M*Ware TMN Agent and Manager Simulators

Put Your TMN Software Development Lifecycle in High Gear.

The M*Ware TMN Offering contains agent and manager simulation tools which compliment the development environments (Convergent Agent/Manager).

M*Ware TMN Simulators are available separately, for the agent and manager roles. They provide easy-to-use, comprehensive simulation of a TMN agent or manager over Q3 standard interfaces, including actual behavior as well as the CMIP protocol. They can be used to test any commercial CMIP/Q3 compliant Agent or Manager.

The M*Ware TMN Simulators offer all features that support a project through the entire software lifecycle:

- DESIGN - simulate both agent and manager to validate the information model (MIB) and prototype the user interface
- DEVELOPMENT - generate customized example application C++ code for use with Vertel's TMN ADE and TMN MDE products
- UNIT TESTING - interactive mode for unit testing of real application against simulation
- QUALITY ASSURANCE - develop scripted scenarios for formal regression testing
- MAINTENANCE - interactive mode for recreation of problem scenarios

The result of using M*Ware TMN simulators is higher quality application code, reduced development cost and faster time to market for your application.

The Vertel TMN Simulators operate in an interactive mode using the GUI, or in a scripts-based mode using the widely used TCL scripting language. Riding on the power and extensibility of the TCL language, the simulators can model complex behaviors, including interactions with databases and prototyping GUIs (using TCL/TK).

The TMN Simulators also provide an intuitive graphical interface for browsing the information model using hyperlinks, and the latest version of the Simulators offer a code generation option, which generates example application code based on your information model and simulation scenarios.

The TMN Simulators are delivered as a binary product on the following platforms:
- Windows/NT 4.0 and Windows 2000
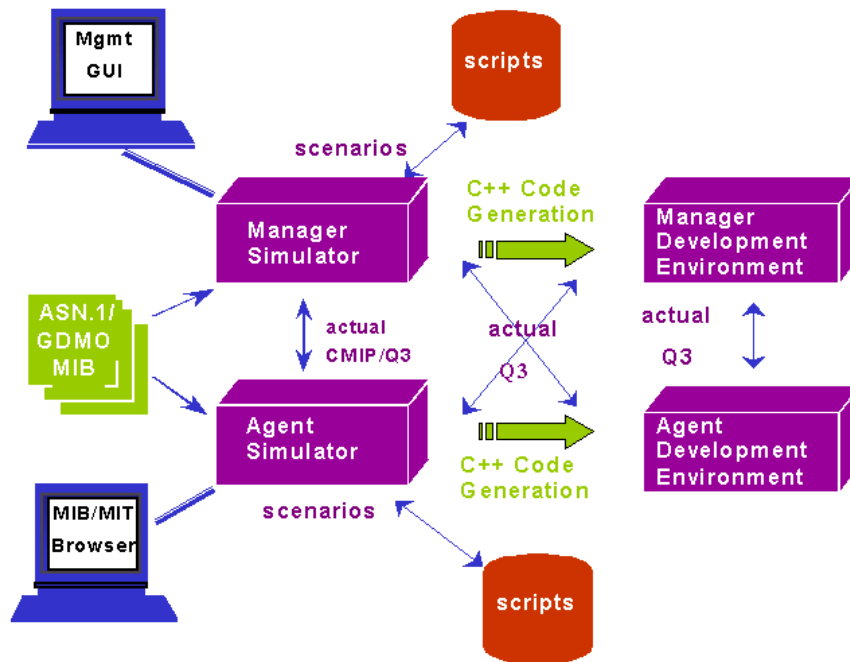- Sun Solaris 2.6 – 2.8
- AIX 5.1
- HPUX 11.x

If you are interested in a different platform please contact your Vertel account manager.

