



# User Manual

## Networks and Temperature Monitoring

[www.pager-enterprise.com](http://www.pager-enterprise.com)

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**See Appendix for quick-start help notes**

**PageR Enterprise** runs on Microsoft Windows Desktop or as a SERVICE and monitors a list of MONITORED OBJECTS that you set up, such as Windows Event Logs, TCP/IP clients, Windows Systems, SNMP, Discs and Temperature using ip hardware devices such as Room Alert, TemPageR, TEMPer Gold, IT Watchdogs and many others.

PageR Enterprise checks each **Monitored Object** in turn and determines if an **Alarm** condition exists ie if there is a problem. Alarms are posted to the PageR log window, disk log file or Windows Event Log. Alarm notification can include EMAIL, SMS TEXT, VOICE CALL, INSTANT MESSENGER, TWITTER etc and the triggering of external programs for CORRECTIVE ACTION.

### Monitored Objects

These are the items and events which we watch for problems. Click the new **+** icon to see these. There is a huge choice from Event Logs to SNMP to WMI to monitor every conceivable problem. Special objects are provided for **Room Alert, TemPageR, TEMPer Gold, IT Watchdogs, Temp Alert** and many other temperature monitoring devices. Monitored Objects each contain one or more ALARM OBJECTS.

### Alarm Objects

These are the rules which govern alerting when a problem is detected and can include alert escalation, task objects, problem correction, server shutdown etc. Alarm Objects each contain one or more CONTACTS.

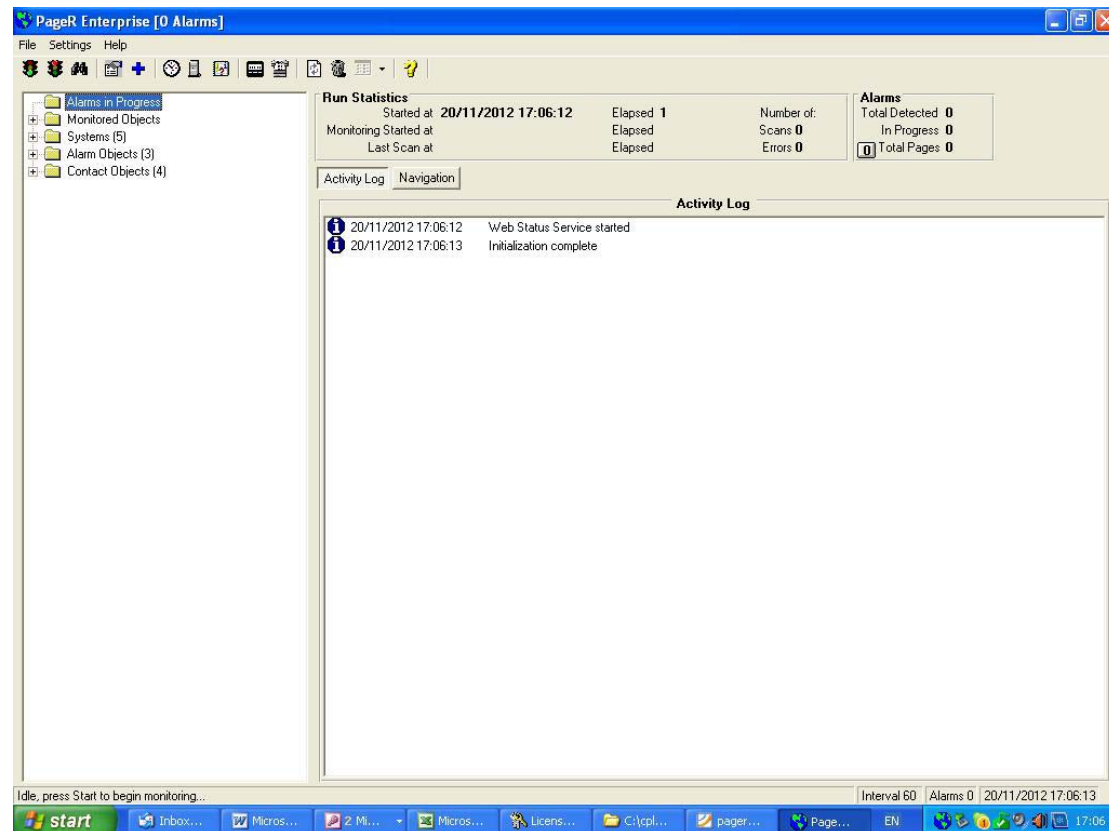
### Contacts

These are the people we contact when there is an alert and contact also defines the methodology of communication, eg email, SMS TEXT, Voice, Instant Message etc.

