

# QualNet Library of Models

*network models in source form to speed model creation*

## Overview

QualNet<sup>®</sup> is a next generation network modeling tool with unparalleled speed, scalability and high fidelity.

The QualNet Library of Models is a highly accurate collection of network models in source code format to speed model setup and custom code development.

The models are separated into libraries suited for specific types of networks. The largest of the libraries is the Standard Bundle, which comes included with QualNet Developer.

*Note: All model libraries are available for QualNet Planner in binary only format. With these models, the configuration files can be modified, but the core functionality can not be modified.*

## Standard Library

### Get started Fast with Models in High Demand

A substantial library is included with QualNet Developer, Model Designer and Planner. The Standard Library includes protocols in high demand for wireless and wired networks, such as FTP, HTTP, VoIP, RIPv2, OSPFv2, BGPv4, 802.11 DCF, TCP, UDP, Ethernet, VLAN switches, bent-pipe satellite, and switch and router models.

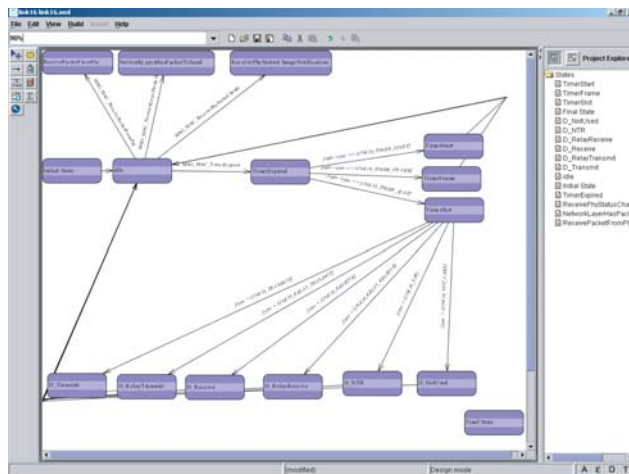
## MANET Library

### For Mobile Ad Hoc Networks

Mobile Ad Hoc NETWORKS (MANET) have no fixed infrastructure and perform well in the most unpredictable environments. The MANET Library includes models that provide wireless dynamic routing, detailed physical layer effects

## Key Benefits

- Models in source form are modifiable
- Models purchased once can be used with all QualNet products
- Models come pre-optimized for parallel execution
- Flexible architecture gives you plenty of options in building your own models and integrating into existing models
- Protect models from misuse and intellectual property violation by compiling before delivering to others



*Finite State Machine tool for code development, included with QualNet Developer and Model Designer, for modification of the QualNet library of models*

such as steerable directional antennas, fading, shadowing, mobility, and complex modulation schemes. ITM, DTED and DEM terrain models are also included. Other terrain models such as TIREM and CTDB are sold separately in the integration module called Terrain Module.

## QoS Library

### For IP networks Carrying Video and Voice Traffic

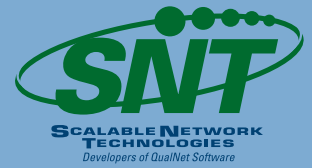
Quality of Service is a networking technology that accommodates bandwidth-hungry, bursty and time-sensitive applications over the Internet. Web-based conventional telecommunications and multimedia are QoS applications. QoS technologies are necessary for managing service levels of competing traffic and bandwidth consumption to keep the price of communications down. The QoS library includes important models for queuing, scheduling and MPLS.

## Cellular Library

Wireless communications via cellular or mobile phones are an important area of network simulation. Migration of existing systems to accommodate multimedia is expensive and complex. Many network operators choose to graft existing cellular networks onto other types of wireless networks. Available January 2003.



# QualNet Library of Models (continued)



Model Layer / Function	Standard Library	MANET Library	QoS Library
<b>Application</b>	CBR FTP / Generic HTTP lookup MCBR TCPLIB traffic gen traffic trace VBR VoIP H323 RTP H225		
<b>Quality of Service</b>			Diffserv traffic classifier Per Hop Behaviors QOSPF RED SCFQ WFQ
<b>Transport</b>	TCP TCP Variants Lite New Reno Reno SACK Tahoe UDP		ECN
<b>Multicast</b>	DVMRP MOSPF PIM-DM	ODMRP	
<b>Queueing</b>	FIFO		RED RIO WRED
<b>Scheduling</b>	CBQ Priority		Round Robin SCFQ WFQ WRR
<b>Routing</b>	Access List AODV BGP v4 Distributed Bellman Ford HSRP IGRP OSPF v2 RIP v2 Static	DSR Fisheye LAR OLSR STAR WRP	

Model Layer / Function	Standard Library	MANET Library	QoS Library
<b>MAC</b>	Abstract Switch CSMA Detailed Switch VLAN Spanning tree IEEE 802.11b DCF IEEE 802.11b PCF Wired Bus	Aloha MACA	
<b>MPLS</b>			LDP RSVP-TE
<b>Physical</b>	Bent Pipe Satellite Detailed Satellite IEEE 802.11 DSSS Point-to-point link Switched ethernet Wired bus		
<b>Antenna</b>	Omnidirectional antenna	Switched beam antenna Steerable beam antenna	
<b>Path Loss</b>	Free Space 2 Ray	ITM** Path Loss Matrix	
<b>Shadowing</b>		Lognormal	
<b>Fading</b>		Ricean Rayleigh	
<b>Modulation</b>		BPSK DPSK DQPSK GMSK Turbo Coding FEC	
<b>Terrain</b>		DTED ** USGS DEM**	
<b>Mobility</b>		Trace file Random waypoint	
<b>Devices</b>	Routers Switches		

\*\* for TIREM and CTDB models, please refer to the data sheet entitled *Integration Modules*.

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Note: To learn about brand new QualNet models not included in this list, please download the most recent data sheet entitled *QualNet Library of Models* at [www.scalable-networks.com](http://www.scalable-networks.com).