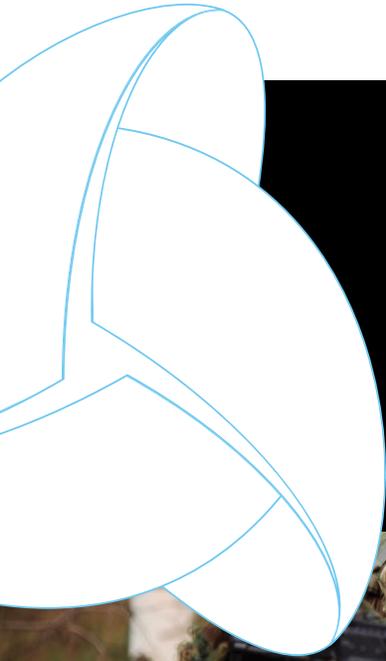# Oceus Networks
Xiphos®

COMPACT AND RAPIDLY DEPLOYABLE 4G LTE COMMUNICATION SOLUTIONS

Optimal situational awareness is essential to understanding how information, events and actions will impact your mission-critical goals and objectives. However, providing secure tactical communications can be difficult on the battlefield, in remote locations and in emergency-response situations where infrastructure is sparse or damaged.

Xiphos®

A reliable deployable alternative system is required in these environments. It must be quick and easy to install, easy to operate and offer a high level of functionality. Xiphos® fulfills those needs.

Xiphos is a portable 4th Generation (4G) Long Term Evolution (LTE) tactical broadband solution based on rugged modular hardware (HW) components. Xiphos provides mobile broadband quickly in areas where no other suitable network exists, and offers high-speed data, video and voice to facilitate complex applications and operations. Xiphos is scalable and can operate in a stand-alone or networked environment.

Xiphos is based on Ericsson's world leading LTE macro radio technology, which provides superior RF output power and range. For example, it provides 5-7 miles of range in a typical tactical environment and over 50 miles of range for airborne deployments with clear line of sight, making it easier to penetrate buildings. This results in a high assured connectivity level and superior user experience.

Key Benefits

Mission-Critical Operations: Xiphos supports mission-critical operations by providing users access to fast mobile broadband connectivity.

Easy-to-Use: Xiphos solutions are easy to install and use. They operate autonomously and can power up and become operational in three to four minutes.

Flexible Rugged Configurations: Xiphos is based on rugged modular HW components that provide deployment flexibility and scalability.

Based on Commercial Technology: The use of standards-based carrier grade commercial 4G LTE technology in Xiphos allows customers to leverage industry innovation and economies of scale to lower costs and to equip users with best-of-breed tools, applications and smart phones.

High Capacity Data Transfer: Xiphos' high capacity enables applications to transfer large amounts of data in a fast and cost efficient manner.

Multitude of LTE Frequencies: Xiphos supports a full range of Frequency Division Duplex (FDD) and Time Division Duplex (TDD) frequency bands, and it is compatible with commercial 4G LTE devices.

LTE Frequency Flexibility: Xiphos supports concurrent use of up to four (4) different frequency bands per system. This allows customers to quickly adapt to an LTE frequency suited for a particular country/region and mission, and it enhances the interference resilience of the solution.

Network Scalability: Xiphos can be deployed in a Network of Xiphos (NOX) configuration, allowing users to move between coverage areas while maintaining already established sessions. This provides flexible network scalability by increasing the aggregated coverage area, data throughput and concurrent connected radio sessions for each deployed Xiphos system.

NEW Advanced Network Of Xiphos (ANOX): The ANOX architecture allows a swarm of Xiphos systems on the move to dynamically learn about the presence of other Xiphos peer systems, and to make intelligent decisions how to optimize network connectivity while Xiphos peer systems are on the move.

NEW Best Backhaul Available (BBA): The ANOX BBA feature provides intelligent algorithms to choose the best backhaul available for signaling and synchronization with peer Xiphos systems.