vertel

The TMN Simulator presents the GDMO information model using an intuitive "browser" style inter-face, with hyper-links to chase down all the references, and easy indexing to every template type using a pull-down menu.
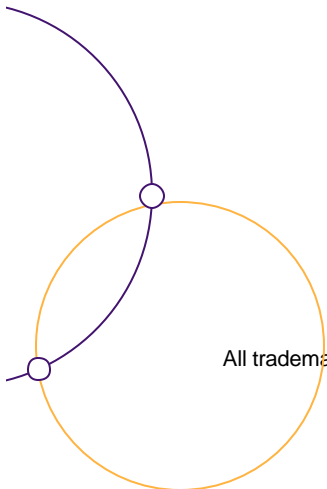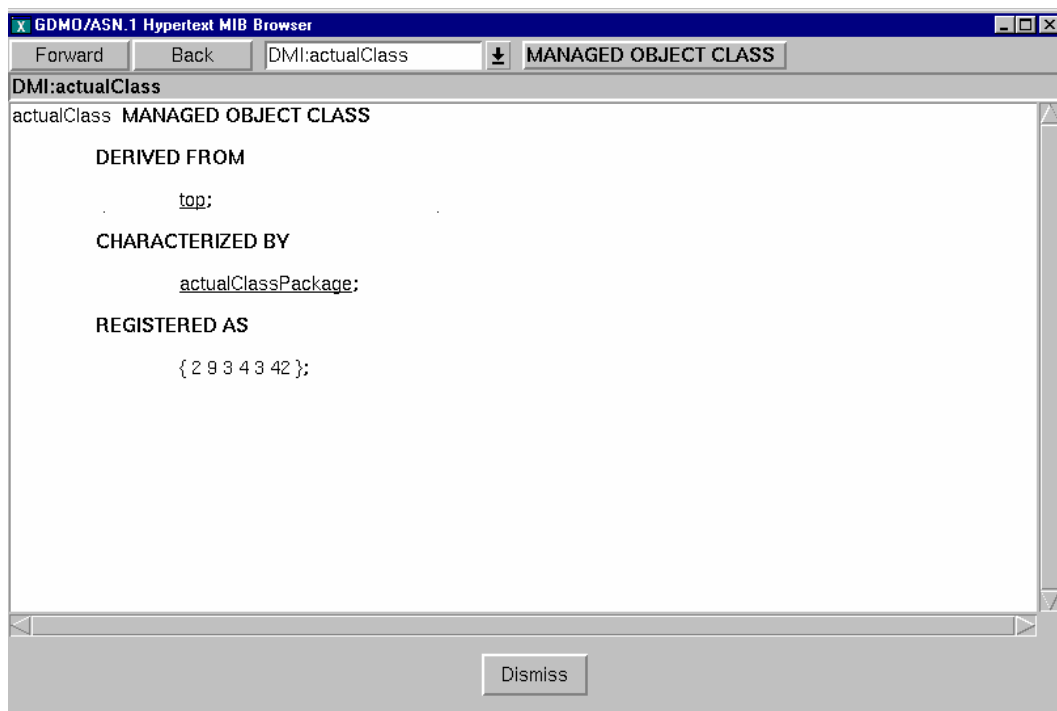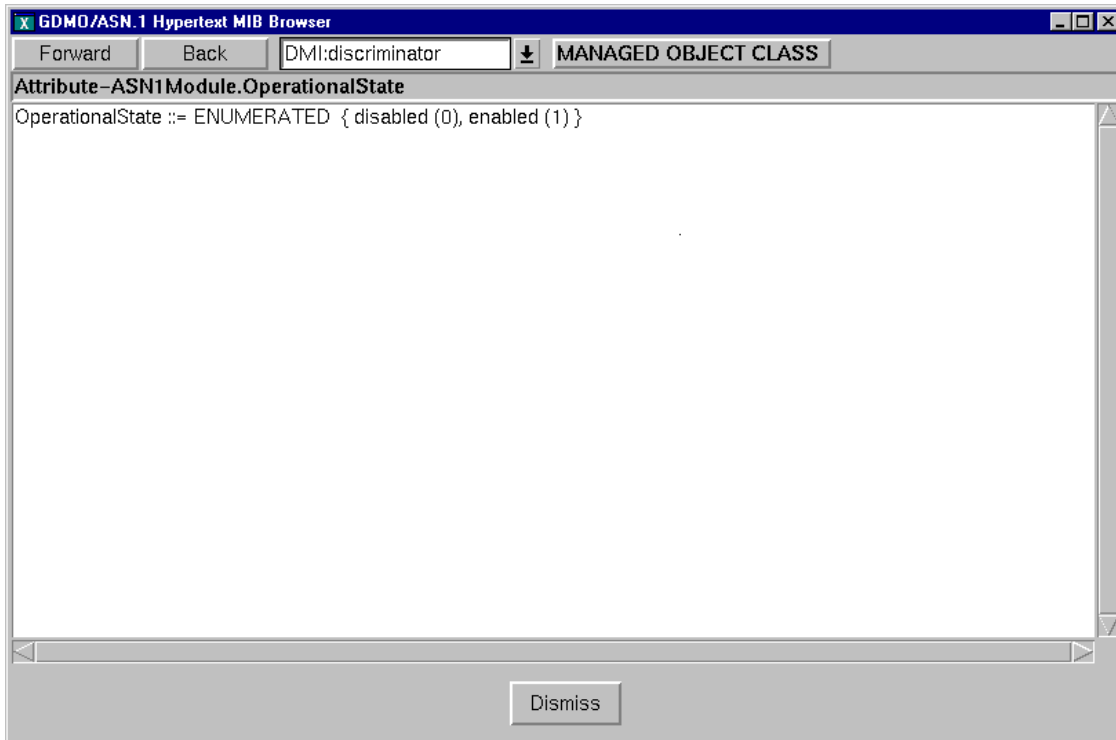
GDMO and ASN.1 Made Easy!

