

Version

3.0

TNT SOFTWARE

ELM Performance Manager™

Getting Started

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ELM Performance Manager 3.0

Getting Started

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Introducing ELM Performance Manager 3.0

ELM Performance Manager is a client/server application that automates a variety of the administrative functions required for monitoring and managing Windows-based servers and workstations. ELM Performance Manager provides real time health and performance monitoring, performance data collection, process monitoring, and WMI monitoring.

ELM Performance Manager is essentially a rules-based management system (RBMS). Using filters and rules, you decide which alarms and conditions trigger notification or corrective action (collectively referred to as "Notification Methods"). In addition to executing Notification Methods, ELM Performance Manager also includes data archiving and reporting, a flexible and easy-to-use user interface, and an integrated, customer-built knowledge base.

ELM Performance Manager has a flexible architecture that enables you to deploy it in a manner that suits your organization's specific needs:

- The ELM Server contains various Engines that handle the processing of Filters, Rules, and Notification Methods. In addition, the ELM Server performs monitoring of Remote Agents.
- The ELM Console, which provides remote access and configuration for administrators and other users of the application. Nearly all aspects of the Server and Agents can be configured using a remote ELM Console. ELM leverages the Microsoft Management Console platform to provide users with a customizable MMC snap-in (the ELM Console) that can be distributed to all administrators, Help Desk technicians and other support professionals within your organization. The XML Web Viewer provides a Web-based interface to Server data and Agents.
- Service Agents reside on Windows workstations and Servers where they monitor the systems in real-time or at specified intervals. Service Agents execute the configured Monitor Items at the specified intervals.

ELM Performance Manager Terminology

The following terms are used in this document, in the ELM Performance Manager product documentation (EPMMC.CHM) and in ELM Performance Manager.

Term	Description
ELM Server	<p>The ELM server process (epmsvr.exe) and supporting modules (DLLs). This component is comprised of several engines that handle such tasks as creating and maintaining a database for data storage, archiving and reporting, managing Agents and Agent licensing, processing Filters and Rules, and executing Notification Methods.</p> <p>The ELM server also monitors Remote Agents and manages sessions with ELM Consoles.</p>
ELM Server Database	<p>The ELM Server database contains data collected from Agents (events and performance data), Alerts generated by Actions and the Alert Notification Method, Knowledge Base Articles created by administrators and end-users, and when configured, ELM Server diagnostic events.</p> <p>The ELM Server can use Microsoft Access (runtime included), Microsoft SQL Server 6.5 or later, or Oracle 8i or later as its database platform. The ELM Server database requires the MDAC 2.6 SP1 or later and JET 4.0 SP3 or later.</p>
ELM Console	<p>The ELM Console refers to the snap-in that resides in a Microsoft Management Console. The ELM Console is the primary user interface for the product. The ELM Console is freely distributable throughout your organization. Installing the ELM Console requires MMC 1.2 or later; you can save the ELM Console in MMC 2.0 format when running on Windows XP.</p> <p>Each snap-in can connect to multiple ELM Servers, and the ELM Console snap-in can be co-mingled with other MMC snap-ins to provide single-seat administration.</p>
Web Viewer	<p>The Web Viewer is an HTTP/XML-based interface to ELM Server Objects. It is implemented as COM objects within a set of Active Server Pages that run under Internet Information Server 4.0 or Internet Information Services 5.x.</p> <p>The server side of the Web Viewer is installed using the setup package for ELM. The client side of the Web Viewer is any Javascript/XML-capable Web browser. The latest versions of Netscape and Internet Explorer support both Javascript and XML and will provide the richest Web Viewer experience. Because the client side is simply a Web browser, most organizations will not have to deploy any software to client machines in order to utilize the Web Viewer.</p>
ELM Server Objects	
Term	Description
Agent	<p>A system monitored by an ELM Server, or a system that transmits messages to an ELM Server.</p> <p>There are three types of Agents: Service Agents, Remote Agents and Remote IP Agents.</p>
Service Agent	<p>The Service Agent process (tntagent.exe) and supporting modules. This component executes Monitor Items, collects data, transmits collected data to the ELM Server, and executes Actions.</p> <p>Service Agents run as a service on the monitored Agent. Service Agents are required in order to monitor health and performance in real-time. Service Agents can only be run on Windows NT, Windows 2000 and Windows XP computers.</p>

Remote Agent	<p>Remote Agents are also called <i>Agentless</i> because unlike a Service Agent, nothing is installed on the system being monitored.</p> <p>The actual monitoring functions for a Remote Agent execute within the ELM Server Process. As a result, Remote Agents cannot be monitored in real-time. In addition, Remote Agents add overhead to the ELM Server process (~10MB per Remote Agent, depending on what Monitor Items are used).</p>
Alert	<p>A special type of event that can be generated from a Monitor Item or by the Alert Notification Method. Alerts are stored in the TNTAlerts database and displayed in the Alerts container within the ELM Console. By design, all entries in the TNTAlerts database are displayed in the Alerts container.</p> <p>Although you can change what columns are displayed in the Alerts container, you cannot filter or limit the number of Alerts displayed, unless you delete an Alert. Deleting an Alert from the Alerts container also permanently deletes the Alert from the ELM Server database.</p>
Event Filters	<p>Event Filters are displayed within the Event Filter container within the ELM Console. Event Filters are used to process incoming events to determine whether or not the event should cause a Rule to execute a Notification Method.</p> <p>Event Filters can be used to isolate a single event or specific set of events, or to isolate all events except for a single event or specific set of events. You can create an unlimited number of Event Filters.</p>
Event	<p>An event can be a single record from a Windows event log, an SNMP trap, a Syslog message or an Alert from an ELM Agent.</p>
Monitor Item	<p>A Monitor Item is the individual thing being monitored. Monitor Items are displayed within the Monitor Item container in the ELM Console. Monitor Items watch for conditions and thresholds, collect data, check Agent, system and application availability and verify quality of service.</p>
Notification Methods	<p>Notification Methods are used to notify administrators/end-users or take corrective action. Notification Methods are displayed within the Notification Method container of the ELM Console.</p> <p>The ELM Server has a rich notification engine that can execute a variety of Notification Methods. You can use beeps and sounds, electronic mail, numeric and alphanumeric pagers, SNMP traps, Syslog messages and scripts as Notification Methods.</p>
Performance Data	<p>Performance Data refers to the Performance Objects and Performance Object Counters that are displayed in the Performance Data container within the ELM Console. Performance Objects are published by the operating system, but software applications and by hardware devices.</p> <p>Performance Counters can be monitored for thresholds and collected for capacity planning purposes. You can also import performance counters for monitoring and collection from any Windows NT, Windows 2000 or Windows XP computer.</p>
Reports	<p>Reports refer to report objects that perform database queries and return the results in a pre-designed format. The ELM Server includes a report engine that enables administrators/end-users to create reports without requiring any additional software.</p> <p>Reports are displayed in the Reports container within the ELM Console. Reports can be generated both on an ad hoc basis and at periodic intervals, and output to a variety of formats.</p>
Rules	<p>Rules link Event Filters with Notification Methods. When one or more Event Filters assigned to a Rule are matched, the Notification Method(s) assigned to the Rule is/are executed. Rules are displayed in the Rules container within the ELM Console. Each Rule can have multiple Event Filters assigned to it, and each Rule can trigger multiple Notification Methods.</p>