NOX LTE Connectivity: An innovative feature that allows multiple Xiphos units to network together, using in-band LTE radio resources.

Integrated Service Application (ISA): The ISA provides person-2-person communication (voice, video, chat) for locally connected users if Xiphos operates in disconnected mode without external IP connectivity to other Xiphos systems, applications and content.

Interference Detection: Xiphos detects LTE cell interference and displays an alarm on the dashboard.

SON and QoS: Xiphos provides sophisticated carrier-grade functionality, such as support for Quality of Service (QoS), policy management and enforcement, Self Organizing Network (SON), priority and pre-emption handling and radio interface optimization.

MODULAR HW COMPONENTS

Xiphos modular hardware design consists of the following ruggedized modules:

- **Main Unit Module:** Contains the Enhanced Packet Core (EPC), Home Subscriber Server (HSS), Policy and Charging Rules Function (PCRF), O&M and Integrated Service Application (ISA) software.

- **DUL Module:** Contains the LTE base band processing unit. Three Radio Units (RU) or Remote RU (RRU) can be connected.

- **RU Module:** Supports a variety of LTE frequency bands.

- **Remote RU:** Deployed close to the antenna. Supports a variety of LTE frequency bands

- **Power Module:** Provides AC-to-DC and DC-to-DC conversion.

By combining these modules in a flexible manner, a variety of deployment alternatives are available to support a customer specific footprint, capacity and environmental requirements. Please refer to the figure and facts table below for more details.

To learn more about the Oceus Networks Xiphos solution, visit: www.oceusnetworks.com/xiphos

FIGURES AND FACTS	XIPHOS WITH RADIO UNITS	XIPHOS WITH REMOTE RADIO UNITS
Size (HxWxD) and weight: Entry Level: Expansions: Radio Unit (RU) Remote RU (RRU) Digital Unit LTE (DUL) Power Module (PM)	MU + DUL + RU + PM: 13.4"x16.5"x18.5",89lbs Per RU, up to 12*(4.4"x16.5"x18.5",33lbs) N/A 3"x16.5"x18.5",16lbs 3"x16.5"x18.5",20lbs	MU + DUL + PM: 9"x16.5"x18.5",56lbs RRU: 20.4"x18.5"x7.4",58lbs N/A Per RRU, up to 6*(20.4"x18.5"x7.4",58lbs) 3"x16.5"x18.5",16lbs 3"x16.5"x18.5",20lbs
Power: Power input Power consumption entry Power consumption expansions:	19V-72V DC, 100V-240V AC 500W-900W Per RU:200W-350W DUL: 100-300 W	19V-72V DC, 100V-240V AC 600W-1150W Per RRU:300W-620W DUL: 100-300 W
Capacity (max values): User: DL/UL Mbps RU: DL/UL Mbps RRU: DL/UL Mbps: System: DL/UL Mbps Bandwidth: RF Output Power: Concurrent RF Sessions	150/50 Mbps 75/50 Mbps N/A 600/300 Mbps 20 Mhz per RU 80W 2000	150/50 Mbps N/A 150/50 Mbps 600/300 Mbps 20 Mhz per RRU 2*60W 2000
LTE Frequency Bands (MHz):	2100 (1),1900 (2),1800 (3),17/2100 (4),850 (5),2600 (7),700 (12,13,14,17),800 (20)	2100 (1),1900 (2),1800 (3,3A),17/2100 (4),850 (5),2600 (7),900E (8), 700 (12,13,17),800 (20), 1900 (25), 850 (26A), 700 (28A,28B,28C), 2600 (38), 1900 (39), 2300 (40F,40B,C,D), 2600 (41)
Environmental: Temperature High Temperature Low MIL 810G EMI, FCC Part 15A	122F/50C -4F/-20C Compliant Compliant	122F/50C -4F/-20C Compliant Compliant