When first installing PageR we therefore recommend setting these three items up in reverse order, since they depend on each other, ie (1) contacts, (2) alarm objects (3) monitored objects.

On any screen in PageR Enterprise you can press the **F1** key for context help.

## Main Screen (new style)



This is the Alternate (new) Main window of PageR. When selected under SETTINGS, this window appears initially and is normally displayed while PageR is monitoring the network if run on the Desktop. If run as a SERVICE you can view it from your INTERNET BROWSER or if you run PageR on the desktop while running as a service it comes up in the restricted MAINTENANCE MODE. All these settings are in OPTIONS/GLOBALS.

You can toggle between the above window and the old style in the SETTINGS drop down menu.

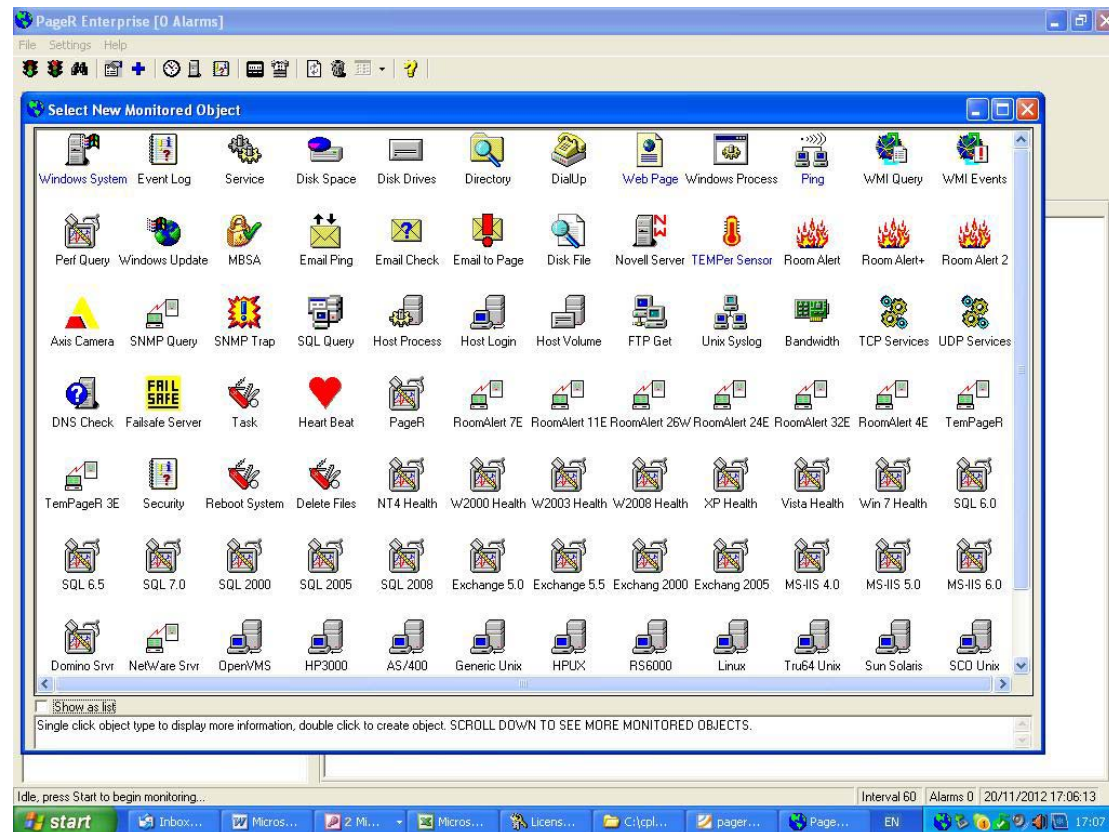
An explorer tree view is shown on the left side of the window and organizes the Monitored Objects, Alarm Objects and Contact Objects. On the right side of the window is a tabbed viewing area. Each tab contains a particular kind of viewer. The primary viewer is the Activity Log window and a Navigation window.

The Navigation window displays in response to clicking items in the tree view and allows display of information about the selected tree view item and can be clicked for further navigation. In either the tree view or Navigation window, clicking a specific object will display a new tab containing detailed information about the selected object.

In the tree view, Navigation window or object Detail window, you can right click to display a menu of functions that can be performed on the selected object. Note that if the selected object is a folder, the functions will be performed on all objects contained in the folder. Drag and Drop is allowed from the tree view to the Navigation window.

