

M*Ware™ TMN Solutions Overview

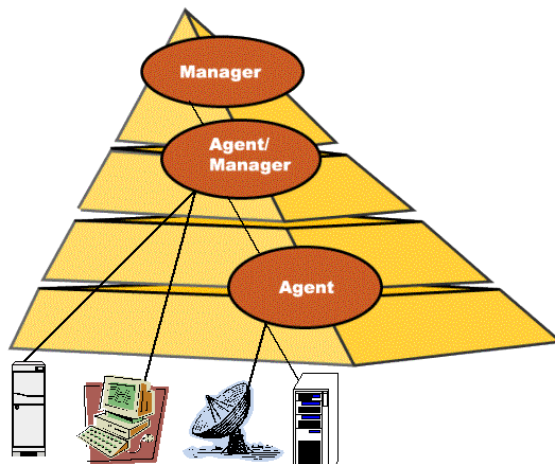
Vertel's product line M*Ware offers mediation, integration and management application development solutions for communication vendors and providers.

An important part of M*Ware consists of the suite of products compliant to the CMIP and OSI network management standards, providing full TMN capabilities through configurable components. Please read further for a small introduction on TMN and a general overview of the Vertel Product set.

The Telecommunications Management Network (TMN) provides a framework for achieving interconnectivity and communication across heterogeneous operating systems and telecommunications networks. TMN was developed by the International Telecommunications Union (ITU) as an infrastructure to support management and deployment of dynamic telecommunications services. It provides standardized network management that is flexible, scalable, more cost-effective, and easier to enhance. TMN networks adhere to standard means for communicating across networks, and allow distributed processing to appropriate levels for optimum performance, reusability, and efficiency.

TMN provides a model of logical layers, often referred to as "the TMN pyramid," which defines or suggests a management function layered hierarchy. The lowest layer is defined by a network resource—the highest layer includes the management of corporate or enterprise-wide goals.

Starting at the lowest layer, the hierarchy includes the network element layer (NE), element management layer (EML), network management layer (NML), service management layer (SML), and business management layer (BML). Once management is defined at the lower layers, additional management application models can build on this foundation.



The TMN Pyramid

The M*Ware TMN Product Overview

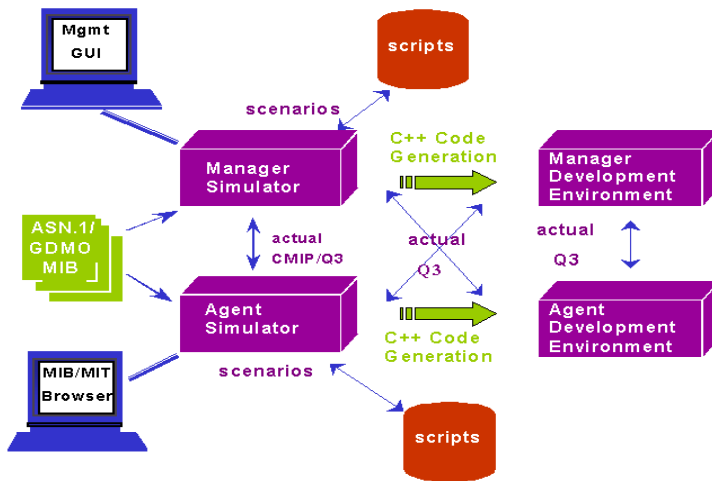
Vertel's M*Ware product line includes a suite of products that work together to provide a complete solution for all your network management needs, providing full TMN capabilities through configurable components. The M*Ware products incorporate high-performance communications stacks, transport providers, routing software, and application services.

The benefits of using M*Ware TMN products include :

- ease of use by providing an integrated development environment
- support on multiple platforms including Solaris™, Windows NT® and 2000™, HP-UX® as well as embedded options
- Proven track record – Vertel products are implemented and used worldwide by companies such as Lucent, Alcatel, AT&T, Nortel, and Cisco.



- TMN products are just a part of the Vertel portfolio. M*Ware is specialized software for multi protocol mediation, management and integration. Easy convergence and integration is guaranteed!!



TMN Product Overview

M*Ware Management Environment

The M*Ware Development Environment products provide tools and components to automate the development of any type of protocol application, including CMIP Management Applications.

M*Ware Development Environment product interfaces are object-oriented and consistent with the TMF-defined TMN/C++ API. They are available on Solaris, HP-UX, Windows NT and 2000. (For other portations, please contact your Vertel sales manager.

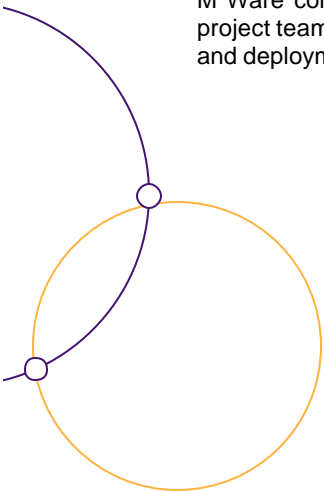
Vertel M*Ware includes many major features which will greatly reduce your application development time, such as

1. C++ Code generation. The TMN Agent and Manager Simulator are able to generate C++ application code from a very easy to use GUI.
2. Dynamic MIB Loading. No more need to recompile your application or Simulators when you make changes to the Information Model (MIB). You can now load your MIB at runtime.

