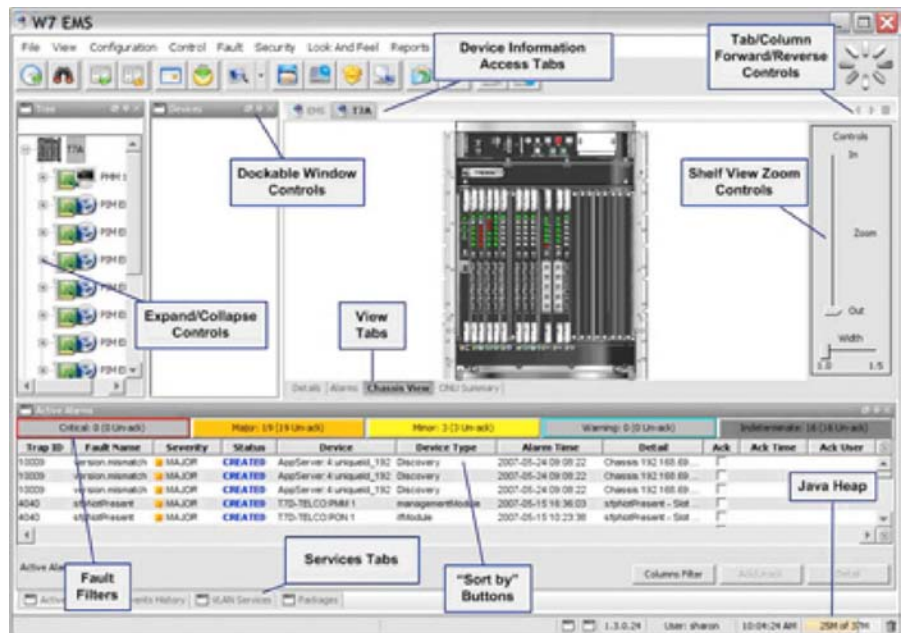


TRIDENT7™ ELEMENT MANAGEMENT SUITE

Enablence is a market leader in optical device technology and its Systems Division is a driving force in Fiber-To-The-Premises (FTTP) optical access technology. We have successfully deployed our FTTP systems to customers on six continents, including one of the largest installed bases of triple-play Optical Network Terminals (ONTs) in North America.



BENEFITS

- Open northbound interface for flow-through provisioning and a web-based customer care application for viewing subscriber service settings

FEATURES

- Full Featured Element Management
- Open Northbound Interface for Flow-Through Provisioning
- Web-based Customer Care Application
- Intuitive & Customizable Graphical User Interface (GUI)

APPLICATIONS

- Triple-play Optical Network Terminals (ONTs) in North America.

UNIFIED ELEMENT MANAGEMENT SYSTEM

The TRIDENT7™ Optical Line Terminal (OLT), Compact Optical Line Terminal (COLT), and all Optical Network Terminals (ONTs) are managed easily via the TRIDENT7 Element Management Suite (T7 EMS). The T7 EMS is a full-featured element management platform, including an open northbound interface for flow-through provisioning and a web-based customer care application for viewing subscriber service settings.

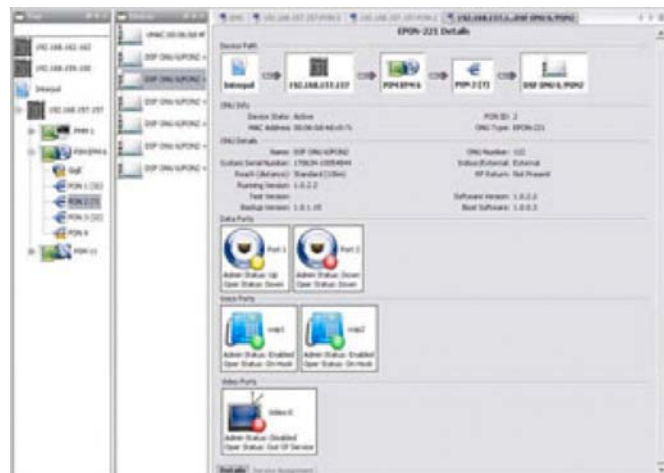
IEEE 802.3 EFM (GE-PON and Point-to-Point) and ITU G.984 GPON elements are supported by the T7 EMS.

GRAPHICAL USER INTERFACE

In addition to CLI and SNMP provisioning capabilities, the T7 EMS provides a user-friendly and individually customizable Graphical User Interface (GUI) for point-and-click provisioning of voice, video, and data services in real time.

