

MANAGER TOOLKIT

COMPONENTS

- **TL1 Manager Server**
including Java Beans for:
 - Communications Mgmt.
 - TL1 Parsing
- **TL1 Code Generator**
including pre-built GR-833 Message specification
- **TL1 NE Simulator**

MAIN FEATURES

- All your TL1 needs in one package
- Manages one or more TL1-based NE's
- Code Generator provides easy to-use Java classes tailored to your TL1 message set
- Contains pre-built Telecordia GR-833 TL1 message specification files
- NE Simulator allows testing of your Manager without waiting for real NE availability
- 100% Java; Any Platform



QCOM TL1 MANAGER TOOLKIT

for Management of TL1 NE's

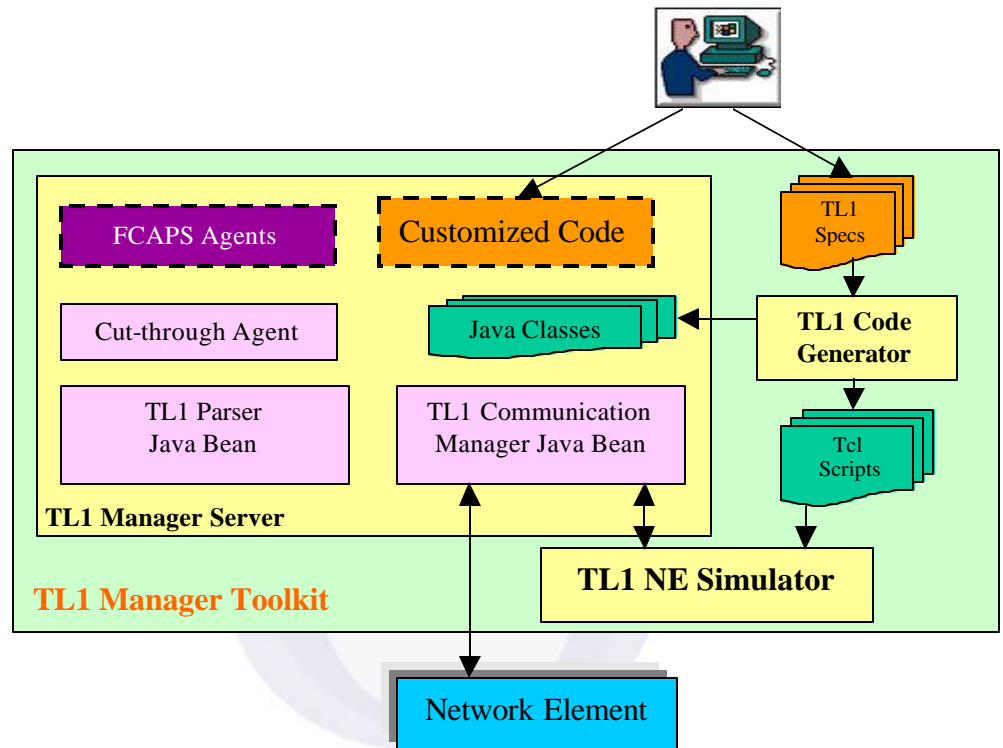
A Part of the QCOM ComponentSuite

The Challenge

The Transaction Language 1 (TL1) interface is the dominant NE interface in use today. Whether your company is a new startup Networking Company or an established vendor, your Management System or Craft Interface Terminal (CIT) will likely need to support TL1-based Network Elements (NE) in as short a development cycle as possible without sacrificing quality.

The QCOM Solution

QCOM's TL1 Manager Toolkit solves all of your TL1 Management System needs. Your development team receives a ready-to-use TL1 Manager framework, which manages all communications and TL1 parsing, leaving them to focus on developing their application code. In addition, developers can use the TL1 NE Simulator test tool for their unit testing instead of tying up the valuable and limited amount of NE equipment. Your QA team can use the NE Simulator to verify your System can support large networks of TL1-based NE's and its flexible scripting language can be used to automate testing. The TL1 Manager Toolkit from QCOM clearly offers **significant time savings** and **cost benefits** for your Company.



