

MeshPlus™

MeshPlus™ is the complete mesh network solution.

MeshPlus™ offers a comprehensive set of hardware and software elements to enable customers to efficiently bring to market wireless mesh enabled products with short design cycles and without specialized engineering resources.

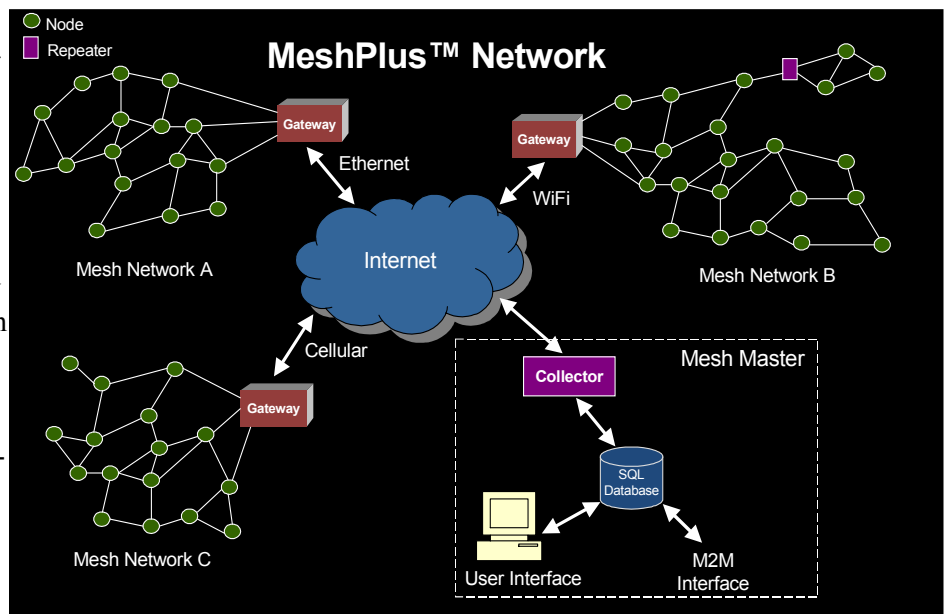
MeshPlus™ was designed from the beginning to achieve long RF range. Many other mesh networking products do not have the RF range for reliable networking in outdoor applications or multistory buildings. MeshPlus™ uses a high power RF transmitter and a sensitive radio receiver. Advanced Forward Error Correction techniques and patented routing protocols enhance link reliability and distance.

MeshPlus™ utilizes the 915 Mhz license free ISM band. A signal on the 915 MHz ISM band has approximately twice the RF range as the same signal on the 2.4 GHz ISM band, and has significantly better penetration of buildings, foliage, and other obstacles. To avoid interference from other RF transmitters and enhance security, frequency hopping spread spectrum is used over the entire 902 MHz to 928 Mhz ISM band. Taken together, these techniques give MeshPlus™ best in class RF range of 1500 to 4000 meters.

MeshPlus™ is designed to work with millions of nodes. Each MeshPlus™ gateway can manage

thousands of nodes. Proprietary algorithms automatically control the data flow by routing traffic along the most efficient paths to and from

MeshPlus™ is future proof. When it becomes desirable to add new features and applications, MeshPlus™ nodes are



the gateway, avoiding flooding, and ensuring the network remains congestion free. These algorithms work without the complexity and overhead associated with routing tables and are unaffected by the number of hops between the gateway and the furthest node.

MeshPlus™ has also been engineered for long battery life, even with the high power transmitter required for long range. Innovative algorithms manage time and frequency synchronization, enabling a “D” sized lithium battery to power a node for over ten years.

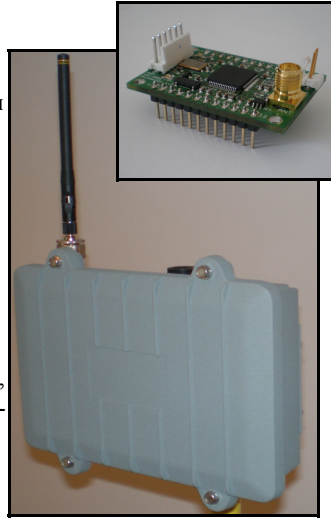
MeshPlus™ Advantages

- *Comprehensive Solution*
- *Fast Time to Market*
- *Long RF Range*
- *Scalability*
- *Software Upgradeable*

over-the-air software upgradeable. The mesh network remains fully operational while the new software downloads.

MeshPlus™ Components

Mesh Stamp™ is a battery powered intelligent plug-in module for quickly prototyping and piloting a MeshPlus™ enabled network. The Mesh Stamp™ incorporates a powerful 32 bit RISC processor and long range RF module for quick integration to proprietary telemetry systems.



MeshPlus™ the complete solution

- *Mesh Stamps*
- *Gateways*
- *Repeaters*
- *Mesh Master*
- *Field Installation Tool*
- *Factory Automation Tools*

The MeshPlus™ Gateway manages thousands of nodes; collecting, storing, and backhauling telemetry data. Back-haul connectivity options include Ethernet, Cellular, WiFi, and PSTN. With a water proof enclosure, and powered by AC or Power-over-Ethernet, the MeshPlus™ Gateway can be installed anywhere.

Mesh Master is a complete set of back office tools for efficient deployment and management of MeshPlus™ networks. Telemetry data is collected and stored in a SQL database. Graphical user interfaces allows efficient retrieval, filtering and viewing of the data. Network Visualization tools give operators a view of the internal working of the mesh network, and assist in network planning and maintenance

Node Id	Last Update	Batt (mV)	Temp (°C)	Digital
6092	Jul 3, 2007 1:45:32 PM	3808	26.4	011110101011
6115	Jun 12, 2007 9:00:00 PM			0101011

Node Id	Time	Alarms
6115	Jun 12, 2007 9:00:00 PM	0001011
		0101011

Node Id	Time	Batt (mV)	Temp (°C)	Digital
6091	Jun 20, 2007 12:00:00 AM	4160	25.4	001010101011
6092	Jun 20, 2007 12:00:00 AM	4188	25.2	001010101011
6094	Jun 20, 2007 12:00:00 AM	4194	23.7	001010101011
6113	Jun 20, 2007 12:00:00 AM	4212	23.9	001010101011

MeshPlus™ Field Installation Tool (FIT) is a waterproof ruggedized unit used in the installation of MeshPlus™ networks. Communicating wirelessly to all MeshPlus™ devices, the FIT allows an installer to change factory default setting, perform diagnostics, and download GPS coordinates at the time of installation.



MeshPlus™ Factory Automation Tools enable the efficient manufacture of MeshPlus™ enabled products. Factory Test Controllers and software automate manufacturing test, calibration, and diagnostics, ensuring a smooth manufacturing ramp process.



MESHPLUS™ FEATURES

- *Fully Ad-hoc*
- *Self healing.*
- *Self configuring*
- *23 dBm Transmit power*
- *1500 to 4000 Meter RF Range*
- *Scalable*
- *Long battery life*
- *Unlimited hops.*
- *Dynamic routing*
- *Path redundancy*
- *128-bit encryption*
- *Spread spectrum communications*
- *Software Upgradeable*