



# QualNet Family of Products

## Overview

Computer networks enable many of the technologies we rely on in our personal lives and business, such as the Internet, financial markets, and cellular phones. Networks also power military combat, where human lives are dependent on the reliable transmission of information.

Networks are diverse and constantly evolving, which translates to heavy design, deployment, and operation costs. Not only does a network model take the guesswork out of topology and device planning prior to deployment, but it also helps maintain the efficiency and effectiveness of that network throughout its lifetime.

## QualNet

The QualNet<sup>®</sup> family of products has unparalleled speed, scalability and model fidelity. Modelers can optimize existing networks efficiently through quick model setup and in-depth analysis tools. Protocol models in source form provide developers with a solid library on which to build and experiment with new network functionality.

The end result is the ability to accurately predict network performance for a diverse set of application requirements and uses. Because of its efficient kernel, QualNet models large-scale networks with heavy traffic and mobility, in reasonable simulation times.

### Key Benefits

- Real-time simulation for man-in-the-loop and hardware-in-the-loop models
- Accurate results through high fidelity models
- Scalable up to tens of thousands of nodes
- Substantial improvements in speed and scalability achievable through parallel execution
- Increased productivity via a large library of models in source form
- Support for a variety of platforms, including Windows, Solaris and Unix

## QualNet Developer

### *Build & Execute Custom Models*

If you are developing a custom network model, QualNet Developer provides all the tools you need. The visual development tool allows users to write code incorporating QualNet APIs and then set up and run simulations. Additionally, debugging and analysis tools help speed up the development process.

## QualNet Planner

### *Configure and Evaluate Models in the QualNet Library.*

If your project does not require enhancements to an existing QualNet model, this is the most cost-effective tool. QualNet Planner enables model set up, execution of simulations, and analysis.

## QualNet Parallel Developer

### *Build and Execute Models on Parallel Computers for Larger, Faster Simulations.*

If speed of simulation and high scalability are your primary concerns, QualNet Parallel Developer takes network simulation to new levels.

## QualNet Library of Models and Integration Modules

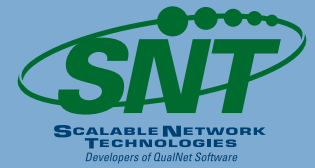
QualNet model libraries and integration tools provide network designers with a large number of networking options. The QualNet libraries and integration modules are as follows:

- Standard Library
- MANET Library
- Quality of Service Library
- IPv6 Library
- Cellular Library
- Satellite Library
- Terrain Module
- Interface to STK/Connect \*\*
- HLA & Threaded Communication Module.



\*\* STK and STK/Connect are registered trademarks of Analytical Graphics, Inc.

# QualNet Family of Products (continued)



## What makes QualNet a superior product?

### The fastest high-fidelity modeling engine on the market

QualNet supports real-time simulation for 100-node wireless networks and high-fidelity models of wired networks with 10,000 nodes or more.

Parallel computing pushes modeling speeds to 10 times sequential speed.

### Network layer APIs for maximum modularity

Open interfaces between each layer in the stack allow for maximum flexibility and integration with existing code.

### Superior insight and modeling tools to optimize broadband networks

QualNet has a large selection of Quality of Service and IPv6 compliant models to help network managers optimize global mixed networks by classifying, prioritizing, and preferentially handling traffic.

### Models with extremely high detail

QualNet has wireless models that incorporate environmental and physical layer effects, such as fading, path loss, and directional antennas.

Point-to-point link models show delay, throughput, and availability.

There are over 200 easy-to-use C functions to simplify writing your own models.

### Useful collection of network device models and functions to build QualNet models

QualNet has a clear modeling paradigm based on network layers.

Probability function inputs, packet generators and physical parameters such as buffers and ports are part of the models.

## Mobility, topographical and geographical model compatibility

Pre-defined trajectories of nodes are modeled through a trace mobility feature.

Direct integration with ModSAF/OTB\* (Modular Semi-Automated Forces/One-SAFTestbed Baseline) is supported.

QualNet is compatible with SDF and PDEF files, and can directly integrate with TIREM (Terrain-Integrated Rough Earth Model)\*

## Finite State Machine code generation accelerator

Powerful visual development tools in C/C++ automate code generation for custom protocols.

Subnet nesting capabilities allow for complex hierarchical topologies.

\* Certain models are only distributed with the appropriate US DoD clearance.

### System Requirements

#### Minimum System Requirements

- Memory Requirements:
  - 64 MB for LAN-size simulations
  - 128 MB+ for simulation of larger networks
- 100 MB free disk space
- Intel Pentium class; AMD K5, K6, Athlon Family; or
- Sun UltraSPARC class
- Windows 2000/XP, Linux, Solaris SPARC
- Java 1.3.x JRE or SDK

#### Compiler Requirements for Model Development

- **Windows**- Microsoft Visual C++ 6.0 SP 5 and up
- **Linux**- gcc versions through 2.96 (gcc 3 not supported)
- **Solaris**- gcc versions through 2.96 (gcc 3 not supported) or Sun Visual Workshop / Forte / ONE compiler family

#### Recommended Systems

##### Windows 2000 or XP

- 256 MB memory
- 600 MHz processor
- 200 MB free disk space

##### Linux-Mandrake 7.0 and higher / Red Hat Linux 6.0 and up

- 256 MB memory
- 600 MHz processor
- 200 MB free disk space

##### Solaris SPARC

- 256 MB memory
- 500 MHz processor
- 200 MB free disk space

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Document #3703