Other Terms	
Term	Description
Actions	<p>Actions are a form of notification that is executed by a Monitor Item. As a result, Actions occur outside of the ELM Server's notification engine.</p> <p>There are four Actions that can be executed: generate Alert, generate application event log entry, send a Network Pop-up Message or execute a script.</p>
Quality of Service (QoS)	<p>Quality of Service deals with response times. It is a level of monitoring above general availability. Determining that a critical service or application is available is only one part of proactive monitoring. Ideally, you should also monitor the responsiveness or quality of service of your critical business applications.</p> <p>Many Monitor Items include quality of service monitoring that enables you to generate warning events or take corrective action when an Agent, TCP port or TCP/IP-based application does not respond within the quality of service threshold.</p>
Wizards	<p>Creating new objects in ELM is accomplished through the use of Wizards. Each Wizard takes the administrator/end-user step-by-step through the creation of an object. Wizards are used to reduce the learning curve for ELM and increase usability.</p> <p>Wizards are launched whenever new object creation is invoked from within the ELM Console. At the end of each Wizard is an option to re-run the Wizard to create additional objects, making multiple object creation quick and easy.</p>

ELM Performance Manager

Planning and Server Sizing

Before installing and using ELM Performance Manager, it's a good idea to spend some time planning your architecture. You'll want to consider the following questions:

Which performance counter data do you want to collect? Windows NT, Windows 2000, and Windows XP provide extensive performance monitoring capabilities. On a typical server there are hundreds of different performance metrics that can be collected and analyzed. Many applications extend the list of published performance counters by including their own application-specific objects and counters. ELM Performance Manager comes with several pre-defined performance data collections sets, and you can create your own custom collection sets.

How frequently do you want to collect data? Data can be collected in real-time (every second), or at periodic intervals. The frequency of data collection is directly related to both resource consumption (overhead) and database size. The more frequently you collect data, the higher your resource utilization and the larger your database becomes (unless you utilize the built-in aggregation/pruning features).

Which database platform do you want to use? You can choose from Microsoft SQL Server, Microsoft Access, and Oracle for storing events, Alerts, Knowledge Base Articles, and performance data. While Microsoft Access supports databases up to 2 GB in size, if you anticipate your database growing beyond 500 MB, we recommend using Microsoft SQL Server or Oracle.

Which notification methods work best for you? You might choose to send non-critical alerts by e-mail, and critical events by network message or pager. You can even use custom batch files as a notification method, which allows you to take action when a critical event occurs (such as restarting a failed service).

What Type(s) and Class(es) of Agents do you want to use? ELM Performance Manager provides two primary types of Agents: a Service Agent and a Remote Agent. Providing both Agent-based and Agentless monitoring enables you to tailor your architecture to suit your organizational needs. ELM Performance Manager Agent's are licensed according to class:

- Cluster Agent - Windows NT and Windows 2000 cluster nodes
- Server Agent - Windows NT Server, Windows 2000 Server and Windows 2000 Advanced Server
- Workstation Agent - Windows NT Workstation, Windows 2000 Professional, Windows XP Professional

Networking and Security

Understanding how your network resources perform is essential to healthy network management. During the planning stage, some thought should be given as to how ELM Performance Manager will fit into your network. At a minimum, your network will have to meet certain requirements:

Name Resolution

Healthy name resolution is essential to a trouble-free network. A thorough understanding of the name resolution methods used by Windows operating systems is essential to optimizing network resources. An unreliable name resolution system can create the appearance of slow or unreliable network applications. ELM Performance Manager uses TCP/IP to communicate and depends on the operating system and configured name resolution (e.g., WINS and/or DNS).

Security

ELM Performance Manager uses integrated Windows Security (NTLM or Kerberos depending on the Server and Agent OS) for authenticating users. Some of the functions simply won't function (such as killing a task or managing services) unless you have administrative rights on the computer being monitored. ELM Performance Manager also supports object and item-level security through the snap-in UI. This means that you can apply Windows Access Control Lists (ACLs) to an object in your ELM Performance Manager hierarchy.

DCOM Permissions

Communication between the ELM Server and the ELM Console, and between the ELM Server and a Remote Agent is all DCOM-based. At each endpoint (ELM Server, ELM Console and Remote Agent), the ELM Server service account requires DCOM **Allow Access** permission. In addition, on each ELM Console, the account for the administrator using the ELM Console also requires DCOM **Allow Access** and DCOM **Allow Launch** permission.

Firewalls and Port Blocking

Because communication between an ELM Server and an ELM Console, or between an ELM Server and a Remote Agent, is COM-based, TCP port 135 (RPC endpoint mapper) needs to be open between the communicating end-points. In addition, DCOM also uses RPC dynamic port allocation. By default, RPC dynamic port allocation randomly selects port numbers above 1024. You can control which ports RPC dynamically allocates for incoming communication and then configure your firewall to confine incoming external communication to only those ports (and TCP/UDP port 135). For more information on DCOM and firewalls, see Microsoft's White Paper [Using DCOM with Firewalls](#). MSDN users can find this article [here](#).

Communication between an ELM Server and a Service Agent occurs over raw TCP/IP sockets. By default, the ELM Server listens on TCP port 1451 and the Service Agent listens on TCP port 1453.

System Requirements

ELM Performance Manager 3.0 has the following **minimum** System Requirements:

ELM Server

The ELM Server can only be installed on a system that meets or exceeds the following specifications:

Operating System

- Windows NT 4.0 Workstation w/SP6a or later
- Windows NT 4.0 Server/Enterprise w/SP6a or later
- Windows 2000 Professional
- Windows 2000 Server/Advanced Server
- Windows XP Professional

Software

- [Microsoft Data Access Components 2.6 w/SP1 or later](#)
- [Microsoft JET 4.0 Service Pack 3 or later](#)

Hardware

- Intel Pentium II-233Mhz (or equivalent x86 CPU) or higher
- 64MB memory + 3MB for each Service Agent
- 10MB of memory for each Remote Agent
- 50MB free disk space (does not include space consumed by database or backup config file)

DCOM Permissions

ELM Server service account requires Allow Access DCOM permissions

Network

TCP/IP

Note:

When using the ELM Server on Windows NT Workstation, Windows 2000 Professional or Windows XP Professional, you will be limited in the number of Agents you can monitor. These operating systems have a hard-coded limit of 10 inbound TCP/IP socket connections. Therefore, you cannot monitor more than 10 Agents when your ELM Server is running on one of these three platforms. This number is reduced further if you are running any other TCP/IP-based socket applications that require inbound socket connections to your ELM Server computer. In this event, you must use a Windows server family product.

