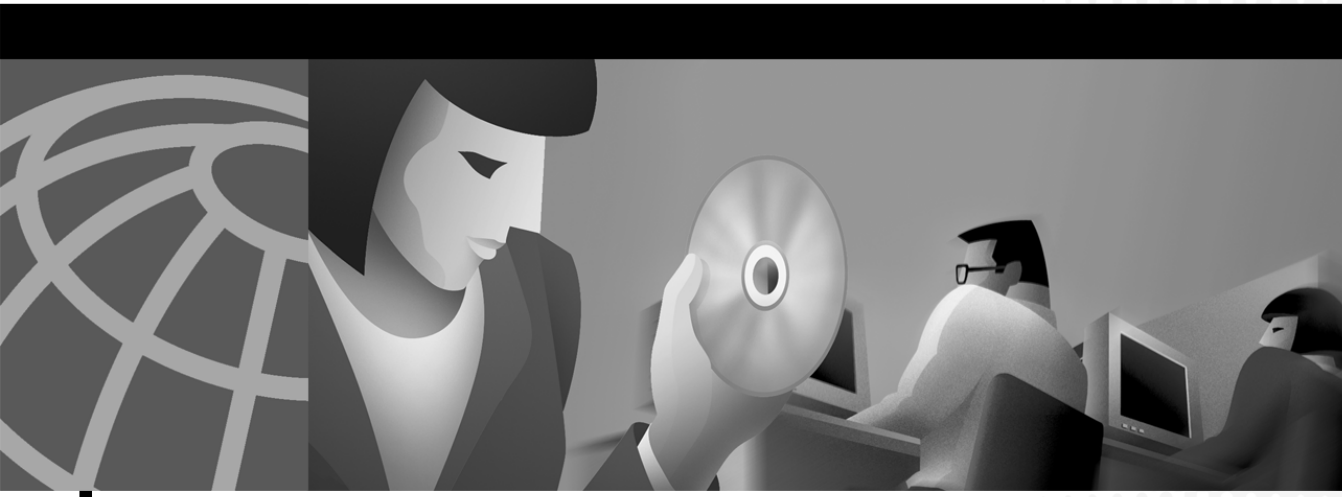

Cisco AlarmTracker Client User Guide

Version 2.0

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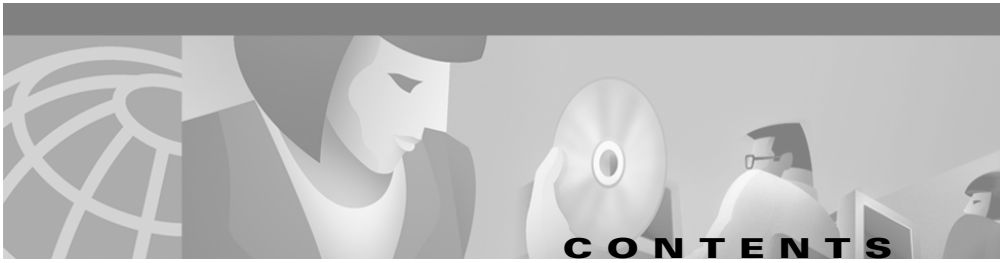

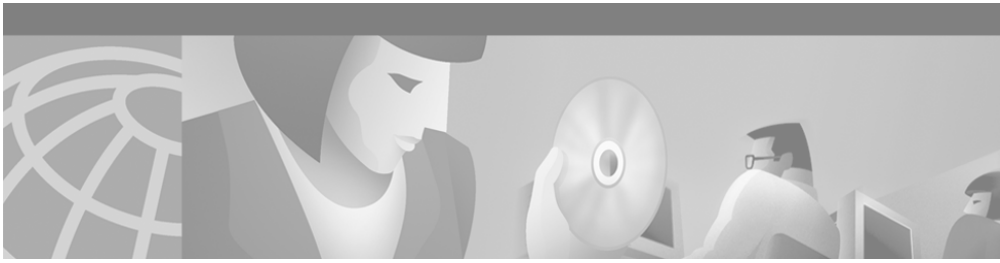

About This Guide

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

Audience

This publication is intended primarily for users of the AlarmTracker Client software. The user should have a general understanding of call center operations.

Organization

This document describes how to use the AlarmTracker Client application to monitor the status of Alarm objects being logged by the LGMapper servers.This guide contains the following chapters.

Chapter	Description
Chapter 1, “AlarmTracker Client Introduction”	Provides an introduction to the AlarmTracker Client application, Alarms, and Nodes.
Chapter 2, “Installing the AlarmTracker Client”	Includes a brief section on installation of the Client application although that topic is covered in more detail in the Remote Monitoring Administrator's Guide.
Chapter 3, “Getting Started”	Provides a general introduction to getting started with AlarmTracker Client. It describes how to connect to an LGMapper server and it provides general information on the usage of the AlarmTracker Client application.
Chapter 4, “AlarmTracker Client Menus”	Describes the AlarmTracker Client menus and menu options.
Chapter 5, “ToolBar”	Describes the AlarmTracker Client Toolbar.
Chapter 6, “StatusBar”	Describes the AlarmTracker Client StatusBar.
Chapter 7, “Tree View”	Describes the AlarmTracker Client Tree View.
Chapter 8, “Main View”	Describes the AlarmTracker Client Main View.
Chapter 9, “Grid View”	Describes the AlarmTracker Client Grid View.
Chapter 10, “EventsBar”	Describes the AlarmTracker Client EventsBar.
Chapter 11, “Current Node Bar”	Describes the AlarmTracker Client Current Node Bar.
Chapter 12, “Audible Alarms”	Describes configuring the AlarmTracker Client Audible Alarms.

Chapter	Description
Chapter 13, "Performance Tips"	Contains some tips on optimizing the performance of your AlarmTracker Client application.
Glossary	Contains terms commonly used in the AlarmTracker Client application.

Conventions

This manual uses the following conventions.

Format	Example
Boldface type is used for user entries, keys, buttons, and folder and submenu names.	Click **OK**.
Italic type indicates one of the following: • A newly introduced term • For emphasis • A generic syntax item that you must replace with a specific value • A title of a publication	• A *skill group* is a collection of agents who share similar skills. • *Do not* use the numerical naming convention that is used in the predefined templates (for example, **persvc01**). • IF (*condition, true-value, false-value*) • For more information, see the *Cisco ICM Software Database Schema Handbook*.
An arrow (>) indicates an item from a pull-down menu.	The Save command from the File menu is referenced as **File > Save**.

Other Publications

For additional information about Cisco AlarmTracker Client and Remote Monitoring Suite software, see the Cisco web site.

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Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

http://www.cisco.com/tac

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

http://www.cisco.com/register/

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

http://www.cisco.com/tac/caseopen

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

AlarmTracker Client Introduction

Overview

The AlarmTracker Client application is one subsystem that is part of a larger system deployed at a Technical Assistance Center (TAC) to provide near real-time monitoring of the health and status of a large number of remote customer product systems. The Remote Monitoring Suite, as a whole, is used to provide centralized global technical monitoring and support for multiple customers and products. Figure 1-1 provides a block diagram of the major components and data flow.

Figure 1-1 Data flow from multiple remote customer sites to central TAC for logging and monitoring.

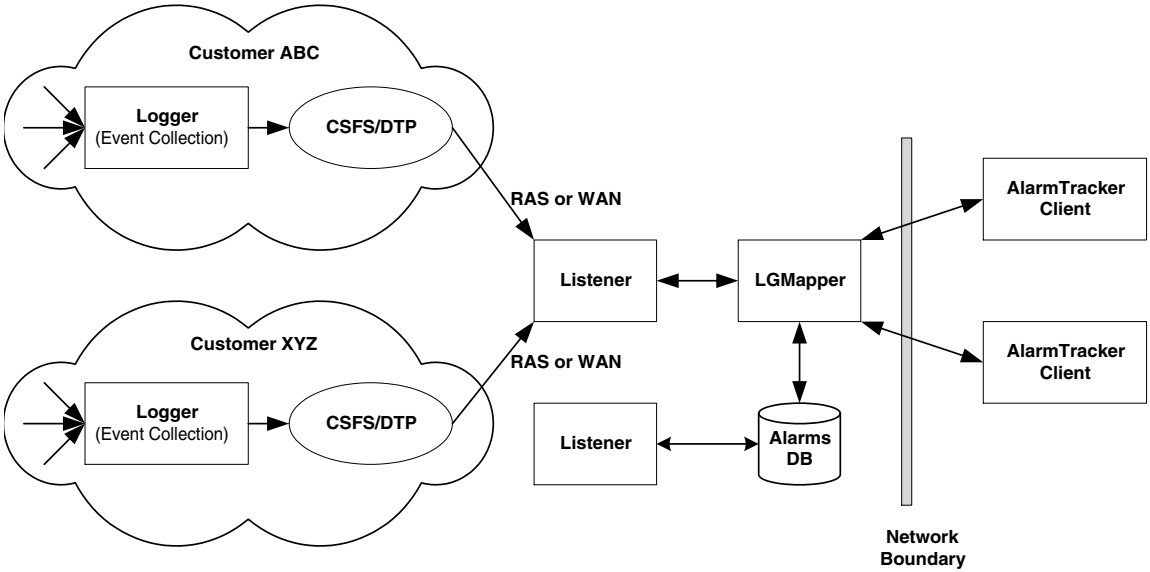
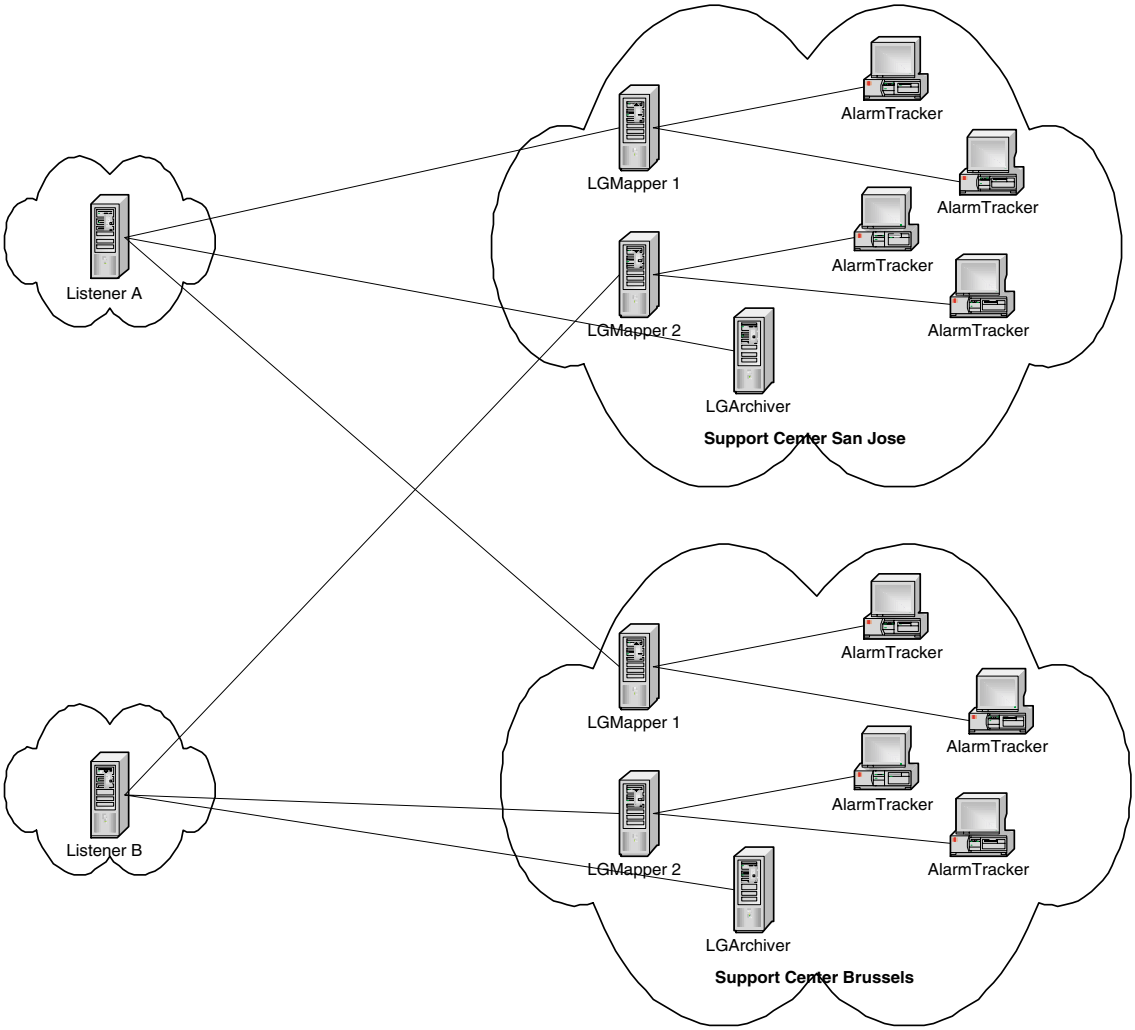


Figure 1-2 shows how the Remote Monitoring solution can be distributed within a global TAC, and it shows how the fault-tolerant architecture might be deployed:

Figure 1-2 Distributed TAC architecture.



In Figure 1-2, note the use of LGMapper servers at each local TAC (San Jose and Brussels). These servers communicate with Listener via named pipes. The purpose here is to minimize the amount of WAN traffic that has to flow from Listener machines to the local TACs.

Each AlarmTracker client application requires a DCOM connection to an LGMapper server, so the LGMapper server can be thought of as a distributor (and logger) of Listener Events. In addition, server-side filtering can be deployed on LGMapper servers to customize the system to serve a particular TAC's needs.

For example, the Brussels support center might support European customers only. In this case, server-side LGMapper filtering can be used to log only Events for the subset of European customers. Similarly, another TAC might be designated to support only a single product. Again, server-side LGMapper filtering can be used to filter and log only Events for that one product.

The Remote Monitoring Suite as a whole provides the following features:

- Remote logging and archiving of Events and Alarms using SQL Server databases
- Support for multiple customers
- Support for multiple products
- Fault-tolerant design
- Near real-time monitoring capabilities
- Object-oriented hierarchy of product systems
- Filtering capabilities on LGMapper to select and log just the data that is relevant

The AlarmTracker Client application provides the following features:

- Full-featured application with many customizable views of Alarm objects
- Filtering capabilities to minimize the amount of data viewed to allow users to better focus on their tasks
- Support to track what the TAC is doing about each Alarm. Includes ability to track who assigned Alarms and who they were assigned to, and ability to exclude Alarms from consideration.
- Loose coupling to trouble ticket systems via the TicketID field. Allows AlarmTracker clients to navigate between the AlarmTracker monitoring system and a trouble ticket system via this identification field.
- Integrated on-line Help system. Custom product help can be obtained for each Event displayed. In addition, interfaces are defined to allow a third party to build a custom help guidance system and integrate it with the AlarmTracker client application (see the Remote Monitoring Administration Guide for information on how to do this).

Alarms

The AlarmTracker Client (AlarmTracker) application primarily deals with the display and management of Alarm objects. Before going on too much farther, it is important to understand what the definition of an Alarm object is.

The Event that signals that an object has failed or is unavailable is called an Alarm. This Event raises a condition for the object. The condition might be that a specific object is offline, unavailable, or has failed. A subsequent Event might report that the object has returned to normal function. This second Event clears the condition.

There are two basic states for an Alarm object:

- the down or raised state which indicates a problem
- the up or cleared state which indicates that the object is OK

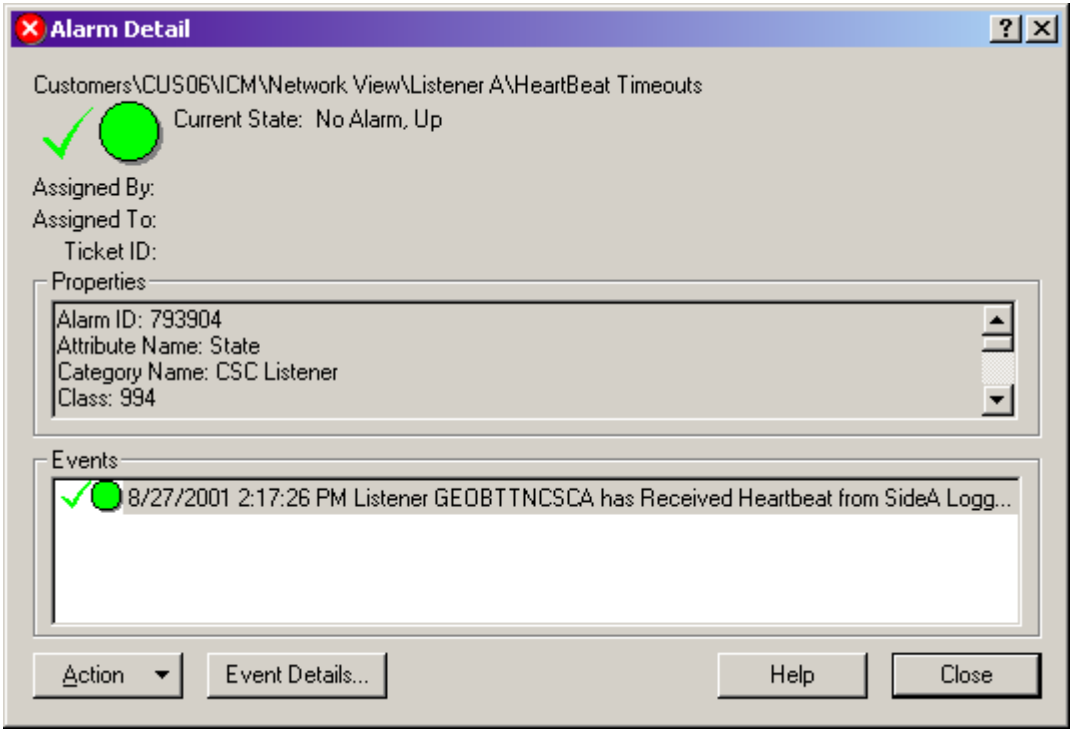
In addition to displaying the current state (and history) of Alarm objects, AlarmTracker allows a customer support team to actively manage Alarms. AlarmTracker can be used to assign Alarm objects so that other support representatives can be aware the someone is working on a particular Alarm.

The assignment status of each Alarm becomes part of each Alarms overall state. This status indicates what the TAC is doing about the Alarm object. It indicates that the Alarm has or has not been acknowledged by a support representative, and the Alarm can indicate who assigned the Alarm and who it was assigned to.

In addition, AlarmTracker can tie the Alarm to an external trouble ticket management system by means of the Ticket ID field. This makes it easier to move back and forth from the AlarmTracker application to the trouble ticket system.

Each Alarm object is comprised of one or more Events. These Events make up the set of state transitions for the Alarm object. The first Event is the raise condition which creates the Alarm object. From there, the Alarm either closes itself if a clear Event is received for it, or other Events may be received related to the Alarm. For example, a user may Assign or Exclude the Alarm, and repeat raise Events may be received for the Alarm. An example of a series of Events received for a particular Alarm is shown in Figure 1-3.

Figure 1-3 Sample of Alarm Details dialog showing state transitions of an Alarm object.



When an Alarm is raised by a particular Event, an Alarm object is created in the Alarms Database maintained on the LGMapper server. When the Alarm is raised, the Alarm object is considered to be an open Alarm and will remain open until both of the following conditions are true:

- The state of the Alarm becomes up or cleared
- The assignment status of the Alarm becomes unassigned (i.e., not assigned or excluded)

In the sample Alarm object shown in Figure 1-3, the Alarm object is closed since the state is up, and the assignment status is unassigned.

When an Alarm object is closed, the next time a raise Event is received for that object, a new Alarm object is created and maintained. This is how the time history of Alarm objects is maintained in the Alarms Database.

Single-State Alarms

Single-state Alarms are Alarms that do not have an associated clear Event associated with them. Thus, the Alarm must be deleted by an AlarmTracker user. This is the only way to clear a single-state Alarm. In fact, by policy, all single-state Alarms must actually be deleted by AlarmTracker users. When an Alarm is deleted, the Listener Base Record object is also deleted as well.

Application Errors

Application Errors are a type of single-state Alarm object, but they are considered of lower priority than other Alarm objects. Application Errors are typically indicative of configuration problems, but are not related to system faults. Examples of Application Errors in the ICM system are unmapped dialed numbers.

Application Errors are also displayed differently in AlarmTracker and their visibility can be easily toggled on and off. They are also maintained and tracked differently in the Alarms Database.

Simple Events

Another class of Alarm objects are not really Alarm objects at all. They are called Simple Events and are maintained and tracked separately from other Alarm objects. Simple Events (or Simples) are stateless Alarms that are maintained by Listener and can be displayed by AlarmTracker in the Event Details View (see Event Details View, page 8-20) and in the Events Bar (see EventsBar, page 4-13).

These are considered lower priority Events and their display can be easily toggled on and off in the Event Details View. In addition, because they are stateless, they are maintained in a separate table in the Alarms Database and tracked differently. Also, Simples cannot be assigned, excluded or deleted.

A Listener setting defines how long Simples are held and tracked. After this period has elapsed, Listener will purge the Simples from its in-memory state and inform client applications (like LGMapper) to do the same. LGMapper servers will purge these Events from its database when instructed to do so by the Listener.

LGArchiver servers, on the other hand, will ignore any requests to delete Simple Events. They are purged when the Event's CreationTime is greater than the LGArchiver time history window.

Nodes

Each node displayed in the Tree View (and in the List Views of the Main View) represents some kind of object (e.g., a customer, a product, a device) and has a parent-child relationship with other nodes.

Node Attributes

Part of the functionality provided by the LGMapper Server is the mapping of Alarm objects to a specific node and Attribute in this object hierarchy. The mapping process involves the examination of the information contained in the Listener Event along with the Listener object name to map the Alarm object to an Attribute of an instance of a node.

An Attribute is defined as some property of a node. For example, for an ICM Logger node, a number of Attributes are defined: Auto purge In Progress, Free Space Used, Log Space Used, NM Ping, Node Manager, Out of Space, and State Transfer.

There are a number of Rules that define the mapping of Listener Events to these Attributes. These Rules also define how to determine the instance name of the node to which the Event is mapped.

All nodes have at least one attribute called the State Attribute. The State Attribute represents the overall state of the node itself.

States

In AlarmTracker Client, every attribute has the concept of a state. The state of an Attribute is driven by the state of the Alarm object(s) that apply to it. For an Attribute that has more than one Alarm that applies to it, its state is determined from the most severe state in the set. Refer to Table 1-1 for State values in order of increasing severity.

Table 1-1 State Values in Order of Increasing Severity

State	Value
Unknown	-1
Up	0
Application Error	1
Partial Impaired	2
Down	3

Thus, the state for an Attribute is determined by taking the maximum value of the states in the set.

Each node has two major properties which define its overall state:

- The value of its State Attribute
- The roll up of the assignment statuses for all Alarm objects for the node and (possibly) its children

Each node is displayed with two icons that represent this overall state. The state icon displays the value of the State Attribute and is shown as the right icon for a Tree View node. The Assignment Status icon which represents the roll up of the assignment statuses for all Alarm objects for the node and (possibly) its children. This is the left icon for a Tree View node.