TL1 Manager Server

The TL1 Manager Server from QCOM provides a ready-to-use framework to build your customized TL1 Manager. It contains built-in support for managing communications with one or more TL1-based Network Elements. Intended in a system where the connection to each TL1 NE is always maintained, the TL1 Manager Server acts as the gateway for the rest of your application software. The Manager Server supports point-to-point management connections as well as Gateway Network Elements (GNE).

A **TL1 Cut-Through Agent** contained in the Manager Server provides the necessary mechanism to allow other Management System software to communicate with the Network Element (NE). The Manager routes the commands onto the appropriate NE connection and returns back all of the received responses (either synchronously or asynchronously).

APPLICATIONS

- Complete TL1 southbound interface for your Management System
- TL1 interface for your Craft Interface Terminal (CIT)
- Provides a test tool for developers in place of real equipment
- Simulate large networks of NE's

TESTED PLATFORMS

- Solaris
- HP-UX
- Windows 98 / NT / 2000
- Linux

GET THE QCOM ADVANTAGE

- Has successfully developed numerous NMS/EMS and DWDM based embedded systems for past five years
- Employs a team of highly skilled professionals led by telecom experts, each with over 20 years of experience



If desired, QCOM **FCAPS Agents** (optional) can be provided in the TL1 Manager Server to provide the necessary link with various components providing the FCAPS functionality inside the **QCOM FasTrack EMS**. Additionally, **Customized Code** can be added to provide the necessary interface with other applications.

The TL1 Manager Server also contains the following Java Beans to be deployed in runtime, to enable any desired customization:

- **TL1 Communication Manager**
- **TL1 Parser**

TL1 Communication Manager Java Bean

The TL1 Communication Manager is a management system component that handles communications with one or more TL1-based Network Elements.

Since each system has different needs, the TL1 Communication Manager is packaged as a highly configurable Java Bean. The user can configure various Bean properties to customize it for their application. The Bean design uses the standard Java Event protocol (i.e. Events and Listeners) to allow the user's application maximum control. The Bean's features are as follows:

- ❖ manages one or more TCP/IP or Serial connections
- ❖ provides automatic NE login and logout (via standard ACT-USER/CANC-USER)
- ❖ automatic login retry if NE connection lost
- ❖ configurable periodic communication test check of each NE (via RTRV-HDR)
- ❖ configurable timers for login attempts, communication tests, communication establishment
- ❖ automatic routing of TL1 requests to Gateway Network Element (GNE)
- ❖ support of TL1 cut-through
- ❖ routing of TL1 autonomous messages to subscribers via standard Bean Event interface
- ❖ generates NE link Up/Down indications to indicate the communication status

TL1 Parser Java Bean

This Java Bean provides generic parsing of TL1 output messages according to the Telecordia standard TL1 syntax GR-831-CORE. It parses the TL1 message into Java objects representing the TL1 standard output syntax (e.g. header, ctag, and text blocks). The Parser can be customized as needed, to support non-standard TL1 syntax or values.

TL1 Code Generator

The TL1 Code Generator produces Java code for your TL1 Manager Server based upon your NE-specific TL1 message set specification. In particular, it generates Java classes specific to your TL1 message set, which build upon the functionality of the TL1 Parser, and allow easy mapping between your TL1 message parameter names, values, and structure. The Generator also produces Tcl scripts and files for use in simulating the TL1 NE in the TL1 NE Simulator.

TL1 NE Simulator

The TL1 NE Simulator simulates the TL1 interface of a Network Element. It is a generic simulator that can be customized by the user to simulate the behavior and functionality specific to the TL1 Message Set of your product. It supports a command-line interface that can be used interactively or via a script. The interface uses the well-known Tool Command Language (Tcl) scripting language. In addition to the standard Tcl features and commands, the simulator supports custom Tcl commands related to the TL1 interface. Besides the scripting mode, the TL1 NE Simulator has an extremely user-friendly GUI which allows you to configure and monitor the NE's, generate alarms and run scripts.

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