The server-side of the Web Viewer component only runs on Internet Information Services 5.0 (Windows 2000) or Internet Information Services 5.1 (Windows XP).

ELM Console

The ELM Console can only be installed on a system that meets or exceeds the following specifications:

Operating System

- Windows NT 4.0 Workstation w/SP6a or later
- Windows NT 4.0 Server/Enterprise w/SP6a or later

Windows 2000 Professional
Windows 2000 Server/Advanced Server
Windows XP Professional

Software

[Microsoft Management Console 1.2 or later](#)

Hardware

Intel Pentium II-233Mhz (or equivalent x86 CPU) or higher
24MB memory

DCOM Permissions

ELM Console user requires DCOM Allow Launch and Allow Access permissions on the ELM Server computer

Network

TCP/IP

Service Agent

A Service Agent can only be installed on a system that meets or exceeds the following specifications:

Operating System

Windows NT Workstation 4.0 w/SP4 or greater
Windows NT Server 4.0 w/SP4 or greater
Windows NT Server 4.0 - Enterprise Edition w/SP4 or greater
Windows NT Server 4.0 - Terminal Server Edition w/SP4 or greater
Windows 2000 Professional
Windows 2000 Server/Advanced Server
Windows XP Professional

Network

TCP/IP

Remote Agent

A Remote Agent can be used to monitor a system that meets or exceeds the following specifications:

Operating System

Windows NT Workstation 4.0 w/SP4 or greater
Windows NT Server 4.0 w/SP4 or greater
Windows NT Server 4.0 - Enterprise Edition w/SP4 or greater
Windows NT Server 4.0 - Terminal Server Edition w/SP4 or greater
Windows 2000 Professional
Windows 2000 Server/Advanced Server
Windows XP Professional

Hardware

x86 or RISC (Alpha) platform

Network

TCP/IP

Web Viewer Client

The Web Viewer can be accessed using a supported Web Browser that meets or exceeds the following specifications:

Operating System

Windows 95 OSR2 or later
Windows 98 or later
Windows Me
Windows NT Workstation 4.0 w/SP4 or greater
Windows NT Server 4.0 w/SP4 or greater
Windows NT Server 4.0 - Enterprise Edition w/SP4 or greater
Windows NT Server 4.0 - Terminal Server Edition w/SP4 or greater
Windows 2000 Professional
Windows 2000 Server/Advanced Server
Windows XP Home Edition
Windows XP Professional

Software

Web browser with the following requirements:

XML parser
Javascript

Configuring the ELM Server Database

Out of the box, ELM creates a Microsoft Access database called ELM.MDB. Even if you cancel out of the Database Wizard that is launched during setup, an Access database called ELM.MDB will be created and used by the ELM Server.

When configuring ELM for SQL Server, MSDE or Oracle, you must first create an empty database to house the collected data. Thereafter, the appropriate tables and columns will be automatically created.

» To configure to the ELM Server for Microsoft SQL Server or MSDE:

1. Create an empty SQL Server or MSDE database.
2. Create a Windows or SQL Server user account and grant that account database owner (dbo) privileges to the database you created in Step 1.
3. Run the Database Configuration Wizard:
 - a. In the Windows 2000 Services MMC snap-in, double-click on the ELM Server service and navigate to the Database tab. If your ELM Server is running on NT 4.0, double-click the ELM applet in Control Panel.
 - b. Click the Launch Wizard button to launch the Database Connection Wizard. Click **Next** to continue past the Welcome screen.
 - c. The Database Type screen will appear. Use the drop-down list on this screen to select **Microsoft SQL Server**. Click **Next** to continue.
 - d. The Microsoft SQL Server screen will appear.
 - i. Enter the computer name for the SQL/MSDE Server containing the database you created in Step 1.
 - ii. Enter the name of the database you created in Step 1.
 - iii. Enter the username and password for the account you created in Step 2. If this is a Windows account, check the **Use Windows NT Authentication** checkbox. Click **Next** to continue.
 - e. The Database Wizard Completed screen will appear. Use the dropdown to specify the length of retention for collected events. By default, collected events

are kept in the database forever.

- f. Click **Finish** to save the database connection settings.

» **To configure the ELM Server for a new Access database:**

1. Create a blank Access database in Microsoft Access 2.0 or later format. If you do not have Access installed, or if you have not created a new Access database, you can use the System DSN creation wizard to create a new, blank Access database.
2. Run the Database Configuration Wizard:
 - a. In the Windows 2000 Services MMC snap-in, double-click the ELM Server service and navigate to the Database tab. If your ELM Server is running on NT 4.0, double-click the ELM applet in Control Panel.
 - b. Click the Launch Wizard button to launch the Database Connection Wizard. Click **Next** to continue past the Welcome screen.
 - c. The Database Type screen will appear. Use the drop-down list on this screen to select **Microsoft Access**. Click **Next** to continue.
 - d. The Microsoft Access Database screen will appear. Enter the path and filename you used for the database you created or specified in Step 1. You can click the **Browse** button to browse your file system for the path and filename. Click **Next** to continue.
 - e. The Database Wizard Completed screen will appear. Use the dropdown to specify the length of retention for collected events. By default, collected events are kept in the database forever.
 - f. Click **Finish** to save the database connection settings.

» **To configure the ELM Server for Oracle:**

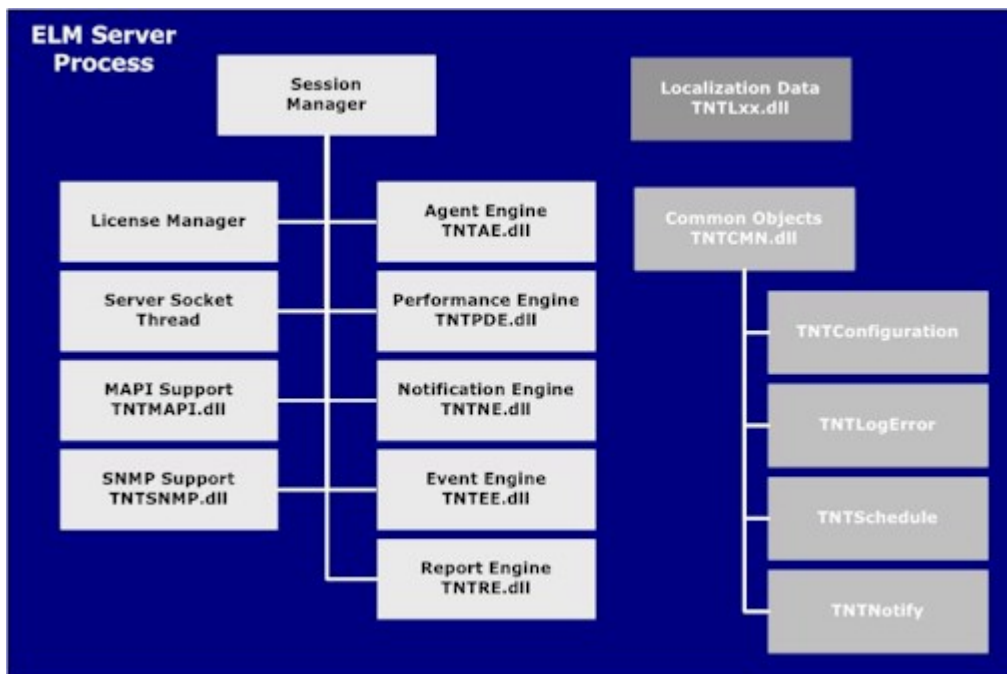
1. Create an empty database on your Oracle server.
2. Create a user account and grant that account database owner (dbo) privileges to the database you created in Step 1.
3. Create a System DSN on the ELM Server computer and configure it to use the database you created in Step 1.
4. Run the Database Configuration Wizard:
 - a. In the Windows 2000 Services MMC snap-in, double-click the ELM Server service and navigate to the Database tab. If your ELM Server is running on NT 4.0, double-click the ELM applet in Control Panel.
 - b. Click the Launch Wizard button to launch the Database Connection Wizard. Click **Next** to continue past the Welcome screen.
 - c. The Database Type screen will appear. Use the drop-down list on this screen to select **Oracle**. Click **Next** to continue.
 - d. The Oracle Database screen will appear. Enter the name of the DSN you created in Step 3. Enter the username and password you created/used in Step 2.
 - e. Click **Next** to continue.

