

FastPath Mesh™

Benefits of FastPath Mesh:

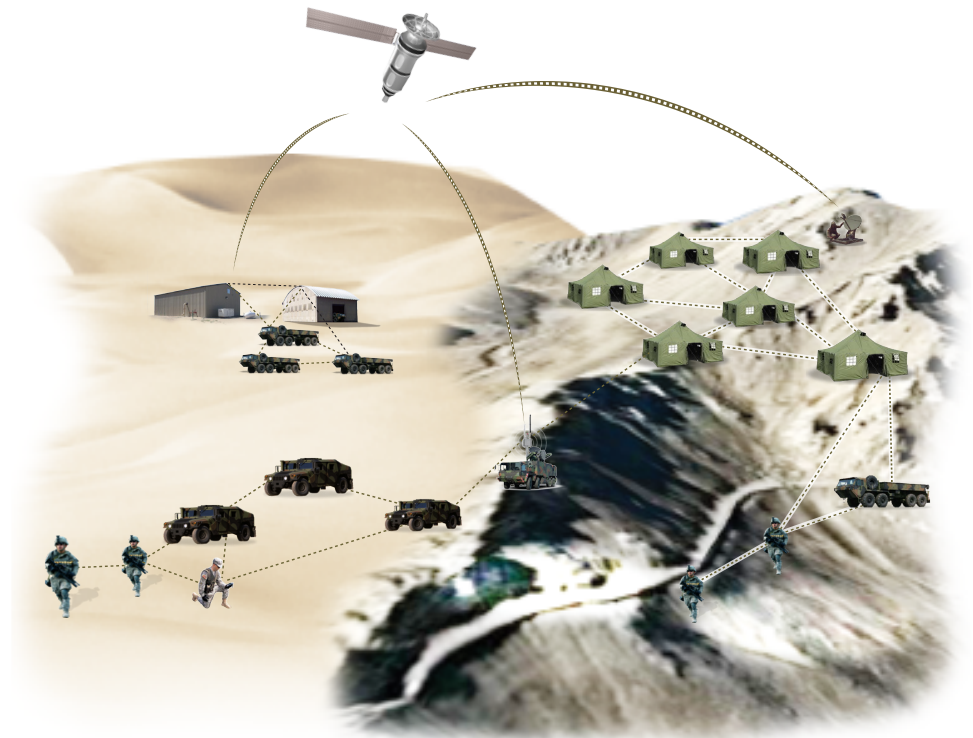
- Architected for tactical networks
- Seamless mobility of nodes
- Reliable, high availability network connectivity
- Performance solution delivers range, throughput and capacity
- Scalable to very large networks, both geographically and numerically
- Accredited end-to-end security for DoD IA compliance
- Supports voice, video, and data for C4ISR/SA applications

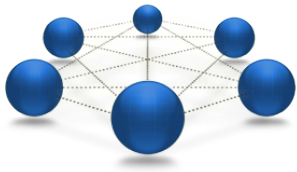
Scalable Mobile Networks for Tactical Applications

The mobile nature of tactical operations demands an adaptable and scalable network solution that can dynamically adjust to the situation. Fortress FastPath Mesh is an advanced solution for secure tactical networks optimized for mobile network applications in military theater scenarios. FastPath Mesh is a self-organizing, self-healing, path-optimizing network solution that provides a network ideally suited for deployed operations and Comms-on-the-Move (COTM) in applications like:

- operations center networks
- network extensions
- convoy networks
- dismounted warfighter networks
- temporary tactical operations centers
- mobile vehicle network extensions
- manned or unmanned vehicles
- platform and sensor communications
- perimeter relay networks

Mesh networks are distinguished by the ability of all nodes to link in a flexible lattice nature to provide coverage where no wired infrastructure exists. Fortress FastPath Mesh solution interconnects nodes in a fluid manner, extending the mesh capability to ideally suit a tactical mobile network typical in the defense and government sector. Fortress FastPath Mesh dynamically adapts the network as needed to ensure reliable, lowest cost path data connectivity as the network grows or shrinks in austere operating conditions.





What is FastPath Mesh?

Technology

FastPath Mesh™ is a layer-2 mesh technology that delivers mobile ad-hoc networking without the complexity of layer-3 routing algorithms. By focusing on the unique needs of tactical wireless networking, Fortress has developed a mesh solution for ubiquitous secure access in dynamic theater conditions. With industry leading throughput and multi-hop agility, FastPath Mesh delivers spontaneous network formation that extends the range of end-to-end connectivity and enables units to join and exit the network seamlessly and securely.

