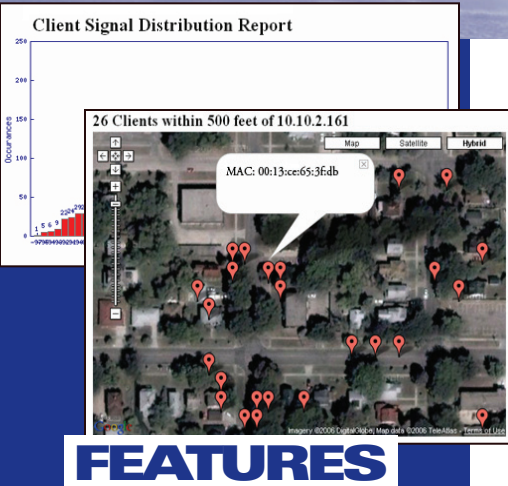


# Tropos Insight

## Metro Operation & Optimization Tool



### FEATURES

#### Advanced Analysis and Optimization System

- Provides unprecedented visibility into network and client performance and reliability
- CMDP collects network and subscriber data from network edge
- Pre-processing ensures minimal airtime use while transferring collected data over network
- More than 100 summary and detailed reports
- Long-term trending for performance evaluation

#### Mesh Reports

- Assess mesh link and router health and activity
- Understand throughput, noise, latency and hop counts
- Pinpoint problem links, paths and nodes

#### Client Reports

- Assess client connectivity and activity
- Understand bytes uploaded and downloaded by client, SNR, device type and location
- Pinpoint high traffic clients and clients with poor connections

#### Backhaul Reports

- Assess the ability of gateways to communicate with the Internet
- Understand upstream and downstream throughput, latency, packet loss and noise
- Pinpoint problem backhaul links

#### Business Analytics

- Offer granular information about usage, times and location for advertisers
- Monitor usage vs. capacity at all locations within the network
- Gauge key subscriber satisfaction indicators such as client link quality, capacity, reliability, and subscriber activity

The Tropos® System Architecture delivers the maximum scalability, high capacity at low cost and great user-experience demanded customers. The Tropos System Architecture combines the innovative and patented Tropos Mesh OS, the industry's most sophisticated metro-scale mesh routing intelligence, with the Tropos operation and business analytics tools, which provide centralized visibility, analysis and control, and purpose-built Tropos routers with peerless 802.11 radio performance. Tropos complete solution enables city-wide fixed and mobile multi-megabit connectivity for IP-based voice, video and data applications.

Tropos Insight is an advanced mesh analysis and optimization system that provides network managers with unprecedented network and client visibility and comprehensive-business analytics. It is one of the Tropos analysis and control tools used to achieve peak network performance and reliability while minimizing network planning, deployment and management costs. Other analysis and control tools include Tropos Control, a purpose-built management system for Tropos mesh networks, Tropos Drive, a drive-test appliance for determining coverage and throughput in Tropos networks, and SignalMX, a powerful MetroMesh coverage planning tool from EDX Wireless.

Wireless mesh management requires a correlated, system perspective because these networks are highly dynamic and interdependent. Tropos Insight enables visibility into every facet of network performance and subscriber activity. Data collection and analysis is enabled by the patented Correlated Mesh Data Protocol (CMDP™). CMDP efficiently collects network and subscriber data from the very edge of the network and enables a distributed data mining and processing system in which Tropos routers and Tropos Insight servers provide unique and detailed visibility with minimum impact on network capacity.

Tropos Insight provides a new class of business analytic reports. The business reports provide executives with macro level visibility and granular detail on key performance indicators from the edge of the network, including network usage by clients, client link quality, network capacity and reliability, service levels and the level of user experience. This data is crucial to track subscriber uptake, comprehend subscriber satisfaction and to support service level agreements.

Tropos Insight also enables executives to determine when, where and how to introduce new sources of revenue such as capacity wholesaling and tiered service levels. Marketing professionals can track subscriber uptake and penetration based on geography, service type or any number of parameters to most efficiently market to existing and potential subscribers.