Realistic shelf views and configurable device topology trees both provide real-time status icons for every T7 device in the network.

Context-sensitive help, coupled with the intuitive and customizable nature of the T7 EMS GUI, minimizes the software learning curve, increases user efficiency, and reduces user error.



T7 EMS COMPONENTS

Model Number	Description
T7-EMS-BASE	T7 EMS Base Software Platform, including provisioning tools for VLAN set up and service packages, plus reporting and event notification modules.
T7-EMS-CUSTCARE	T7 EMS web application for customer service and service provider viewing of service settings and port status of specified ONTs.
T7-EMS-CUSTCARE-PDA	Blackberry plug-in for Customer Care application. Allows Customer Care application to be accessed via Blackberry.

OSS INTERFACES & SUPPORT

Model Number	Description
T7-EMS-OSS-CERT	T7 EMS Northbound Interface for support of ETI Triad and Commsoft.
T7-EMS-OSS-CUSTOM	T7 EMS Northbound Interface for support of custom OSS/BSS integration.
T7-EMS-ON-SITE	On-site daily rate for EMS support of installation and integration services.
T7-EMS-WARRANTY	T7 EMS Maintenance Agreement for EMS Software Platform (Annual)

CUSTOM EMS SYSTEM CONFIGURATION

The T7 EMS allows the user to customize client views, as well as set system preferences, including:

- Automatic software upgrade on discovery
- Configuring an external interface for northbound provisioning requests
- Configuring an FTP Server for software upgrades
- Automatic move of pending ONTs to a provisioned state, thereby allowing the ONTs to be automatically upgraded and configured without manual intervention

FLEXIBLE PROVISIONING

The T7 EMS enables fully automated device configuration and service provisioning. When the system is set up for automated provisioning, service packages are sent via a northbound interface to the T7 EMS where the packages are translated into the appropriate VLAN, QoS, and service settings on the ONT and OLT. Service provisioning templates can even be sent prior to installation of a device, in which case the T7 EMS holds settings with a logical placeholder until the device appears in the network. Auto-provisioning coupled with service templates enables the service provider to provision thousands of subscribers conveniently and efficiently.

Additionally, the T7 EMS can backup all provisioned and configured parameters and store them in the T7 EMS database. Network operators can configure the scheduler to backup the network on a recurring basis in order to keep the database synchronized and current.

FAULT MANAGEMENT

The T7 EMS features advanced fault management, including alarm notification, event history browsing, and user configurable reports. SNMP traps are captured by the management modules of the OLTs and sent via XML/JMX to the T7 EMS platform, where they are written to a log file. The alarm logging feature can be configured to aggregate duplicate alarms and show an associated count with a time stamp of the last alarm event received. Using this feature, users may set up filters such that only specified alarms are displayed in the fault viewer window.

Users may also use the T7 EMS to acknowledge and clear active alarms. Tabs on the active alarm window show counts for how many alarms are active for each severity level. Clicking on a severity tab will display only the alarms at that severity level.

CUSTOMER CARE

The Customer Care web application enables customer service representatives or service installers to check the status of subscriber service ports, which greatly reduces the number of calls to a network provider's operations center. An add-on function is available which allows this management application to be accessed by RIM Blackberry devices.

TROUBLESHOOTING

Real-time device status icons and an event history log clearly indicate when devices or modules have associated alarms, which may be accessed from the main GUI screen or through specific device menus. Alarms are acknowledged and cleared through the alarm panel, and the user may set up notifications for specified alarm conditions.

EVENT NOTIFICATION

Network operators may configure the T7 EMS to use email, SMS, pop-up message, audible sound or text-to-speech messages when specified alarms conditions occur. For example, a technician could be paged if an OLT experiences a power failure or a field service representative could be emailed when a certain device goes offline a specified number of times.

SCALABILITY

The T7 EMS is a highly modular platform that allows a single server to support many T7 devices. A portion of the management platform resides on the management module of the OLT while the SQL database can be run on a separate server. Because of this distribution model, the T7 EMS platform running on a high-end Windows server can support as many as fifty (50) fully populated OLTs and their associated ONTs.

REPORTING

More than forty (40) standard reports are available in the T7 EMS, covering everything from configuration details to subscriber details and inventory, which can be filtered according to several fields. In addition to displaying the reports, the customer can obtain a CSV version of the report for importing into other applications such as Excel, or an OSS/BSS system.