The State Attribute of a node is determined by three things:

- The roll up of the state of all Attributes associated with that node
- The roll up of the State Attribute of all child nodes
- The rule that defines how the roll up of child node states should be done

The roll up of a set of states is defined as the most severe state in the set. Thus, the roll up of a set of states can be determined by taking the maximum value of the states in the set. The icons associated with these states are described in Node State Icon, page 7-1.

The rule that defines how a child node state rolls up to its parent is defined by the OID Nodes in the configuration tables in the Alarms Database. There are three possibilities for how a node processes relapse from its children:

- **None** - The node ignores state roll up notifications from its children (this is rarely used).

- **Critical path** - The roll up is essentially an OR (or maximum value) of the states of its children and the node state itself.
- **Functional** - All child node states are processed as a group. If all child node states are up, the roll up state is up. If all child node states are down, the roll up state is down. If at least one, but not all child node states are down, the roll up state is partially impaired. The roll up value is then processed with the local state value to determine the overall node state value.

The assignment status of a node is determined by three things:

- The roll up of the assignment status of all Alarms associated with that node
- The roll up of the assignment status of all child nodes
- The rule that defines how the roll up of child node states should be done

The roll up of a set of assignment statuses is defined as the most severe in the set. Assignment status values in order of increasing severity are shown in Table 1-2.

Table 1-2 Assignment Status Values

Assignment Status	Value
No Alarm	0
Excluded	2
Assigned	3
Unassigned Application Error	5
Unassigned	6

Thus, the roll up of a set of assignment status values can be determined by taking the maximum value of the set. The icons associated with these status values are described in Assignment Status Icon, page 7-3.

Installing the AlarmTracker Client

Overview

Installation of the AlarmTracker Client is very straightforward. It should simply involve running the installation files and starting the Client.

AlarmTracker Client uses the SQL Server OLE DB provider to gain direct access to the LGMapper Alarms Database to perform queries to refresh AlarmTracker displays. The SQL Server OLE DB provider is part of the Microsoft Data Access Components (MDAC) re distributable component. The Alarm tracker installation verifies that MDAC 2.1 SP2 or higher is present on your system before proceeding. If it is not, an error message is generated and installation halts. See MDAC Requirement for details on this.

MDAC Requirement

Similar to the LGMapper, the AlarmTracker Client uses the SQL Server OLE DB provider in order to access the LGMapper SQL Server Alarms Database. This provider must be on your system in order for the installation to proceed.

When you start the installation script (see Running the Installation Script, page 2-2), the script will verify that the SQL Server OLE DB provider is present. If it is not, an error message is shown and the installation aborts. MDAC 2.1 SP2 or higher must be present in order for AlarmTracker Client installation to proceed.

If it is not present, you must first install the MDAC components. In this case, we have provided the self-installing MDAC 2.1 component in the file mdac_typ.exe. This file should be on the installation disk.

Note To install MDAC 2.1, you must first copy the mdac_type.exe from the release media to a writable temporary directory and execute it from there. This is a limitation of the installer. In other words, you cannot properly install MDAC directly from the CD or from read-only media. Once this installation is complete (you may have to reboot), you can proceed with the AlarmTracker Client installation.

Running the Installation Script

If MDAC 2.1 SP2 or higher is present, then AlarmTracker installation can proceed.

If you are working with an installation disk, you can double click setup.exe to begin the installation. If you have a self-installing executable named Install_AlarmTracker.exe, then you can double click that file to begin.

As with most installations, you will be prompted to select a location for the files. You can accept the default, or you can navigate to another folder which does not have to exist. The Installation folder selection is the only user-selectable installation option.

When installation completes, some COM components will be registered. This may require a system reboot for the registration to take effect.

Getting Started

Starting AlarmTracker Client

Starting the AlarmTracker Client is as easy as starting most other Windows applications. The AlarmTracker Client installation procedure creates a Start menu option so one way of starting it is to select the AlarmTracker2 item in the Start menu.

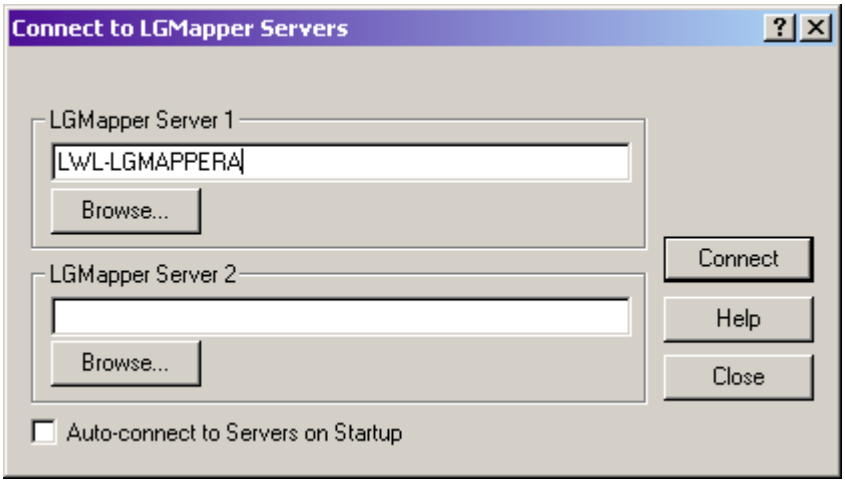
The executable name is AlarmTracker.exe, and this file can be found in the bin folder under the installation folder selected during installation.

Connecting to an LGMapper Server

Connect to LGMapper Servers Dialog

Since all of the displays in AlarmTracker Client rely on data from a (potentially) remote server, when AlarmTracker Client starts up, it immediately displays the Connect to Server dialog (Figure 3-1). This gives you the opportunity to immediately specify which remote server hosts you want to connect to.

Figure 3-1 Connect to LGMapper Servers Dialog



This dialog gives you the opportunity to connect to two servers. One of the connections will become the primary or *active connection* to the server, and the other will become the backup or *standby connection*. You can enter the name LOCAL (case insensitive) as a pseudonym for the name of your machine if you have a properly installed LGMapper server on your machine.

You do not need to enter the names of two computers, however, you can not leave both edit boxes empty. The purpose of entering two server names is provide the opportunity for the client application to fail over to the standby server in the event that the connection to the primary server is lost for any reason. The use of a standby server is entirely optional.

Connect to LGMapper Server Dialog Controls

Browse: Pops up a standard computer browser that enables you to pick a computer from the list of computers in your network.

AlarmTracker Client will save your most recent successful choices in the Registry so these edit boxes may be initially filled in.

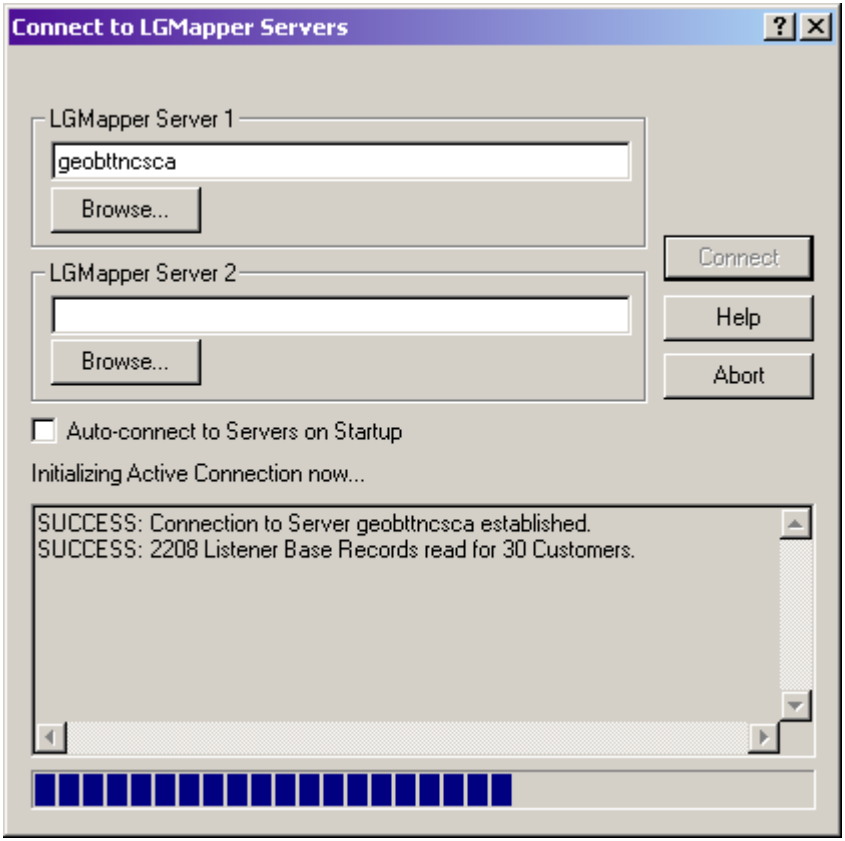
Close: Closes the dialog box while leaving both edit boxes empty, no connection will be made. If there are no active connections to a server, then all of the AlarmTracker Client views will be empty. Should you close this dialog, you can bring it back using **File > Connect To LGMapper Servers**.

Note Not any computer is an allowable choice to select. The server must have a properly registered copy of the LGMapper COM server. If these machines do not, then the connection will fail.

If you enter the names of two valid servers, AlarmTracker Client will attempt to make a connection to both of them, but only one connection can be the active one. During connection, an attempt is first made to make the first Server name the active connection.

The connection process may be almost instantaneous, or it may take a few seconds to a few minutes to connect depending on the state of the LGMapper server, the number of customers supported, and the speed of your network. During the connection process, the Connect to LGMapper Servers dialog expands to show the status of the connection as it happens. During connection, the dialog looks similar to Figure 3-2.

Figure 3-2 Connect to LGMapper Servers dialog showing connection status



If you revisit the Connect To Servers dialog later in the session, the edit boxes may contain a computer name that is read only. If a successful connection is made to the computer you first entered, it will appear as read only text. You will only be able to enter a computer name for a Server you did not enter earlier, or in the case where making a connection to the computer failed earlier.

The names of the servers you connect to are saved in the Registry so the next time you start AlarmTracker Client, the dialog will fill these names in for you. You also have the option of auto-connecting by checking the Auto-connect to Servers on Startup check box on the dialog.

Note To use AlarmTracker Client, your administrator has to add your account to one of three User Groups on the LGMapper machine. If you are not in one of the User Groups, you may get an Access Denied error message when starting AlarmTracker Client. The group you are in determines the privilege you have when running AlarmTracker Client.

The three User Groups are:

- LGM Readers
- LGM Users
- LGM Administrators

The User Groups have the following privileges:

- **LGM Readers** - read-only access. You do not have privilege to Assign, Exclude, Clear or Delete any Alarm objects.
- **LGM Users** - you have the privilege to Assign, Exclude and Clear Alarm objects, but you will only be able to Delete single-state Alarm objects.
- **LGM Administrators** - you have full privileges to Assign, Exclude, Clear and Delete Alarm objects.

Note Communication with LGMapper is two way. Not only does AlarmTracker Client make DCOM calls to LGMapper to request information, but LGMapper also calls back into the AlarmTracker Client application to deliver Event data. To ensure proper operation, there must be a two-way trust relationship between the domains of the LGMapper machine(s) and the AlarmTracker Client machine. If this does not exist, the connection process will fail.

If the machines are in different domains and there is no two-way trust relationship between them, you can work around this if you know a trusted account in the domain of the LGMapper machine. If you have this, you can use the net use command before starting AlarmTracker Client as follows:

```
> net use \\lgmappermachine /user:domain\username passwd
```

where:

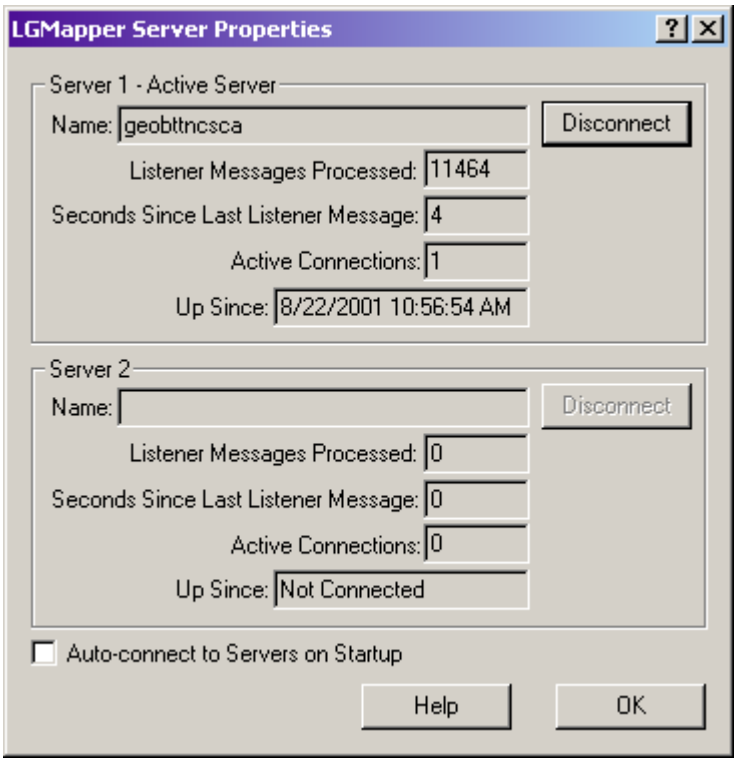
- lgmappermachine is the name of the LGMapper machine
- domain\username is a valid domain user name on the LGMapper machine

- passwd is the password for that account.

Getting Connection Status

Once you have made a connection to a server, you can get status information about it by displaying the Server Properties dialog as shown in Figure 3-3.

Figure 3-3 Server Properties Dialog



You can display this dialog in one of two ways:

1. Use the **File > LGMapper Server Properties**
2. By double-clicking one of the server status indicators located at the bottom right of the main frame window in the StatusBar

This dialog shows you information about each server currently connected. For each server, it displays some information about the health and status of the server's operation.

The first two items below the Name indicate the status of the server's connection to the Listener server. The **Listener Messages Processed** field indicates the total number of messages processed since the server started. If you re-display this dialog every now and then, this number should increase.

The **Seconds Since Last Listener Message** is perhaps more important. Since Listener sends out heartbeat messages every 5 seconds, even if there is no input from customer sites, this field should never display a number greater than 5. If so, it indicates a potential problem with the Listener connection.

The third field shows the number of **Active Connections** to this server. This is a count of the number of active AlarmTracker Client sessions running against the LGMapper server. This field is a good indicator of the load on the server.

Disconnect allows you to sever your connection to the indicated LGMapper server. If you disconnect your active connection and you have a standby server, AlarmTracker Client will automatically create an active connection to the standby server.

Dealing With Server Failures

AlarmTracker Client has the ability to connect to two LGMapper Servers although only one Server is active at any one time. As you will see in the description of the StatusBar in Chapter 6, “StatusBar” and, as in Figure 3-4, you can see two icons which indicate the status of the Servers you connected to.

The AlarmTracker Client and LGMapper are intended to operate in a fault-tolerant way. Because you have the opportunity to connect to two LGMapper Servers, the software attempts to minimize the down time in the event of a Server failure or network interruption. Table 3-1 describes how the AlarmTracker Client deals with Server failures or network failures.

Table 3-1 Possible Failure Scenarios

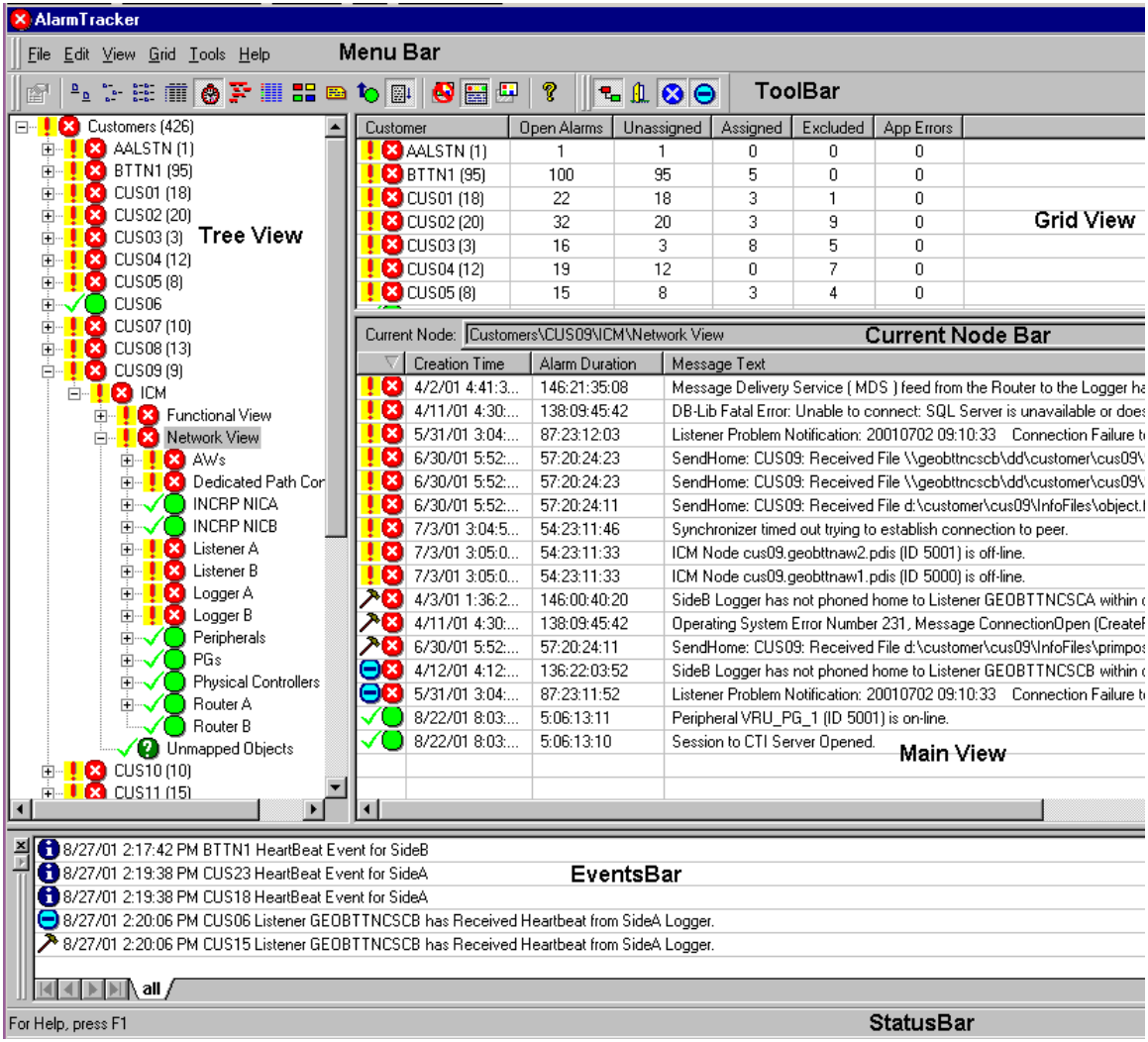
Scenario	Attempted Action
Have Active and Standby Connections	
Active Connection Fails	Dialog appears and informs you of progress of making the standby connection the active connection. AlarmTracker Client will also attempt to reconnect the failed active Server as the standby Server every four minutes.
Standby Connection Fails	Since operation is not affected, AlarmTracker Client will attempt to reconnect to the failed standby Server every four minutes. The icon at the bottom right will turn red indicating the loss of the standby Server.
Have Only Active Connection	
Active Connection Fails	Dialog appears and attempts to reconnect to the failed active Server every four minutes. You have the opportunity to abort this process and either exit or try to connect to a different server using **File > Connect to LGMapper Servers**.

There is one difference to the above scenarios if the AlarmTracker Client can determine that the LGMapper was disabled by an Administrator. In this case, no attempt to reconnect to this Server is made.

AlarmTracker Client Views

Once an active connection has been made, numerous visual elements of AlarmTracker Client will begin to update. The following screen capture shows some of the main visual elements of the AlarmTracker Client application.

Figure 3-4 AlarmTracker Client Showing Available Views



AlarmTracker Client is a MS Explorer-like application with a Tree View on the left side that provides navigation and a main view pane on the right side whose contents change as you select different nodes in the Tree View.

Some of the key Views are seen in this figure and include the following:

- **Tree View** - this View is one of the primary Views of the AlarmTracker Client application. This View shows a hierarchical representation of all nodes known to the system. More details on the Tree View are found in Chapter 7, "Tree View".
- **Main View** - this View is closely related to the Tree View in that its content will change as you select different Nodes in the Tree View. (The Main View in the figure above is the iconic List View to the right of the Tree View that is displaying the four green icons). AlarmTracker Client is like a Microsoft Explorer application in this sense. The Main View actually has many styles of displaying information. Shown above is the Large Icon view which displays the child Nodes of the currently selected Tree View Node and all of the Attributes of the selected Node as icons which display the state of each item. More details on the Main View are found in Chapter 8, "Main View"
- **Grid View** - this View is shown directly above the Main View. Grid View is intended to give you a top-level overview of the system. This view is a top-level view of all customers. This View has special properties. More details on Grid View are found in Chapter 9, "Grid View".
- **EventsBar** - this view is more specifically referred to as a Control Bar since it has user interface properties that are different than a View. The EventsBar displays a time history of Listener events. The contents of the EventsBar is highly customizable and is described in more detail in Chapter 10, "EventsBar".

What is most important here is variety of choices. There are a number of options for you to display the status of the system you are monitoring. It is up to you to select the Views most appropriate for your situation. In some cases, you may just need a high level overview of your system. In this case, emphasizing Grid View may be most appropriate. In other cases, you may want to focus on a single customer. In this case, you might be drilling down in the Tree View Node for that customer looking at specific Intelligent Contact Management (ICM) components and problems. You might also customize the EventsBar to focus on the Listener messages for that customer or a subset of the ICM components for that customer.

The important thing is to use the system to display the information you need in the format that you need it. The AlarmTracker Client gives you the flexibility to do that.

One other thing to note in Figure 3-4 is that the icon seen in the application's caption is the same as the State icon for the root Node of the hierarchy. This icon will also be seen if the application is minimized on the task bar. For more information about the State icon, see Node State Icon, page 7-1.

Navigating to Different Nodes

There are a number of ways to navigate to different nodes in AlarmTracker Client, but perhaps the easiest is to select a different node in the Tree View. When the selection is changed in the Tree View, the contents of the Main View are updated to reflect the new node selection.

You can always move the parent node by selecting **View > View Parent Node** or by selecting the **View Parent Node** Toolbar option icon.

When using Grid View, you can navigate to a specific customer node by double clicking the name of customer in the view. This will immediately select that customer's node in the Tree View and set the focus to that view.

You can also navigate to a node in the EventsBar by right-clicking an Event and choosing the **Jump to Node**.

Displaying Alarms

Probably the most often used Main View setting is the **Alarm Details View**. You can select this view via the **View > Alarm Details**, or via the equivalent Toolbar icon.

A sample of this view is shown in Figure 3-4.

This view shows Alarm objects for the currently selected Tree View node. There are also filter options that allow you to include Alarms for all child nodes, and options to show only open Alarms, display/hide Application Errors, display/hide Excluded Alarms.

