

SmartMesh™

High Performance, Reliable and Easy Wi-Fi Mesh

The First Intelligent Indoor 802.11 Meshing for Building Low Cost, High Performance, and Ultra-Reliable Wireless LANs

SmartMesh is a unique, new approach to building high-performance wireless LANs (WLANs) that reduces cumbersome RF planning and costly cable backhaul by reducing the need to run Ethernet wiring to individual ZoneFlex access points.

SmartMesh dramatically simplifies, speeds and reduces the cost of WLAN deployment. With SmartMesh, enterprises can now simply plug in ZoneFlex access points to any convenient power source and walk away. No extensive RF site surveys, cable runs, configuration, or optimization. The network does everything.

SmartMesh delivers three key ingredients that have hindered the use of indoor meshing:

- 1) high performance**
by combining 802.11n with Smart Wi-Fi technology
- 2) reliable connectivity**
between mesh nodes using best path selection and interference avoidance techniques
- 3) ultra-simple deployment**
through the automation of AP and mesh provisioning

SmartMesh extends Ruckus-patented Smart Wi-Fi technology to create a new class of reliable and high performance wireless LANs that are self-organizing, self-optimizing and self-healing. It is the first Wi-Fi meshing approach that combines high-gain smart antenna arrays, sophisticated RF routing and centralized management with a single WLAN system.



BENEFITS

Dramatically lower deployment costs

Eliminates costly Ethernet cabling to every Wi-Fi access point. Extended signal range from high-gain directional antenna array reduces the number of mesh APs typically required.

No RF experts required

SmartMesh automatically determines the optimal network topology and maintains the best connections between APs.

Extended range minimizes mesh hops for high performance

A high-gain directional antenna array in every SmartMesh access point enables signals to reach farther to eliminate needless mesh hops that degrade performance.

Deploys in half the time of conventional 802.11 WLANs

Automating configuration, reducing Ethernet cabling and eliminating extensive RF planning, enables SmartMesh WLANs to be deployed and operational in half the time of conventional WLANs.

Integrated interference avoidance ensures high reliability

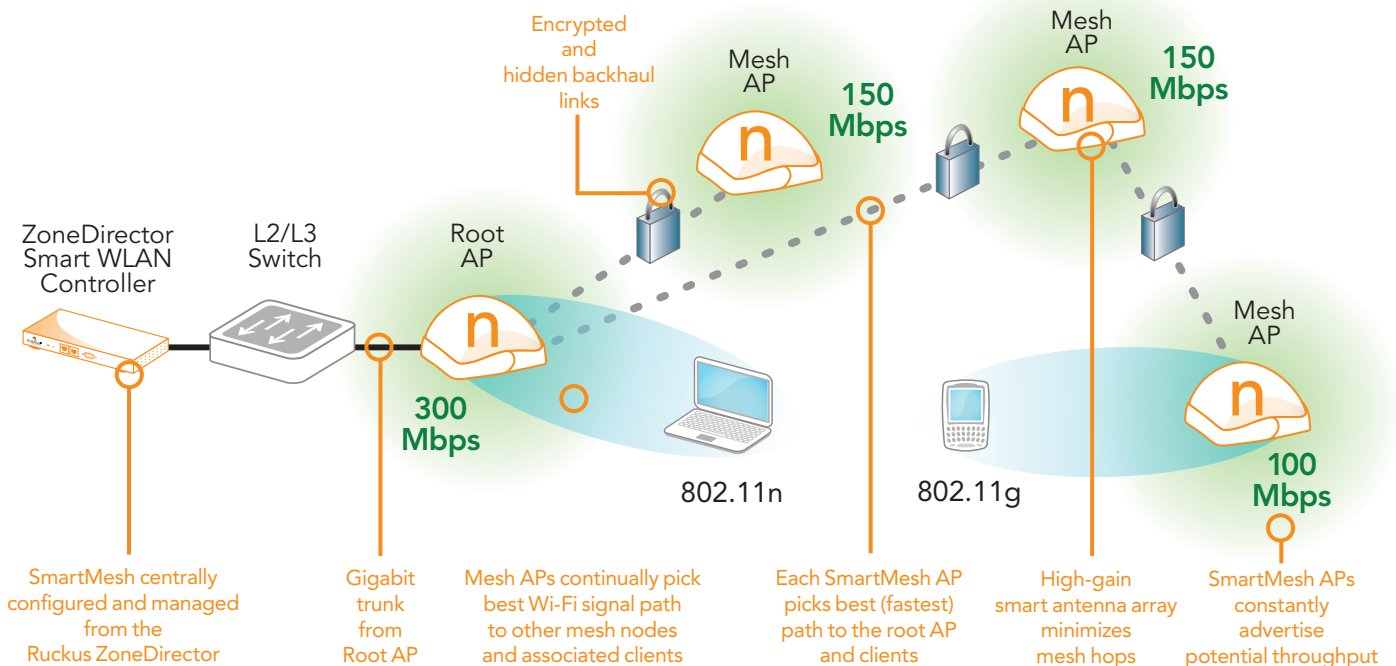
An intelligent antenna array in each ZoneFlex SmartMesh AP picks the best signal path for traffic at any given time and can automatically steer signals around interference to ensure high availability of mesh links.

