interfaces to connect back to the Xeon-based CU/DU. This ensures the ultra-low latency required for the Supercell to coordinate all 8 O-RUs in real-time.
- **Advanced MIMO Capabilities:** The 4T4R configuration is the foundation for the Distributed MU-MIMO functionality enabled by the CU/DU, allowing the system to serve multiple high-bandwidth devices simultaneously on the same frequency.

XCOM Radio Series Specifications

XCOM Radio 1000	
5G NR Mode	TDD
Frequency Bands	n48 (3.55 - 3.70 GHz) n53 (2.4835 - 2.495 GHz)
Channel Bandwidth	10, 20, 40, 100 MHz
Antenna Configuration	4T4R
Antenna Options	External: 4x SMA Internal: omni 6dBi
Maximum Conducted RF Power	30dBm (1W)
Data Interface	Optical fiber (SFP+), Cat 6A (RJ45)
Power Supply	PoE++ Type 4 Class 8 -48VDC

XCOM Radio 1000 *(continued)*	
Power Consumption	Max 60W
Ingress Protection	IP20
Weight	4.5Kg/ 10lbs
Dimensions	242 x 240 x 93mm / 9.5" x 9.4" x 3.7"
Operating Temperature	-10C to 50C
Cooling Method	Natural convection
Installation Options	Ceiling, wall, pole-mount

XCOM Radio 3000	
5G NR Mode	TDD
Frequency Bands	n48 (3.55 - 3.70 GHZ) n53 (2.4835 - 2.495 GHz)
Channel Bandwidth	10, 20, 40, 100 MHz
Antenna Configuration	4T4R
Antenna Options	External: 4x N-type Internal: omni 6dBi
Maximum Conducted RF Power	30dBm (1W)
Data Interface	Optical fiber (SFP+), Cat 6A (RJ45)
Power Supply	PoE++ Type 4 Class 8 -48VDC
Power Consumption	Max 60W
Ingress Protection	IP68
Weight	5.5Kg/ 12lbs
Dimensions	263.5 x 262 x 110mm / 10.4” x 10.3” x 4.3”
Operating Temperature	-40C to 55C
Cooling Method	Natural convection
Installation Options	Ceiling, wall, pole-mount

XCOM Radio 5000	
5G NR Mode	TDD
Frequency Bands	n48 (3.55 - 3.70 GHZ) n78 (3.30 - 3.80 GHz)
Channel Bandwidth	10, 20, 40, 100 MHz
Antenna Configuration	4T4R
Antenna Options	External: 4 x 4.3-10 connectors
Maximum Conducted RF Power	43dBm (20W)
Data Interface	Optical fiber (SFP+), Cat 6A (RJ45)
Power Supply	-48VDC
Power Consumption	Max 150W
Ingress Protection	IP65
Weight	10Kg/ 22lbs
Dimensions	300 x 245 x 106mm / 11.8" x 9.6" x 4.2"
Operating Temperature	-40C to 55C
Cooling Method	Natural convection
Installation Options	Wall, pole-mount

XCOM Core

The XCOM Core is a 3GPP Release 16 compliant 5G Standalone (SA) Core built on a microservices-based Kubernetes architecture. It provides an enterprise-ready foundation for ultra-reliable, low-latency communications (URLLC) through a fully programmable, cloud-native framework. It is designed for Industry 4.0 applications and bridges the gap between high-performance private 5G technology and modern IT DevOps workflows.

The XCOM Core offers these key benefits:

- **Industrial-Grade Private 5G (Rel-16):** Unlocks features like TSN (Time-Sensitive Networking) integration and URLLC essential for precision robotics and industrial automation.
- **Agility:** Built using Kubernetes, it allows for seamless scaling, automated healing, and rapid deployment across edge or data center environments.
- **Programmable Management:** A REST API-first architecture enables effortless integration into existing enterprise environments.
- **Unified End-to-end Visibility:** Offers a single pane of glass experience through the XCOM Orchestrator by integrating local EMS precision with Cloud NMS orchestration. This centralizes system health, subscriber provisioning, real-time alarming, and KPI analytics into one intuitive dashboard.