From this view, you can easily see the state and assignment status for the Alarms associated with the selected node, and it allows you to view the constituent Events for any of the Alarms seen in the view. It also allows you to easily manage the state of these Alarms (i.e., change the assignment status). You can also select the columns you want to see displayed

More information on using the Alarm Details View can be found in Alarm Details View, page 8-4.

Managing Alarms

User Actions

Alarm objects are managed by the different user actions that can be applied to them. The following user actions are allowed on Alarm objects:

- **Assign** - a user can assign an Alarm object which acknowledges that someone at the support center is aware of the condition. As part of assigning the Alarm, you can assign the Alarm to someone else or to a queue, enter some notes about the Alarm, and enter a Ticket ID to cross reference the Alarm with an external trouble ticket reporting system.
- **Unassign** - this is the inverse operation of an Assign. Unassigning an object moves the object back to the unassigned state. Note that this option is not available if the Alarm is Excluded.
- **Exclude** - a user can exclude an Alarm object which generally means that someone at the support center is aware of the condition, but it is a condition that can be essentially ignored. As part of excluding the Alarm, you can assign the Alarm to someone else or to a queue, enter some notes about the Alarm, enter a Ticket ID to cross reference the Alarm with an external trouble ticket reporting system.
- **Include** - this is the inverse operation of an Exclude. Including an object moves the object back to the unassigned state. Note that this option is not available if the Alarm is Assigned
- **Clear** - you can Clear an Alarm which effectively overrides a clear Event from the customer site. A user clear operation is sometimes needed if, for some reason, the up or clear Event was not sent by the relevant device at the customer site. Note that a user Clear can only be done to an unassigned object, and cannot be done to single-state Alarm objects.

- **Delete** - a user can Delete an Alarm object which has the effect of deleting the object from the set of Listener Base Records, and of deleting all Alarm objects associated with that particular Listener object in the Alarms Database. Note that a Delete can only be done to an unassigned Alarm object or to a closed Alarm object.

As noted above, some of the user actions cannot be performed depending on the current state of the Alarm object. This behavior is enforced by the AlarmTracker Client UI. Also, depending on the user's rights (see User Rights, page 4-15), not all options will be available to every user.

Clear and Delete

It is important to understand the distinction between the Clear and Delete user actions.

Clear is used for an Alarm object when a support person determines that the object is, in fact, up, but for some reason the clear Event was never received. This is, in a sense, a "manual override" for a clear Event from the device. When a user Clear is done, the Alarm object is closed and the state of the underlying Listener object becomes Up. The Alarm object remains in the Alarms Database and can be viewed in various AlarmTracker Client views.

By policy, a user Clear can only be done on an Alarm that is Down and Unassigned. If the Alarm is currently Assigned or Excluded, the user must first Unassign or Include it before Clearing it. This is a policy decision enforced by the AlarmTracker Client UI.

Another policy decision is that single-state Alarms (Application Errors are considered single-state Alarms) cannot be Cleared. They must be Deleted.

A user Delete operates in a different way. A Delete results in the object being deleted from the Listener Base Records, and in the deletion of all Alarm objects associated with the Listener object. Thus, when you delete a particular Alarm object, you may, in fact, be deleting multiple Alarm objects from the database. All Alarm objects associated with the Listener object are deleted from the LGMapper Alarms Database. They will be removed from any Alarms display (you may still see earlier Events in the EventsBar), but you will no longer see these Alarms.

Note An LGArchiver server will not delete the Alarm objects from its Alarms Database. It will mark the Alarm object as closed and will include the Delete Event in the database.

By policy, single-state Alarms must be Deleted. They cannot be Cleared. Also by policy, non single-state Alarms can only be Deleted if they are Down and Unassigned or if they are closed. Also, only users with Administrator rights (see User Rights, page 4-15) can Delete non single-state Alarm objects. Users with Administrator rights or User rights can Delete single-state Alarms.

Exclude Node Feature

Another type of Alarm management is the Exclude Node feature. This feature indirectly manages a group of Alarm objects related to a node.

The Exclude Node feature can be used to exclude all Alarm objects for a particular node in the Tree View object hierarchy and all of its children as well. This feature is used from the Tree View Edit menu, or from the context menu that pops up when you right click a node in the Tree View.

The Exclude Node feature is equivalent to marking all Alarm objects for the node and its children as Excluded and it applies to all future Alarm objects for that node and its children until the node is included by a user. More details on this feature are included in Exclude/Include a Node, page 7-5.

Note The Exclude Node feature is optional and is not enabled in the Listener server by default. If you try to Exclde a node and get and error message, contact your system administrator to enable the feature. Details on how to enable this feature are provided in the *Cisco Remote Monitoring Administration Guid*e.

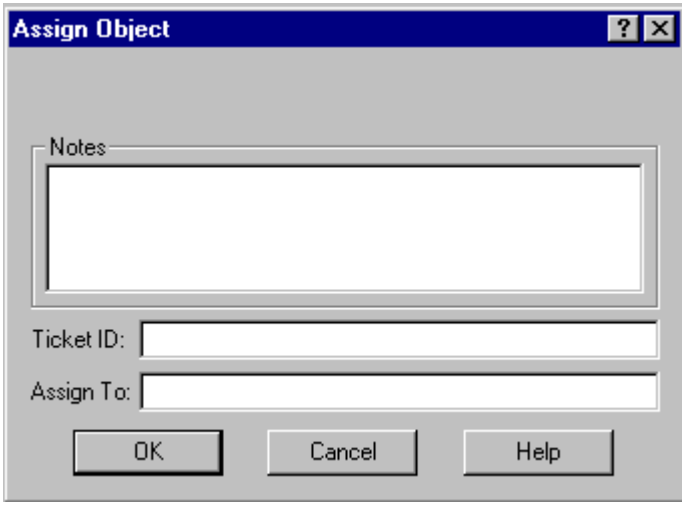
Performing User Actions

AlarmTracker Client provides many ways for you to perform a user action on one or more Alarm objects. Most views (e.g., Alarm Details View, Alarm Bars View, Object State View, Ticket ID Finder View and the EventsBar) allow you to select one or more Alarms and perform a user action on them. This is typically done by

highlighting the Alarm object(s) in the view and using an Edit menu option or context menu option to perform the desired user action. Another way to perform a user action is to use the **Action** button in the Alarm Details dialog (see Showing Alarm Details, page 8-8).

When you select one of the user actions described inUser Actions, page 3-12, a user action dialog appears as shown in Figure 3-5.

Figure 3-5 Assign Object Dialog



The dialog title reflects the type of user action selected. In the sample shown above, the user action is an **Assign**.

In the dialog you can enter some notes that will be associated with the particular user action you have selected.

You can also enter a **Ticket ID** that you might want to associate with the object(s). This Ticket ID might represent the Ticket ID for some external trouble ticket reporting system. This field can also be used in the Ticket ID Finder View (see Ticket ID Finder View, page 8-29) as a search criterion to display all Alarms for a particular Ticket ID.

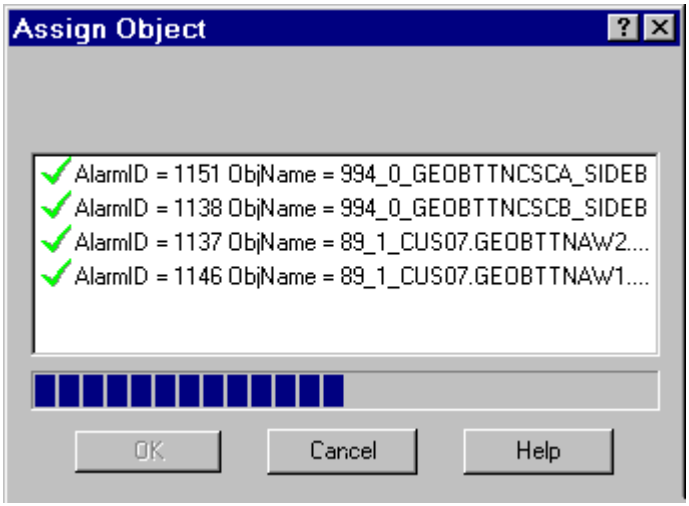
You also have the option of assigning the Alarm to some person or queue. The **Assign To** field is simply text that gets associated with the Alarm object(s). It simply allows you to see this information when it is displayed in AlarmTracker

Client. No notifications (e.g., e-mail) are sent out to this user or queue. AlarmTracker Client is not intended to replace a trouble ticket management system.

If you are performing an operation on a group of Alarm objects, all the objects should be in a compatible state or some error could occur. Also, the **Notes**, **Ticket ID** and **Assigned To** fields will be associated with all selected Alarm objects.

When you click **OK**, a message is sent to LGMapper for each Alarm object. LGMapper then forwards the requests to Listener. While this is happening a dialog box appears indicating the status of the request. A sample of this is shown in Figure 3-6.

Figure 3-6 User Action Status Dialog



This sample shows the progress of assigning a group of objects. If the user action on all selected Alarms is successful, the dialog box will disappear when the last object is successfully processed. If an error occurs on at least one of the objects, a dialog will be displayed, and the user action status dialog will remain on the screen.

You can abort a user action on a group of Alarms by clicking **Cancel** on the status dialog. Any actions already successfully completed are not undone.

Avoiding Information Overload

At a TAC like Cisco's where well over 100 customers are monitored, Listener Events are being received every second from some remote site. There are a number of settings you can tweak in the AlarmTracker Client user interface that allows you focus on the more important aspects monitoring Alarms - that of detecting and responding to new Alarm objects.

Filter Settings

The first is creating filter settings that are tailored to your use. This is controlled using **Tools > Filters**. Depending on your support model, this may not be possible, but this dialog allows you to select a subset of customers and/or products to monitor. If your support model allows you to pick users who are responsible for monitoring a subset of customers, each user can monitor a subset of the total customer base. Thus, one user might monitor customers A-H, another user might monitor customers I-N, etc. Then each user can select those customer names from the dialog box. This not only limits the Tree View to showing only these customer nodes, but it also reduces the amount of Listener Events delivered to and processed by the AlarmTracker Client application.

More information on setting these filters can be found in Filters, page 4-8.

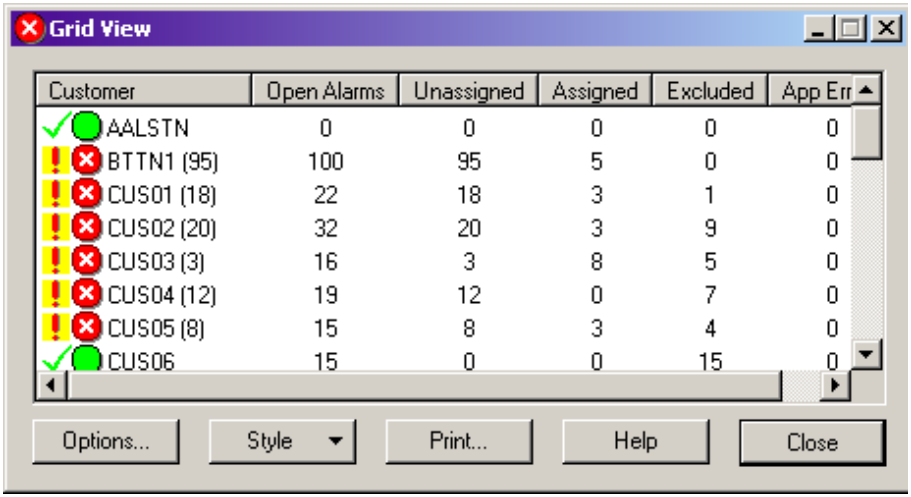
Using Grid View

The use of Grid View provides a means to easily track the state of customer nodes being monitored by AlarmTracker Client. You can enable Grid View via the Grid menu (Dock or Float options), or via the equivalent Toolbar options.

Dock Option	
Float Option	

The View options allow you to control which nodes are displayed. In a typical setting, you can have Grid View display only those customer nodes which unassigned Alarms. A sample of this setting is shown in Figure 3-7.

Figure 3-7 Grid View Showing Only Customer Nodes Having Unassigned Alarms

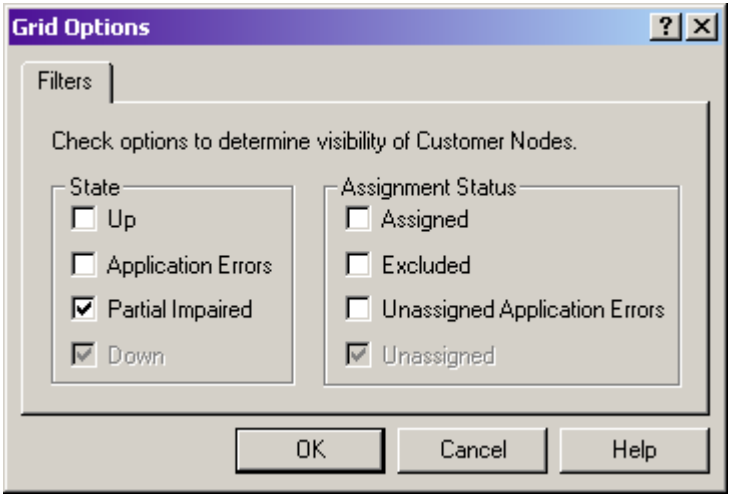


Customer	Open Alarms	Unassigned	Assigned	Excluded	App Err
AALSTN	0	0	0	0	0
BTTN1 (95)	100	95	5	0	0
CUS01 (18)	22	18	3	1	0
CUS02 (20)	32	20	3	9	0
CUS03 (3)	16	3	8	5	0
CUS04 (12)	19	12	0	7	0
CUS05 (8)	15	8	3	4	0
CUS06	15	0	0	15	0

In this mode, the view shows those customers with Alarms that have not been acknowledged by any TAC user. These are generally Alarm objects that demand immediate attention.

A sample of the Grid View Options dialog that was used to create the above display is shown in Figure 3-8.

Figure 3-8 Grid Options Dialog with Settings for Figure 3-7



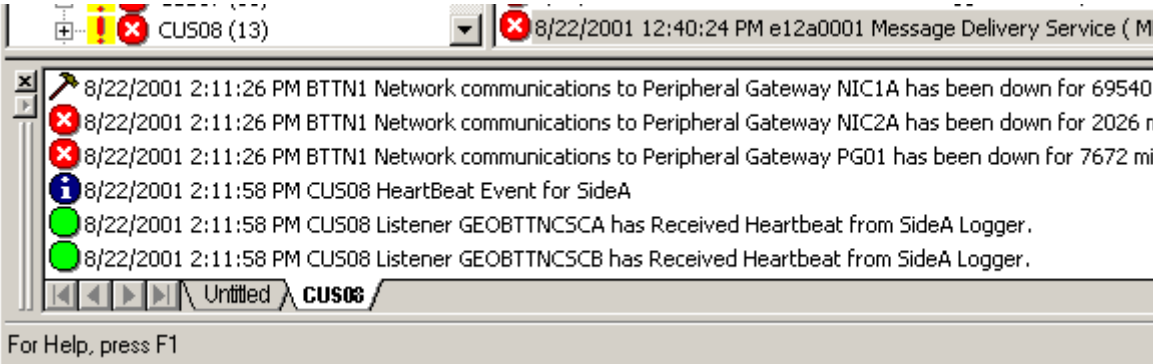
When using Grid View, you have the option of docking the view at the top of the Main View (as seen in Figure 3-4), or of floating the dialog on your desktop as a modeless dialog (as seen in Figure 3-7).

In the Grid View, you can easily navigate to any customer shown by double clicking on the customer icon. This immediately selects that customer's node in the Tree View, and sets the focus there. More information on Grid View is found in Chapter 9, “Grid View”.

Tuning the EventsBar

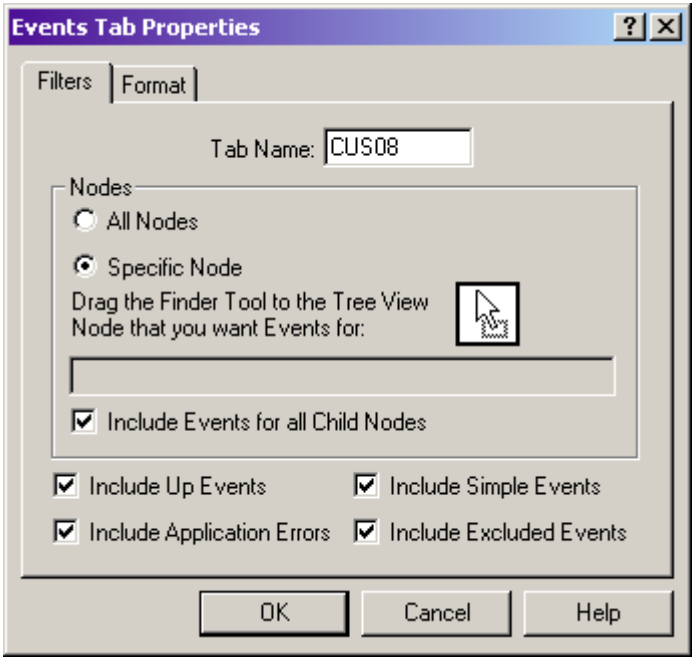
Sometimes you need to focus on one particular customer, or even on one particular device at a customer site. You can easily add an EventsBar tab and set a filter to display Events only for that customer or device. This allows you to watch these events in a scrollable list control window as they come in. You can easily add an EventsBar tab by selecting the **View > EventsBar Options > Add Events Tab**, or by right- clicking in the EventsBar window and selecting **Add Events Tab** from the context menu. (You should make sure the EventsBar is visible by checking **View > EventsBar**.) A sample of creating a tab for a particular customer is shown Figure 3-9.

Figure 3-9 EventsBar tab for a particular customer



When you make one of these choices a dialog box appears that allows you to select the node you want to monitor, and a number of check box options that allows you to filter the data that is shown in the tab. A sample of the dialog settings used to create the results shown in Figure 3-9 is shown in Figure 3-10.

Figure 3-10 Add EventsBar Tab dialog settings for a particular customer

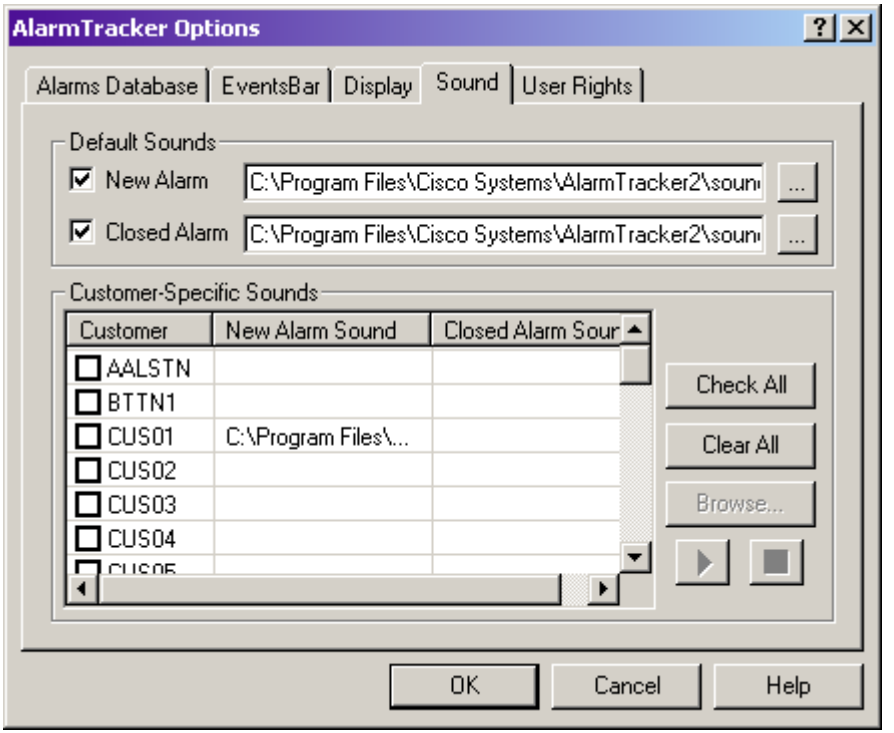


Of particular note in this dialog is the check box labeled Include Events for all Child Nodes. It is important to check this box if you want to include the Events not only for the node selected, but for all of its child nodes as well. For more details on how to use the EventsBar, see Chapter 10, "EventsBar".

Using Audible Alarms

You can also play a sound when an Alarm is received for a particular customer (or all customers if desired). This is controlled using **Tools > Options** in the Sound property page as seen in Figure 3-11.

Figure 3-11 Tools > Options - Sound Property Page



This dialog allows you to globally enable or disable the playing of audible Alarms, and it allows you control which sounds are played and for which customers. Sounds can be played for new Alarms as well as when Alarms are closed. In addition, you can set up different custom sound files for each customer if desired. More details on how to use this dialog are found in Chapter 12, “Audible Alarms”.

Customizing AlarmTracker Client

AlarmTracker Client uses the Registry to save your visual settings when you exit the application. It will store the following things so that when you start AlarmTracker Client the next time, your visual state will look very much like it was when you exited:

- The names of the servers you last connected to
- The size and position of the main window
- The width of the Tree View
- The Tree View node currently selected
- The type of Main View displayed
- The state and type of the Grid View - this includes whether the Grid View was hidden, docked or floating
- The number of EventBars tabs along with the filter and format options
- The specific columns selected in the Alarm Details View, Object State View and TicketID Finder View, and the format options in the Event Details View
- Customer and product filter settings
- Display options
- Audible Alarm sound options

Thus, you may spend some time configuring your displays to match your needs so this feature allows you to get back to where you were when you next start AlarmTracker Client.

AlarmTracker Client Menus

This chapter describes the contents of the menus displayed by AlarmTracker Client.

File Menu

The File menu presents some of the standard Windows menu options along with some options specific to the AlarmTracker Client application. The following File menu items are shown:

- **Connect To LGMapper Servers** - this option displays the Connect To Servers dialog described in Connecting to an LGMapper Server, page 3-1.
- **Disconnect LGMapper Servers** - disconnect from an LGMapper server.
- **LGMapper Server Properties** - this option displays the Server Properties dialog described in Getting Connection Status, page 3-6.
- **Print** - print the view's contents. This item may be disabled for some views.
- **Print Preview** - preview the contents of the view before printing.
- **Print Setup** - select printer options.
- **Exit** - this option terminates the application.

Edit Menu

The content of the Edit menu varies depending on the type of View currently selected. This menu is described in the context of the View that it applies to.

View Menu

The View menu allows you to select the visibility state of the various Control Bars, and it allows you to select the type of Main View to display. The View menu contains the following items:

- **Toolbar** - toggles the visibility state of the icon Toolbar. An indented check mark indicates that the Toolbar is visible.
- **Edit Toolbar** - toggles the visibility state of the Edit Toolbar. This Toolbar contains buttons specific to the type of View that has focus. These buttons represent shortcuts to Edit menu options for that View. An indented check mark indicates that the Toolbar is visible.
- **StatusBar** - toggles the visibility state of the icon Toolbar. An indented check mark indicates that the StatusBar is visible.
- **EventsBar** - toggles the visibility state of the icon Toolbar. An indented check mark indicates that the EventsBar is visible.
- **Current Node Bar** - this control bar appears just above the Main View and indicates the path to the currently selected node in the Tree View. This can be helpful if the currently selected node has scrolled out of view.
- **EventsBar Options** - a pull-right menu, this option opens up further options for the EventsBar. See section 11 for more details.
- **Large Icons** - shows the Main View as large icons.