## Monitored Objects Selection Screen

Click the blue **+** icon in the main screen to see the following **Monitored Object** types which are available (double-click to open one for setup):



Press the **F1** key for help after choosing an object.

**Monitored Objects** are the heart of PageR Enterprise monitoring. These are the different types of event we can watch out for, and there is a wide variety (over 50 types) available to monitor all possible kind of problem.

Most popular Monitored Objects are -

- 1) PING
- 2) EVENT LOGS
- 3) WINDOWS SYSTEM
- 4) PERF QUERY (SNMP)
- 5) DISK FILE
- 6) WEB PAGE
- 7) Room Alert and TemPageR
- 8) WINDOWS SERVICE
- 9) DISK SPACE / DISK DRIVES
- 10) UNIX SYSLOG

## Operation

To operate PageR, you create a list of objects to monitor and one or more Alarm Objects. Alarm Objects contain the CONTACTS who will be notified. An Alarm Object also defines the actions to be taken.

A Contact Object contains a person or persons who receives alarm notifications. Each Contact can have different notification options. One or more Contacts or Contact groups can be associated with Alarm Objects. Contacts also support notification escalation schemes.

From scratch, we normally set up in REVERSE ORDER – (1) CONTACT OBJECT, (2) ALARM OBJECT, (3) MONITORED OBJECT. If contact and alarm objects already exist go straight to monitored object setup.

Once you have created one or more Monitored Objects, start monitoring by clicking the Main Window button on the Main window tool bar. Monitoring begins and continues until you click the Stop button or exit the program. You can set PageR to start minimized and begin monitoring automatically.

PageR executes its tasks in the following order –

- 1) scan all MONITORED OBJECTS once
- 2) execute any ALARM OBJECTS which were triggered by the scan
- 3) repeat scan of MONITORED OBJECTS, and so on.

### TRACE MODE

Trace mode creates a debug file which can be sent to your supplier for analysis if you experience any problems with PageR.

## **Monitored Object Types**

### **Event Log**

Detects new event records in the System, Application, Security or other event logs on the local or any remote Windows system. Alerts are raised based on the severity of the event or by keyword matching on the content of the event record text.

### **Windows System**

Checks any Windows system to determine if it is up. Alert is raised if the Windows system does not respond to a probe. Supports Windows NT and later. This object replaces the NT, 2000 and XP System objects described above.

### **Windows Update**

Checks any Windows 2000 or later system for updates available from Windows/Microsoft Update service. Alert is raised if selected updates are available and not applied to the system.

### **Disk Space**

Monitors disk volume free space on Windows systems. Alert raised if free space falls below a specified amount or percent of total space.

### **Disk Drives**

Monitors the physical disk drives on Windows systems. Alert raised if problems are found.

### **NetWare Server**

Checks NetWare server to determine if it is up. Alert is raised if the server does not respond to a probe.

### **PING TCP/IP Device (Ping)**

Checks any device supporting TCP/IP by pinging it. Alert is raised if the device does not respond to a ping.

### Host Process

Checks host system (via Telnet) for a list of processes expected to be present. Alert is raised if a process is not present.

### Host Volume

Checks host system (via Telnet) for disk volume free space. Alert is raised if volume free space drops below a selected threshold.

### Host Login

Checks availability of host systems and performs monitoring functions by logging on to the host.

### Disk File

Examines new records in disk files and checks for Alert conditions by matching the files contents against a list of words or phrases.

### Service

Checks Windows Services on the local or remote Windows system and raises an Alert if the service is not running. Can attempt to restart failed services.

### Performance Counter Query

Checks Windows Performance Counters on the local or remote Windows system and raises an Alert if counter values are out of tolerance.

### Windows Process checking

Checks a list of processes on the local or remote Windows system to ensure the processes are running. Raises an Alert if a process is not present.

### Windows Management Instrumentation (WMI) Query

Checks WMI objects on the local or remote Windows system and raises an Alert if WMI object values are out of tolerance.

### Windows Management Instrumentation (WMI) Events

Monitors the local or remote Windows system using WMI Event Reporting and raises an Alert if WMI detects the defined events.

### Domain Name System

Checks DNS servers and raises an Alert if the server does not respond or incorrectly resolves sample requests.

### SNMP Query

Checks SNMP Mib object values on SNMP agents and raises an Alert if object values are out of tolerance.

### TCP Services

Checks the availability of TCP Network Services (such as FTP, SMTP, HTTP and more) on selected systems.