Automated deployment keeps things simple

Configure the entire SmartMesh in minutes from a central management system. Plug mesh APs into the network and the ZoneDirector automatically provisions all nodes.

Highly secure

All mesh backhaul links between nodes are encrypted, hidden to ensure safe and secure operation.



Smart Wi-Fi Makes all the Difference

Smart Wi-Fi technology is used by the SmartMesh to form, direct and steer Wi-Fi signals over the best performing paths between mesh nodes as well as to associated clients. This enables the SmartMesh to adapt in real time to environment changes ensuring highly reliable and available wireless trunk links.

Each ZoneFlex access point within the SmartMesh integrates an intelligent, high-gain antenna array that provides diversity and extended signal range. This ensures high performance by minimizing the number of mesh hops and reduces the number of mesh APs required.

Additionally, this same smart antenna array allows the SmartMesh to continuously choose from thousands of antenna patterns to avoid or reject interference to maintain high performance connections between mesh nodes.

How SmartMesh Works

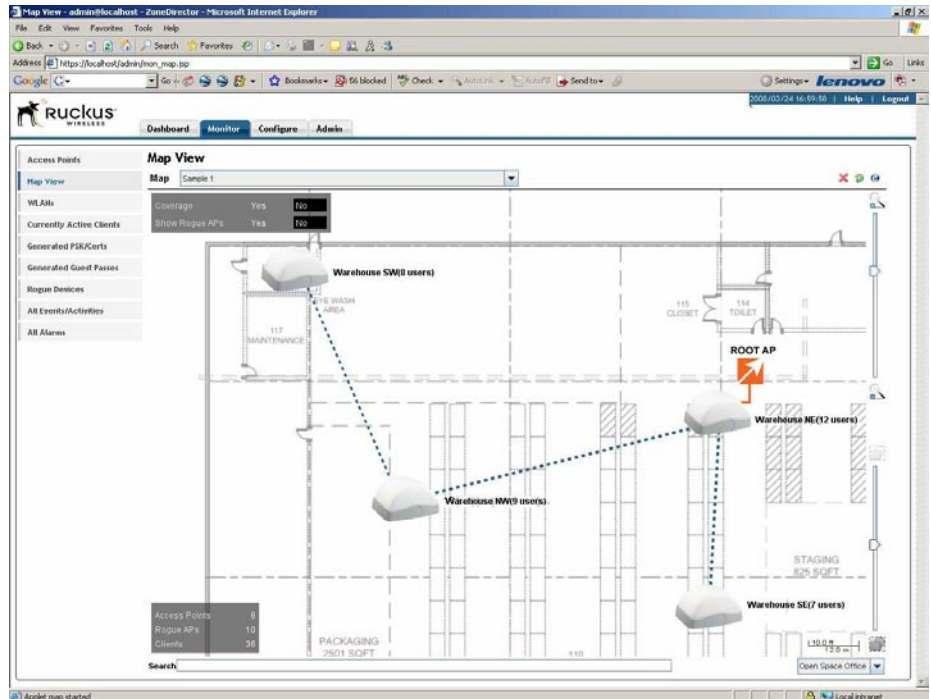
With SmartMesh, each ZoneFlex AP functions as a wireless node within the mesh. SmartMesh uses antenna ranking techniques to determine the best upstream path through the RF to the backhaul AP.