- **Small Icons** - shows the Main View as small icons.

- **List** - shows the Main View as a list of items.

- **Details** - shows the Main View as a detailed list of items.

- **Alarm Details** - shows the Main View as a detailed list of Alarm objects.

- **Alarm Bars** - shows the Main View as a graphical representation of Alarm objects.

- **Event Details** - shows the Main View as a detailed list of Events.

- **Object State** - shows the current state of all Listener objects for the node selected.

- **Ticket ID Finder** - allows you to display all Alarms associated with a particular Ticket ID.

- **View Parent Node** - selects the parent Node of the Node currently being viewed.

- **Manual Refresh** - toggles manual refresh mode. In manual refresh mode, contents of the Main View are refreshed only when you select **View > Refresh** (F5 key).
- **Refresh**- refreshes or updates the current View.

- **Scroll Events** - toggles whether or not newly received Events are made visible when they arrive.

- **View Options** - shows a context-sensitive dialog allowing you to customize the View options for the particular View that has focus.

For additional details on the Large Icons, Small Icons, List, Details, Alarm Details, Alarm Bars, Event Details, Object State, and Ticket ID Finder options, see Chapter 8, “Main View”.

Grid Menu

The Grid menu contains items specific to the Grid View. This menu contains the following items:

- **Hide** - hides the Grid View.

- **Dock** - docks the Grid View above the Main View. This is the mode shown in Figure 3-4 on page 3-9.

- **Float** - floats the Grid View in a modeless dialog box. This effectively "detaches" the view from the application to let it stand by itself.

- **Large Icons** - shows the Grid View as large icons.

- **Small Icons** - shows the Grid View as small icons.

- **List** - shows the Grid View as a list of items.

- **Details** - shows the Grid View as a detailed list of items.

- **Options** - allows you to select options to customize how the Grid View is displayed.

These options are discussed in more detail in Chapter 9, “Grid View”.

Tools Menu

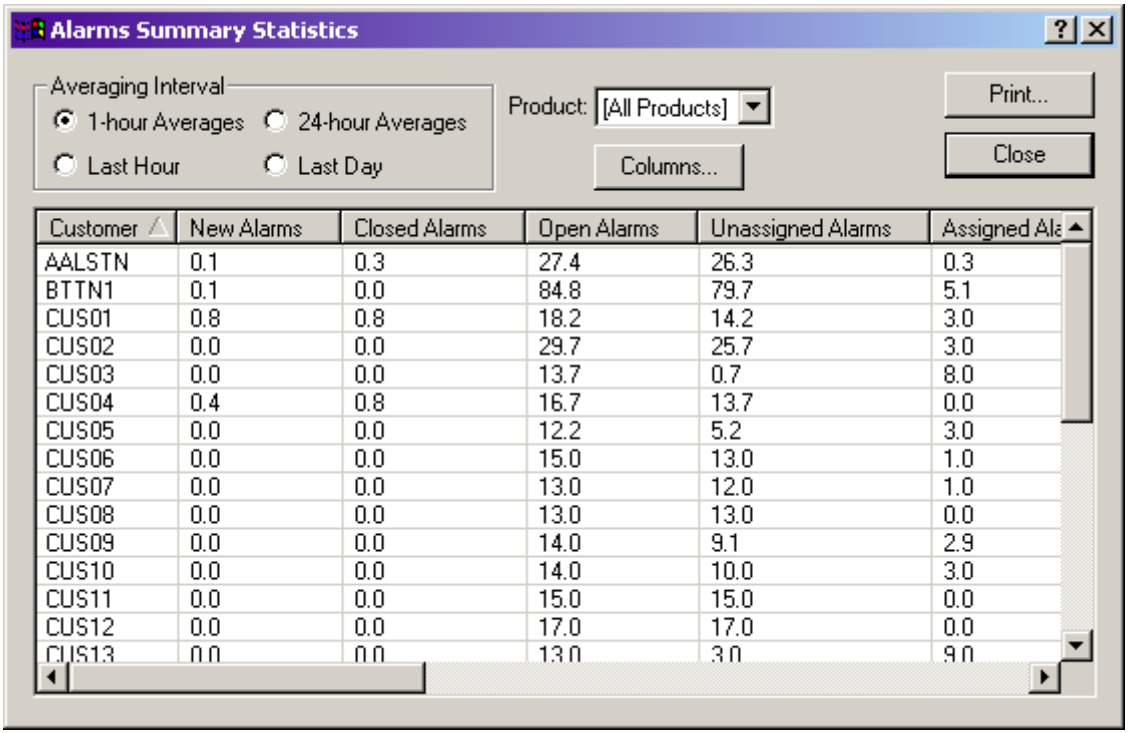
The Tools menu allows you to make selections that affect the overall operation of AlarmTracker Client. This menu contains the following items:

- **Summary Statistics** - displays a dialog containing summary statistics on Alarms and Events per Customer.
- **Filters** - displays a dialog to allow you to select customer and product filter settings.
- **Options** - allows you to select options to customize global AlarmTracker Client settings.

Summary Statistics

Tools > Summary Statistics displays a resizable dialog that contains summary statistics (averaged over time) about Events and Alarms processed by LGMapper. A sample of this dialog is shown in Figure 4-1.

Figure 4-1 Alarms Summary dialog



Customer	New Alarms	Closed Alarms	Open Alarms	Unassigned Alarms	Assigned Ala
AALSTN	0.1	0.3	27.4	26.3	0.3
BTTN1	0.1	0.0	84.8	79.7	5.1
CUS01	0.8	0.8	18.2	14.2	3.0
CUS02	0.0	0.0	29.7	25.7	3.0
CUS03	0.0	0.0	13.7	0.7	8.0
CUS04	0.4	0.8	16.7	13.7	0.0
CUS05	0.0	0.0	12.2	5.2	3.0
CUS06	0.0	0.0	15.0	13.0	1.0
CUS07	0.0	0.0	13.0	12.0	1.0
CUS08	0.0	0.0	13.0	13.0	0.0
CUS09	0.0	0.0	14.0	9.1	2.9
CUS10	0.0	0.0	14.0	10.0	3.0
CUS11	0.0	0.0	15.0	15.0	0.0
CUS12	0.0	0.0	17.0	17.0	0.0
CUS13	0.0	0.0	13.0	3.0	9.0

This dialog shows averages of various statistics for each Customer being monitored. You can select which product to sample on, or select **All Products** to average the statistics across all products.

The averaging interval can also be selected. The choices are:

- **1-hour Averages** - data represent an average of all the hourly data recorded,
- **Last Hour** - a snapshot of the hourly data from the last hour recorded,
- **24-hour Averages** - data represent an average of all the daily data recorded,
- **Last Day** - a snapshot of the daily data for the last day recorded.

The columns and their orders can be specified by pressing **Columns**. This will pop up a dialog that allows you to edit these columns.

You can also vary the sort order by single clicking on the column headers. You can sort in ascending or descending order by clicking the same column. The sort order is indicated by a small triangle at the right edge of the column header. In the above figure, the display is currently sorted by Customer in ascending order.

The following columns are available for display:

- **New Alarms** - the average number of new Alarms that have been received for this Customer over the selected averaging interval.
- **Closed Alarms** - the average number Alarms that have been closed for this Customer over the selected averaging interval.
- **Open Alarms** - the average number of open Alarms for this Customer over the selected averaging interval.
- **Unassigned Alarms** - the average number of unassigned Alarms for this Customer over the selected averaging interval.
- **Assigned Alarms** - the average number of assigned Alarms for this Customer over the selected averaging interval.
- **Excluded Alarms** - the average number of excluded Alarms for this Customer over the selected averaging interval.
- **New App Errs** - the average number of new Application Error Events that have been received for this Customer over the selected averaging interval.
- **Closed App Errs** - the average number of Application Errors that have been closed for this Customer over the selected averaging interval.
- **Open App Errs** - the average number of open Application Errors for this Customer over the selected averaging interval.
- **Unassigned App Errs** - the average number of unassigned Application Errors for this Customer over the selected averaging interval.
- **Assigned App Errs** - the average number of assigned Application Errors for this Customer over the selected averaging interval.
- **Excluded App Errs** - the average number of excluded Application Errors for this Customer over the selected averaging interval.
- **Alarm Events** - the average number of Events associated with Alarm objects that have been received for this Customer over the selected averaging interval.
- **App Err Events** - the average number of Application Error Events that have been received for this Customer over the selected averaging interval.

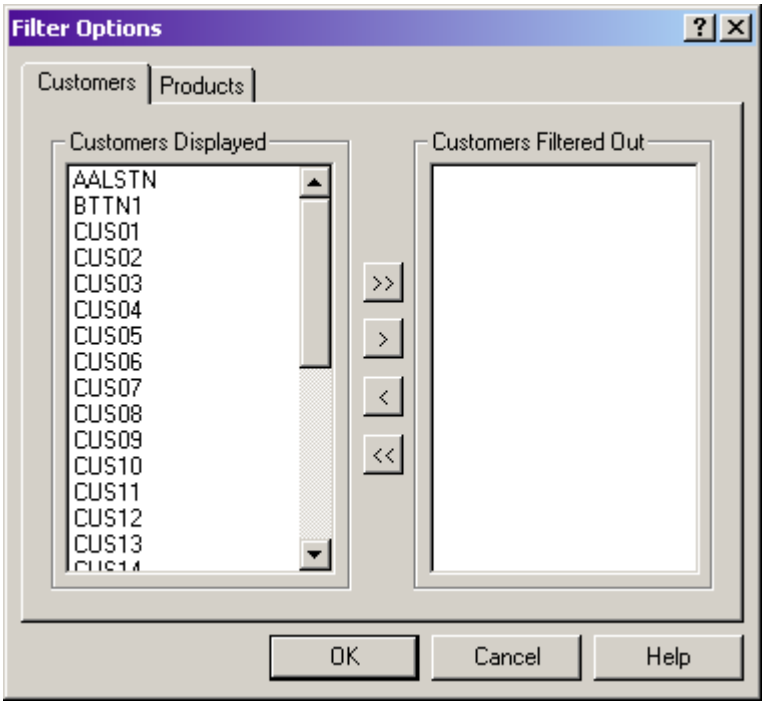
- **Simple Events** - the average number of Simple Events that have been received for this Customer over the selected averaging interval.

Filters

Tools > Filters displays a property sheet that allows you to define client-side filter settings to limit the amount of data viewed in your AlarmTracker Client. For example, you may want to limit the number of customers that you view in your AlarmTracker Client, or you may be responsible for supporting a single product. You can use client-side filtering to filter out what you don't need.

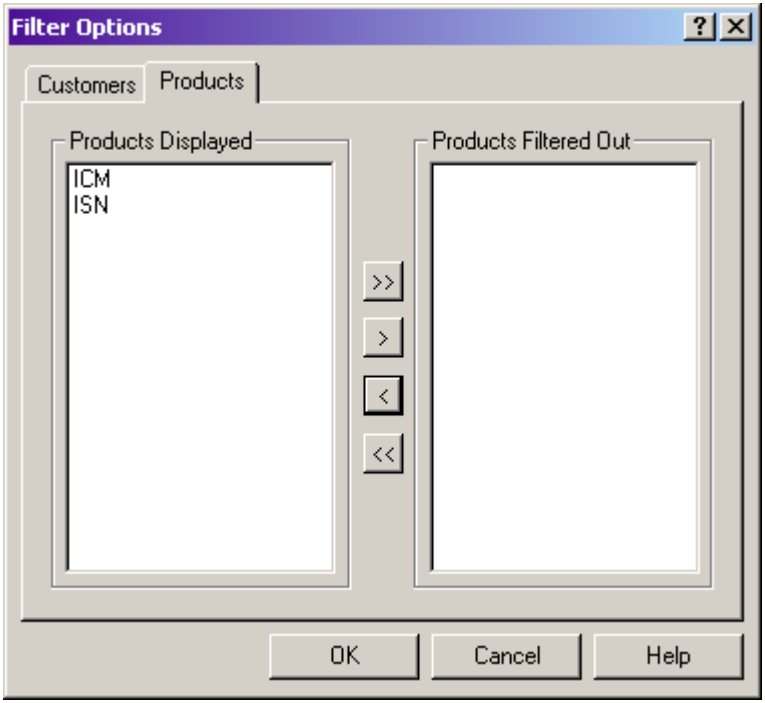
A sample of the property sheet is shown below.

Figure 4-2 Filter Options Dialog - Customers Tab



The Customers tab (Figure 4-2) shows the current list of Customers being monitored in the Customers Displayed list box. You can select one or more Customers and use the arrow keys to move them to the Customers Filtered Out list box on the right. To move all the Customers from one side or the other, use the >> or <<.

Figure 4-3 Filter Options Dialog - Products Tab



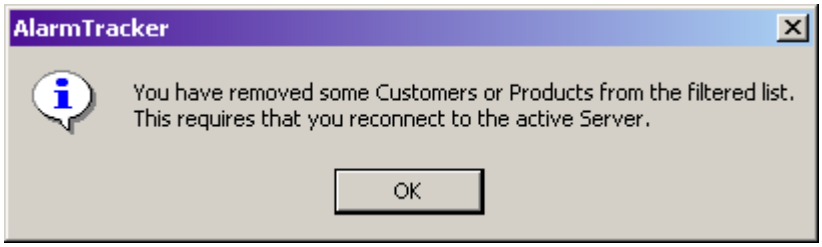
The Products tab (Figure 4-3) operates in much the same way.

When you click **OK**, the information is sent to the attached LGMapper so that it can record your filter settings.

If you are only moving Customers and/or Products to the filtered side (moving items from left to right), in a few seconds, your AlarmTracker Client displays should be updated to reflect the filtered items.

If you move any Customers and/or Products from the filtered side to the displayed side (moving items from right to left), your AlarmTracker Client will have to reconnect in order to re-initialize the object hierarchy for those new items. If you do this, the dialog in Figure 4-4 will be shown before the reconnection occurs.

Figure 4-4 Information Dialog



Options

Tools > Options displays a dialog that allows you to modify some global variables that affect the overall operation of the AlarmTracker Client software. There are five Property Pages (tabs) that appear as part of this dialog:

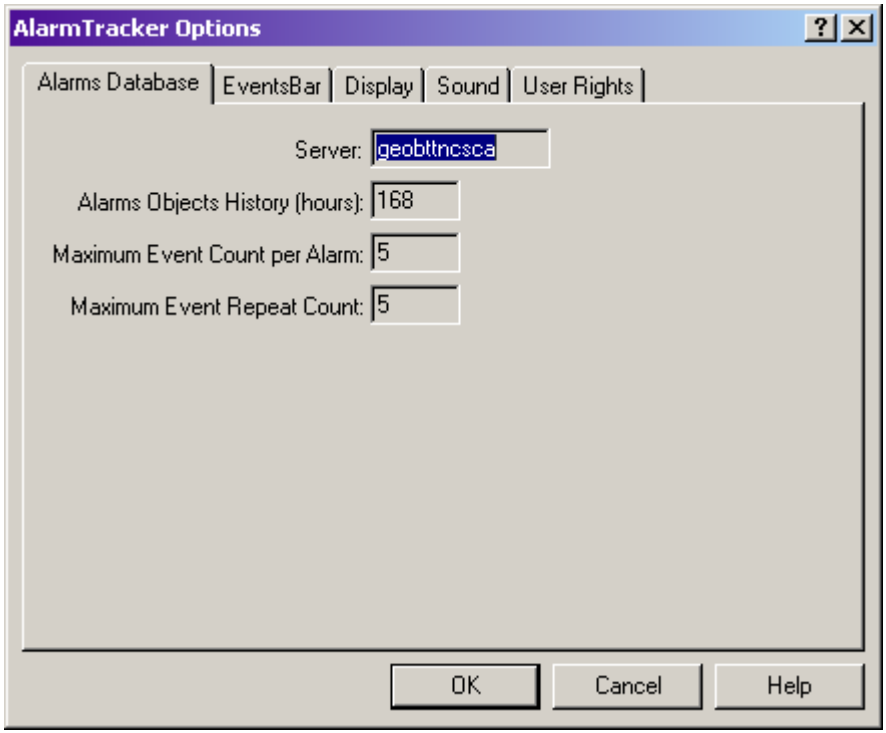
- **Alarms Database**
- **EventsBar**
- **Display**
- **Sound**
- **User Rights**

All the options you select in these Property Pages are saved in the Registry between sessions.

Alarms Database

The Alarms Database tab shows some of the properties of the Alarms Database attached to the LGMapper server. A sample of this page is shown in Figure 4-5.

Figure 4-5 AlarmTracker Options - Alarms Database Tab



This property page shows the following properties:

- **Server** - name of the LGMapper server,
- **Alarms Objects History (hours)** - number of hours of cached Alarm object history that the LGMapper to maintains. This value controls the number of closed Alarm objects (records in the database) that the LGMapper maintains. A higher number means more history is maintained, but it also means that more disk space is required to store the information. During LGMapper operation, it will occasionally purge the Alarms database of any closed Alarm objects whose closed time fall outside the time history window. Note that any Alarm objects that are still open are never purged.
- **Maximum Event Count per Alarm** - this value is used to implement a form of event suppression or filtering to prevent the Alarms database from growing unbounded. This value limits the total number of Events that can be

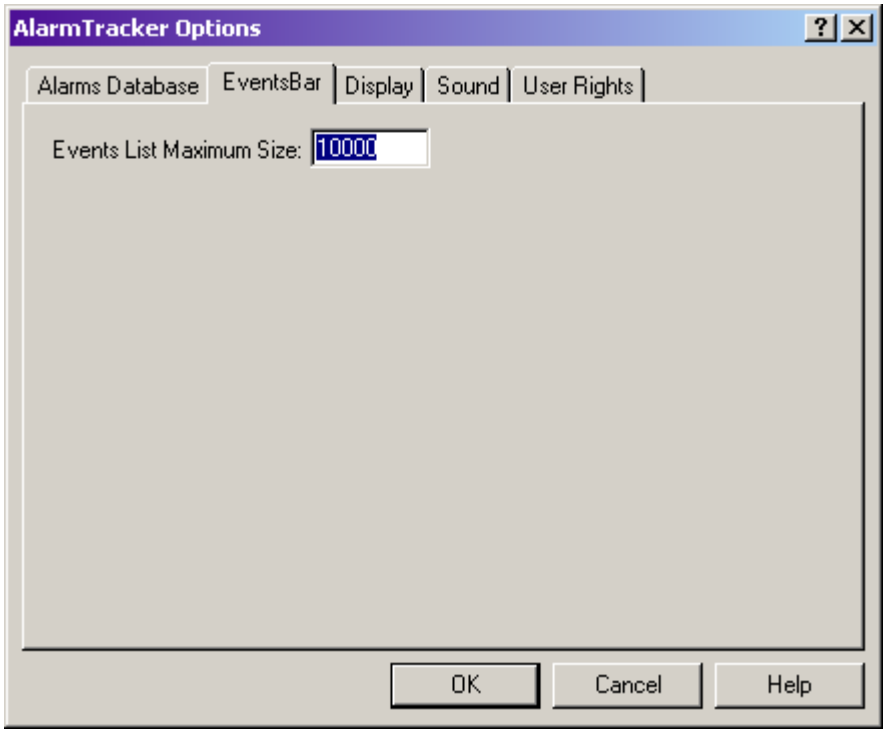
associated with an Alarm. This type of suppression is useful for an Alarm that has been excluded for a long time. Such an Alarm could see the object going up and down a large number of times - especially for an object that has been excluded for months. The suppression is done by deleting the oldest Events first, although the first Event (the Event that results in the creation of the Alarm object) is never deleted.

- **Maximum Event Repeat Count** - this value is also used to implement a form of event suppression or filtering to prevent the Alarms database from growing unbounded. Some Alarms result in an Event being phoned home every 5 minutes or so indicating that the Alarm is still down. This could result in a large number of Events associated with the Alarm, although there is little additional information contained in these repeat Events. The value in this field limits the number of repeat Events for an Alarm.

EventsBar

The EventsBar property page has a single setting which allows you to set the maximum number of Listener Events saved in each of the tabbed list controls. A sample of this page is shown in Figure 4-6:

Figure 4-6 AlarmTracker Options - EventsBar Tab

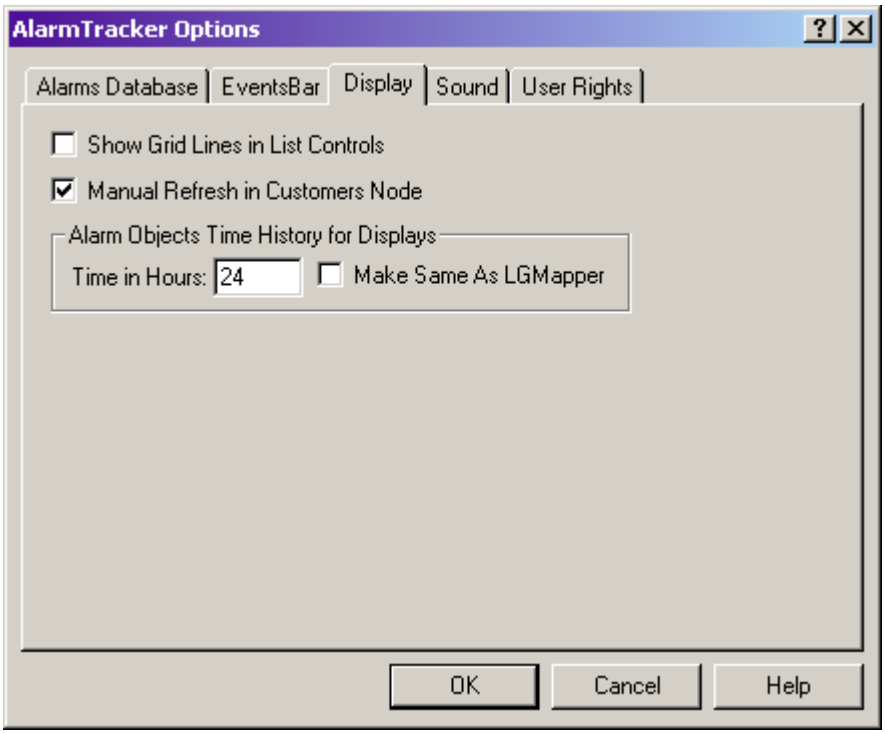


This setting is performance-related in that its value affects the virtual memory usage of the program. You can set this number to a maximum of 100,000 events. Once the control contains more than the number you specify, the oldest Events will be removed from the top of the control. This operation does not actually delete the Events in any way. It simply removes them from the control.

Display

The Display property page contains options that affect other display-related settings. A sample of this page is shown in Figure 4-7.