- f. The Database Wizard Completed screen will appear. Use the dropdown to specify the length of retention for collected events. By default, collected events are kept in the database forever.
- g. Click **Finish** to save the database connection settings.

ELM Performance Manager Architecture

ELM Server

The ELM Server process is a 32-bit, multi-threaded, COM-based application that runs as a service on Windows NT, Windows 2000 and Windows XP computers. This process is implemented as a set of engines and other components that provide a variety of functions, as shown in the following illustration:



Session Manager

The Session Manager manages the state of the ELM Server. In addition, when an ELM Console is communicating with an ELM Server, it is communicating via the Session Manager. This is all COM-based communication.

Agent Engine

The Agent Engine contains the non-performance related Monitor Items. In addition, the Agent Engine manages the COM objects that represent each Agent.

Performance Engine

The Performance Engine contains the performance-related Monitor Item. In addition, it includes the list of all performance objects and counters that are displayed in the Performance Data container within the ELM Console.

Notification Engine

The Notification Engine executes all notification methods. It manages both the COM objects that represent the Notification Methods, as well as the Notification Method job queue.

Event Engine

The Event Engine manages all of COM objects that represent Event Filters, all Alerts, and Rules. In addition, it also executes and maintains both the SNMP and Syslog receiver threads.

Report Engine

The Report Engine manages all of the COM objects that represent all Reports. In addition, it manages a Report Job Queue (for scheduled reports). The Report Engine also creates, manages and maintains the database used by the ELM Server. It also manages report editing, and handles both running and previewing reports.

License Manager

The License Manager maintains current licensing state. The License Manager provides license information to the Agent Engine to ensure that the proper types of Agents are licensed, and that the proper Monitor Items are available to each Agent. It also provides information to the Event Engine to facilitate the licensing of IP Agents that transmit SNMP Traps or Syslog messages to the ELM Server.

Server Socket Thread

This thread is responsible for TCP two-way socket-based communication with all Service Agents. In addition to establishing outbound communication with a Service Agent, this thread also listens for inbound communication from an ELM Agent. This thread is also responsible for reporting the current values of all of the ELM Server's published performance counters. The component of the thread that is responsible for reporting this data does not do anything unless and until something requests the data via the ELM Server performance library file.

MAPI Support

This component provides support for the MAPI Email Notification Method.

SNMP Support

This component provides support for the SNMP Trap and OID Notification Methods.

Common Objects

This component provides support for updating, managing and saving server configuration data, ELM Server logging, scheduled items, and actions that are triggered from Monitor Items.

Localization Data

This component provides support for non-U.S. English (localized) versions of Windows.

ELM Server Database Engine

ELM includes a built-in database engine that provides database support for a variety of platforms:

- Microsoft Access (runtime included)
- Microsoft SQL Server
- MSDE
- Oracle

In order for ELM to work with a database, you must install the Microsoft Data Access Components (MDAC) version 2.6 SP1 or later and JET 4.0 Service Pack 3. You can freely download both components from Microsoft's [Data Access web site](#).

ELM stores Alerts and collected Performance Data in its database. ELM includes a licensed runtime version of Microsoft Access that automatically creates an Access database for you. During Setup, a Wizard will launch that will step you through the creation of your database. By default, ELM will create an Access database called ELM.MDB that resides in the ELM program directory.

If you are using Microsoft SQL Server, MSDE, or an ODBC-compliant database, you must first create an empty database to house the collected data. Thereafter, the appropriate tables and columns will be automatically created.

ELM creates the following tables in its database:

TNTAlerts

All generated Alerts are stored in this table. All Alerts in this table are displayed in the Alerts container in the MMC snap-in. When you delete an Alert from this container, you are also deleting it from this table.

TNTErrLog

The ELM Server can be configured to log a variety of activity and error information. When you configure the Server to **Log to a Database**, the activity and error information will be stored in this table.

In addition to the above tables, any performance data that is collected will be stored in tables whose names begin with the letters **PD** and correspond to the performance object being collected. For example, if you were collecting the Process performance object and counters, the data would be stored in a table called **PDProcess**; if you collect the Memory objects and counters, the data is held in a table called **PDMemory**. ELM can aggregate (average) collected performance data on a weekly, monthly or quarterly basis. By aggregating your collected data, you can reduce the growth rate of your database.

Service Agents

ELM uses a **Service Agent** to monitor Windows NT, Windows 2000, and Windows XP computers in real-time.

A Service Agent can run on the following computers:

- Windows NT Workstation 4.0 w/SP5 or greater
- Windows NT Server 4.0 w/SP5 or greater
- Windows NT Server 4.0 - Enterprise Edition w/SP5 or greater
- Windows NT Server 4.0 - Terminal Server Edition w/SP5 or greater
- Windows 2000 Professional
- Windows 2000 Server/Advanced Server
- Windows XP Professional

Agents and Servers can have one-to-one or one-to-many relationships. A Server can monitor multiple Service Agents and a Service Agent can be monitored by multiple Servers. Each Service Agent maintains separate configuration, collection set and cache files for each Server that is monitoring it.

The Service Agent is comprised of a 32-bit, multithreaded executable called TNTAGENT.EXE, its companion DLLs and its configuration data. These files exist in the %systemroot%\TNTAgent and \Program Files\Common Files\TNT Software\ELM 3.0 folders on the monitored system. It runs as service under the LocalSystem account on each monitored system. Service Agents typically consume about 7-15MB of memory, and less than .1% of the overall CPU time on the monitored system. The amount of resources actually consumed depend on the number of Monitor Items applied to the Agent, the frequency at which those Monitor Items are executed, and the amount of data generated by or being collected from the monitored system.