Performance

FastPath Mesh provides fast link setup, low latency and broadband throughput regardless of the size of the mesh network. With specific multicast optimizations that prevent network flooding, FastPath Mesh is ideally suited to critical high-bandwidth applications such as streaming video and VoIP.

Scalability

FastPath Mesh routing protocol requires only a small percentage (less than 5%) of network bandwidth and is independent of the size of the network. As a result, a Fortress-enabled mesh network is far more scalable than those using traditional routing protocols where control traffic grows significantly with network size.

Mobility

FastPath Mesh allows nodes to move within the network as well as to leave and re-join the network without user intervention. This is achieved through a combination of proactive and reactive routing protocols that automatically allow for continuous route refinement and provide faster failover.

Distributed Architecture

FastPath Mesh dynamically builds the network and adapts to change with no single point of failure; the distributed architecture has no central controller, with fully distributed control and DNS, far surpassing the reliability and availability of central controller-based networks.

Security

Fortress was the first vendor to be awarded FIPS 140-2 validation for a wireless solution and today is at the forefront of implementing NSA Suite B cryptographic algorithms for COTS for SECRET. Fortress' wireless mesh products implement FIPS validated end-to-end encryption.

Media Independence

In addition to supporting the internal radios in each Mesh Point, FastPath Mesh™ also integrates with external networks including 802.16 (WiMAX), military RF, free space optics (FSO), standard Ethernet or a heterogeneous mix of technologies. FastPath Mesh will network over non-Fortress links and ensure that the network is optimized and connected from end-to-end.

Tactical Mesh Network Use Cases

Mesh network architecture and capabilities benefit many real-world network needs and are particularly well suited to tactical networks. Some typical examples of operational scenarios where mesh capabilities can enhance tactical operations are: Deployable Operations Center Network – the rapid deployment and changing nature of forward operating bases and tactical command centers in military engagements or training exercises demands a flexible and robust infrastructure network. Mesh enables fast setup of the operational headquarters and supports extending the secure network to link multiple assets in the base or area.

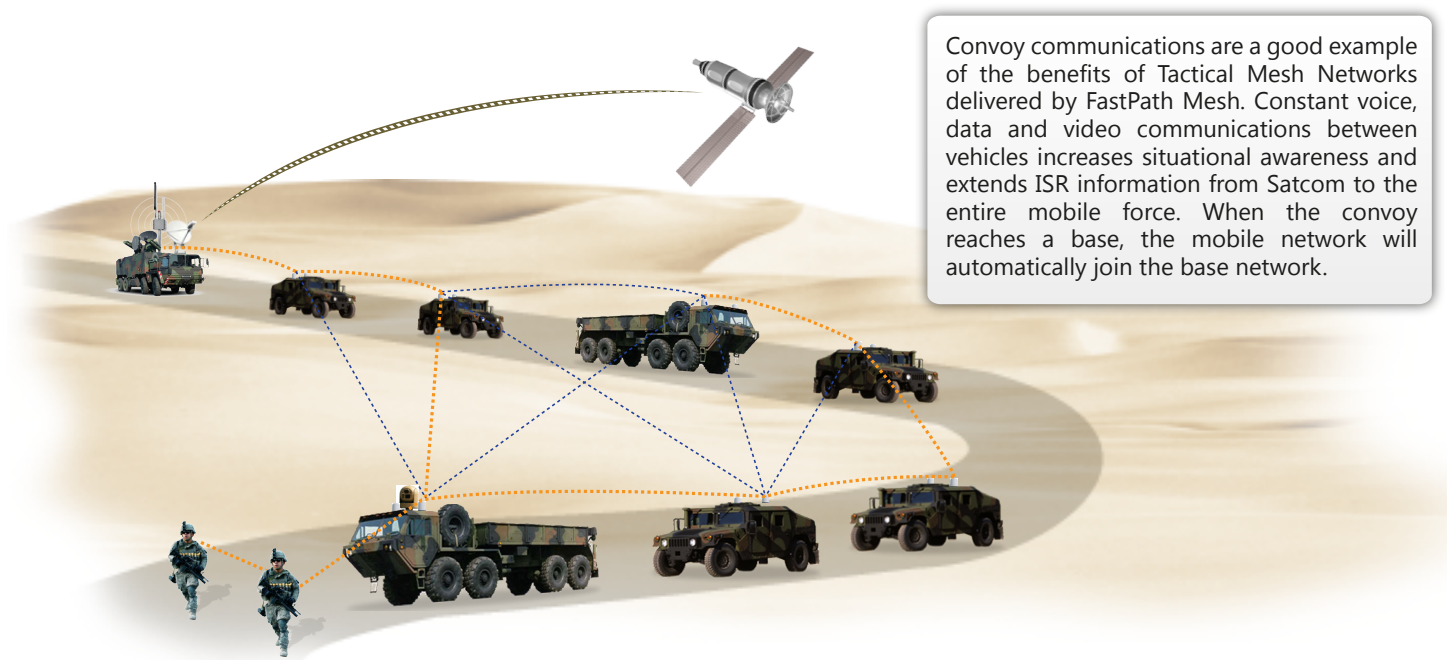
Temporary Network Extensions – Defense operations are often required to respond and immediately adapt to new ground situations. Mesh architecture supports rapid set up of logistics bases, medical facilities, maintenance depots, docking capabilities and other resources that require the network to quickly and seamlessly expand to accommodate new users, extend to remote sites and add more capacity.

