

Fortress[®] Wireless Solutions for Energy Markets



End-to-End Private Mobile Wireless

Highly Reliable, 'Always On' Connectivity

Unlicensed/Licensed Spectrum and Frequency Agile

Flexible and Ruggedized for Any Environment

Supports Standards Based User Devices

General Dynamics' Fortress Wireless Solutions offers an array of broadband products that are deployed in energy markets, including oil, gas, and nuclear applications. These solutions provide reliable, high-bandwidth, wireless networking to allow access to remote areas, support real-time data collection, and improve safety during operations. These solutions are based on the latest commercial standards, including IEEE 802.11 and 4G LTE, providing state-of-the-art technology in portable, rugged form-factors, suited to a variety of environments and applications.

Benefits

Mobility and Portability – Fortress wireless products are optimized for Size, Weight and Power (SWaP) constrained applications such as those requiring mobility and ease of transportation into environments where there is no existing network infrastructure in place. This is ideal for energy exploration as well as drilling and hydraulic fracturing applications.

Rugged Equipment – Energy exploration, transportation and storage are often performed in harsh environments in conjunction with heavy machinery. Fortress products are built for outdoor operation to withstand extreme temperature and weather conditions, as well as shock and vibration levels associated with industrial equipment. Fortress products are also available in embedded form factors for small platforms such as unmanned systems.

Ease of Deployment and Use – In various energy operations, dedicated IT staff aren't usually available onsite to provide 24x7 support. Fortress products are designed for quick and easy deployment for "set and forget" operation and do not require specialized operator skills or training.

Licensed and Unlicensed Spectrum – Smaller portable networks are generally better served using unlicensed spectrum in the 2.4 and 5.8 GHz bands, but government and public-private partnerships have the ability to take advantage of licensed spectrum that can offer dedicated bandwidth and reduce the risks of interference. Fortress products are available in both unlicensed and licensed spectrum, and can also be re-banded to support custom frequency requirements.

Security – Data collected from energy operations needs to be protected from competitors and hackers for both privacy and safety reasons. The Fortress family of products include wireless networking solutions that are widely deployed by the U.S. military and have been certified by the U.S. National Institute of Standards and Technology (NIST) Cryptographic Module Validation Program, the U.S. National Information Assurance Partnership (NIAP) Common Criteria Evaluation and Validation Scheme (CCEVS) and the U.S. Department of Defense.

Scalability – Energy operations vary in size from small remote sites to large geographic areas. The Fortress family of products are scaleable to support a range of network sizes from connecting a few vehicles in close proximity to thousands of users spread out over many square miles. The Fortress products can also support data throughput of up to 200 Mbps, making it suitable for high-bandwidth video applications.

Fortress® Wireless Solutions for Energy Markets

Applications

Fortress products have been successfully deployed in the following applications:

Texas Energy Network (TEN) – TEN provides carrier class 4G LTE network dedicated to the oilfield. The network provides telemetry/SCADA data collection from well heads, pipelines, and storage tanks. It also provides remote office broadband access for VoIP, video surveillance, FAX, and VPN applications.

Hydraulic Fracturing – Used in “fracking” operations such as well completion services, Fortress products perform real-time monitoring of various sensors located on pumping and blending vehicles, providing a real-time view of equipment health and safety. Wireless networking allows vehicles to be easily moved in and out of operation without cables being disconnected or broken.

Sensor Monitoring – In nuclear facilities, Fortress products are used to monitor sensors and equipment without the costs and risks of running cable into radioactive areas. They’re also used to monitor radiation exposure for personnel safety.

Products

Technology

IEEE 802.11 is a set of standard media access control and physical layer specifications for wireless local area network (WLAN) communications, created and maintained by the IEEE LAN/MAN Standards Committee (IEEE 802). The standard supports wireless connectivity for fixed, portable, and moving devices within a local area. The standard uses the 2.4 GHz ISM band as well as the 5 GHz U-NII band, which are harmonized worldwide.

LTE (Long-Term Evolution) is a standard for wireless communication of high-speed data for mobile phones and data terminals, based on the GSM and UMTS network technologies. The standard is developed by the 3GPP (3rd Generation Partnership Project) and is specified in its Release 8 document series, with minor enhancements described in Release 9. LTE increases the capacity and speed of wireless data networks and simplifies the network architecture using an IP-based system.

Fortress Mesh Points

General Dynamics Fortress wireless mesh points deliver high performance COTS wireless and secure communications capabilities based on industry-proven technology. Fortress mesh points are enhanced with the highest levels of industry-standard encryption that conform to commercial and government security standards. Currently deployed in some of the world’s most demanding environments, Fortress mesh points meet stringent environmental standards and are optimized for rugged-outdoor, mobile, military, first responder and critical infrastructure environments where no infrastructure exists.

Fortress Wireless Mesh Points enable rapid establishment of a scalable and mobile high performance secure wireless infrastructure network for outdoor and ad-hoc operations. Fortress FastPath Mesh, which is common across the family of mesh points, provides a truly mobile, self forming, self healing, and path-optimizing wireless network infrastructure for dynamic network environments. Delivered in a family of rugged, versatile form factors, designed for performance and survivability in harsh outdoor environments, Fortress Mesh Points deliver performance networking and true mobility all with FIPS-certified security.

- ES2440 High Capacity Mesh Point
- ES820 Vehicle Mesh Point
- ES520 Deployable Mesh Point
- ES210 Tactical Mesh Point

Fortress LTE

Ideal for small to large specialized private wireless deployments or as an extension to Wi-Fi systems, Fortress LTE delivers an end-to-end solution providing ‘always on’ high speed network access to vital information including voice, video, data, text and chat using any 3GPP compliant LTE enabled device. Fortress LTE solutions are frequency agile, customizable for specific applications and designed for harsh, permanent or temporary deployments where network access may not be available. Fortress LTE is a cost effective, single vendor end-to-end solution consisting of:

- 4G Core Network
- Radio Access Network (Base Station)
- User Equipment (UE)

GENERAL DYNAMICS

Mission Systems