Service Agents create files in the TNTAgent folder that contain configuration data and cache information:


File Name	Description
TNTAgent.dat	Agent configuration data

If the communication or connectivity between the Service Agent and the ELM Server are interrupted, or if the ELM Server is down for any reason, the Agent will go into Cache Mode. In Cache Mode, the Agent will cache up to 10MB of data.

File Name	Description
SERVER-XXX.CACHE	Event cache file (where SERVER is the name of the ELM Server(s) monitoring the Agent and XXX represents the three character product edition: ELM Enterprise Manager - EEM, ELM Log Manager - ELM, and ELM Performance Manager - EPM).

This cache file will be located in one of two places:

- If the Agent has an ELM Server or an ELM Console installed, the cache file will reside in the \Program Files\Common Files\TNT Software\ELM 3.0 folder.
- If the Agent does not have an ELM Server or an ELM Console installed, the cache file will reside in the TNTAgent folder.

 **Note**

Agents monitored by multiple ELM Servers may not go into cache mode for all Servers at the same time. The cache mode behavior on an Agent monitored by multiple Servers will depend on the nature of the communications disruption. For example, if one of the ELM Servers is down for maintenance, the Agent will go into cache mode for that ELM Server only. The Agent will only go into cache mode for those ELM Servers with which it cannot communicate.

Also note that disabling an Agent or its Monitor Items does not put it into cache mode. This means that data transmitted by the Agent after re-enabling an Agent is not cached data and will therefore trigger applicable Rules and Notification Methods.

Windows-based Monitor Items that can be used for Service Agents include:

Performance Alarm

Performance Alarms monitor performance objects, counters and instances and can generate a variety of Notification Methods when a counter or instance of a counter is greater than, less than or equal to your specified threshold for your specified duration. You can use this monitor item on Windows NT, Windows 2000, and Windows XP.

Performance Data Collection Set

This Monitor Item is used to collect and store performance data from Windows NT, Windows 2000, and Windows XP computers. A Collection Set is a group of performance counters that are collected at the same time. You can use multiple Performance Data Collection Sets that contain different groups of counters, or a single Performance Data Collection Set that contains all of the counters you want to collect.

Process Monitor

If you need to monitor individual processes, you can do so with a Process Monitor. The Process Monitor is multi-functional; it can let you know when a process has exceeded the threshold of CPU usage you specify, and it can track when processes are instantiated or terminated.

WMI Monitor

If you are using Windows Management Instrumentation--the Microsoft implementation of Web-Based Enterprise Management (WBEM)--you can use WMI Monitors to query a WMI namespace and database. If the results of the query change, a variety of notification options can be executed.

Remote Agents

To monitor a TCP/IP system or device, or to monitor a Windows NT, Windows 2000, or Windows XP computer without installing any additional software, you can use a **Remote Agent**. Using a Remote Monitor is called *Agentless* monitoring because no Agent code is installed on the monitored system. Because Agent code is not used on the monitored system, this will add overhead to your network. However, this scenario is advantageous when you do not want to install any software on the monitored system in order to keep tabs on it.

Remote Agents are not monitored in real-time. Instead, the ELM Server periodically executes the Windows-based Monitor Items listed below against a Remote Agent.

- **Performance Alarm**
- **Performance Data Collection Set**
- **Process Monitor**
- **WMI Monitor**

User Interface

The user interface to the ELM Server is called the ELM Console Snap-In, or simply the ELM Console. ELM uses the Microsoft Management Console (MMC) framework to host its primary user interface. The ELM Console is implemented as a standalone snap-in that requires [MMC 1.2](#) or later to operate. You can add multiple snap-ins if you have more than one ELM Server in your organization. You can use the ELM Console snap-in as a standalone application, or you can add native operating system and third-party snap-ins. By combining all of your snap-ins into a single MMC console, you can manage your network and infrastructure using single-seat administration.

The ELM Console provides the user interface to the ELM Server. The left pane of the Console contains the console tree, also known as the Scope pane. This tree displays the ELM hierarchy. The ELM Server, which resides at the top of the snap-in hierarchy, is your workspace within the ELM Console. The right pane of the Console is the details pane, also known as the Results pane. When you select an item in the console tree, the contents of the details pane will change to reflect the item you selected.

The ELM Console uses both standard views and Taskpad views for the Results pane in the ELM Console. Standard views are explorer-like views of objects and items. Taskpad views are also explorer-like, but also provide the ability to add shortcuts to functions (tasks) from inside and outside a given console. The Taskpad views include shortcuts for the most common functions in the ELM Console, such as starting Wizards, updating Agents, and so forth. You can modify the existing Taskpad views, or create additional custom Taskpad views that contain the desired tasks. For more information on creating or modifying Taskpad views, refer to the Microsoft Management Console Help file.

Important

You cannot select multiple items in a Taskpad view. Attempting to do so will cause an error message to appear. In order to select multiple items, you must switch to the standard view for the results pane in the ELM Console.

The ELM Console provides a logical container-based representation of the ELM Server Objects you can configure:

Agents. The ELM Server communicates with **Service Agents, Remote Agents** and **IP Agents**. ELM Agents monitor Windows NT, Windows 2000 and Windows XP event logs, system services, performance data, and active processes and forward information to one or more central ELM Servers.

Alerts are displayed in the Alerts container, and are visible from any ELM Console. Alerts can be generated by both Actions and Notification Methods.

Event Filters are used to isolate one or more specific events. Event Filters provide a mechanism for selecting a subset of all events. Using wild cards and Boolean logic, the filter will identify an

event or group of events. Any number of Event Filters can be combined to create a complex set of events. By using wildcards and Boolean operators, the Administrator does not have to be familiar with every event log message.

Monitor Items are individual items that you want to monitor. For example, to monitor the event logs on Windows NT, Windows 2000, or Windows XP, you would use an Event Monitor. If you want to monitor services, you would use a Service Monitor.

Notification Methods are the ways you would want to be notified of events that occur. You can have separate methods for various event categories, or separate methods for various application events. For example, you could have one method that describes how to notify a database administrator about important database related events, and another method for notifying a security administrator about important security related events.

Rules are used to take action when a specific event, alarm or condition occurs. A Rule combines any number of Notification Methods with any number of Event Filters to create a procedure for notifying an administrator when important events occur, for taking corrective action, or both.

Performance Data is used to display the various performance objects, counters and instances that can be monitored and collected.

Reports are used for reporting against the collected data in your database (Performance Data or Alerts). ELM includes a robust reporting engine and provides you with a Wizard-based interface for creating reports on the fly, and for scheduling reports to run at a specified time.

ELM also uses Wizard-based technology to step you through the most commonly performed tasks.

Wizards can be run from a variety of places, including context menus and within other Wizards.

Web Viewer

The Web Viewer provides a read-only view of your ELM Server data. In addition to viewing information, you can also enable and disable items, and view reports that have been saved and output in HTML format.

