



nex-G Mesh

nex-G Multi Radio Mesh

The explosive global growth of the wireless internet phenomenon through the proliferation and ubiquitous Wi-Fi empowerment; mandates that all urban and rural communities be called upon to provide their residents and businesses with an affordable solution for Broadband Wireless Internet Access (BWIA). nex-G's Multi-Service Wireless Mesh Network, MeshReach, gives our customers a complete wireless broadband solution that delivers secure internet access and allows various municipal departments such as police, fire and government workers to use the same network without mobility limitations.





In addition, nex-G Wireless Mesh solution uses the Wi-Fi 802.11g standard, allowing users with Wi-Fi enabled laptop computers or handheld computing devices to access the network without new hardware or software.

nex-G's mesh solution, MeshReach, can provide the following features:

- Mobility internet access
- Multiple hopping to solve the non-line of sight issue.
- Multiple routing to enhance the performance and to be decentralized to avoid a central point of failure.
- Transmit Power Control to reduce the frequency interference.

nex-G MeshReach is a secure, QoS capable, Linux based OSI layer 2 wireless mesh networking software platform which targets enterprise, campus, WISP networks covering significant areas with 802.11 wireless access. nex-G MeshReach is designed to function on the nex-G embedded multi-radio hardware platform with single or multiple nex-G based radio modules.

The MeshReach architecture consists of two types of mesh network elements: MeshReach Node and MeshReach Gateway. MeshReach Node provides data transport, monitoring and AP functionality for connecting regular 802.11 wireless clients to the network. MeshReach Node connected to wire backbone will function as MeshReach Gateway. Beside Node functionality MeshReach Gateway can act as bridge, router, firewall and access controller.

MeshReach Node software is logically subdivided into components: Mesh Set and Service Set. Mesh Set selects optimal path to the gateway and provides mesh backhaul connectivity.

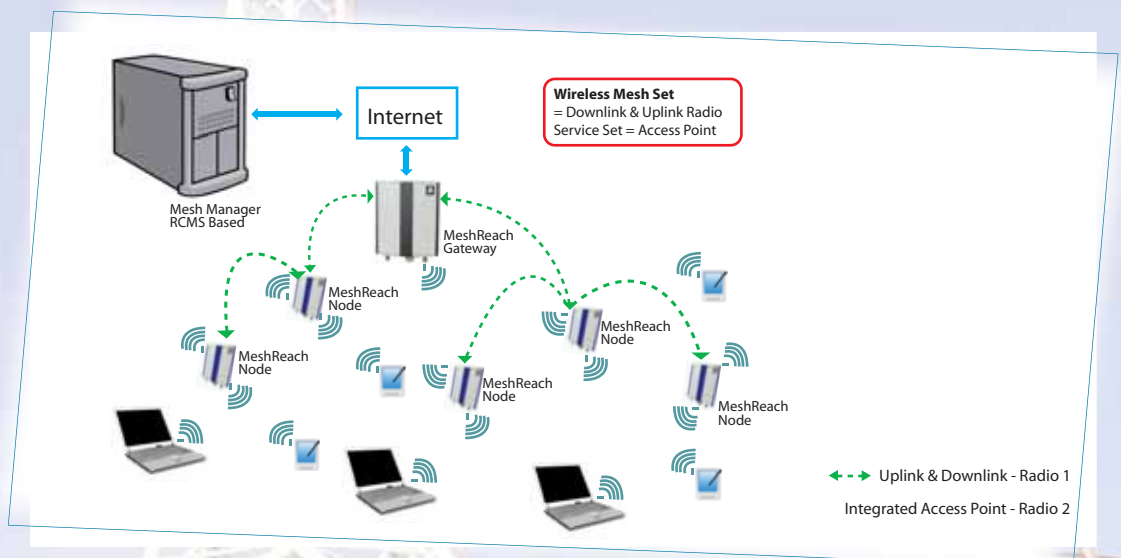


Figure 1: nex-G 2-Radio Mesh Network

Service Set is dedicated to service provisioning for 802.11 clients (notebook computers, PDAs, Wi-Fi phone sets, etc.). It covers the functionality of comprehensive high grade 802.11 access point including MBSSID (Virtual APs) with individual security settings.