### Web Page

Checks web servers by Downloading a specified web page from the server. Raises an Alert if the page fails to download or takes too long.

### Email Check

Reads email messages on mail server and scans them for text strings. Generate Alert or execute Task if strings found.

### Email Ping

Sends a unique mail message to a mail server and tries to read that message back in a set time period to monitor timely mail delivery.

### Bandwidth

Monitors network traffic on a target system's network interfaces. Generates Alert if the traffic level exceeds preset thresholds.

### Directory

Monitors a Windows disk directory and generates an Alert if total file size or count exceeds preset thresholds.

## DialUp

Dial a modem number and test for successful connection in the allowed time.

## SQL Query

Execute an SQL query against an SQL server and test for successful completion.

## MBSA

Execute a Microsoft Baseline Security Analyzer scan against a target system and raise an alert if security issues are found.

## Hosting System

When PageR is used with the Message Server device, the Message Server can detect failure of the system to which it is attached and execute a page notification.

## Room Alert™ Environment Monitor

PageR can monitor a Room Alert environment monitoring device attached to the com port of the Windows system where PageR is running. Using Room Alert, PageR can detect a variety of environmental problems. The Room Alert device and environmental sensors are available from CPL Systems Ltd.

## Room Alert PLUS™ Environment Monitor

PageR can monitor a Room Alert PLUS environment monitoring device attached to the com port of the system where PageR is running. Using Room Alert PLUS, PageR can detect a variety of environmental problems. The Room Alert PLUS device and environmental sensors are available from CPL Systems Ltd.

## TEMPer Environment Sensor Devices

PageR can monitor the TEMPer series of temperature and humidity sensing devices.



Server/Listener Objects create a service that waits for and responds to external events directed to PageR.

### Syslog Server

Receives Syslog logging messages from Unix systems and raises Alerts as needed based on message severity or searching the message for specified words or phrases. Allows PageR to monitor Unix host systems.

### SNMP Trap Server

Receives SNMP Trap messages from SNMP agents and raises Alerts. Allows PageR to handle SNMP Traps.

### Axis Video Camera

Receives Motion Detection messages from Axis video camera and generates Alerts. Can also capture and record images from cameras on a regular basis.

Utility/Action Objects are objects that perform some utility function on a regular basis.

### Email to Page

On a regular basis, examines messages in a mailbox and generates page requests based on the messages. Allows users to page Contacts by sending an email.

### FTP File Get

On a regular basis, retrieves disk files from system supporting FTP. Used to bring disk log files to the local system for examination by the Disk File monitored object or to retrieve paging script files generated on other systems.

### Heart Beat

On a regular basis, generates a notification that tells the recipient that PageR is running.

### Task

A task object will execute a script, command file or program on a repetitive basis or as part of an Alert response. Tasks can also be used to create user defined monitored objects.

## Main Screen - Activity Log Window

The Activity Log area of the Main window displays a running log of PageR activity and alarms. You can control the level of logging detail for non alarm activity on the Global Options tab of the Options window.

All alarms and internal errors are logged to the window regardless of detail level setting.

Each line in the window has a severity symbol, date and time of the activity or alarm and a description of the activity or alarm. The severity symbols are:



Informational message



Alert (internal errors, warnings)



Alarm notification

You can set the number of lines kept in the log window buffer on the Global Options tab of the Options window. When the number of lines in the log window exceed this value, the oldest line is deleted to make room for a new line.

By default, if the log window is scrolled to the bottom, new lines added to the window will scroll the window down, keeping the newest line in view. However, if you scroll up, the window will remain positioned at the point you have scrolled to, even when new lines are added to the log window buffer. You can set the **Auto Scroll Log Window** option on the Global Options tab to have the log window automatically repositioned to the bottom whenever a new line is added.

## Status Bar

A status bar is displayed at the bottom of the Main window. It shows current status information:



### Current Activity

Displays the current state of PageR.

### Interval

Displays the current sleep Interval in seconds.

### Current Alarms

Displays the current number of active alarms.

### Time of Last Activity

Date and time of last activity (log window update).

## Main Window Drop Down Menus

The Main window has these pull down menus:

### File Menu

#### **Start Monitoring**

Click to start network monitoring.

#### **Stop Monitoring**

Click to stop network monitoring.

#### **Status**

Display object status window.

#### **Systems Console**

Display the Systems Console.

#### **Network Event Console**

Display the Network Event Console.

#### **Hide**

Hide PageR from view, do not display in tool bar. You can access PageR when it is hidden by left clicking tray icon (display main window ) or right clicking the tray icon (display task bar menu). Hiding is supported on NT 4.0 and later.