During installation of the ELM Server, you are presented with an option to automatically create an ELM virtual directory on the ELM Server. If your IIS server is running multiple Web Sites (also known as Virtual Web Servers), you can select which Web Site you want to contain the ELM virtual directory. The virtual directory should point to the WebSite directory on your ELM Server (by default, C:\Program Files\TNT Software\ELM30\WebSite).

The Web Viewer provides access to the following items:

- Agents
- Alerts
- Event Filters
- Notification Methods
- Performance Data
- Reports
- Rules

The Web Viewer is implemented as a set of COM objects within Active Server Pages (ASP) documents. It uses the Extensible Markup Language (XML) as the transport mechanism for the data, making it lightweight and fast, and XSL (XML Styles) to format the data's appearance.

The Web Viewer can be installed on Internet Information Server/Services 4.0, 5.0, and 5.1. Integration with IIS means that you can secure the Web Viewer from unauthorized use. In addition, you can control the name of the virtual directory, the port, and other properties. The Web Viewer server components must run on the ELM Server computer.

Once installed on the server, you can access the Web Viewer by pointing your Web browser at the virtual directory (by default EEM30). For example, to access the Web Viewer on a server names EARTH, you would point your Web browser to **http://earth/eem30**.

Installation

Installing the ELM Server

Installing the **ELM Server** is a relatively easy and straightforward process. Once you've determined that your system meets the minimum requirements as previously described, you can begin your installation by performing the actual installation of the application.

ELM is distributed electronically from TNT Software's Web site (<http://www.tntsoftware.com>). It is packaged into a self-extracting executable that will launch the setup process when executed. It is packaged into a self-extracting executable that will launch the setup process when executed:

Windows 2000 and Windows XP, as well as Windows NT computers with the Windows Installer service installed can use the Microsoft Installer package (MSI package). Windows NT computers without the Windows Installer service require the EXE package. You can download the Windows Installer for both NT 4.0 and Windows 2000 from [Microsoft](#).

» To Install the ELM Server:

1. Double-click the MSI or EXE file you downloaded to execute it. The Setup Wizard will launch.
2. Click Next to continue. The License Agreement screen will appear.
3. Select I accept the license agreement and click Next to continue. The ReadMe Information screen will appear.
4. Read the contents of the ReadMe file and click Next to continue. The Select Features screen will appear.
5. Select the feature(s) you want to install. When selecting the Server or Console components, you can use the Browse button to choose the destination folder. Use the Disk Cost button to check available disk space. Click Next to continue. The User Information screen will appear.
6. Enter the Company Name and Serial Number as it appears on your SLA. If this is an evaluation version, enter the Company Name and leave the Serial Number field set to Evaluation. Select the option that says Anyone who uses this computer and click Next to continue. If this is an evaluation version, the expiration date will be displayed when you click Next. If this is a non-eval version, a confirmation dialog will appear when you click Next.
7. Click Next to continue, and click OK to clear the dialog message that appears. The Service Account Logon screen will be displayed.
8. In the Username field, enter the account you want to use for the service account. This account must have administrative rights on the ELM Server, on all Service Agents, and on all Windows-based Remote Agents. Enter the password for this account in the Password and Verify Password fields.

9. Click Next to continue. If the account specified in the preceding step does not already have Log on as a Service rights on the ELM Server, the Setup process will grant this right to the account.
10. If IIS is installed, the Web Site Name screen will appear. If you wish to install the Web Viewer component, leave the Create the ELM Web Site virtual directory on this computer checkbox checked. Leave the default Alias set to EEM30. Select the Default Web Site and click Next to continue. Note: if you do not create the Web Viewer virtual directory during the initial install of ELM, you will need to create the virtual directory manually.
11. The Ready to Install the Application screen will appear.
12. Click Next to continue. Setup will copy the files to the target destination, register its components, install the ELM Server service and launch the Agent Installation Wizard.
13. Click Next to continue. Note: If you are presented with the Upgrade Previous Version dialog box instead of the Agent Installation Wizard, clear all of the checkboxes on this dialog box and click Next to continue. Once the file copy process has completed, the Database Connection Wizard will launch.
14. Click Next to proceed past the Wizard's Welcome screen. The Database Type screen will appear. Using the Database Type dropdown, select the type of database you want to use.
15. Click Next to continue. The next screen depends on what database type you selected:
 - If you select Microsoft Access, the Microsoft Access screen will appear. Select the path and filename for the Access database you want created. By default, a database called ELM.MDB will be created in the ELMServer directory. To accept this default, click Next. To change the database name or location, enter the path and filename you want to use, or use the Browse button to browse for the path. Click Next to continue.
 - If you select Microsoft SQL Server, the Microsoft SQL Server screen will appear. Enter the Computer Name of the SQL Server, the database name and the username and password for an account that has database owner (dbo) rights on the SQL Server database you created. Click Next to continue.
 - If you select Oracle, the Oracle Database screen will appear. Enter the name of the System DSN you created. Enter the username and password for an account that has database owner (dbo) rights on the Oracle database you created. Click Next to continue.
16. Click Finish to complete the Database Connection Wizard.
17. Click Finish to complete Setup.

Installing the ELM Console

Installing the **ELM Console** is a relatively easy and straightforward process. Once you've determined that your system meets the minimum requirements for installation, you can begin your installation by performing the actual installation of the application.

ELM is distributed electronically from TNT Software's Web site (<http://www.tntsoftware.com>). It is packaged into a self-extracting executable that will launch the setup process when executed. It is packaged into a self-extracting executable that will launch the setup process when executed:

Windows 2000 and Windows XP, as well as Windows NT computers with the Windows Installer service installed can use the Microsoft Installer package (MSI package). Windows NT computers without the Windows Installer service require the EXE package. You can download the Windows Installer for both NT 4.0 and Windows 2000 from [Microsoft](#).

» To Install the ELM Console:

1. Double-click the file you downloaded to execute it. The Setup Wizard will launch.
2. Click Next to continue. The License Agreement screen will appear.

3. Select I accept the license agreement and click Next to continue. The ReadMe Information screen will appear.
4. Read the contents of the ReadMe file and click Next to continue. The Select Features screen will appear.
5. Select the Server component and choose Entire feature will be unavailable. Make sure just the Console component is selected.
6. Click Next to begin the install process.
7. Click Finish to complete the install process.

Installing Service Agents

In order to monitor systems in the most efficient manner possible, ELM uses a **Service Agent**. The Service Agent is a 32-bit, multithreaded application. It consists of an executable called TNTAgent.exe, dynamic link library files (DLLs), and support files which reside on the monitored system. The default installation path is **%systemroot%\TNTAgent**. The TNT Agent service runs under the LocalSystem account on each monitored system. There is absolutely no reason to ever use a service account for the Service Agent service.