SECURITY

The T7 EMS features secure management connections and full user access control. User permissions for management functions may be customized for individual users and user groups. Secure client-server communication is ensured via TLSv1.

T7 EMS SERVER DEFAULT DATABASE ENGINE

By default, the T7 EMS Server software includes Microsoft SQLServer 2000 Desktop Engine (MSDE), which is a limited version of Microsoft SQLServer 2000 intended for a small number of users. MSDE is sufficient for small network installations with limited EMS usage. Installations that exceed the recommended limits in the table below should not rely on MSDE, but should instead utilize SQLServer 2000 Standard Edition or better.

The following table compares the capabilities of MSDE and SQLServer 2000 Standard Edition.

MSDE & SQL Server 2000 Standard Edition Capabilities

	MSDE 2000 (Included with T7 EMS)	SQLServer 2000 Standard Edition
Maximum Database Size	2 GB	1,000,000 TB
Concurrent Activity Limit	8 Concurrent Operations If exceeded, database will slow until concurrent activity drops within limit. Noticeable performance degradation if limit exceeded frequently.	No Limit
Recommended Maximum Network Size	10 OLTs	50 OLTs
Recommended Maximum Concurrent EMS Client Users	3	10
Recommended for Use with Flow-Through Provisioning	No*	Yes
Recommended for Use with Web Status Check	No*	Yes

* Flow-Through Provisioning and Web Status Check will function correctly with MSDE™. However, if they are used frequently, the number of concurrent operations in the database will exceed the allowed amount, and performance will degrade. Therefore, SQLServer 2000 Standard Edition is recommended if these features are to be used.

T7 EMS CLIENT SOFTWARE MINIMUM HARDWARE REQUIREMENTS

Processor	Intel® Pentium® 4 Processor 3.40GHz, Intel® or Equivalent
Operating Systems	Microsoft® Windows® XP Professional, SP2 with Media or Microsoft® Windows® 2000 Pro
Memory	2GB, DDR2 400MHz (2x512)
Keyboard	Microsoft® compatible
Monitors	19.0 inch VGA
Graphics Card	64MB PCIe x16 nVidia Quadro NVS 280, Dual VGA Capable
Boot Hard Drive	100GB SATA, 7200 RPM Hard Drive without RAID
Hard Drive Configuration	C1 All SATA drives, Non-RAID, 1 or 2 drive total configuration
Floppy Drive Options	Optional
Mouse	Microsoft® compatible
File System	NTFS File System
CD-ROM	48X CD-ROM

T7 EMS SERVER SOFTWARE - UP TO 10 OLTs

Processor	Intel® Xeon™ Processor at 3.4 GHz/1MB Cache, 800MHz FSB
Operating System	Microsoft® Windows® 2000 Server or Microsoft® Windows® Server 2003 with 5 Client Licenses
Additional Processor	None
Memory	4 GB DDR2 400MHz
Keyboard	Optional
Monitor	Optional
Primary Hard Drive	60GB 15K RPM Ultra 320 SCSI Hard Drive
Primary Controller	RAID Support
Second Hard Drive	60GB 15K RPM Ultra 320 SCSI Hard Drive
Hard Drive Configuration	RAID 1
Floppy Drive	Optional
Mouse	Optional
Network Adapter	100M NIC
CD / DVD Drive	24X IDE CD-ROM

T7 EMS SERVER SOFTWARE - UP TO 50 OLTs

Processor	Intel® Xeon™ Processor at 3.4 GHz/1MB Cache, 800MHz FSB
Operating System	Microsoft® Windows® 2000 Server or Microsoft® Windows® Server 2003 with 5 Client Licenses
Additional Processor	Intel® Xeon™ processor at 3.4 GHz/1MB, 800MHz FSB
Memory	8 GB DDR2 400MHz
Keyboard	Optional
Monitor	Optional
Primary Hard Drive	100GB 15K RPM Ultra 320 SCSI Hard Drive
Primary Controller	RAID Support
Second Hard Drive	100GB 15K RPM Ultra 320 SCSI Hard Drive
Hard Drive Configuration	RAID 1
Floppy Drive	Optional
Mouse	Optional
Network Adapter	1G NIC
CD / DVD Drive	24X IDE CD-ROM
Power Supply	Dual Power Supplies Recommended

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