Tropos Insight offers over 100 powerful, sophisticated network reports. Summary reports provide key, high-level performance indicators. Should an area require further investigation, network managers and business professionals can drill down deeper into the information with Tropos Insight's detailed reports. Each Tropos Insight report identifies improvement opportunities in the network that can be acted upon to increase Tropos mesh network capacity, reliability and end-user satisfaction.

Tropos Insight provides network managers with detailed historical trend information through continuous distributed data collection. Trend analysis provides a perspective that is essential to network optimization and troubleshooting. To ensure that the network manager receives a comprehensive view of the network, Tropos Insight presents all of this information in an easy-to-use format.

Tropos Insight allows network operators to keep up with the dynamic nature of their network and the changing demands of their user base quickly, efficiently and at low cost. It is a crucial tool for delivering an outstanding user experience while minimizing network operating expenses.

# Tropos Insight

## Metro Operation & Optimization Tool

### REPORT CATEGORIES

#### **Mesh Link Quality:**

Indicates the number of active links and the associated quality of these links to characterize the health of the mesh network. Also characterizes, in detail, associated events such as flapping nodes, hop counts, neighboring routers, high router dependence and a myriad of RF interference and contention data.

#### **Client Reports and Maps:**

Measurements for assessing the activity of associated clients, including reports for client SNR, client packet error rate, client bandwidth utilization, client link quality, routers visited, client association and authentication events, most active clients, breadth of client devices, client location over various timeframes and in multiple levels of detail.

#### **Mesh Node Throughput, Latency, Packet Loss Reports:**

Measurements for assessing the ability of active routers to transmit data within the mesh. Parameters considered for individual reports include upstream and downstream throughput, noise, latency, node loss and node count.

#### **Backhaul Throughput, Latency and Packet Loss:**

Measurements for assessing the ability of active routers to transmit data to the wired network. Parameters considered for individual reports include upstream and downstream throughput, noise, latency, node loss, node count and gateway router dependence.

#### **Concurrent Subscriber Capacity:**

Advanced reports to capture information regarding router and client count and their contribution to the subscriber capacity of the network.

#### **Minimum System Requirements:**

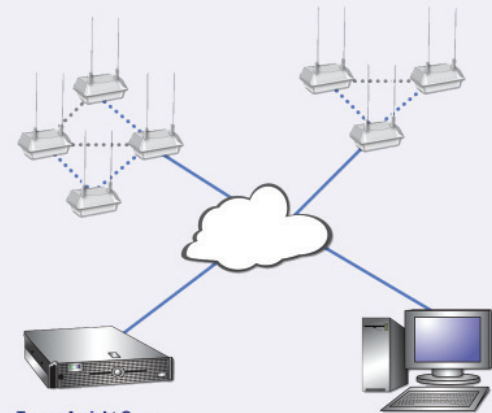
- 3 GHz (or greater) dual processor
- 3 GB RAM
- 200 GB minimum disk space
- One of the following installed:
  - Linux Fedora Core 4.0
  - Red Hat Enterprise Linux 4 (w/ Kernel foundation Linux 2.6.9-39 or greater)

#### **Correlated Mesh Data Protocol (CMDP)**

##### **Correlated Mesh Data Protocol (CMDP)**

###### **Tropos Routers**

- Collect and pre-process network data
- Collecting data at network edge provides detailed subscriber visibility
- Pre-processing enables efficient data transfer, conserving airtime



###### **Tropos Insight Server**

- Aggregates data from all routers in the network
- Performs post-processing and correlation
- Distills and prepares data for reporting

###### **Web Browser GUI**

- Presents reports for use by business executives and network managers

#### **Ordering Information:**

Part Number:

NMISERVER- Tropos Insight Server License (includes 10 Tropos Insight Router Licenses)

NMIROUTER - Tropos Insight Router License