Architecture Overview	
Deployment Model	On-premises or hybrid (on-prem plus cloud)
Architecture	SA (stand-alone)
3GPP SBA (Service-Based Architecture) Compliance	Decoupled NFs, SBI (service based interface), NRF (network repository function), CUPS, Cloud-native design
Microservices and Containerization	Kubernetes NFs
Core Network Functions and Interoperability	
AMF (Access and Mobility Management Function)	Yes (N1 to UE, N2 to RAN, N8 to UDM)
SMF (Session Management Function)	Yes (N4 to UPF)
UPF (User Plane Function)	Yes (N3 to RAN, N6 to DNN)
AUSF (Authentication Server Function)	Yes
UDM (User Data Management)	Yes
PCF (Policy Control Function)	Yes
NRF (NF Repository Function)	Yes
NSSF (Network Slice Selection Function)	Yes
CUPS (Control and User Plane Separation)	Supported
Performance & Scalability	
Throughput in Gbps	1.6Gbps (tested - limited by RAN configuration used)
Latency Benchmarks	<20ms avg end-to-end ping latency
Concurrent Sessions Supported	1024
Security Features	
3GPP security compliance	TLS Support through XCOM Orchestrator
Subscriber authentication and encryption	SUCI (Subscriber Concealed Identifier)
Automated User Equipment Lock / Unlock / Re-Attach	Yes
Management & Orchestration	
Support for NFV/SDN	Fully compatible with NFV infrastructure and Kubernetes
Integration with orchestration platforms (e.g., ONAP)	REST API based management interface
Subscriber management with encrypted USIM profiles	QoS management via PCF and SMF
Performance and Fault Management	Integrated with XCOM RAN based on-prem EMS and cloud NMS dashboards
Compliance & Standards	
3GPP support	Rel 16 and 17
ETSI/NFV compliance	Fully designed with NFV principles for deployments

Compliance & Standards *(continued)*	
Multiple PLMN ID support	12 PLMN IDs
IMS/VoNR support	Requires connection to an open-source or commercial IMS core
Deployment & Maintenance	
Configuration Management	Yes
High availability	Yes
Use Cases Supported	
Network slicing	Yes
Private 5G networks	Yes
SUCI Deconcealment for iPhone Attach	Yes

XCOM Orchestrator

The XCOM Orchestrator is a cloud-based private 5G orchestrator that creates a single pane of glass for the network administrator by unifying the management of the local EMS clients into one centralized dashboard. This provides total visibility into the end-to-end private 5G network, from the RAN to the core to the individual end user devices, including industrial routers.

Instead of logging into separate systems, the XCOM Orchestrator aggregates all data into one interface:

- **Unified Device Lifecycle:** From a single screen, you can provision a new end user device like a 5G industrial router and assign it a specific set of network policies.
- **Correlated Analytics:** Maps the performance of the private 5G RAN directly against the health of the system. If a robot on the factory floor loses connection, the XCOM Orchestrator dashboard tells you instantly if the issue is a local radio or a global core configuration error.
- **Centralized Security & QoS:** Automatically pushes QoS rules down to every local EMS.
- **Multi-Site Management:** Bridges the gap between geographically dispersed facilities, allowing a network administrator in one location to monitor the end-to-end health of private 5G deployments across the entire global enterprise.

XCOM Orchestrator Dashboard

Cloud	
Provider	Google Cloud Provider (GCP)
Software Type	Managed SaaS
Authentication	
SSO	Google or EntraID (Microsoft) / OAuth
API	RESTful API / API First approach
Authorization	RBAC (Role Based Access Control)
Roles	Admin, Writer, Reader
Console	
Dashboard	Performance Metrics Fault Management / Alerts User Management"
Software	
Software	Remote Software Updates for XCOM RAN, XCOM Core and EMS Configuration Management (XCOM RAN / XCOM Core)
Connectivity	
Customer Connection	mTLS connections from registered elements to the cloud
Firewall	Allow outbound connections on port 443

XCOM Industrial Router

The XCOM Industrial Router is a ruggedized, secure, high-speed gateway between XCOM RAN private 5G and local industrial equipment, including PLCs, sensors and robots, providing data collection and protocol conversion into a unified format for AI-driven analysis and response.
The router enables reliable ultra-low-latency wireless connectivity to support Industry 4.0 applications such as AI-based quality inspection, autonomous mobile robots (AMRs), and predictive maintenance. The XCOM Industrial Router includes VPN support, firewall protection, and remote monitoring and management for large scale deployments, and is the only industrial router available on the market today that includes support for Globalstar Band n53 dedicated spectrum in addition to Band n48 and Band n78.

Robotics, automation, and mission-critical industrial applications demand more than a basic private 5G network. To truly scale, streamline operations, and stay competitive, you need a solution designed to handle high-density environments, heavy data loads, and zero-downtime requirements. XCOM RAN delivers with the next generation in private 5G.

Private Wireless Reimagined.

Ready to transform your business?

Contact our team of experts to learn how XCOM RAN can support your automation journey.