SmartMesh topology is automatically determined based on the potential throughput of each node. Potential throughput is the actual throughput of its uplink (i.e. how fast the uplink AP can get a packet to the wired network) as well as the potential throughput to the uplink AP. This is based on the actual throughput to the uplink AP, signal strength and other considerations such as AP load and hop count.

FEATURES

- Built on patented BeamFlex directional smart Wi-Fi antenna array technology
- Centrally managed by Ruckus ZoneDirector Smart WLAN controller
- Self-forming network topology
- Automatic AP provisioning
- Secure encrypted backhaul links
- Self-healing around mesh AP failures and environmental problems
- Supported on all ZoneFlex 802.11g and 802.11n Smart Wi-Fi access points
- Real-time interference avoidance and automatic interference rejection
- Best path signal selection to clients
- Quality of service and rate limiting throughout the mesh

SmartMesh is managed centrally from the Ruckus ZoneDirector Smart WLAN controller. Powerful mapping and management tools allow a complete view of the entire SmartMesh, connections within the mesh, associated mesh clients and other unique controls.



Each AP in the mesh determines the best mesh node with which to associate. Each upstream ZoneFlex APs continually advertises its Smart Mesh characteristics including its own potential throughput and the path through which it is connected to the wired network. This allows other APs to make real-time topology decisions, reacting to any changes in the environment.

In the event of an AP failure or if an upstream path drops below a set performance threshold due to overloading or interference, a new path to the best performing AP is selected. This efficient tree topology minimizes convergence risks and latency while maximizing performance.

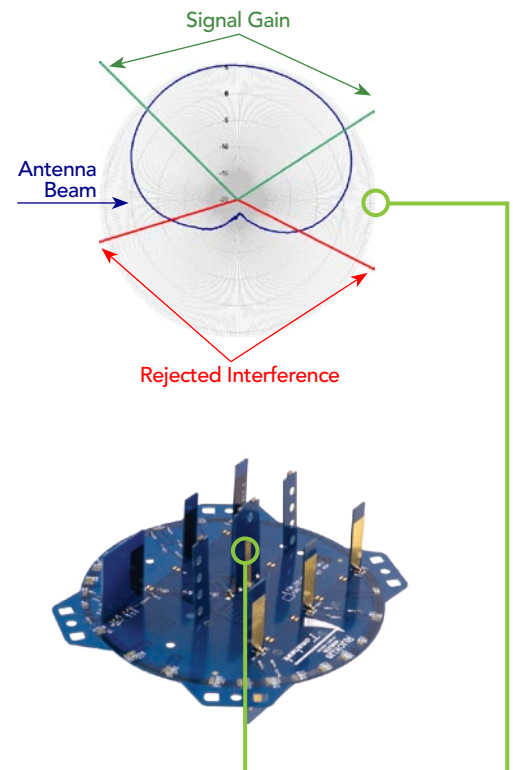
Simple to Deploy

To enable SmartMesh administrators simply click a check box within the ZoneFlex Setup Wizard. Once the WLAN is configured, administrators attach the SmartMesh access points to the ZoneDirector for auto-provisioning. After provisioning is complete administrator can place the ZoneFlex APs virtually anywhere.

Once plugged into any power source, the SmartMesh determines the optimal network topology and each ZoneFlex AP chooses the best mesh path back to a root AP.

Simple to Manage

All management of the SmartMesh is performed from the ZoneDirector. There, administrators can view a topology map of the mesh, see associated clients and make any desired changes.



Each SmartMesh AP integrates a patented smart antenna array with six high gain, vertically-polarized and six horizontally-polarized antenna elements. This enables up to 4096 potential antenna combinations and up to 9 dBi gain and 18 dB interference rejection, thereby delivering unprecedented range extension and signal reliability.