#### **Clear Log Window**

Clear the activity log window.

#### **Print Screen**

Print the Main window. You may also press function key 12 (F12) on any window to print that window.

#### **Send a Manual Page**

Display the Manual Paging window.

#### **View Log File**

Display the Disk Log File Viewer.

#### **View Event Log**

Display the Event Log Viewer.

#### **Performance Monitor**

Displays the Performance Monitor application.

#### **Write test record to Event Log**

Writes a record to the Application Event Log that simulates a real error event. This can be used to test the Event Log Monitored Object .

#### **Exit**

Click to shutdown PageR and exit the program.

## [Settings Menu](#)

### **Options**

Display the Options (configuration) window.

### **More Options**

Display the second Options (configuration) window.

### **Save Main Window Size and Location**

Record the main window size and location and set that size and location subsequent start ups.

### **Save Configuration to Registry**

Save the configuration to the Registry immediately.

### **Backup Configuration when saved**

Make a backup of the configuration to the file **Backup.cfg** in the install directory when configuration is saved.

### **Export Configuration to disk file**

Save the configuration to a disk file. The configuration is written to a disk file with the .cfg extension in XML format. This file can serve as a configuration backup, a debugging tool or to replicate configurations. Contact tech support for assistance with importing a saved configuration.

### **Set Start Up Configuration**

Select or type the name of the Configuration you wish to use the next time PageR is started. It does not change the currently loaded Configuration. See Managing Configurations for more information.

## [Help Menu](#)

### **Display Help**

Click to display the PageR help. Pressing function key one (F1) on any screen will display help about that screen.

### **About**

Click to display the About box.

## [Sending Alerts](#)

### [The Notifications that can be made are:](#)

#### **Email**

PageR can send an alarm notification via email using SMTP or MAPI protocols. MAPI requires Microsoft Messaging on the system where PageR is executing. The recipient of notification email can be set at a global level and by monitored object.

#### **Paging and SMS TEXT**

PageR can page a pager or cell phone using a modem attached to a com port of the system

where PageR is executing. Paging is controlled by paging (.MSG) files. These files contain the Alert Script.

Paging files are created by the user and stored in the **Alerts** directory. Sample paging files can be found in the **Sample** directory.

### **Message Broadcast**

You can send alarm messages to other Windows systems via the Windows Messenger Service. Alarm messages can be sent to a specific system or to all systems in the Windows domain. Such messages are displayed to the user of the target system in a popup window.

### **Execute External Applications**

You can have PageR execute an external application when alarm events begin and when they end. An external application can be a program or a batch/command file. This allows PageR to interact with other applications, such as paging systems, fax systems, help desk systems and others.

### **Instant Messaging**

You can have PageR send activity logging and alarm messages to Instant Messaging clients. This feature uses MSN Messenger and either the .Net or Exchange Messenger Services.

### **Voice Call**

Using a VOICE MODEM PageR can make a simulated voice call which uses the text in the alarm settings.

## **Task Bar Tray Icon**

When PageR is running its icon appears in the Task Bar Tray. This tray icon allows access to PageR after it has been hidden from view. When PageR is running, it can have three visual states. It can have one or more windows visible on the desktop, it can be minimized to the Task Bar and it can be hidden.