Vehicle Networks – Vehicles and convoys carry advanced information technology and require flexible communications capabilities to stay connected through voice, video and data. Mesh network self-organizing capabilities enable communications that move with the convoy and can keep mobile assets connected to each other and to their command post while extending connectivity to each individual and device in the mobile units. Vehicular networks enable command and control (C2), vehicle health management, situational awareness, voice communications, asset tracking, access to dismounted soldiers and more.

Dismounted Warfighter – Groups of soldiers in theater maintain communications with each other and carry state-of-the-art intelligence, surveillance and reconnaissance (ISR) and situational awareness (SA) equipment. When enabled with tactical mesh points, they can establish a mobile mesh network for continuous connectivity to each other, to their vehicle and to a command post or backhaul link. Dynamic mesh network technology enables the most advanced man-portable technology to be fully online in the most austere conditions.

Incident Response – military and civilian first responders require quick access to services and information databases at a moment's notice when responding to natural disasters and emergency situations. Mesh network automatic self configuration capabilities will allow units from different agencies and units to rapidly and securely establish the most reliable communications possible for ad-hoc networks in all conditions.

Perimeter/Border Security – the enormous distances and remote conditions of international borders and base perimeters present unique challenges in maintaining connectivity to surveillance and monitoring devices like cameras, motion sensors or access card systems. Wireless relay networks using mesh architecture will establish a daisy chain multi-hop network with self-healing reliability that can leapfrog disabled points or link to central points in the mesh for redundancy.





FastPath Mesh™

Capabilities:

FastPath Mesh will automatically self-form, self-heal, and self-optimize each path within the network and ensure end-to-end security. The highly-scalable solution extends network coverage by routing data through multiple mesh points to achieve robust non-line-of-sight communications where no existing infrastructure exists.

Fortress Mesh Points

The Fortress family of tactical mesh points all offer advanced capabilities including:

- Multiple radios for mesh infrastructure and wired or wireless local access enabling client devices like PCs and smartphones
- FastPath Mesh self-forming and self-healing mesh capability automatically adapts to the addition and removal of nodes to/from the network infrastructure
 - Flat layer-2 mesh to enable seamless mobility of nodes
 - Decentralized operation - no single point of failure
 - Native IPv6 support "out-of-the-box"
 - Scalable architecture can accommodate unlimited mesh points as the infrastructure expands
 - Distributed DNS, DHCP and ARP proxy at each mesh point eliminates overhead and congestion of broadcast traffic
- End-to-end security maintains data integrity at each hop
 - Internal RADIUS server supports WPA2 and IPsec certificate-based authentication
 - FIPS 140-2 Level 2 validated security on all mesh and Wi-Fi links
 - NSA Suite B crypto algorithms for up to SECRET communications with NSA approval
- Rugged construction for outdoor operation

Fortress FastPath Mesh

The mesh network provides the following capabilities:

- Mesh networks can be established or extended quickly and easily without running cables, reducing deployment cost and setup time.
- Mesh provides fault-tolerance by making use of multiple paths between mesh points. If one path is no longer available or a more optimal path is identified, the alternate path is used automatically
- Mesh points can extend communications between both fixed and mobile infrastructures, supporting dynamic network environments like vehicular comms-on-the-move and dismounted communications, where mesh points may regularly join or leave the network.
- Mesh networks are ideal for applications such as unattended sensors, unmanned devices and dismounted operations where range and mobility are critical and running cable is impractical.

Fortress Technologies

www.fortresstech.com

1.888.477.4822

© 2011 Fortress Technologies, Inc.
All rights reserved.

GENERAL DYNAMICS
C4 Systems



FORTRESSTECHNOLOGIES®