Figure 4-7 AlarmTracker Options - Display Tab



This property page contains the following options:

- **Show Grid Lines in List Controls** - allows you to turn grid lines on or off for all list controls. This is a global setting that affects all list controls in details mode. This includes the EventsBar tabs, the main View (when in details mode), Alarm View, Event View, Grid View (in details mode), and the Grid View dialog (in details mode). You can toggle this setting on and off.
- **Manual Refresh in Customers Node** - allows you to toggle manual refresh mode when the Customers (root) node is selected in the Tree View. This is a performance optimization and is checked by default. Normally, in

auto-refresh mode, the Main View's content is updated each time an Event comes in that might affect the display. Since the Customers node includes all other nodes under it, almost any incoming Event would result in the display being refreshed. When monitoring large customer sets, this could result in severe performance degradations depending on the Main View selected and other view options. Checking this box is a performance optimization that forces the refresh mode to always be manual when the Customers node is selected.

- **Alarm Objects Time History for Displays** - allows you to limit the amount of history shown in the Alarms Details View, Event Details View and Alarm Bars View. These views will always show open Alarms, but this setting controls the time history for showing closed Alarms. For example, a value of 24 for the Time in Hours option means that any Alarms in the database whose closed times are less than 24 hours ago will be displayed. Checking **Make Same As LGMapper** results in the maximum number of Alarms displayed. You may want to experiment with different settings to get what is best for you. Selecting too much time history may result in a display that is too cluttered or make the query times to the remote database slower. Selecting too little time may not give you the results or granularity that you desire.

Sound

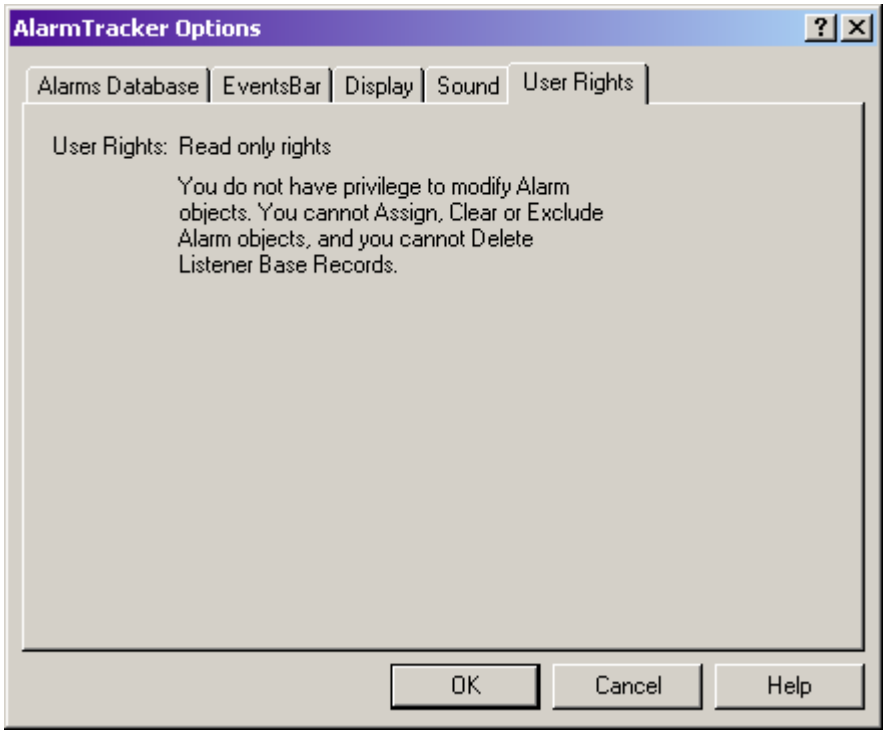
The Sound property page allows you to customize the audible Alarms feature of the product. This feature is discussed in more detail in Chapter 12, “Audible Alarms”.

User Rights

The User Rights property page indicates what kind of user rights you have been assigned.

A sample of this page is shown in Figure 4-8.

Figure 4-8 AlarmTracker Options - User Rights Tab



There are three possible values that you can see here:

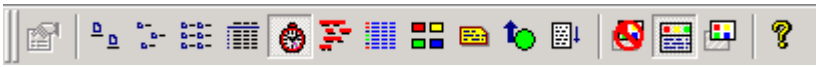
- **Read only rights** - You do not have privilege to modify Alarm objects. You cannot Assign, Clear, Exclude or Delete Alarm objects.
- **User rights** - You can modify Alarm objects. You can Assign, Clear and Exclude Alarm objects, but you can only Delete single-state Alarm objects.
- **Administrator rights** - You have full privileges to modify Alarm objects. You can Assign, Clear, Exclude and Delete Alarm objects.

Note You cannot change this setting. Your user rights have been determined by the LGMapper Administrator.

ToolBar

The Toolbar is shown in Figure 5-1 as the band of buttons just under the main menu bar. These buttons are simply shortcuts to a subset of the menu items available. As you move the mouse over the buttons, tooltips provide a hint as to what the button does. In addition, the StatusBar help text is updated with further hints.

Figure 5-1 Toolbar



The visibility of the Toolbar can be controlled using **View > Toolbar**.

StatusBar

The StatusBar is shown in Figure 6-1. It is band along the bottom of the main window.

Figure 6-1 StatusBar

General information on the menu option or Toolbar button currently selected is shown on the left side of the StatusBar.

On the right side of the StatusBar are two static text windows and two icons.

The first text window indicates the number of items contained in the Main View's display.

The second text window indicates the current refresh status as controlled by **View > Manual Refresh**. The text contained in this window will either be 'Auto Refresh' or 'Manual Refresh' indicating the current mode.

The two icons graphically show the state of the connections to the two LGMapper Servers.

Red Icon - Indicates no connection

Green Icon - Indicates a valid connection

Green Icon with Yellow Lightening BoltThrough It- Indicates an active connection.

In Figure 6-1 both Server1 and Server2 have no connection.

In Figure 3-4 on page 3-9, Server1 is an active connection, and there is no connection for Server2.

A tooltip will also appear when you hover over these icons with the mouse. This tooltip displays the Server name along with an indication if it is active or not.

The visibility of the StatusBar can be controlled using **View > StatusBar**.

Tree View

The Tree View represents the primary means of navigating through the hierarchy of Nodes. The analogy to the NT Explorer holds here where clicking on a Node effectively selects that Node as the Node to display more information about in the main View.

The Tree View shows a hierarchy of Nodes. A small plus sign (+) to the left of an icon means that there are child Nodes underneath that are not yet visible.

A small minus sign (-) to the left of an icon means that the child Nodes are currently being displayed.

Single clicking on the plus sign will open up the child Nodes for display. Single clicking on the minus sign will collapse the child Nodes. The same effect is achieved by double clicking on a Node.

There are two icons displayed next to each Node in the tree. The one to the right indicates the current State of the Node. The one to the left indicates the current assignment status of the Node. The meaning of these icons is described below.

Node State Icon

The rightmost icon for each Node displays the current State of the Node. This State is an overall graphical representation of the health and status of this Node. The underlying object model also supports the concept of a State rollup which means that the State of a child Node can affect the State of its parent. This concept is built into the design and is up to the user of the LGCnfg tool to decide how the various Nodes roll up their States. The AlarmTracker Client simply displays whatever State exists for that Node.

The State of a Node is actually determined by combining the overall status of all the Alarm objects related to the Node along with any rollup of the State values of the child Nodes contained by the Node. How this information is combined depends on the type of Node being displayed.

The following State icons and their meaning are shown here:

This icon indicates that the State of the Node is unknown. This usually means that no data has been seen for this Node since the Server was initialized.

This icon indicates that the State of the Node is Up.

This icon indicates that an Application Error has occurred on the Node.

This icon indicates that the Node is partially impaired. This means that at least one of its child Nodes is down, but, due to fault tolerant design, the overall operation of the Node is not compromised.

However, the presence of this State indicates that the user should drill down and look for trouble areas beneath it.

This icon indicates the Node is Down.

There are two other types of icons that may be seen in the State icon. These icons are actually an overlay of a bitmap on top of one of the icons shown above.

The first type of overlay is for a Hyperlink Node. This overlay is a yellow arrow superimposed on an icon. A Hyperlink Node is actually a reference to an actual Node somewhere else in hierarchy. It is most often used in a Logical or Functional branch of Nodes. The State of a Hyperlink Node will be the same as the State of the real Node that it refers to.

A Hyperlink Node will always appear as a leaf Node and can never have child Nodes. You can navigate to the real Node that the Hyperlink refers to by double clicking on this Node.

The other type of overlay indicates an Excluded Node. This overlay is a cyan diagonal line superimposed on the State icon. A Node can be Excluded by selecting **Edit > Exclude** or by right clicking on a Node and choosing Exclude.

When a Node is Excluded, it will continue to process Listener messages, but the State of an Excluded Node will not roll up to its parent.

The States of all child Nodes will also be displayed in this way. In addition, the Assignment status of the Node and all of its children is shown as Excluded (see Assignment Status Icon).

Assignment Status Icon

The second type of icon displayed in the Tree View is the Assignment status. This icon represents the rollup of the Assigned status of all contained Alarm objects.

The following Assignment status icons can be seen:

This icon indicates that there are no open Alarm objects for this Node.

This icon indicates that the Node is Excluded, or that there is at least one Excluded Alarm for this Node or one of its children.

This icon indicates that there is at least one assigned Alarm for this Node or one of its children.

This icon indicates that there is at least one unassigned Application Error Alarm for this Node or one of its children.

This icon indicates that at least one of the Alarm objects for this Node and its children is currently unassigned.

Display of Unassigned Alarms

For Customer nodes, in addition to the name of the Node being displayed in the Tree View, a count of the number of open Alarms which have not been assigned is displayed as a number in parentheses following the name. An Open Alarm is defined as an Alarm object that has been created, but is still in the Down state, or is assigned to a user. Application Errors, Simple Events and Excluded Alarms are not included in the count. If there are no unassigned Alarms for a Node, then no value is shown.

The value represents the total number of unassigned Alarms for all nodes associated with the Customer.

Navigating in the Tree View

You can open or close a Node in the view by simply clicking on the '+' or '-' icon that precedes the icons and Node name. You can also double-click on a Node to expand or collapse the Node.

You can also navigate using the arrow keys on your keyboard. The up and down arrow keys move the selected node up and down in the list. The left arrow key collapses an expanded node, or moves to the parent node if the node is collapsed. Similarly, the right arrow key expands a collapsed node, or moves to the first child of an expanded node.

The Node that is currently selected is highlighted, and this is the Node that is represented in the Main View.

You can also navigate to a node's parent using **View >View Parent Node** or the equivalent Toolbar button.

Edit Menu

Exclude/Include a Node

For the Tree View, the only Edit Menu option that is enabled is the Exclude Node/Include Node option. For the Tree View, any Node can be marked as Excluded by selecting **Edit > Exclude Node**. This has the effect of Excluding the Node selected and all of its child Nodes. The State of each Node will still be maintained, but its icon will have a cyan slash through it as described in Node State Icon, page 7-1.

Once a Node is Excluded, its State will not roll up to its parent Node.

When a Node is Excluded, you can Include the Node by selecting **Edit >Include Node**. (Note: When a Node is Excluded, **Edit > Exclude Node** changes its name to **Edit > Include Node**). This “unexcludes” or includes the Node that was previously Excluded. The cyan slash will disappear and the Node's State will once again roll up to its parent.

Context Menus

You can invoke a context menu by right-clicking on a Node. The only item that appears is the Exclude Node/Include Node item. This has the same behavior as using **Edit > Exclude Node** as described in Exclude/Include a Node.

Main View

The AlarmTracker Client Main View is tightly coupled with the Tree View in the sense that the information displayed in the Main View is specific to the particular Node selected in the Tree View. In this sense, the operation of AlarmTracker Client is very much like the Windows Explorer.

There are a number of view options that allow you to select how you want to view information for the currently selected Node. These are described in the following section.

View Options

The choice of which view is desired is done via the View menu. The choices are:

- **Large Icons** - shows the Main View as large icons.

- **Small Icons** - shows the Main View as small icons.

- **List** - shows the Main View as a list of items.

- **Details** - shows the Main View as a detailed list of items.

- **Alarm Details** - shows the Main View as a detailed list of Alarm objects.

- **Alarm Bars** - shows the Main View as a graphical representation of Alarm objects.

- **Event Details** - shows the Main View as a detailed list of Events.

- **Object State** - shows the current state of all Listener objects for the node selected.

- **Ticket ID Finder** - allows you to display all Alarms associated with a particular Ticket ID.

The first four choices are very much like the Windows Explorer choices. These are described in List View.

The last five choices represent different types of views for displaying information about the Node selected. These are described in the Alarm Details View, Alarm Bars View, Event Details View, Object State View, and Ticket ID Finder View sections following.

List View

The List View is very much like the Windows Explorer's main view. This view displays a collection of the Nodes contained by the currently selected Node along with the Attributes of the selected Node. Every Node has a State Attribute and this Attribute is what drives the State icon of the Node itself. Other Attributes are optional and may or may not contribute to the value of State Attribute.

Icons

The icons for Nodes in the List View are the same as those for the Tree View as described in Node State Icon, page 7-1. Different icons are used for Attributes to distinguish them from a Node.

The following icons may be seen:

(dark green) The state of the Attribute is unknown.

(green) The state of the Attribute is Up.

(yellow) The state of the Attribute is partially impaired.

(red) The state of the Attribute is Down.

(white) The state of the Attribute is unknown, or the Attribute is a non-state Attribute.

View Styles

As described earlier, the view styles for the List View include large icons, small icons, list view and details. These styles are very similar to the Windows Explorer styles.

The Details selection shows some additional information that is not seen in the other views. This view shows four columns of information:

- **Name** - the name of the Node or Attribute.
- **State/Value** - the State of the Node, or the value of the Attribute.
- **Time In State** - the time the Node has been in the current state, or the Attribute has had its current value.
- **Active Alarms** - for a Node, this is number of open Alarm objects that are currently unassigned.

Navigation

To change between the different types of List Views, you can use the View menu selections, or the equivalent Toolbar button.

You can "drill down" into a Node by double clicking on a Node in any of the List Views.

You can move up to a Node's parent by using **View > View Parent Node** or the corresponding Toolbar button.

Alarm Details View

The Alarm Details View is a different type of view that displays information about the Alarm objects related to the currently selected Node. You can select the Alarm Details View using **View > Alarm Details** or the corresponding Toolbar button.

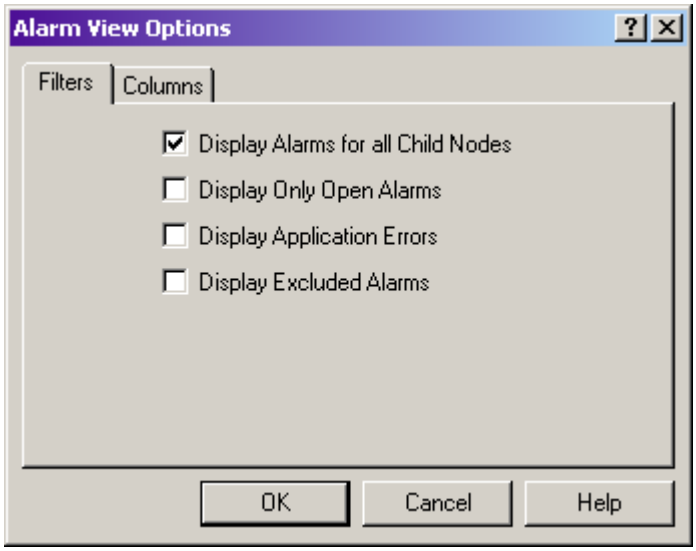
The Alarm Details View contents are displayed in a list control in details mode. A sample of the Alarm Details view is shown in AlarmTracker Client Showing Available Views, page 3-9.

The content of the view and the number of columns shown are controlled by options that you can select using a property sheet.

Filtering Alarm Objects

You can control the types of Alarm objects displayed in this view using **View > View Options** or the context menu. This menu choice displays the property sheet pages (tabs) shown in Figure 8-1 and Figure 8-2.

Figure 8-1 Alarm View Options - Filters Tab



The Filters page allows you to display different types of Alarm objects:

- **Display Alarms for all Child Nodes** - Checking this box displays Alarm objects for the currently selected Node, and all of its child Nodes.
- **Display Only Open Alarms** - Checking this box shows only Alarms that are currently open. Any Alarm objects that are closed or deleted will not be seen.

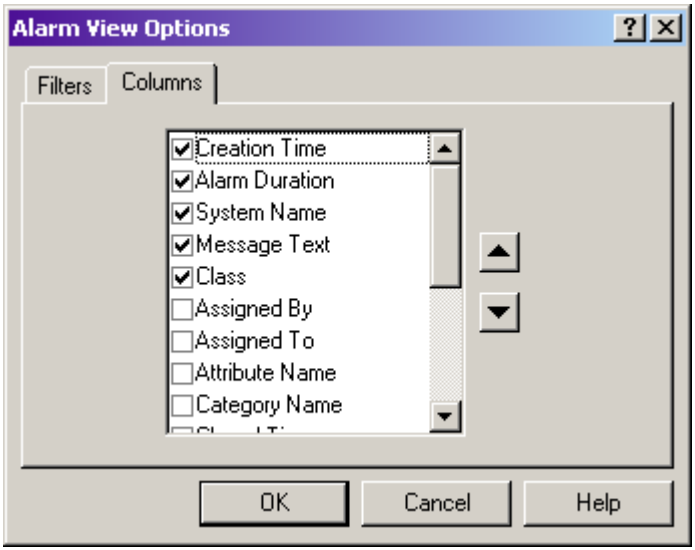
- **Display Application Errors** - Checking this box includes Application Errors in the display. Since these are often thought of as lower priority Alarms, you have the option to hide these from the display.
- **Display Excluded Alarms** - Checking this box includes Alarms objects that are currently Excluded in the display.

These filter options are also available as Toolbar buttons that appear when the Alarm Details View is the current Main View option.

Controlling the Information Displayed

The Columns Property Page shown in Figure 8-2 shows how you can control the amount of information displayed in the columns of the list control. The page presents a list box of items which you can check or uncheck, and move up or down to determine the order in which they are displayed in the control.

Figure 8-2 Alarm View Options - Columns Tab



You can control the width of the columns by dragging the column dividers in the control.

The information on which columns are displayed and the width of the columns is saved in the Registry so that the next time you start AlarmTracker Client, these settings are the initial settings for your display.

Sorting Alarms

The order in which Alarms are displayed can be controlled by clicking on any of the displayed column headers. Clicking once sorts the column in ascending order and is indicated by superimposing a small triangle pointing up. Clicking on the same column again sorts the column in descending order and is indicated by a small triangle pointing down.

When you sort on the first column (the unlabeled icon column) the descending sort order is determined by the following criteria:

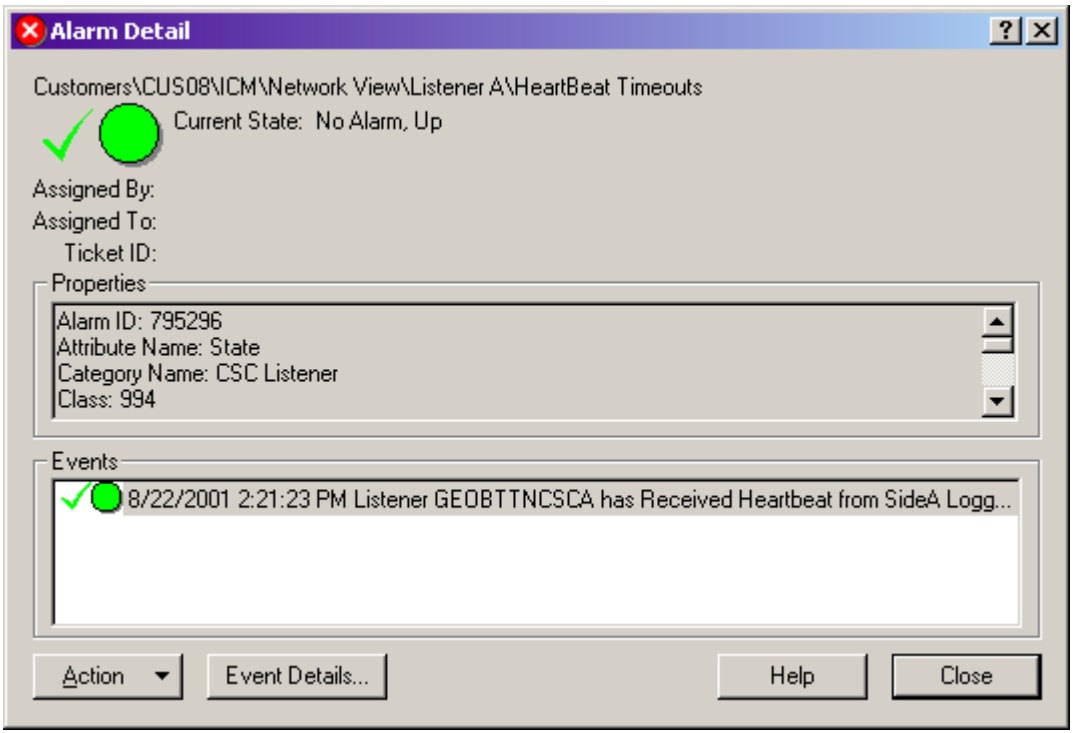
1. Down and Unassigned (most severe),
2. Down and Assigned,
3. Down and Excluded,
4. Application Error and Unassigned,
5. Application Error and Assigned,
6. Application Error and Excluded,
7. Up and Assigned,
8. Up and no Alarm (closed Alarms) (least severe).

Showing Alarm Details

For any Alarm Object in the view, you can show more details about it by double-clicking the selected object, by choosing **Edit > Properties**, by selecting the corresponding Toolbar button (shown below), or by selecting **Properties** from the context menu.

This results in a modal dialog box appearing which shows the details of the Alarm Object. A sample of this dialog box appears in Figure 8-3

Figure 8-3 Alarm Detail Dialog



This dialog box has a number of features.

- The parsed Node name is shown at the top with each Node separated with a backslash (\) character.
- The current state of the Alarm Object is shown next both in iconic form and in text form. The meaning of the icons are described in sections 8.1 and 8.2.
- The **Assigned By** field indicates the user name of the person who Assigned or Excluded the object.
- The **Assigned To** field indicates the name of the user or group that is assigned to this Alarm. This optional field can be filled in when the user Assigns or Excludes the Alarm.
- The **Ticket ID** indicates the Ticket ID that can be associated with this Alarm. This Ticket ID field provides a loose coupling between the Remote Monitoring system and an external trouble ticket reporting system. This optional field can be filled in when the user Assigns or Excludes the Alarm.
- A read-only edit box is shown which shows some properties associated with the Alarm Object. These properties are part of the Listener Events that make up this Alarm Object.
- Below that are the **Events** that make up this Alarm Object. This is the list of Listener Events that make up the Alarm Object. Note that the time seen in this list control is the time that the Event is received by the LGMapper Server. To get more information on an individual event, you can double click on the event you want to see or click **Event Details**. This will pop up another modal dialog that is described in Event Details, page 8-10.
- At the bottom of the dialog is a menu button labeled **Action** that allow you to take action on the Alarm Object. Depending on the state of the Alarm Object and your User Rights, some of these options may be disabled, or named differently. The following menu items appear when you click on the **Action** button:
  - **Assign/Unassign** - this option allows you to assign the Alarm Object or unassign it if it is already assigned. This action results in an event being sent to the connected server and on to its connected Listener to indicate that you are assigning/unassigning this object. If it is a valid operation, Listener will then broadcast this to the LGMapper servers which then broadcasts it to all connected AlarmTracker Clients.