You can use the ELM Console to install Service Agents remotely, or you can install them manually on the target machine. Service Agents are only used for monitoring Windows NT, Windows 2000, and Windows XP systems; if you are monitoring a computer with an Alpha or RISC processor, a different OS or device that uses TCP/IP, or if you do not wish to install software on the monitored system, you can use a **Remote Agent** or an **IP Agent**.

Note:

In order to install a Service Agent, you must have administrative rights on the monitored system. ELM will attempt to install the Service Agent using your current credentials (e.g., the account you're logged on with); if this account does not have administrative rights on the Service Agent, a **Connect As** dialog will appear that will allow you to specify an alternative account and password.

» To install a Service Agent:

1. Right-click on the Agent container in the ELM Console snap-in and select New | Agent. The Agent Installation Wizard will launch. If necessary, click **Next** to continue.
2. From the dropdown, select **Service Agent** and click **Next** to continue.
3. Enter the **name** or **IP address** of the system you want to monitor. Click the **Browse** button to browse your network if you are unsure of the computer's name. Click **Next** to continue.
4. Using the dropdown, select **Service Agent**. Click **Next** to continue.
5. Modify the **Categories** field as desired, or leave the default entries. Click **Next** to continue.
6. In the **Listen on TCP Port** field, enter the TCP port on which you want the Agent to listen. Service Agents communicate with the ELM Server over TCP/IP sockets. By default, Service Agents listen on TCP port 1253. You can change

the port used by the Agent by selecting an alternative TCP port. Use the **Test** button to verify that the port is available.

7. Click **Next** to continue. If there are no monitor items configured, click **Finish** to complete the Wizard. If there are monitor items, the **Select Monitors** dialog will appear. In this event, click on each Monitor Item you want applied to this Service Agent. To create a new Monitor Item, right-click in the white space in this dialog and select **New Monitor Item**. Click **Next** to continue. Click **Finish**.
8. Click **OK** to acknowledge the Agent installation. When prompted to install another Service Agent, click **No**.

The Agent executable, companion DLL files and configuration data will have been copied to the target computer. A service called the TNT Agent will be installed and started, and real-time monitoring of the Service Agent will commence.

Installing Service Agents Remotely

If the Agent you want to monitor it on the other side of a firewall, in a DMZ environment, or located in an environment that restricts the use of NetBIOS and DCOM/RPC endpoint ports, you can use the Setup package to install an Agent on the remote system and then use the Agent UI to register the Agent with the ELM Server and select monitor items for the Agent.

ELM is distributed electronically from TNT Software's Web site (<http://www.tntsoftware.com>). It is packaged into a self-extracting executable that will launch the setup process when executed:

Windows 2000 and Windows XP, as well as Windows NT computers with the Windows Installer service installed can use the Microsoft Installer package (MSI package). Windows NT computers without the Windows Installer service require the EXE package. You can download the Windows Installer for both NT 4.0 and Windows 2000 from [Microsoft](#).

» To install a Service Agent remotely:

1. Copy the ELM Setup package to the target computer, and execute the file to begin the install.
2. The Installation Welcome screen will appear. Click **Next** to continue.
3. The License Agreement screen will appear. Read the license agreement and indicate your acceptance of its terms by selecting **I accept the license agreement**. Click **Next** to continue.
4. The ReadMe Information screen will appear. Read the contents of the ReadMe file and click **Next** to continue.
5. The Select Features screen will appear:
 - Click Server and choose **Entire feature will be unavailable**.
 - Click Console and choose **Entire feature will be unavailable**.
 - Click Agent and choose **Will be installed on local hard drive**.
6. Click **Next** to continue, and then **Next** one more time to initiate installation.
7. The Agent executable and support files will be installed. When the installation has completed, click **Finish** to exit the setup application.
8. Navigate to the install path for the Agent (by default it is %systemroot%\TNTAgent). Execute **TNTAgent.exe**.
9. The Agent user interface (UI) will appear. On the menu, choose **Service Manager | Install as a Service**. You will see a status message that says **Agent (TNTAgent) installed**.

10. Choose **Service Manager | Start** to start the TNT Agent service.
11. Choose **File | Register Server**. The **Connect to Server** dialog box will appear.
 - In the **Name** field, enter the host name, IP address or fully-qualified domain name for the ELM Server you want to register. If desired, click the **Browse** button to browse the network for the ELM Server you want to register.
 - In the **Port** field, enter the TCP port on which the ELM Server is listening. By default, ELM Servers listen on the following TCP ports:
 - ELM Enterprise Manager - TCP Port 1251
 - ELM Log Manager - TCP Port 1351
 - ELM Performance Manager - TCP Port 1451

Note:

The name field may already be filled in with an Agent name that contains :EEM (or something similar) after it. The :EEM is a visual cue that indicates the product you are running. ELM Performance Manager users will see :EPM and ELM Log Manager users will see :ELM. When these descriptors are used, the Register Server Wizard will assume the default ELM Server port is being used, and attempt to communicate with the ELM Server on that port. If you are not using the default ELM Server port, do not use a product descriptor, and specify the port you are using.

12. Click **Next** to continue. The Select Monitors dialog box will appear. Put a check in the box to the left of each Monitor Item you want to assign to this Agent. You can view the properties of any Monitor Item by right-clicking the item and selecting **Properties**.
13. Click **Finish** to save the Agent settings and ELM Server registration. You should see a status message that says **Data sent to SERVER, message 0x4c8**, where SERVER is the name of your ELM Server. Also, a file called TNTAgent.dat will be created in the TNTAgent folder. This file contains the Agent configuration settings.

Installing Remote Agents

ELM can monitor Windows NT, Windows 2000, and Windows XP computers without having to install a Server Agent. The ELM Server polls Remote Agents to collect data and monitor them. Because Agent code is not used on the monitored system, this will add overhead to your network. However, this scenario is advantageous when you do not want to install any software on the monitored system in order to keep tabs on it. Remote Agents require administrative privileges on the system being monitored. If the ELM Server Service Account has the appropriate administrative rights on the monitored system, you can use that account. Otherwise, select a Custom Account that has administrative rights on the monitored system. You can use the Test button to validate the account's permissions on the Remote Agent.

Note:

In order to use a Remote Agent for a Windows-based system, you must provide an account with administrative rights on the monitored system. If the account you specify does not have administrative rights on the Remote Agent, you will not be able to monitor it.

» To install a Remote Agent:

1. Right-click on the Agent container in the ELM Console snap-in and select New | Agent. The Agent Installation Wizard will launch. If necessary, click **Next** to continue.
2. From the dropdown, select **Remote Agent** and make sure the **IP Agent** checkbox is not checked. Click **Next** to continue.
3. Enter the **name** or **IP address** of the system you want to monitor. Click the **Browse** button to browse your network if you are unsure of the computer's name. Click **Next** to continue.
4. Modify the **Categories** field as desired, or leave the default entries. Click **Next** to continue.
5. Click **Next** to continue. If there are no monitor items configured, click **Finish** to complete the Wizard. If there are monitor items, the **Select Monitors** dialog will appear. In this event, click on each Monitor Item you want applied to this Service Agent. To create a new Monitor Item, right-click in the white space in this dialog and select **New Monitor Item**. Click **Next** to continue. Click **Finish**.
6. Click **OK** to acknowledge the Agent installation. When prompted to install another Remote Agent, click **No**.