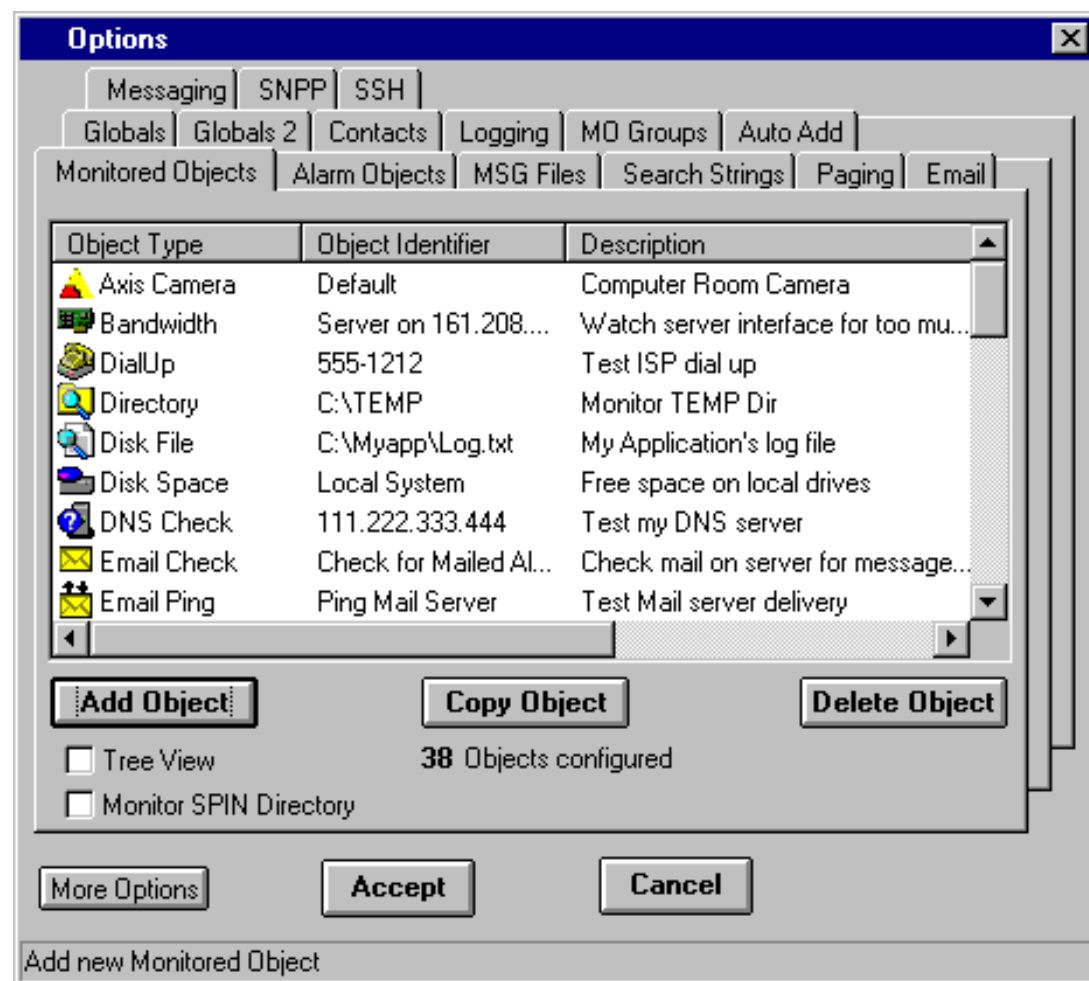
You can hide PageR by clicking the Hide button on the Main window File menu. Once hidden, PageR is executing but is not visible and does not appear in the Task Bar. When hidden, PageR is accessed via the icon in the Task Bar Tray.

Place the mouse cursor over the icon to see the number of current alarms.  
Right click the icon to see a more detailed status report and a menu of options.

Left click the icon to display the Main window. If alarms are posted while PageR is minimized or hidden, the icon will change to the alarm symbol until you display the Main window and view the alarm report in the log window.

## Options Window

The Options Window contains a series of tabs that give access to PageR's configuration options. Click the main screen icon or go to SETTINGS/OPTIONS.



The Options window allows access to PageR configuration settings. The settings are organized onto tabs. Switch between setting tabs by clicking on the appropriate tab.

The settings tabs are:

### Monitored Objects Tab

### Alarm Objects Tab

### Contact Objects Tab

### MSG Files Tab

## Search String Files Tab

## Paging Notification Options Tab

## email Notification Options Tab

## Global Options Tab

## More Global Options Tab

## Logging Options Tab

## Monitored Object Groups Tab

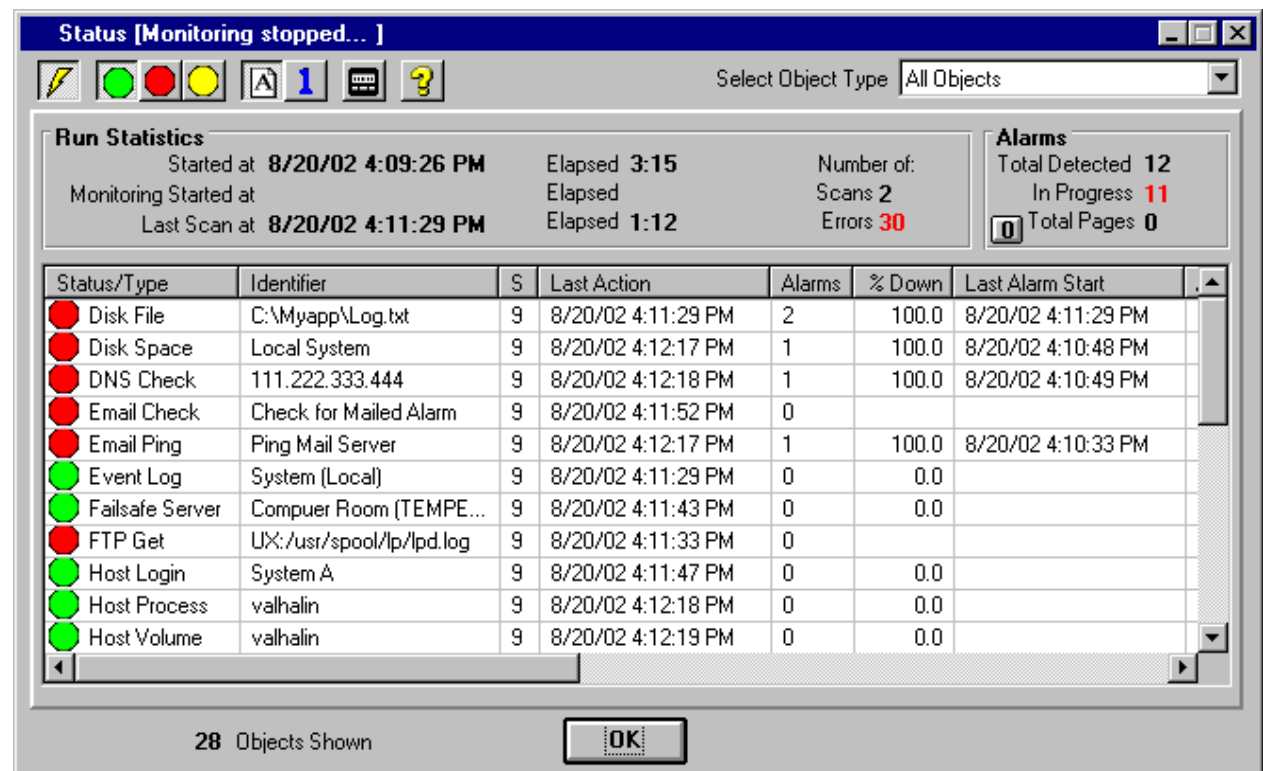
Click **More Options** button to see more.

After making changes to one or more tabs, you can click **CANCEL** to discard the changes and return to the Main window or **OK** to accept all changes and return to the Main window. Accepted changes are retained temporarily until saved to the Registry or until you exit PageR. If there are unsaved changes at exit, you will be prompted to either keep the changes to the Registry or discard them.

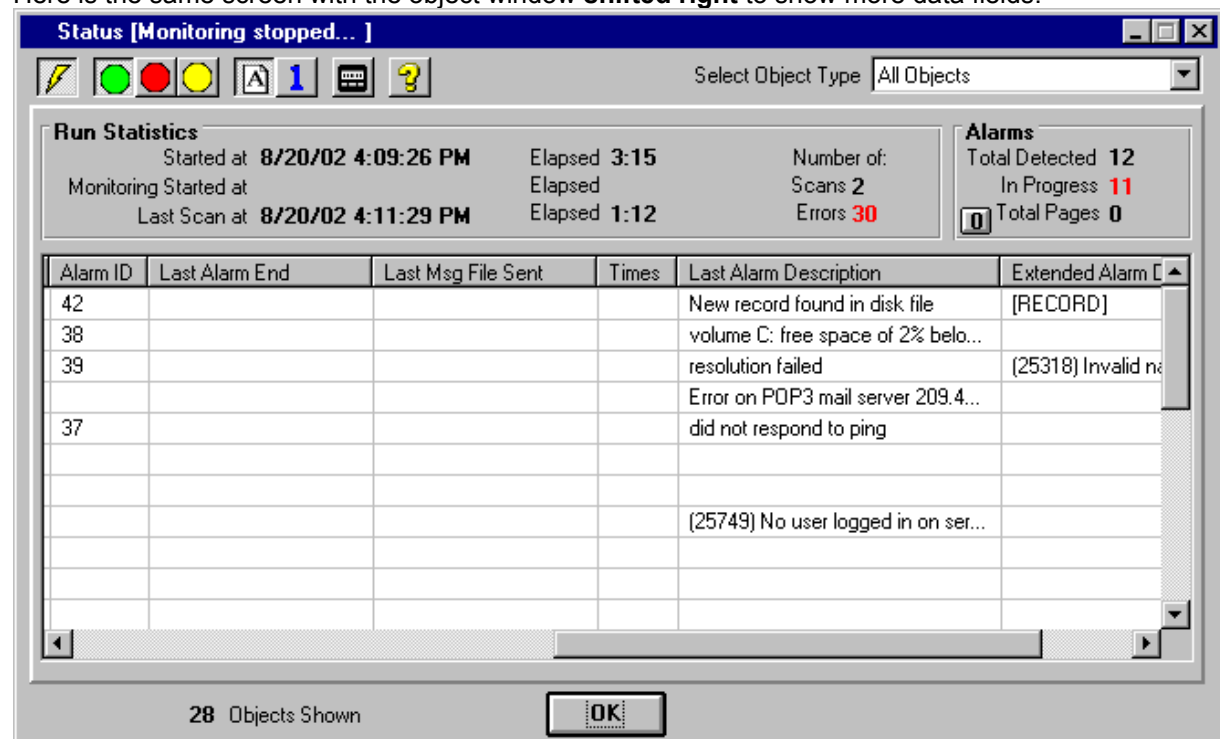
Note that the first time the Options tab is displayed in a PageR session, PageR scans your network to build a list of systems. This network scan can take from a few seconds to a few minutes depending on the complexity of your network.