Vertel's TMN Simulators transform the complexities of GDMO and ASN.1 into the ease of a point-and- click user interface.

Your MIB may be easily navigated using a browser-style hyper-link presentation. Similarly, the dynamically updating MIT may be viewed using a GUI to easily navigate the objects in the tree and examine their attribute values. CMIP requests and responses may be easily formulated using forms and menus. This allows easy interactive testing of an agent or manager.

```
GDMO/ASN.1 Hypertext MIB Browser                                    _ □ ✕

  Forward        Back       DMI:discriminator    ↨   MANAGED OBJECT CLASS

Attribute-ASN1Module.OperationalState

OperationalState ::= ENUMERATED  { disabled (0), enabled (1) }





                                    Dismiss
```

Model any Scenario with TCL

Beneath all of this lies the power of TCL, the widely known scripting language. Scenarios may
be crafted and captured for repeatable formal testing. And TCL brings with it a variety of
extensions to access windows, databases, and more. The possibilities for the scenarios that
can be modeled are wide open.

New Code Generation Feature

M*Ware TMN Simulators include a code generation feature that generates C++ code based on
your information model and on scenarios created using the Simulator GUI. The generated code
is designed for applications built on Vertel's TMN Manager Development Environment (MDE) or
TMN Agent Development Environment (ADE), based on the TMF TMN/C++ API. The code
generation feature will allow you to leverage the Simulator's intuitive GUI to construct complex
ASN.1 values and GDMO requests, instead of writing the C++ code by hand.

The generated code will provide valuable stubs and examples customized to your domain,
which will give you a head start on your application development. The generated code, by way
of example application code, will also help reduce the learning curve for the C++ API.

A Case Study

Reduce the cost of Design Phase by 60%,
Reduce the cost of Development by 40%

In a case study at a major telecom service provider, the original project plan estimated

vertel

- 6 man-months for information model development,
- 10 man-months for a prototype of the graphical user interface, and
- 10 man-months for the development of agent and manager simulations to validate the information model

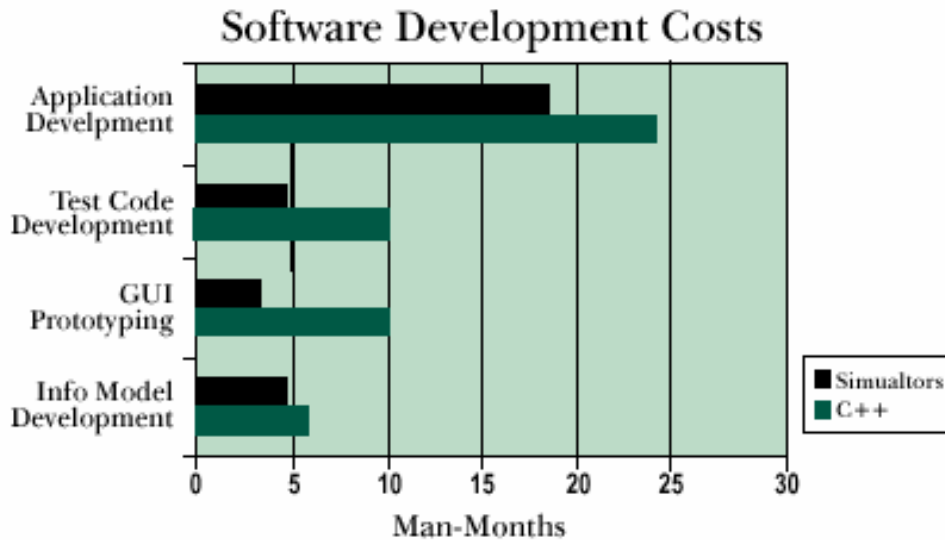So in total the required time was 26 man-months.