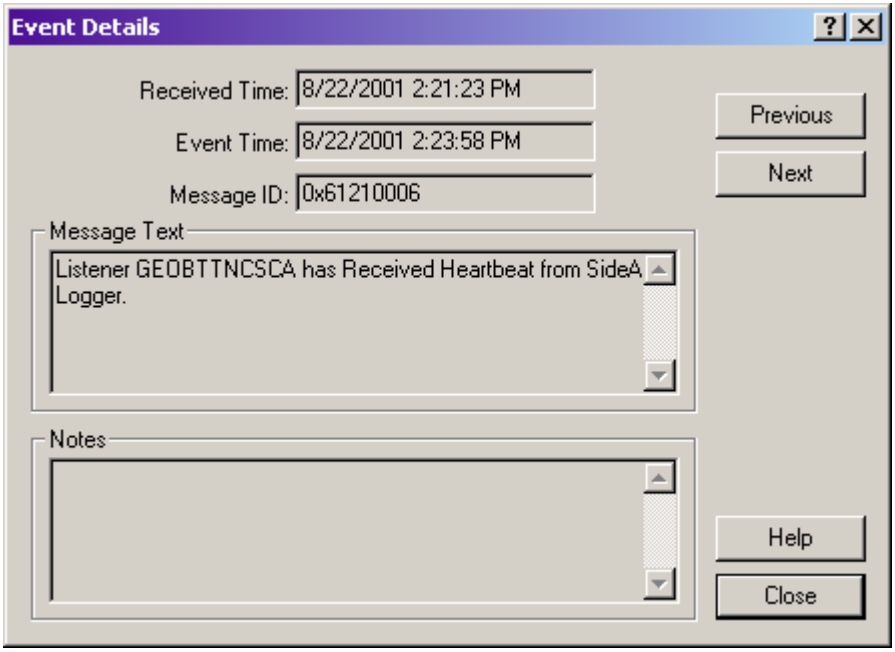
Thus, when you assign/unassign an object, all other connected clients will see the result of this operation. The result is seen in the form of a Listener event and another State Transition in this dialog. The state of the Alarm Object is also changed. Because of the chain of processing involved in pressing this button, the result may not be seen immediately.

- **Exclude/Include** - this button allows you to Exclude the Alarm Object or Include it if it is currently Excluded. The processing involved for this operation is identical to the processing for the Assign/Unassign operation described above.
- **Clear** - this button allows you to manually clear (set to Up) an Alarm Object that is currently Down. The processing involved for this operation is identical to the processing for the Assign/Unassign operation described above.
- **Delete** - this button allows you to Delete the Listener object and all Alarms objects associated with the Listener object. This can only be done for Alarm Objects that are currently closed or unassigned.

Event Details

When you double click on an event in the Events list control as seen in Figure 8-3 or when you click **Event Details** for a selected Event, another modal dialog box appears which gives you more details on the event you selected. This is shown in Figure 8-4.

Figure 8-4 Event Details Dialog



This dialog shows the following fields:

- **Received Time** - this is the time the Event was received at the LGMapper server.
- **Event Time** - this is the time the Event occurred at the customer site, shown relative to the local time zone. For example, if the customer is in the US Central time zone and the AlarmTracker Client is in the US Eastern time zone (one hour later than Central) and the Event occurred at 09:00:00 in the central time zone, the time displayed in the Event Time control is 10:00:00.
- **Message ID** - this is the hexadecimal EMS message ID associated with the Event.
- **Message Text** - this is the message text associated with the Event.
- **Notes** - for user actions, this field stores any notes entered by the user who assigned, excluded or cleared the Alarm.

There is also a **Help** button on this page which allows you to see more information on the particular hexadecimal EMS Message ID being displayed. This gives you more information on this particular Listener Event.

If the Alarm Detail dialog includes multiple Events in the State Transitions list control, the Previous and Next buttons allow you to navigate to each Event without leaving this dialog.

The Edit Menu

The following Edit menu items are enabled when the Alarm Details View has focus:

- **Display Alarms for all Child Nodes** - checking this menu option displays Alarm objects for the currently selected Node, and all of its child Nodes.
- **Display Only Open Alarms** - checking this menu option shows only Alarms that are currently open. Any Alarm objects that are closed will not be displayed.
- **Display Application Errors** - checking this menu option includes Application Errors in the display. Since these are often thought of as lower priority Alarms, you have the option to hide these from the display.
- **Display Excluded Alarms** - checking this menu option displays Alarms objects that are currently Excluded.
- **Assign/Unassign** - this menu selection applies to the currently selected Alarm Object and has the same effect as the Assign button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.
- **Exclude/Include** - this menu selection applies to the currently selected Alarm Object and has the same effect as the Exclude button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.
- **Clear** - this menu selection applies to the currently selected Alarm Object and has the same effect as the Clear button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.
- **Delete**- this menu selection applies to the currently selected Alarm Object and has the same effect as the Delete button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.

This selection results in a message being sent back to the originating Listener requesting that the object be deleted from the Listener Base Records. If allowed, the request is then broadcast by Listener to the LGMapper Servers and then on to all Clients.

The result is that the object is deleted from the Listener Base Records and all Alarm objects associated with the Listener object are deleted from the Alarms Database. By all instances of the object we mean that if the same Alarm has been raised and cleared several times, then by deleting its Base Record, all instances of this Alarm are deleted.

You can delete any Alarm Object that is not currently Assigned or Excluded. This includes Alarms that are no longer open.

- **Properties** - this menu selection applies to the currently selected Alarm Object and has the same effect as double clicking on an Alarm Object. This results in the display of the Alarm Details dialog as described in Showing Alarm Details, page 8-8.

Depending on the state of the Alarm Object, not all of these menu items will be enabled.

The first four items in the above list which have icons shown with them are also included on an Edit Toolbar that appears when the Alarm Details View has focus. These buttons represent shortcuts to these same **Edit** menu options.

Context Menu

When you right click on an Alarm Object, a context menu appears with the following items:

- Assign/Unassign
- Exclude/Include
- Clear
- Delete
- Properties
- View Options

These options are described in The Edit Menu, page 8-12.

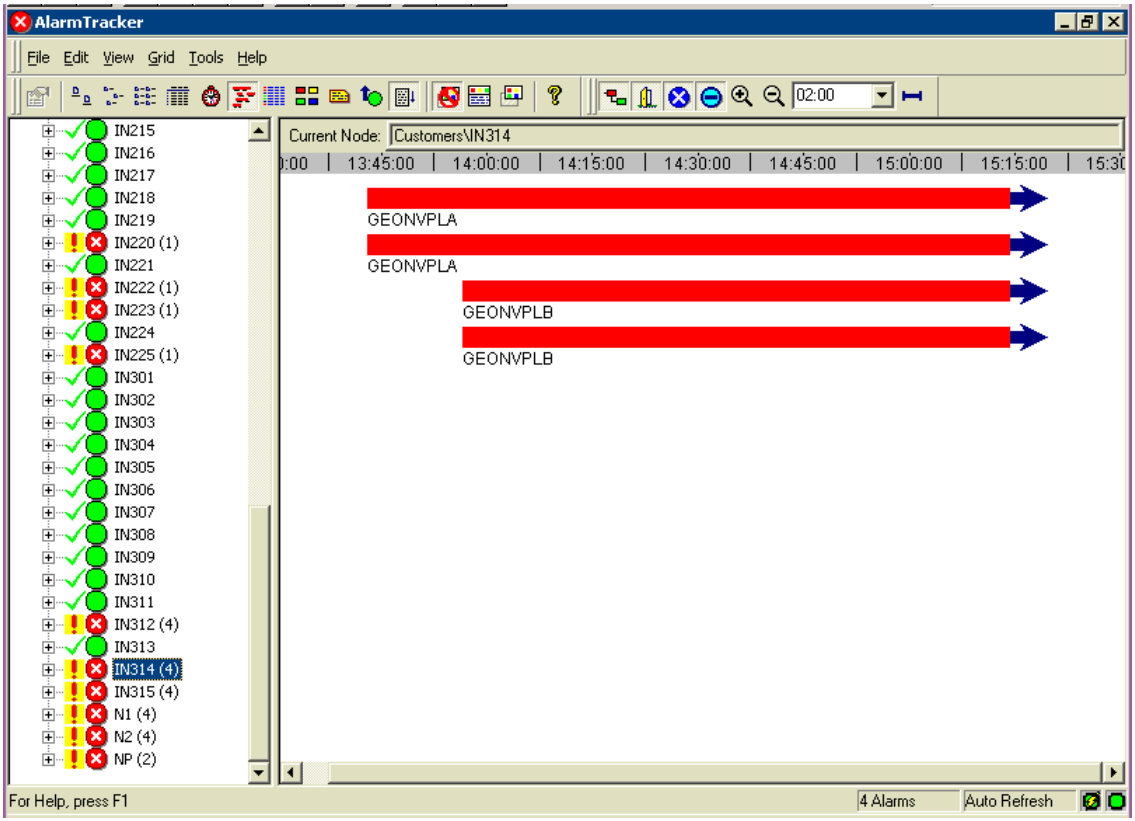
Alarm Bars View

The Alarm Bars View is a view similar to the Alarm Details View that displays information about the Alarm objects related to the currently selected Node in a graphical time-oriented manner. It is shown as a set of horizontal bars where each one represents a single Alarm object. Each bar displays the set of State transitions as a different color scheme throughout its duration. The purpose of this View is to present Alarm information in a time-oriented manner so that you might detect patterns in the way Alarms are occurring. It also gives you the chance to clearly see that a particular Alarm object is going up and down in some kind of pattern.

You can select the Alarm Bars View using **View >Alarm Bars** or corresponding Toolbar button.

A sample of the Alarm Bars View is shown in Figure 8-5.

Figure 8-5 Alarm Bars View



How the Alarm Objects Are Displayed

Each Alarm object is shown as a horizontal bar in the View with a time scale running horizontally across the top of the View.

The time scale shows the time of day as **hh:mm:ss**. For scales that span multiple days, you can see the day by moving the mouse over the ruler. A tooltip will pop up indicating the current day. The width of the view window spans a time interval equal to the value shown in the combo box on the Edit Toolbar. In Figure 8-5, this interval is one hour (01:00). The total time extent is, by default, determined by the

earliest Creation Time of the all the Alarms being displayed. The maximum time is slightly greater than the current time. The horizontal scroll bar allows you to move across this time span.

Each Alarm bar represents a single Alarm object. The left edge of the bar indicates the time that the Event that signaled the Alarm was received by the LGMapper. All other Events that mark State transitions are shown as different colored sections in the bar. Each time marked is the time that the Event was received by the LGMapper Server.

Multiple Alarms for the same Listener object are shown on the same row. Thus, in this view you can see patterns of a device continuously "bouncing" if you see many Alarm bars on the same row.

You may also be able to visually correlate Alarms for different devices as you look up and down in the display.

The following colors and patterns are used to indicate Alarm State and Assignment Status:

- **Solid red** - indicates a Down State that is unassigned,
- **Solid blue** - indicates an Application Error that is unassigned,
- **Diagonal hatched pattern of red and brown** - indicates a Down State that is assigned,
- **Diagonal hatched pattern of green and brown** - indicates an Up State that is assigned,
- **Diagonal hatched pattern of red and cyan** - indicates a Down State that is Excluded,
- **Diagonal hatched pattern of green and cyan** - indicates an Up State that is Excluded.
- **Diagonal hatched pattern of blue and brown** - indicates an Application Error that is assigned,

In addition, Alarms that are shown with a **right-pointing arrow** indicate Alarm objects that are still open.

All Alarm objects are shown with the System Name associated with the Alarm drawn below each Alarm Bar. When the View has focus, a ToolTip will also pop up when you hover over an Alarm bar. The ToolTip contains information about the particular Alarm segment you are hovering over. This ToolTip contains the following information:

- **Received Time** - Time the Event was received by the LGMapper Server.
- **Event Time** - The time the Event occurred at the Customer site (adjusted to local time).
- **Time in State** - The time the Alarm object has been in the State you are hovering over.
- **State and Assignment Status**
- **Message Text**

Filtering Alarm Objects

The set of filtering options for this View is identical to that of the Alarm Details View. These options can be invoked using **View >View Options**, or using the **View Option**s context menu choice. See Filtering Alarm Objects, page 8-5 for details on these filter options.

In addition, you can sort the Alarm Bars based severity or by Creation Time.

Changing the Display Attributes

When the Alarm Bar View is visible, the Edit menu and the Edit Toolbar can be used to change filter and zoom settings. The Toolbar is a standard Windows control bar that can be docked or floated on the desktop.

The Toolbar includes the following buttons and controls:

- **Display Alarms for all Child Nodes** - checking this button displays Alarm objects for the currently selected Node, and all of its child Nodes.

- **Display Only Open Alarms** - checking this button shows only Alarms that are currently open. Any Alarm objects that are closed will not be seen.

- **Display Application Errors** - checking this button includes Application Errors in the display. Since these are often thought of as lower priority Alarms, you have the option to hide these from the display.

- **Display Excluded Alarms** - checking this button displays Alarms objects that are currently Excluded.

- **Zoom In** - Incrementally decreases the visible time window visible in the view each time you click it. This time window value is updated in the combo box to the right of the button. The minimum time window is set to 30 minutes.

- **Zoom Out** - Incrementally increases the visible time window visible in the view each time you click it.

- **Time Window** - A combo box that shows the current time window visible, and allows you to select a visible time window from a pick list, or enter any positive value in the format **hh:mm** that you like.

- **Edit Time Window** - button that allows you to select the minimum and maximum times shown in the View. The default is to select a time interval that includes the earliest creation time of the Alarm displayed and shows time slightly past the current time of day.

To manually set the minimum and maximum times, uncheck the **Use Default Time Window** check box. To return to the default settings, check this box. You can also edit the time window via the AlarmBars View Options dialog by selecting **View >View Options**.

You can also set the filter options using the Filter property page by selecting the **View > View Options**. Similarly, you can edit the time window values in the Time Window property page.

Getting More Information on an Alarm

You can double-click on an Alarm object which will present the Alarm Detail dialog as described in Figure 8-3 on page 8-8. Alternatively, you can right click on an Alarm object and select **Properties**.

You can also right click on an Alarm and Assign, Exclude, Clear or Delete the object as described in The Edit Menu, page 8-12.

The Edit Menu

The Edit menu for the Alarm Bars View contains the items described in The Edit Menu, page 8-12.

Context Menu

The context menu that pops up when you right click on an Alarm Bar contains the following items:

- Assign/Unassign
- Exclude/Include
- Clear
- Delete
- Properties
- View Options

These items are described in Changing the Display Attributes, page 8-17 and The Edit Menu, page 8-12

Event Details View

The Events View is a view that displays a time-ordered list of Listener Events related to the currently selected Node. It is presented as a list control in details mode.

The information displayed in the view is controlled by options that you can select using a property sheet. The Events View output is identical to the EventsBar output as described in Chapter 10, “EventsBar”, . The main difference here is that you are automatically filtering the output for the particular Node selected in the Tree View.

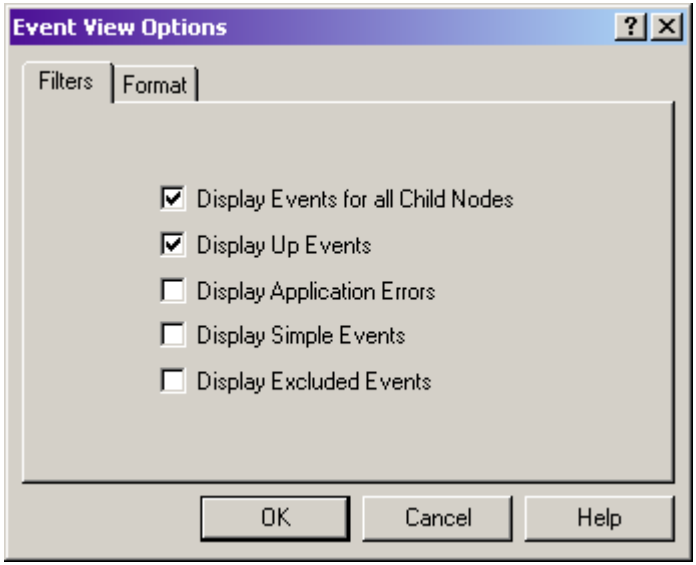
You can switch to the Event Details View using **View > Event Details** or the equivalent Toolbar button.

Listener Events are the actual messages that the Listener process receives from customer sites. These events are the constituent parts of an Alarm Object as described in Alarm Details View, page 8-4.

Filtering Events

You can control the types of Alarm objects displayed in this view using **View > View Options** or the context menu. This menu choice displays a Property Sheet shown in Figure 8-6.

Figure 8-6 Event View Options - Filters Tab



The Filters Property Page shows how you can filter the output to include or exclude different types of events.

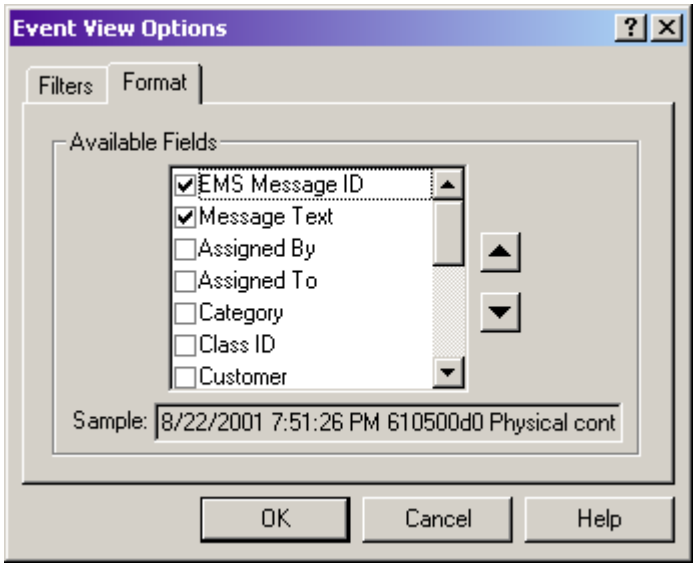
- **Display Events for all Child Node**s - Checking this box shows Events for the currently selected Node, and all of its child Nodes.
- **Display Up Events** - Checking this box shows Up Events. If you are mainly interested in seeing only Down Events, you may want to leave this box unchecked.
- **Display Application Errors** - Checking this box includes Application Errors in the display. Since these are often thought of as lower priority Events, you have the option to hide these from the display.
- **Display Simple Events** - checking this box includes Simple Events in the display. Simple Events are informational messages that do not have the concept of raise and clear so they are not part of any Alarm Object.
- **Display Excluded Events** - checking this box includes Excluded Events in the display. Excluded Events are Events associated with Excluded Alarm objects. You may see some Excluded Events in the display, even if this option is not selected. This may happen if an Alarm that was once Excluded is no longer Excluded.

Note Filtering is based on the state of the Alarm Object not the state of the Alarm Object. It is possible to filter out Excluded events but see them in the Events View if the Alarm Object to which they belong is currently in another state (such as Down) while it was previously excluded.

Controlling the Information Displayed

The second property page in the **View > Options** Property Sheet is the Format page as shown in Figure 8-7.

Figure 8-7 Events View Options



This property page shows how you can control the amount of information displayed in the list control. The page presents a list box of items which you can check or uncheck, and move up or down to determine the order in which they are displayed in the control.

The information on which items are displayed is saved in the Registry so that the next time you start AlarmTracker Client, these settings are the initial settings for your display.

Showing Alarm Details

You can double click on an Event in the list control and a modal Alarm Details dialog appears that shows you the Alarm Object associated with the Event you selected. This dialog is identical to the one described in Showing Alarm Details, page 8-8.

The Edit Menu

The following Edit menu items are enabled when the Events View has focus:

- **Display Events for all Child Nodes** - Checking this box shows Events for the currently selected Node, and all of its child Nodes.

- **Display Up Events** - Checking this box shows Up Events. If you are mainly interested in seeing only Down Events, you may want to leave this box unchecked.

- **Display Application Errors** - Checking this box includes Application Errors in the display. Since these are often thought of as lower priority Events, you have the option to hide these from the display.

- **Display Excluded Events** - Checking this box includes Excluded Events in the display. Excluded Events are Events associated with Excluded Alarm objects.

- **Display Simple Events** - Checking this box includes Simple Events in the display. Simple Events are informational messages that do not have the concept of raise and clear so they are not part of any Alarm Object.

- **Properties** - This menu selection applies to the currently selected Event and has the same effect as double clicking on an Event. This results in the display of the Alarm Details dialog as described in Showing Alarm Details, page 8-8.

Depending on the state of the Alarm Object that the selected Event is part of, not all of these menu items will be enabled.

Context Menu

When you right click on an Event, a context menu appears with the following items:

- Properties
- View Options

Object State View

The Object State View is a view that is almost identical in format to the Alarm Details View described in Alarm Details View, page 8-4. The primary difference is that it displays only the current object (Alarm) state of all Listener objects for the selected node subject to the filtering constraints applied.

You can switch to the Object State View by selecting **View > Object State**, or the equivalent Toolbar button.

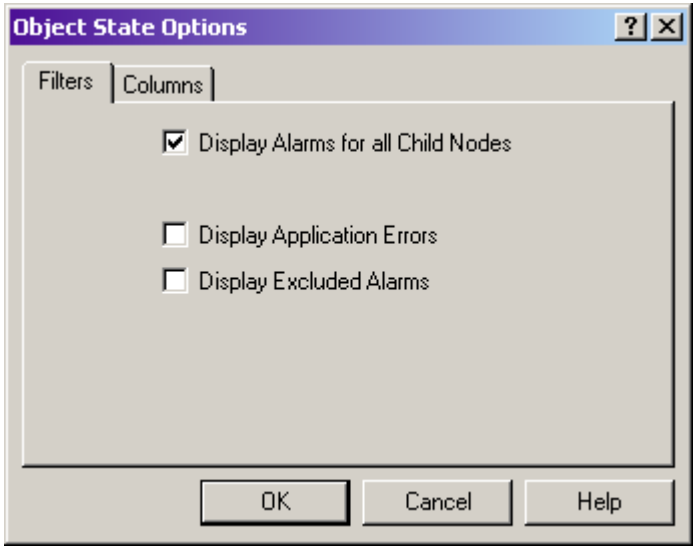
One difference that may be quickly seen in the Object State View is that Listener objects not associated with real Alarm objects may be seen. That is, Listener maintains the current state of all known objects. Many of these states represent an

"up" state. When LGMapper initializes, it reads the full set of Listener Base Records and creates Alarm objects for all Listener objects not in an up state. LGMapper also creates an Alarm object for all Listener objects in the up state, but these Alarm objects are marked as not real Alarms. They can be displayed in the Object State View, but are not displayed in the Alarm Details View since they are not real Alarm objects.

Filtering Objects

You can control the types of objects displayed in this view via the **View > View Options** menu choice or context menu option. This menu choice displays a Property Sheet shown in the following figure.