The Remote Agent will be added to the list of monitored systems, and the selected Monitor Items for this Remote Agent will be executed according to their settings.

Pre-Configured Items

ELM Performance Manager includes several pre-configured items, many of which are ready for immediate use. The table below lists the pre-configured items and their purposes. The pre-configured items are there to provide some functionality out of the box, and to provide examples of how to configure various things. You do not need to use pre-configured items. You are free to modify and/or delete them and create your own objects and items.

Items are stored in the various containers that are shown in the left-hand (scope) pane of the ELM Console. Some items are set as defaults, which means that they are automatically applied to any associated new items that get created. For example, the Ping Monitor is set as a default item. This means that every time you add a new Agent, the Ping Monitor will be automatically assigned to the new Agent. Finally, some items are enabled and some are disabled.

The table below details the pre-configured items that ship with ELM Performance Manager, including container location, whether or not the item is set as a default, and (where applicable) whether or not the item is enabled.

Container	Item Type	Name	Description	Default Selection	Enabled
Event Filters	Event Filter	All	All events from all event logs on all monitored Windows Agents	No	N/A
		ELM Agent Events	All events with a source of TNTAgent	No	
		ELM Agent Monitor Messages	All events generated by the Agent Monitor	No	
		ELM Monitor Errors	All errors or failures generated by an ELM Server or ELM Agent component	No	
		ELM Monitor Messages	All events generated by any Monitor Item	No	
		ELM Performance Alarm Messages	All events generated by the Performance Alarm	No	
		ELM Process Monitor Messages	All events generated by the Process Monitor	No	

	ELM Server Events	All events generated by an ELM Server	No
	ELM WMI Monitor Messages	All events generated by the WMI Monitor	No
	Errors	All error events	No
	Informational	All information events	No
	Warnings	All warning events	No

Monitor Items					
Monitor Items	Agent Monitor	Agent Monitor	Performs 'heartbeat' check on Service Agent every 10 minutes. Also checks for QoS response time of 10 seconds or less and restarts TNT Agent service if service is stopped	Yes	Yes
	Performance Alarm	Percent Free Disk Space <= 5%	Monitors to the LogicalDisk/% Free Disk Space counter every 15 minutes and generates an Alert when there is 5% or less of the total disk space free	No	No
		Available Memory <= 20MB	Monitors the Memory/Available MBytes counter every 15 minutes and generates an Alert when the amount of free memory in megabytes is 20 or less	No	No
		Disk Queue Length >= 3	Monitors the LogicalDisk/Avg. Disk Queue Length counter for all logical disks every 15 minutes and generates an Alert of the value is 3 or greater	No	No
	Performance Data Collection Set	Windows NT/2000/XP Disk	Collects all LogicalDisk and PhysicalDisk performance objects/counters every 30 minutes	No	No
		Windows NT/2000/XP Memory	Collects all Memory and Paging File performance objects/counters every 30 minutes	No	No
		Windows NT/2000/XP Networking	Collects all Network Interface, ICMP, NBT, Network Segment, UDP, TCP and IP performance objects/counters every 30 minutes	No	No

		Windows NT/2000/XP Processes	Collects all Process and Processor performance objects/counters every 30 minutes	No	No
		Windows NT/2000/XP System	Collects all System performance objects/counters every 30 minutes	No	No
	Process Monitor	Process Monitor	Inspect all processes except _Idle and _Total every 30 minutes for excessive CPU utilization. Generates warning Alert when CPU usage by any process exceeds 50% and error Alert when CPU usage exceeds 75%	Yes	Yes

Notification Methods	Alert	Generate an Alert	Generates an Alert event in the Alerts container within the ELM Console	No	No
	Beep	Error Beep	Play a beep noise on the ELM Server computer when an error event is received	No	Yes
		Warning Beep	Play a beep noise on the ELM Server computer when a warning event is received	No	Yes
	Mail	Sample Send SMTP Mail	An example of how to send an SMTP mail message for notification purposes	No	No
	Network Pop-up Message	Sample Network Pop-up Message	An example of how to send a network message to a Windows computer for notification purposes	No	No
	Play Sound File	Sample Play Foghorn Sound File	An example of how to play a WAV sound file on the ELM Server for notification purposes	No	No
	Post Web Form	Sample Post Web Form to PageNet	An example of how to use a web post form to send a message to a PageNet Nationwide Pager service subscriber	No	No
	SNMP	Sample Send SNMP Trap	An example of how to send an SNMP Trap to any SNMP-capable management system (including an ELM Server) for notification purposes	No	No
	Syslog	Sample Send Syslog Message	An example of how to send a Syslog message to any Syslog Server (including an	No	No

			ELM Server) for notification purposes		
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Performance Data	Performance Object	ICMP	ICMP Performance Object	N/A	N/A
		IP	IP Performance Object		
		LogicalDisk	LogicalDisk Performance Object		
		Memory	Memory Performance Object		
		NBT Connection	NBT Connection Performance Object		
		Network Interface	Network Interface Performance Object		
		Network Segment	Network Segment Performance Object		
		Paging File	Paging File Performance Object		
		PhysicalDisk	PhysicalDisk Performance Object		
		Process	Process Performance Object		
		Processor	Processor Performance Object		
		System	System Performance Object		
		TCP	TCP Performance Object		
		Thread	Thread Performance Object		
UDP	UDP Performance Object				

Reports	N/A	Daily Memory Utilization	Memory usage for the current day for Agents that have been assigned the Windows NT/2000/XP Memory Performance Data Collection Set	N/A	Yes
		Daily Process Utilization	Process usage for the current day for Agents that have been assigned the Windows NT/2000/XP Processes Performance Data Collection Set		Yes

		Daily Processor Utilization	Processor usage for the current day for Agents that have been assigned the Windows NT/2000/XP Processes Performance Data Collection Set		Yes
		Memory Utilization	Memory usage for Agents that have been assigned the Windows NT/2000/XP Memory Performance Data Collection Set		Yes
		Network - ICMP Statistics	ICMP usage for Agents that have been assigned the Windows NT/2000/XP Networking Performance Data Collection Set		Yes
		Network - IP Statistics	IP usage for Agents that have been assigned the Windows NT/2000/XP Networking Performance Data Collection Set		Yes
		Network - TCP Statistics	TCP usage for Agents that have been assigned the Windows NT/2000/XP Networking Performance Data Collection Set		Yes
		Network - UDP Statistics	UDP usage for Agents that have been assigned the Windows NT/2000/XP Networking Performance Data Collection Set		Yes

Rules	N/A	Errors	Uses Errors Filter and executes Error Beep Notification Method	N/A	Yes
		Warnings	Uses Warnings Filter and executes Warning Beep Notification Method		Yes