M*Ware Convergent Agent and Manager Development Environment

The M*Ware convergent Manager Environment is ideally built to enable developers to easily build customizable, dynamically configurable TMN-conformant agents and manager applications. The resulting, fully functional TMN Agent or Manager provides the value added, agent role process for network elements, Q-adapters, and mediation devices at the NE, EML, NML, and SML layers of the TMN model.

M*Ware convergent DE automates most of the tasks associated with building an application and leads the project team through each stage of agent application development--design, prototyping, development, testing, and deployment. Please read the dedicated datasheet of M*Ware Convergent Manager for more details.



TMN Simulators

The TMN Agent Simulator and TMN Manager Simulator may be used with the Agent and Manager Development Environment products above, or with any TMN-conformant agent or manager. The Simulators use standard TCL scripts to emulate the behavior of a TMN-conformant agent or manager. Simulators have graphical user interfaces, are dynamically configurable at run-time, and provide script-generation tools to produce test cases for a particular information model (MIB).

The Simulators also provide a code generation feature that allows you to generate example code based on the objects in your MIB. The generated code contains complex ASN.1 values and CMIP requests that can be used when building actual agents and managers with Vertel's Convergent Manager/Agent. This feature significantly reduces your development time. Please read the dedicated Agent Simulator and Manager Simulator datasheets for more details.

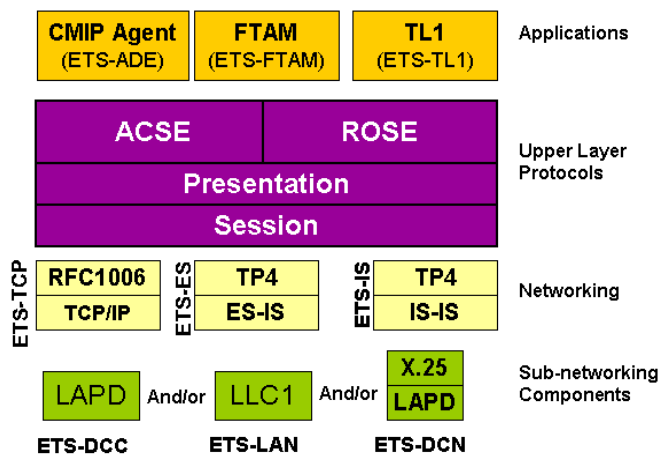
TMN ETS

M*Ware Embedded Telecommunication Solutions (ETS) products provide communication services and management among operation support systems (OSSs), network elements (NEs) and gateway network elements (GNEs).

M*Ware TMN ETS products/components are designed to run on VxWorks and VRTX, and can easily be ported to any embedded system running a Real-Time Operating System (RTOS).

ETS was designed with NE hardware and software vendors in mind. ETS products are widely deployed and standards-based, and work with a variety of integrated, modular products and components. ETS contains a fully GR-253 conformant OSI protocol stack as well as a CMIP Agent specifically designed for RTOS environments.

ETS can now be offered including G.7712 support, to allow mutual OSI and IP DCC tunneling. Read our detailed G.7712 Whitepaper.



ETS Components

M*Ware TMN UTS

The M*Ware UNIX/NT Telecommunications Solutions (UTS) products provide standards-conformant OSI protocol products that are fully integrated with other M*Ware TMN products. UTS products are supported on Solaris, HP-UX, Windows NT and 2000, and AIX.



UTS-FTAM

UTS-FTAM, when integrated, allows user applications to perform the system functions necessary for uploading and downloading system images, configurations, backups and log files. UTS-FTAM allows developers to easily build applications that support simple, unstructured file transfer, access, and management (FTAM) for initiator and responder implementations on UNIX and NT Systems.

The product enables an initiator application that allows for multiple clients to register and utilize FTAM services via an application programmer interface (API). The initiator may be used to generate transfers to any system running an FTAM-compliant responder. UTS-FTAM provides a responder that can interoperate with the Vertel FTAM initiator, or with any FTAM-compliant initiator.

UTS-FTAM is fully conformant to ISO 8571. It is modular, and functional modules may be customized or replaced to suit the implementation environment.

UTS-Net Link

UTS-Net Link is an open systems interconnection (OSI) transport product that provides data transmission services for any OSI-conformant application such as CMIP applications, and FTAM. UTS-Net Link contains UTS-TCP (RFC-1006); UTS-WAN (X.25) and UTS-LAN (CLNP) protocol stacks.

Network Information Management is a highly specialized skill. Vertel is a dedicated provider of network to OSS integration, mediation, network management and B2B exchange solutions.

*Vertel's M*Ware is a complete product line of pre-built and configurable components and solutions built to make network information applications easily configurable, maintainable and highly re-usable.*

*Working with M*Ware will increase in-house development or system integrator efficiency with 30 % or more! . But you can also decide to use our Professional Services organization.*

*Read our M*Ware technical differentiators paper to understand e.g. how M*Ware outperforms EAI toolkits, and our M*Ware ROI customer case studies to understand how much money M*Ware can save for you RIGHT NOW.*

About Vertel

Vertel is a leading provider of convergent mediation, management and B2B exchange solutions.

Since 1995, Vertel has provided solutions to both telecom infrastructure vendors and service providers such as Alcatel, Nokia, 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, creates high performance solutions that enable customers to quickly cross 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 while leveraging existing investments.

Vertel's Professional Services organization in USA, Europe and Asia develops customized communications software solutions tailored to individual customer requirements, and also 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

