MetroMesh™ Architecture

TROPOS networks

The patented Tropos® MetroMesh™ architecture delivers the maximum scalability, high capacity at low cost and great user experience demanded by carriers, municipalities and network users. The MetroMesh architecture combines the innovative and patented Tropos MetroMesh OS, the industry's most sophisticated metro-scale mesh routing intelligence, with the Tropos MetroMesh operation and optimization tools, which provide centralized visibility, analysis and control, and purpose-built MetroMesh routers with peerless Wi-Fi radio performance. MetroMesh enables carriers, municipalities and public safety agencies to deliver city-wide fixed and mobile multi-megabit connectivity for IP-based voice, video and data applications.

Installed in more than 500 customer sites worldwide, the Tropos MetroMesh architecture includes the innovative and patented Tropos MetroMesh OS with Predictive Wireless Routing Protocol (PWRP®) and the Advanced Mesh Connectivity Engine (AMCE™), the Tropos MetroMesh operation and optimization tools and purpose-built MetroMesh routers.

FEATURES

MetroMesh OS

- Patented, purpose-built layer 3 mesh routing intelligence
- Predictive Wireless Routing Protocol dynamically employs links across multiple frequency bands to form the highest throughput, lowest latency end-to-end path
- Dynamic channel assignment, automatic power control and automated data rate selection provide the most efficient use of RF spectrum
- Redundant, self-configuring and self-healing network architecture
- Adaptive Mesh Connectivity Engine compensates for Wi-Fi client variations, improving connection reliability
- Ability to configure and operate multiple virtual networks on a single wireless infrastructure
- High-speed, session-persistent roaming

MetroMesh Tools

- Tropos Control - purpose-built element management system for MetroMesh networks
- Tropos Insight - advanced analysis and optimization tool for MetroMesh networks
- Tropos Drive - drive-test appliance to determine coverage and throughput in MetroMesh networks
- SignalMX - powerful MetroMesh coverage planning tool from EDX Wireless

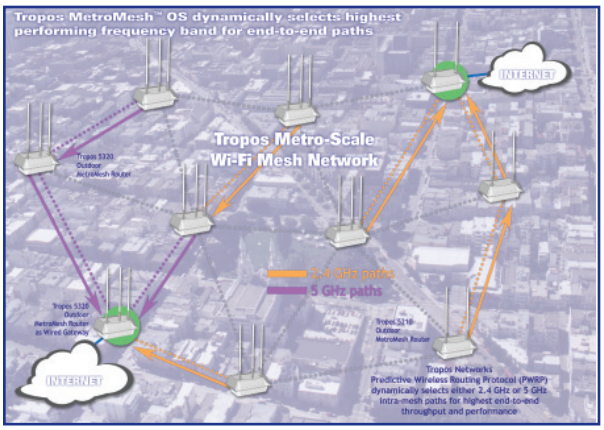
MetroMesh Routers

- High-performance 54 Mbps Wi-Fi
- Unrivaled link budget for superior RF propagation
- Tropos outdoor MetroMesh routers are ruggedized and weatherized for extreme outdoor conditions
- Tropos mobile MetroMesh routers are vehicle mounted for flexible network operation
- Tropos indoor MetroMesh routers extend metro-scale networks for in-building coverage

Tropos MetroMesh OS

With 50 patents issued or pending, Tropos MetroMesh OS provides the industry's most sophisticated mesh networking intelligence. Tropos MetroMesh OS is the key to delivering the ultimate scalability, high capacity at low cost and great user experience demanded by carriers, municipalities and network users.

Tropos MetroMesh OS is composed of three elements.



Predictive Wireless Routing Protocol (PWRP) – forms a wireless mesh, dynamically routing traffic along the highest throughput path to the Internet, providing maximum spectral efficiency. This is true even if the links required to form the highest performing path are in different frequency bands. PWRP negates effects of RF interference, wired backhaul failure and mesh router failure. It scales to thousands of nodes with the lowest routing overhead in the industry. PWRP is the industry's only mesh routing protocol built on the important principle of optimizing client-server throughput. PWRP also enables, without need for special client hardware or software, session-persistent client mobility and provides dynamic channel assignment, automatic power control, automated data rate selection.