Mesh Set and Service Set can coexist on the single radio interface for cost effectiveness, although more radio interfaces are recommended for better overall wireless mesh network performance and implementation of specific network topologies. Dedicated radio interfaces used for Wireless Mesh Node Uplink, Downlink and Service Set is configured to form the optimal nex-G hardware configuration.

nex-G MeshReach network control protocol (MNCP) is based on extensions to IEEE 802.11 protocol for signaling, mesh path selection and topology change detection. nex-G MeshReach software will comply to IEEE 802.11s wireless mesh protocol once it is approved.

nex-G mesh transport layer based on OSI layer 2 bridging is transparent for all IP and non IP protocols and brings no overhead to wireless data stream.



Traffic between client and Mesh Node and between Nodes can be secured by 802.11i (WPA2) supporting pre-shared and dynamic key modes and 802.1x authentication. 802.1Q and 802.1P tags are preserved in intra-mesh transport. IEEE 802.11e standard implementation assures QoS between network elements.

Integral part of nex-G MeshReach software suite is nex-G Mesh Monitor which shows graphical representation of network topology and status.

Full network management and monitoring functionality is provided by the separate nex-G Remote Configuration Management System (RCMS).

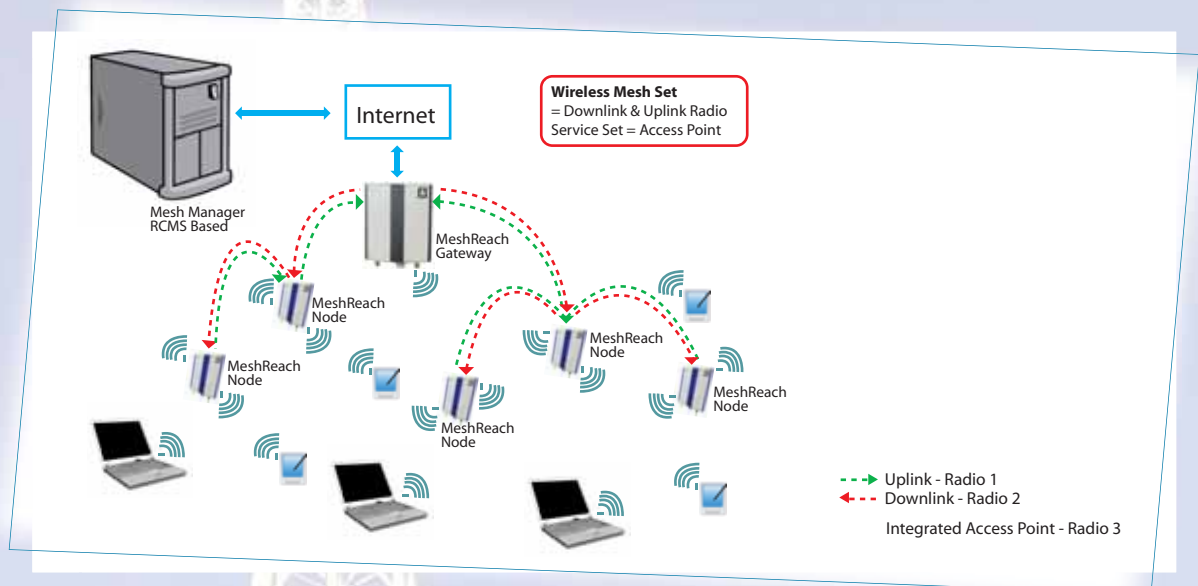


Figure 1: nex-G 3-Radio Mesh Network

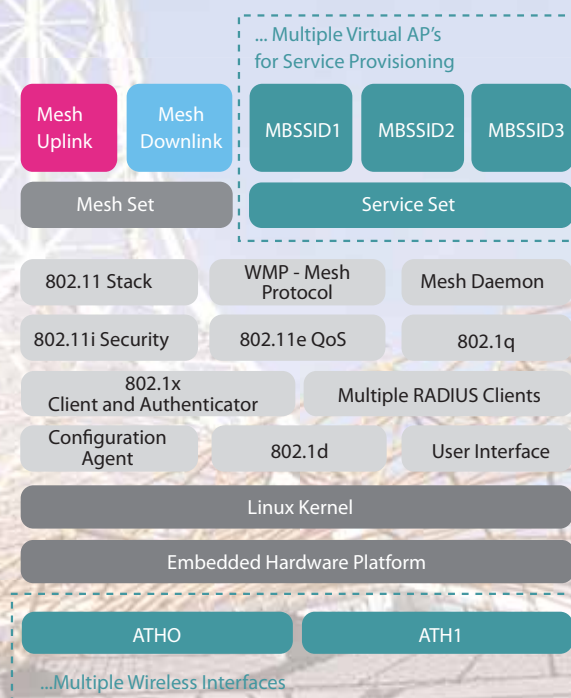


Figure 2: nex-G MeshReach Architecture

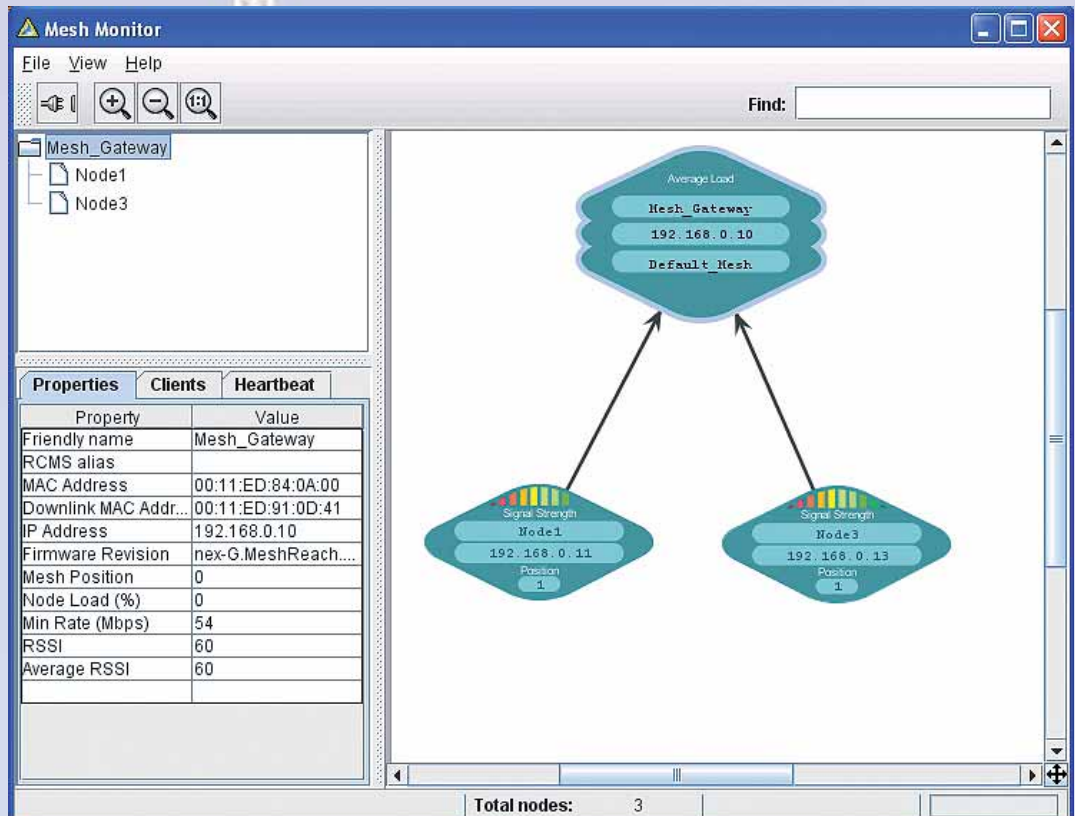


Figure 3: nex-G MeshReach Monitor View

FEATURES

- OSI layer 2 wireless mesh, auto discovery and dynamic configuration of new network nodes
- Provides infrastructure for multiple branded wireless services with diverse security policies
- Support of economical single radio and multiple 802.11 radio modules for low latency, high bandwidth applications
- Industry standard WPA2 (AES) protocol provides security for intra-mesh traffic
- Preservation of 802.1Q and 802.1P tags in intra-mesh transport
- 801.11e wireless QoS support for services and intra-mesh data transfers
- Graphical mesh monitoring software
- Remote Configuration Management (RCMS) support