Figure 8-8 Object State Options - Filters Tab



The Filters page allows you to display different types of Alarm objects:

- **Display Alarms for all Child Nodes** - Checking this box displays Alarm objects for the currently selected Node, and all of its child Nodes.

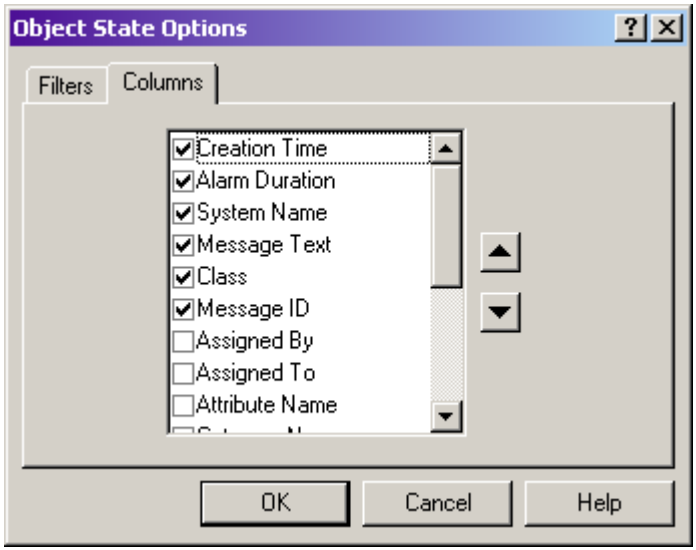
- **Display Application Errors** - Checking this box includes Application Errors in the display. Since these are often thought of as lower priority Alarms, you have the option to hide these from the display.
- **Display Excluded Alarms** - Checking this box includes Alarms objects that are currently Excluded in the display.

These filter options are also available as Toolbar buttons that appear when the Object State View is the current Main View option.

Controlling the Information Displayed

The Columns Property Page shown in Figure 8-9 shows how you can control the amount of information displayed in the columns of the list control. The page presents a list box of items which you can check or uncheck, and move up or down to determine the order in which they are displayed in the control.

Figure 8-9 Object State Options - Columns Tab



You can control the width of the columns by dragging the column dividers in the control or by double clicking on the column divider to auto size it.

The information on which columns are displayed and the width of the columns is saved in the Registry so that the next time you start AlarmTracker Client, these settings are the initial settings for your display.

The Edit Menu

The following Edit menu items are enabled when the Object State View has focus:

- **Display Alarms for all Child Nodes** - checking this menu option displays Alarm objects for the currently selected Node, and all of its child Nodes.

- **Display Application Errors** - checking this menu option includes Application Errors in the display. Since these are often thought of as lower priority Alarms, you have the option to hide these from the display.

- **Display Excluded Alarms** - checking this menu option includes Alarms objects that are currently Excluded in the display.

- **Assign/Unassign** - This menu selection applies to the currently selected Alarm Object and has the same effect as the Assign button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.
- **Exclude/Include** - This menu selection applies to the currently selected Alarm Object and has the same effect as the Exclude button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.
- **Clear** - This menu selection applies to the currently selected Alarm Object and has the same effect as the Clear button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.
- **Delete** - This menu selection applies to the currently selected Alarm Object. This selection results in a message being sent back to the originating Listener requesting that the object be deleted from the Listener Base Records. If allowed, the request is then broadcast by Listener to the LGMapper Servers and then on to all Clients.

The result is that the object is deleted from the Listener Base Records and all Alarm objects associated with the Listener object are deleted from the Alarms Database. By all instances of the object we mean that if the same Alarm has been raised and cleared several times, then by deleting its Base Record, all instances of this Alarm are deleted.

You can delete any Alarm Object that is not currently Assigned or Excluded. This includes Alarms that are no longer open.

- **Properties** - This menu selection applies to the currently selected Alarm Object and has the same effect as double clicking on an Alarm Object. This results in the display of the Alarm Details dialog as described in Showing Alarm Details, page 8-8.

Depending on the state of the Alarm object and on your User Rights, not all of these menu items will be enabled.

The first three items in the above list which have icons shown with them are also included on an Edit Toolbar that appears when the Object State View has focus. These buttons represent shortcuts to these same **Edit** menu options.

Context Menu

When you right click on an Alarm Object, a context menu appears with the following menu items:

- Assign/Unassign
- Exclude/Include
- Clear
- Delete
- Properties
- View Options

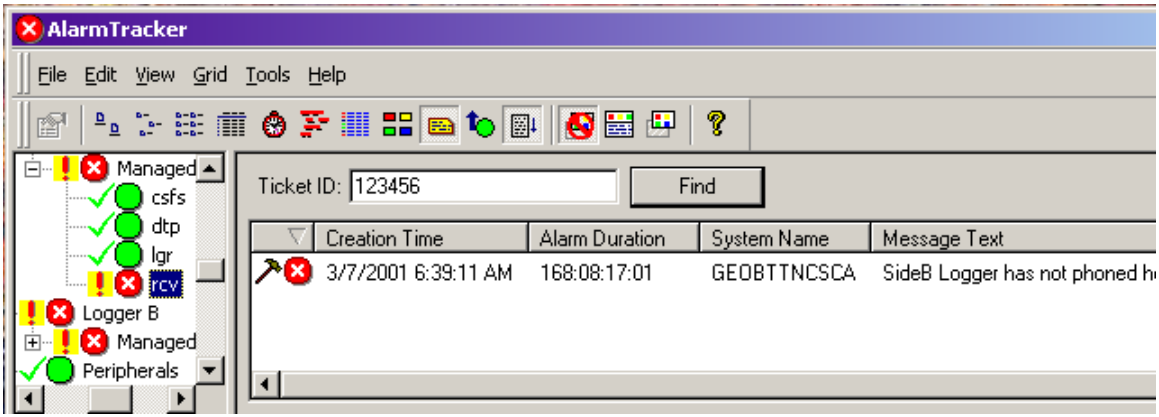
A description of these context menu items is included in The Edit Menu, page 8-27.

Ticket ID Finder View

The Ticket ID Finder View is a list control view that is very similar in format to the Alarm Details View described in Alarm Details View, page 8-4. The primary difference is that it also includes some controls at the top of the view to allow you to select a specific Ticket ID to search for. This view is used to display all Alarm objects associated with a particular Ticket ID.

You can switch to the TicketID Finder View by selecting **View > Ticket ID Finder**, or the equivalent Toolbar button.

Figure 8-10 Sample of Ticket ID Finder View



When you enter a Ticket ID and click **Find**, the list control will fill with all Alarm objects that have that match the Ticket ID entered.

This view is most useful when a set of Alarms are generated for some system fault and they all get associated with a single trouble ticket. Sometimes it is useful to clear or delete all such Alarms so this view provides an easy way to quickly find them all.

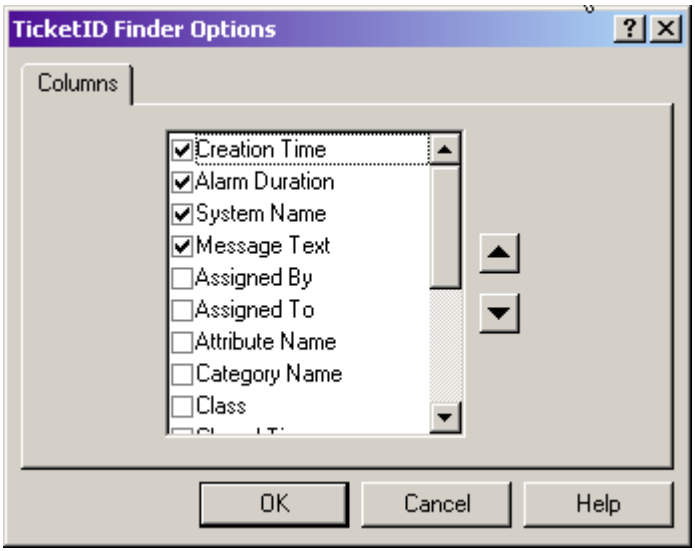
Entering a Ticket ID

The Ticket ID is a case-insensitive text field so you can enter arbitrary text. When you click **Find**, a SQL query is generated that queries the Alarms Database for all Alarm objects whose TicketID field match what you entered. The resulting rowset is displayed in the view.

Controlling the Information Displayed

You can control the columns displayed in this view via the **View > View Options** or the context menu option. This menu choice displays a Property Sheet shown in Figure 8-11.

Figure 8-11 Ticket ID Finder Options



The Columns Property Page shown in Figure 8-11 shows how you can control the columns displayed in the list control. The page presents a list box of items which you can check or uncheck, and move up or down to determine the order in which they are displayed in the control.

You can control the width of the columns by dragging the column dividers in the control or by double clicking on the column divider to auto size it.

The information on which columns are displayed and the width of the columns is saved in the Registry so that the next time you start AlarmTracker Client, these settings are the initial settings for your display.

The Edit Menu

The following Edit menu items are enabled when the Ticket ID Finder View has focus:

- **Assign/Unassign** - this menu selection applies to the currently selected Alarm Object and has the same effect as the Assign button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.
- **Exclude/Include** - This menu selection applies to the currently selected Alarm Object and has the same effect as the Exclude button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.
- **Clear** - This menu selection applies to the currently selected Alarm Object and has the same effect as the Clear button in the Alarm Details dialog as described in Showing Alarm Details, page 8-8.
- **Delete** - This menu selection applies to the currently selected Alarm Object. This selection results in a message being sent back to the originating Listener requesting that the object be deleted from the Listener Base Records. If allowed, the request is then broadcast by Listener to the LGMapper Servers and then on to all Clients. The result is that the object is deleted from the Listener Base Records and all Alarm objects associated with the Listener object are deleted from the Alarms Database. By all instances of the object we mean that if the same Alarm has been raised and cleared several times, then by deleting its Base Record, all instances of this Alarm are deleted. You can delete any Alarm Object that is not currently Assigned or Excluded. This includes Alarms that are no longer open.
- **Properties** - This menu selection applies to the currently selected Alarm Object and has the same effect as double clicking on an Alarm Object. This results in the display of the Alarm Details dialog as described in Context Menu, page 8-19.

Depending on the state of the Alarm object and on your User Rights, not all of these menu items will be enabled.

Context Menu

When you right click on an Alarm Object, a context menu appears with the following menu items:

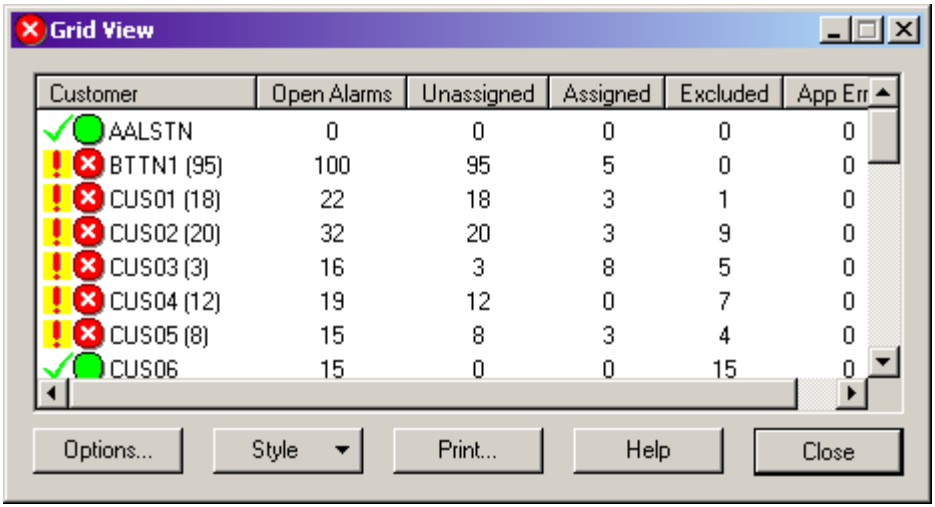
- Assign/Unassign
- Exclude/Include
- Clear
- Delete
- Properties
- View Options

A description of these context menu items is included in The Edit Menu, page 8-12.

Grid View

Grid View is intended to present a high-level overview of the health of the Customer set being monitored. It is presented as a list control similar to the Main View as described in Chapter 10, "EventsBar" with icons indicating the State and overall Assignment Status of each Customer Node. However, unlike the Main View, you cannot drill down into the set of Nodes under the Customer Node. A sample of Grid View when it is floating as a modeless dialog on your desktop is shown below.

Figure 9-1 Floating Grid View



Customer	Open Alarms	Unassigned	Assigned	Excluded	App Err
AALSTN	0	0	0	0	0
BTTN1 (95)	100	95	5	0	0
CUS01 (18)	22	18	3	1	0
CUS02 (20)	32	20	3	9	0
CUS03 (3)	16	3	8	5	0
CUS04 (12)	19	12	0	7	0
CUS05 (8)	15	8	3	4	0
CUS06	15	0	0	15	0

In Grid View, you can control which Customer Nodes are visible based on the severity of the problems that exist on the Nodes. This feature allows you to better focus your attention on Customers that might need immediate attention. Double clicking on a Customer Node changes the focus to the associated Tree View Customer Node so that you can drill down further to explore this Node in more detail.

View Modes

Grid View can be in one of three states controlled by the Grid menu (or main Toolbar) choices:

- **Hide** - Hide the Grid View.

- **Dock** - Dock the Grid View above the Main View (see Figure 3-4 on page 3-9 for an example).

- **Float** - Float the Grid View as a modeless dialog on the desktop (see Figure 9-1 for an example). This dialog can be resized and minimized and it has its own icon in the task bar. The icon shown on the dialog and on the task bar represents the overall state of all Customers being monitored.

View Styles

The Grid View is a list control, and the items displayed can be shown in the standard list control styles:

- Large Icons
- Small Icons
- List
- Details

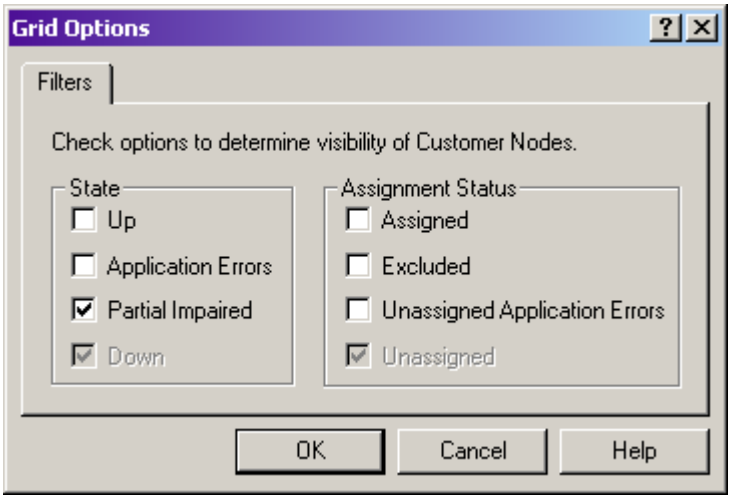
In Details style, some additional summary information is shown in the set of columns displayed next to the Customer name:

- **Open Alarms** - the number of open Alarm objects.
- **Unassigned** - the number of unassigned Alarm objects.
- **Assigned** - the number of open assigned Alarm objects
- **Excluded** - the number of open Alarm objects that are Excluded.
- **App Errors** - the number of open Application Errors.

Customizing the View

The objects displayed in Grid View can be controlled via the **Grid > Options** menu options or via the **Options** button in the floating Grid dialog. This pops up a dialog box as shown below.

Figure 9-2 Grid Options



By checking these options, you can control which Customer icons are visible in the display.

In the **State** section, the **Down** item is always checked. That means that any Customer that contains at least one Down Alarm object will be shown. You also have the option of including Customers that have only Application Errors, and Customers that are Up. Checking these boxes will increase the number of icons visible in the View.

On the **Assignment Status** side, the **Unassigned** item is always checked. That means that any Customer that contains at least one open Alarm object that is unassigned will be shown. You also have the option of including Customers that have **Assigned** and **Excluded** Alarms, and Customers that have **Unassigned Application Errors**. Again, checking these boxes will increase the number of icons visible in the View.

The settings shown in the figure above result in a display that allows you to focus on open and unassigned Alarm objects and it minimizes the amount of information seen in the display, but it guarantees that you won't miss any important Alarm.

EventsBar

The EventsBar is a control bar that is nominally docked at the bottom of the main frame window of the AlarmTracker. It contains none, one, or more tabbed windows that display a series of Listener Events in the same format as those contained in the Events View, described in Event Details View, page 8-20. The purpose of the EventsBar is to allow you to monitor incoming Listener Events and to allow you to select exactly what information you would like to see.

The EventsBar is a standard Windows control bar. That means it can be docked, floated or hidden entirely. In Figure 3-4 on page 3-9, the EventsBar is shown docked at the bottom of the main frame window. This is the only allowable docked position for the EventsBar. When docked, you can hide the EventsBar by clicking the Close button in the upper left of the control bar, or you can right click anywhere in the EventsBar and select the **Hide EventsBar** context menu option. When docked, you can float the EventsBar by dragging the gripper handle on the left side of the control bar and moving it to wherever you like.

When floating, the window can be resized. It can be hidden by clicking the close button in the upper right of the floating window, or by right clicking on the window border and selecting **Hide**. Or you can right click anywhere else in the window and select **Hide EventsBar**. You can redock the EventsBar by dragging it over the main frame window near the bottom.

Another way to hide the EventsBar is using **View->EventsBar**. This option toggles the visibility of the EventsBar. The checkmark indicates its current visible state.

The EventsBar is really a series of tabbed windows, each of which contain a list control containing a series of Listener Events. The content of each tabbed window can be controlled via a context menu seen by right clicking anywhere in the EventsBar.

When you exit AlarmTracker, all of the information about the EventsBar is saved in the Registry so that the next time you start AlarmTracker, these settings are restored. This includes information about the visibility, docked state and size of the EventsBar, as well as the number of tabs and the content of the tabbed windows.

Adding and Removing Tabs

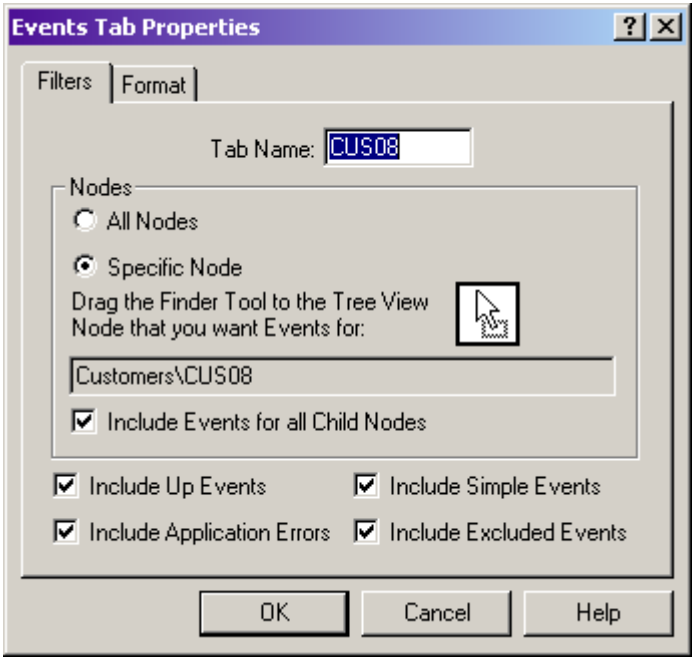
To add a tabbed window to the EventsBar, invoke the context menu by right clicking in the EventsBar and select **Add Events Tab**, or you can select **View > EventsBar Options > Add Events Tab**. This results in the Events Tab Properties property sheet appearing. You can then specify the information you want for your tab. This property sheet is described in Controlling the Contents of a Tab.

To remove a tab, invoke the context menu and select the Remove Events Tab option. Or you can select **View > EventsBar Options > Remove Events Tab**. This option will remove the currently selected tabbed window.

Controlling the Contents of a Tab

The contents of a tabbed window can be controlled via the Events Tab Properties property sheet. This property sheet appears when you select **View > EventsBar Options > Add Events Tab** or **View > EventsBar Options > Events Tab Properties**. This property sheet allows you to filter the Listener Events displayed in the tab, and what kind of information each Event should display.

Figure 10-1 Events Tab Properties - Filters Tab

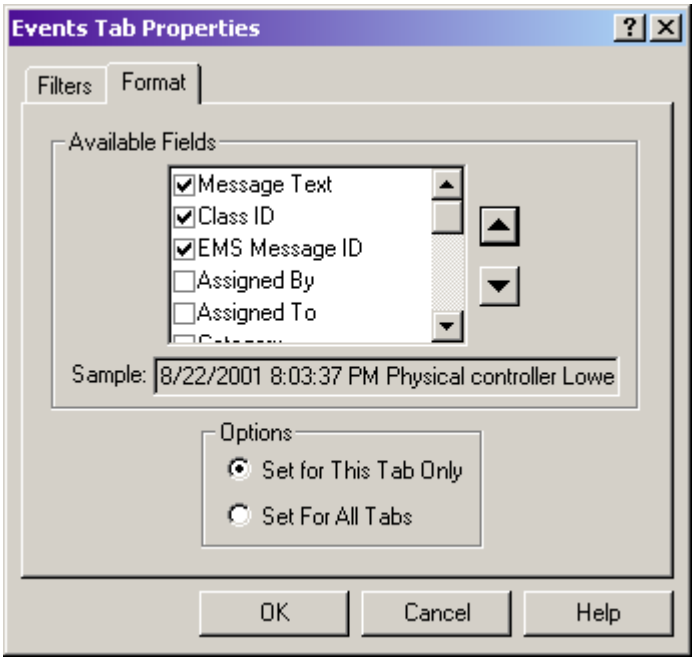


The Filters property page allows you to specify what Events should be displayed in the tab.

- **Tab Name** - This allows you to specify the name that appears on the tab.
- **Nodes** - This allows you to filter Listener Events. You can select **All Nodes** in which case all Listener Events will appear in the tab, or you can select Specific Node which allows you to specify which Node you want to filter on. When you select this radio button, a finder tool appears. You can then drag the finder tool to the Tree View to select the Node you want to filter on. When you release the mouse, the name of the Node appears in the read-only edit box. By checking **Include Events for all Child Nodes**, you have the option of including all Events for the Node you selected and all of its child Nodes. If you leave this option unchecked, you will see only the Events for the Node selected.
- **Include Up Events** - When checked, this will result in all Up Events for the selected Node(s) to appear in the tab output.

- **Include Application Errors** - When checked, this will result in all Application Errors for the selected Node(s) to appear in the tab output
- **Include Simple Events** - When checked, this will result in all Simple Events for the selected Node(s) to appear in the tab output.
- **Include Excluded Events** - When checked, this will result in all Events for Excluded Alarm objects for the selected Node(s) to appear in the tab output.

Figure 10-2 Events Tab Properties - Format Tab



The Format property page (tab) allows you to control what information should appear for each Event displayed.

This property page shows how you can control the amount of information displayed in the list control. The page presents a list box of items which you can check or uncheck, and move up or down to determine the order in which they are displayed in the control.

It also includes an **Options** field which allows you specify that the fields you selected should apply to this page only, or to this page and all future tabs created.