Multi-service infrastructure – allows different user communities to have their own private network running over a single physical metro-scale Wi-Fi mesh infrastructure. Running multiple user groups on a network maximizes return on investment. The multi-service infrastructure integrates seamless mobility into the centralized authentication systems used by large network operators. Tropos' novel use of BGP routing makes the core routers used by network operators mobility aware. These capabilities enable carriers to roll out profitable nationwide or international metro-scale Wi-Fi mesh systems supporting millions of users.

Adaptive Mesh Connectivity Engine (AMCE) – provides adaptive connectivity to accommodate the wide variations in Wi-Fi clients used to access metro-scale mesh networks. AMCE provides adaptive tuning on each Tropos MetroMesh router that dynamically detects and compensates for the unique characteristics of attached Wi-Fi clients. AMCE delivers the reliable connectivity required for an outstanding user experience. Its benefits are delivered via software running on Tropos MetroMesh routers. No special client hardware, software or configuration is required.

MetroMesh™ Architecture

Tropos MetroMesh Operation and Optimization Tools

Tropos MetroMesh operation and optimization tools minimize network planning, deployment and management costs. These tools include Tropos Control, a purpose-built element management system for MetroMesh networks, Tropos Insight, an advanced MetroMesh analyzer and optimization application, Tropos Drive, a drive-test appliance to determine coverage and throughput in MetroMesh networks and SignalMX, a powerful MetroMesh coverage planning tool from EDX Wireless.

Tropos Control is a powerful element management system. It enables network operators to perform a plethora of important functions, including over the air configuration and updates of Tropos MetroMesh routers, whole network performance monitoring and statistical capture. The centralized management capabilities of Tropos Control minimize network management and operations costs.

Tropos Insight is an advanced MetroMesh network analyzer and optimizer used to determine network-wide backhaul, mesh and client performance. It incorporates a statistical package that provides system-wide data correlation and identifies opportunities for performance optimization. Tropos Insight enables network operators to keep up with the changing demands of their user base quickly and at low cost.

Tropos Drive is a purpose-built drive-test appliance. It determines coverage and throughput in MetroMesh networks. Tropos Drive correlates coverage and throughput measurements with latitude and longitude information. It pinpoints coverage gaps and areas of sub-optimal performance in MetroMesh networks. The result is quick and easy assessment of subscriber user experience across the network.

EDX Wireless' SignalMX is a sophisticated MetroMesh coverage planning tool. An add-on module to the basic EDX SignalPro® network design tool, SignalMX delivers accurate coverage and performance estimates. It provides data transfer to/from Tropos Control.

MetroMesh operation and optimization tools provide the centralized visibility, analysis and control of highly dispersed mesh network systems. They minimize the time, personnel and truck rolls required to operate the network while providing an outstanding user experience.

Tropos MetroMesh Routers

Tropos MetroMesh routers combine the industry's most sophisticated mesh networking intelligence with purpose-built hardware platforms. Each MetroMesh router provides wireless connectivity to standard 802.11b/g clients and extends the coverage area of the metro-scale Wi-Fi network. The radio- and spectrum-independence of the Tropos MetroMesh OS, allows Tropos Networks to seamlessly integrate future radio standards such as 802.11n, WiMAX, 3G/4G cellular and other unlicensed and licensed radio technologies.

Tropos MetroMesh routers include:

- Tropos outdoor MetroMesh routers – ruggedized and weatherized, Tropos outdoor MetroMesh routers can be mounted on external structures such as buildings or lampposts in less than 15 minutes by a trade-level worker with one tool. Outdoor MetroMesh routers run on a wide range of power options and are available with an optional, factory-installed battery backup system.
- Tropos mobile MetroMesh routers – are designed for vehicular applications. They seamlessly mesh with the fixed mesh routers, quickly extending network coverage. Mobile MetroMesh routers can be used in a variety of applications including tactical response networks and providing Wi-Fi access in commuter trains and buses.
- Tropos indoor MetroMesh routers – extend metro-scale Wi-Fi coverage indoors. They provide the same high performance, scalability, metro-scale mobility and multi-use network capability as outdoor MetroMesh routers to hard-to-wire indoor environments.

Sporting the industry's best Wi-Fi receive sensitivity, MetroMesh routers can be deployed in the industry's lowest node density for any given level of performance and coverage. They provide the most economical way to implement a high-performance metro-scale Wi-Fi network.

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