With the aid of the TMN Simulators,
- the information modeling effort was reduced to 4 man-months,
- the GUI prototype to 3 man-months, and
- the simulation development to 4 man-months.

Thus, a 26 man-month effort was reduced to an 11 man-month effort, a savings of nearly 60%.

In a related project, the development effort for a TMN Manager included 22K lines of manager code and 14K lines of agent code just for testing purposes. The development of test code represented 40% of their development effort. With TMN Simulators, the development of test modules can be reduced by as much as 80%, since scenarios are developed using the TCL scripting language with the support of a graphical user interface. No C++ coding is required.

Simulators expedite the development phase as well, both in the use of the Simulator GUI for interactive unit testing, as well as the new code generation feature. Savings of 25% in this phase are estimated.

Software Development Costs

Category	Simulators	C++
Application Develpment	18	24
Test Code Development	5	10
GUI Prototyping	3	10
Info Model Development	5	6

Man-Months

vertel

Standards Conformance

- ITU X.200: Reference Model for OSI

- ITU X.209: Specification of BER for ASN.1

- ITU X.213: Network Layer Addressing

- ITU X.701: Systems Management Overview

- ITU X.710: CMISE Definition

- ITU X.711: CMIP Specification

- ITU X.720: Management Information Model

- ITU X.721: Definition of Management Information

- ITU X.722: Guidelines for Definition of Managed Objects

- ITU X.730, X.731, X.732, X.733, X.734, X.735, and X.736: Systems Management Functions

- ITU Q.822: Stages 1, 2, and 3 Description of Q3

- TMF: OmniPoint 2.0

- TMF: TMN C++ High Level API

About Vertel

Vertel is a leading provider of Mediation, Network Integration and Management and B2B Exchange Solutions.

Since 1995, Vertel has provided solutions to over 300 companies, including telecom infrastructure vendors, operators and service providers such as Alcatel, Nokia, Siemens, Motorola, Lucent, Nortel, NTT, Samsung, AT&T, BT, Deutsche Telekom, Cingular and Williams Communications.

Vertel's in-depth knowledge and commitment to industry standards, combined with experience of working with many different equipment types, allows the creation of high performance solutions that enable customers to quickly overcome technological barriers.

Vertel's mission is to make its customers successful by enabling them to reduce operational costs and introduce new services, networks and OSSs whilst maximizing existing investments.

Vertel's Professional Services organization in USA, Europe and Asia develops communications software solutions tailored to individual customer requirements and offers project management, systems analysis and other technical services.

For more information on Vertel or our M*Ware products, contact us at 21300 Victory Boulevard, Suite 700, Woodland Hills, Ca. 91367; telephone: + 1818 227 1400; fax: +1 818 598 0047 or visit www.vertel.com

vertel

Related M*Ware Products

The following complementary products are also available from Vertel.

M*Ware Convergent Manager/Agent

The M*Ware Convergent Manager/Agent Development Environment is one of Vertel's most popular products and conforms to the TMF API. The TMF API provides a consistent interface for developing both manager and agent applications, thus promoting reusability across application development projects and reducing training costs and learning curves. , M*Ware Convergent Manager/Agent includes the specific TMN features explained here, but can contain adapters and support libraries for other protocols as well. This ideal environment enables you to build equipment and networks for the multi-technology, multi-protocol services requested today!

Read our M*Ware Convergent Manager/Agent datasheet for more details.

M*Ware TMN-UTS

M*Ware Unix/NT telecommunication solutions (UTS) provide standards-conformant open systems interconnection (OSI) transport products that includes data transmission services (the lower layers) for any OSI-conformant application such as CMIP applications, and File Transport, Access, and Management (FTAM). UTS-Netlink contains UTS-TCP (RFC-1006), UTS-WAN (X.25) and UTS-LAN (CLNP) protocol stacks and is supported on Solaris, HP-UX, Windows NT and Windows 2000, and AIX.