Showing Alarm Details

You can double click on an Event in the list control or select the **Event Properties** context menu option when you right click on the Event. A modal Alarm Details dialog appears that shows you the Alarm Object associated with the Event you selected. This dialog is identical to the one described in Showing Alarm Details, page 8-8.

Some Events may not have an Alarm Object associated with them. The most likely situation for this is a Simple Event which has already been purged by Listener. In this case, an informational message appears informing you of this fact.

View Menu Options

The **View > EventsBar Options** pull-right menu item relates to the EventsBar control bar. The three pull-right options are:

- **Add Events Tab** - This menu selection allows you to add a new Events Tab window to the EventsBar. Selecting this menu option results in a property sheet appearing that allows you to customize the properties. See Controlling the Contents of a Tab, page 10-2 for more details.
- **Remove Events Tab** - This menu selection allows you to remove the Events Tab window that is currently visible.
- **Events Tab Properties** - This menu selection allows you to display and modify the properties of the Events Tab that is currently visible.

Context Menu

When you right click in an Events Tab window or on the EventsBar border, a context menu appears with the following menu choices:

Hide EventsBar - This menu selection allows you to hide the EventsBar.

Add Events Tab - This menu selection allows you to add a new Events Tab window to the EventsBar. Selecting this menu option results in a property sheet appearing that allows you to customize the properties. See Controlling the Contents of a Tab, page 10-2 for more details.

Remove Events Tab - This menu selection allows you to remove the Events Tab window that is currently visible.

Events Tab Properties - This menu selection allows you to display and modify the properties of the Events Tab that is currently visible.

Jump to Node - This menu option allows you to jump to the Tree View node that is associated with the Alarm object.

Event Properties - This menu selection applies to the currently selected Event and has the same effect as double clicking on an Event. This results in the display of the Alarm Details dialog as described in Showing Alarm Details, page 8-8.

Current Node Bar

The Current Node Bar is an optional control bar that attaches to the top of the Main View to display the path to the currently selected node in the Tree View. Use of this option may be useful when the currently selected Tree View node scrolls out of sight. A sample of the Current Node Bar is seen in Figure 3-4 on page 3-9.

The visibility of the Current Node Bar is toggled using **View > Current Node Bar**.

Audible Alarms

Overview

AlarmTracker has the ability to play sounds when new Alarms are created, and when they are closed. This feature is very customizable and has the following features:

- The audible Alarms feature can be turned on or off easily.
- You can play an arbitrary WAV file for an audible Alarm. These files can be selected and previewed by the AlarmTracker application.
- You can play different sounds for the appearance of a new Alarm and for the closing of an Alarm.
- You can selectively choose which Customers sound Alarms.
- You can customize which sounds are played for each Customer, if you wish.

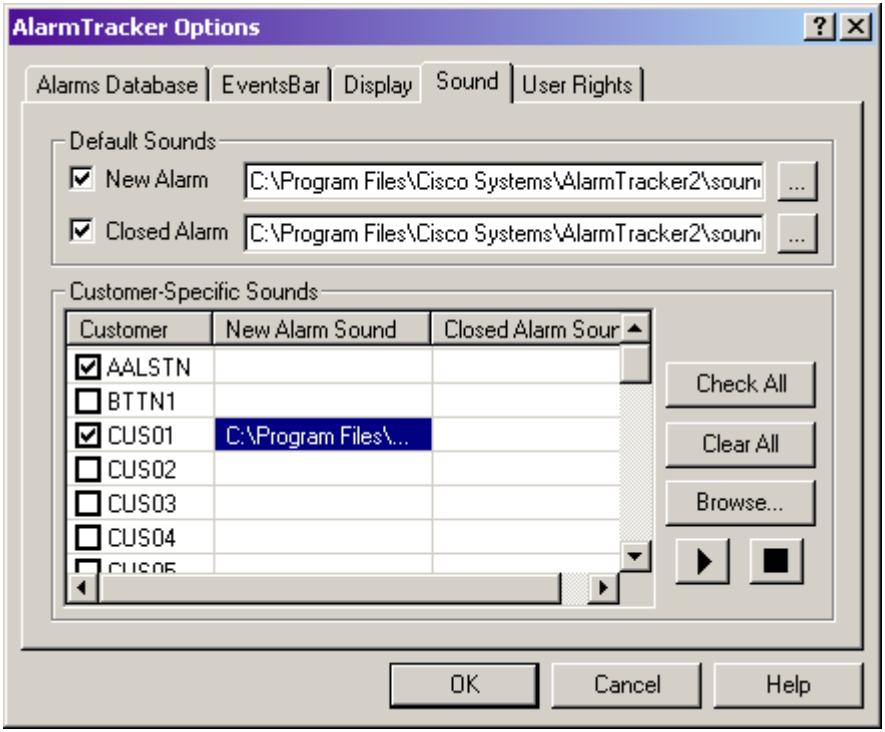
These features are all controlled via the Sound property page in the AlarmTracker Options dialog which is invoked by selecting **Tools > Options**.

The settings selected are saved in the Registry between sessions.

Configuring Audible Alarms

An example of the Sounds property page is shown in the following figure:

Figure 12-1 Configuring audible Alarms



This property page shows that you can select the default sounds to be played for Alarms. You can use the **Browse** button which pops up a Windows file browser allowing you to select a new file. This file browser also allows you to preview the sound as well.

Toggling the **New Alarm** or **Closed Alarm** boxes globally enables or disables the audible Alarms feature.

You can toggle audible Alarms for each Customer by checking the box next to the Customer name. In this list control, you can also customize the sound played for each Customer. If you leave **New Alarm Sound** or **Closed Alarm Sound** fields empty, the default sound is played.

In the sample shown above, audible Alarms are enabled for the AALSTN and IN102 Customers only. Since no sound files are shown for the AALSTN Customer, the default sounds will be played for a New Alarm and for a Closed Alarm. For the IN102 Customer, a New Alarm Sound file is indicated so that sound will be played for New Alarms.

When you highlight an entry in the New Alarm Sound or Closed Alarm Sound columns, you can pop up a Windows file browser by clicking on **Browse** on the right or by double-clicking the list control cell. To clear a sound file, use the **Delete** key when the sound file is highlighted.

You can also preview sound files that are highlighted by using the preview button (a right facing triangle) below the **Browse** button. The other button here is a **Stop** button (square) to cancel the playing of the sound.

Performance Tips

Overview

The AlarmTracker product is a full-featured tool which sorts a large amount of Listener Event data and attempts to present it to the user in an organized way. There are many product options that allow you customize the look and feel of AlarmTracker, and there are many filtering options to allow you to see only what you want to see.

Because AlarmTracker is a full-featured tool, and because it processes so much data, there can be some issues that affect performance. It is not a light-weight application. For example, the Cisco TAC supports over 150 Customers and receives on the order of 120,000 Events per day. There are over 40,000 node objects whose state needs to be maintained and managed by the AlarmTracker application. The management of these node objects requires memory, and the processing of Listener Events on the client side requires CPU power.

This section describes some suggestions you can use to maximize the performance you get from your AlarmTracker application. For each suggestion, the pluses and minuses of each suggestion will be discussed.

Using the EventsBar

The EventsBar can be used to display a console-like stream of Events received from the LGMapper. You can create multiple tabs and filter the stream in many ways.

If this feature is not useful to you, make sure you have no Event Tab windows. You can achieve this with the following steps:

1.Make the EventsBar visible by making sure the **View->EventsBar** option is checked.

2.Delete all your tab windows by right clicking in each tab and selecting **Remove Events Tab** from the context menu.

3.Close the EventsBar by using the **Close** button in the EventsBar, toggling the **View->EventsBar** menu option, or by right clicking in the EventsBar and selecting **Hide EventsBar**.

If you don't have any EventsBar tabs, it not only eliminates the memory needed to maintain the EventsBar displays, but it also reduces the amount of network traffic that LGMapper sends across to your AlarmTracker client. Unless you are using the Event Details View, LGMapper can reduce the amount of information sent to your AlarmTracker client by sending across only summary information on each Listener Event. If you don't need to display raw Events, it doesn't need to send the whole Event message across to AlarmTracker. This reduction in the number of bytes sent across is almost a factor of 10.

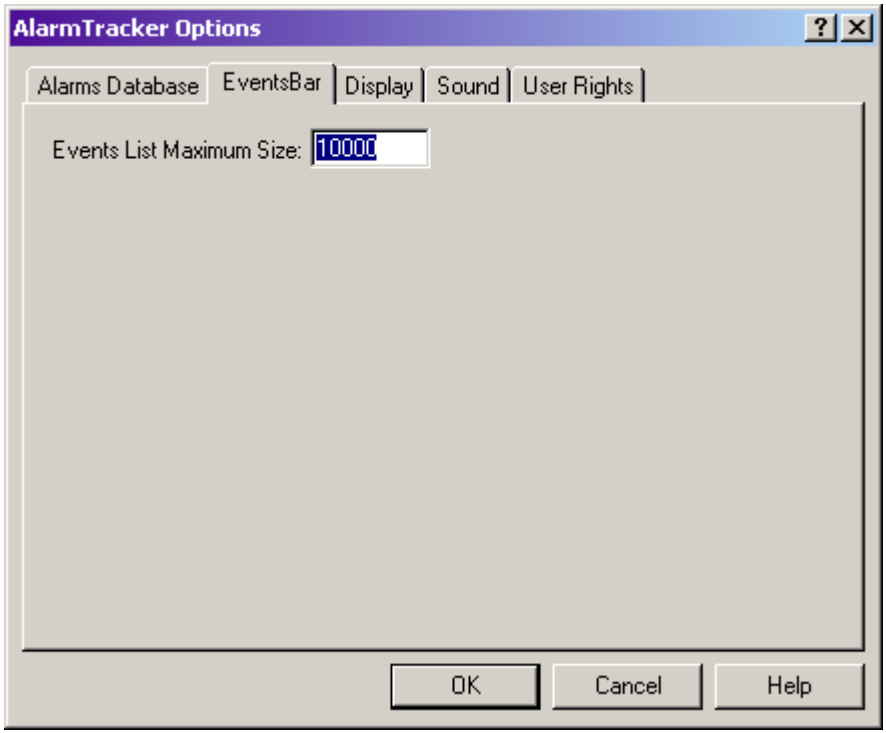
If you are interested in looking at the Events from only 1 customer, or for only the Logger A or some specific node, you can filter the Event stream to limit the Events to only the ones you want to see.

Also, if you really need to use the EventsBar, you can get some reduction in network traffic by not checking the **Include Simple Events** in the **Events Tab Properties…** Filters property page.

Events List Maximum Size

If you need to monitor Events in the EventsBar, try to limit the number of Events that are maintained in each tab window. This is a number that you can enter in the EventsBar tab in the **Tools->Options…** dialog.

Figure 13-1 AlarmTracker Options - EventsBar Tab



This parameter controls the maximum number of Events that are stored for each list control in an EventsBar tab. Once this maximum is reached, the oldest Events are purged.

The *factory default is 10,000*, but if you use more than one tab, and if your machine doesn't have a lot of memory, you may want to lower this value to 1,000 or so.

The recommended value is 1,000.

Simples in Event Details View

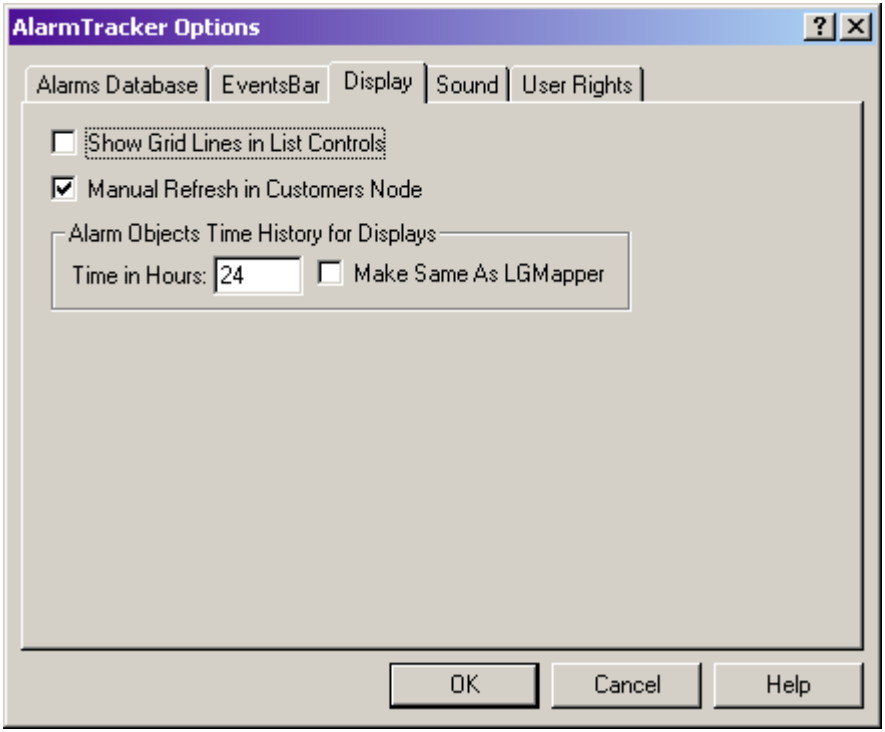
If you use the Event Details View, ***do not*** *check* **Edit > Display Simple Events** unless you really need to. Simple Events represent more than half the volume of Event data that Listener receives. If you don't need to see them, don't ask for them. It takes longer to query the database, longer to send the data across the wire, and longer to fill up the display.

Also, if you are not using the EventsBar tabs, you get an additional savings by not sending Simple Events across the wire.

Alarm Objects History for Displays

This is a number that you can enter in the Display tab in the **Tools > Options** dialog.

Figure 13-2 AlarmTracker Options - Display Tab



The value allows you to limit the amount of history shown in the Alarms Details View, Event Details View and Alarm Bars View. These views will always show open Alarms, but this setting controls the time history for showing closed Alarms. For example, a value of 24 for the Time in Hours option means that any Alarms in the database whose closed times are less than 24 hours ago will be displayed. Checking **Make Same As LGMapper** results in the maximum number of Alarms displayed. You may need to experiment with different settings to get what is best for you. Selecting too much time history may result in a display that is too cluttered or make the query times to the remote database slower. Selecting too little time may not give you the results or granularity that you need.

The advantage of making this number larger is to see more time history of Alarms in your views. This is most useful in the Alarm Bars view when you can graphically see an Alarm that is "bouncing." That is, an Alarm that is continually

raised and cleared. You would see this as a set of bars that go across horizontally in this view. The more time history you have, the more likely it is that you will be able to see this type of phenomenon.

The disadvantage, of course, is that it takes more time to perform each query, more time to transfer the data across the wire to your AlarmTracker client machine, and more time to fill up the display.

If you want to optimize performance, set this value to 1 hour. This means you are only returning Alarm and Event data for closed Alarm objects whose closed time is less than one hour ago. This minimizes the data sent across the wire.

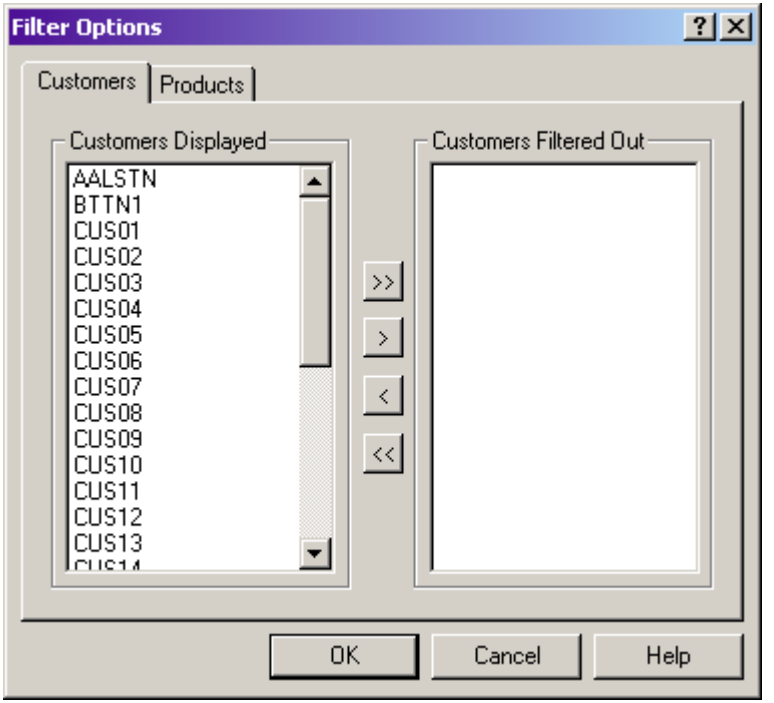
Exit AlarmTracker When You Are Not On the Job

When you leave at the end of your shift, exit AlarmTracker. When AlarmTracker is running you are receiving a constant stream of Listener data from LGMapper. This consumes resources in the LGMapper server that are dedicated to your connection, and it uses network bandwidth. For example, for a TAC that supports 150 Customers, approximately 34kBytes of data are sent across the wire to your AlarmTracker client every minute. By exiting the AlarmTracker application when you are not using it, you will reduce the amount of network traffic, and reduce the load on the LGMapper server.

Select Only the Customers and Products You Need To Monitor

If you know that you are responsible for only a subset of the customers or products, you can select a subset of the full list to monitor. Use the **Tools > Filter** dialog.

Figure 13-3 Filter Options - Customers Tab



Limiting the customer set or product set will reduce the number of Tree View nodes that need to be maintained and updated, and it reduces the amount of data that LGMapper has to transfer across the wire since it will not have to send messages for filtered Customers and Products.

A

Active Alarm

See **Open Alarm**.

Alarm Object

An object that generally indicates some type of failure condition for some component in a monitored system. Typically, an Alarm Object is created by an Event that signals or raises the Alarm. The Alarm Object has a state that consists of the object being raised (down) or cleared (up), and an Assignment Status that indicates what action support personnel is taking in response to the Alarm.

Alarm States

Represents the state of an Alarm object or node. Possible state values in order of increasing severity are:

Unknown - The state of the object is unknown. A node object can have this state, but an Alarm object cannot. This is indicated by a dark green question mark.

Up - The state is Up. This is indicated by a green circle.

Application Error - Indicates an Application Error. This is indicated by a dark blue circle with a white X in it.

Partial Impaired - Indicates the state is partially impaired. A node object can have this state, but an Alarm object cannot. This means that at least one of the node's child Nodes is down, but, due to fault tolerant design, the overall operation of the Node is not compromised. This is indicated by a yellow triangle with an exclamation point.

Down - Indicates a fault condition. This is indicated by a red circle with a white X in it.

AlarmTracker

Refers to the AlarmTracker Client application.

Application Error A single-state Alarm Object that is deemed less serious than other types of Alarm Objects. This usually indicates some kind of configuration error. For example, in the ICM product, unmapped dialed numbers or routing script errors are classified as Application Errors. An Application Error generally does not affect the operational status of the system. An Application Error is indicated by a dark blue circle with a white X in it.

Assignment Status Represents the status of how the support personnel are responding to the Alarm Object.

Possible Assignment Status values in order of increasing severity are:

No Alarms - there is no problem with this object. This is indicated by a green check mark.

Excluded - this Alarm Object is Excluded. This is indicated by a cyan circle with a horizontal blue bar.

Assigned - a support center user is assigned to the Alarm Object. This is shown as a hammer.

Unassigned Application Error - no one is assigned to the Application Error. This is shown as blue exclamation point.

Unassigned - no one is assigned to the Alarm Object. This is shown as a red exclamation point with a yellow background.

C

Closed Alarm

An Alarm object that is not open. An Alarm is closed when both its State is up and its Assignment Status is no Alarms. When displayed, a closed Alarm Object is shown with a green State icon and a green check mark to indicate there is no longer a problem for this object.

COM

Microsoft's Component Object Model.

D

DCOM

Distributed COM.

E

Event

See **Listener Event**.

Excluded Alarm An individual Alarm Object that has been marked as Excluded by a user. An Excluded Alarm represents an Alarm that users do not have to pay close attention to. A user may exclude an Alarm if he is aware that the customer is performing maintenance at the site and knows that the Alarm Object may appear many times over some period of time. An Excluded Alarm's State still contributes to it's owner Node's overall State. An Excluded Alarm is marked as Excluded by the AlarmTracker software by a cyan circle with a dark blue dash through it as the icon for the Assignment Status.

Excluded Node A Node that has been marked as Excluded by a user. An Excluded Node represents a Node that users do not have to pay close attention to. A user may exclude a Node if he is aware that the customer is performing maintenance at the site and knows that it may be going up and down for some period of time. An Excluded Node still process Events and Alarms and will update its state attributes, but the State of the Excluded Node does not roll up to its parent. An Excluded Node and all of its descendents are marked as Excluded by the AlarmTracker software with a cyan diagonal bar through the icon representing the state of the Node.

I

ICM Intelligent Contact Management.

Inactive Alarm See **Closed Alarm**.

ISN Internet Service Node

L

Listener Base Records

Each Listener maintains a set of Base Records which represents the current known state of all known Listener objects. These Base Records are maintained both in memory and on disk so that when Listener exits, they are persisted.

Listener Event

A message sent from the Listener process. Listener Events typically are grouped together to comprise an Alarm Object. Events can be raise or clear events indicating a change in state of an Alarm Object, simple Events which contain informational content, or Clear, Delete, Working On or Exclude Events which indicate a change in the Assignment Status of an Alarm Object.

M

MDAC

Microsoft Data Access Components.

N

Node

A node in the hierarchy of ICM components. This appears as a node item in the Tree View of the AlarmTracker Client software.

O

Open Alarm

An Alarm object that is not closed. The Alarm Object's state must not be Up, or its Assignment Status must not be no Alarms (or both). An Alarm Object is initially created (opened) when a raise Event occurs. (See **Closed Alarm** and **Alarm Object**).

S

Simple Event

An Event sent by the Listener that contains informational content. A Simple Event is stateless in that it will never appear as an Alarm Object. A Simple Event is indicated by a blue icon with a white "i" in the middle of it.

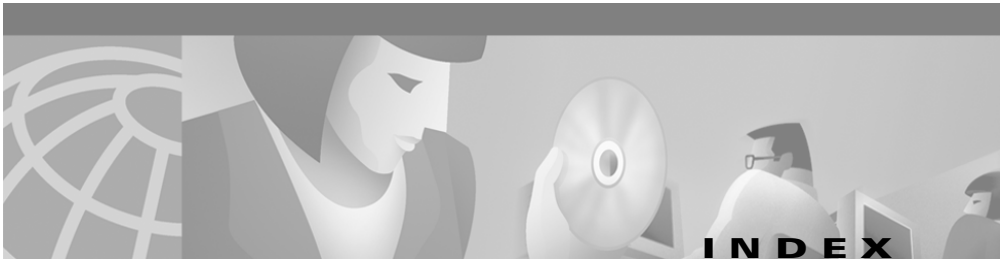
Single-State Alarm Object

An Alarm Object that does not have a clear Event associated with it. A single-state Alarm Object must be cleared manually by a user. You can determine if an Alarm Object is a single-state Alarm Object by looking at the Alarm Object in the Alarm Details dialog. Text at the top of the dialog will indicate if this Alarm is single-state.

T

TAC

Technical Assistance Center.



Numerics

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