## Monitored Object Status Window

This window displays the current status of the network objects that PageR is monitoring.



Here is the same screen with the object window **shifted right** to show more data fields.





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**Tool Bar Buttons (left to right)**

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**Enable/disable Auto Update**

When enabled, the Status window is updated whenever any objects status changes.

**All Objects / Alarms Only / Suspended & Disabled Only**

Use these three buttons to control the objects shown. All objects, only objects with in progress alarms, only objects that are suspended or disabled.

**Sort by Object Type (alpha) or Severity**

Use these two buttons to select the sort order of the objects displayed.

**Display Help for this Window****Select Object Type**

Use this drop down box to limit the objects displayed to a specific object type. You can also limit the objects displayed to a specific Severity value.

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**Run Statistics**

This information tells when PageR was started, when monitoring last started and when the last scan of the monitored object list was started. It gives elapsed times for each of these in days:hours:minutes format. It indicates the number of scans that have been performed since monitoring last started and how many internal errors have occurred.

**Alarms**

Shows the total number of alarms detected since PageR was started and how many alarms are currently in progress. Also shown is the number of pages executed since scanning started.

The width of the columns in the monitored objects list box can be changed by placing the cursor on the edge of a column header and dragging right or left.

**Status/Type**

Shows a status icon and Monitored Object type for each object in the Monitored Object List. The default status icons are:



No alarm in progress for object



An alarm is in progress for the object



Monitoring is suspended for the object

**Identifier**

This is the unique identifier for the monitored object. You can click on the column header to toggle this column to display the object description text.

**Severity**

This is the Severity value assigned to the monitored object. You can click on the column header to sort the display by Severity.

You may click on the column header of any of the following columns to move that column to be the next column after Severity. The first three columns cannot be moved. If you set a new column to be first after Severity, this will be retained for the next time the Status Window is

displayed.

**Last Action**

Time of last action on the object. An Action can be a scan, a page delivery, suspend/resume or anything that changes the state of the object.

**Alarms**

Total number of alarms detected for this object since PageR started.

**Last Alarm Start**

Starting time of last alarm event for the object.

**Alarm ID**

Unique alarm identification number of the last alarm. A unique Alarm ID is assigned to every alarm event.

**Last Alarm End**

Ending time of last alarm event for the object.

**Last MSG File Sent**

Time that the last paging file (page) was sent for the object.

**Times**

Number of times that the paging file (page) was sent for the current/last alarm.

**Last Alarm Description**

Description of the current/last alarm event for the object.

**Object Pop-Up Menu**

You may place the mouse cursor over the Status/Type text of an object and right click to display the Popup Menu for the object. This menu allows you to suspend/resume monitoring for the object, to clear the current alarm or to display a detailed list of the information PageR knows about the Monitored Object.

The **Monitored Object Attributes** for an object is a list of the current values for all data items PageR knows about a Monitored Object. After viewing the information, click anywhere in the information window to return to the normal Status display.

Status [Monitoring stopped...]

Select Object Type: All Objects

**Run Statistics**

Started at	8/20/02 4:09:26 PM	Elapsed	5:33	Number of:	
Monitoring Started at		Elapsed		Scans	2
Last Scan at	8/20/02 4:11:29 PM	Elapsed	3:30	Errors	30

**Alarms**

Total Detected	12
In Progress	11
Total Pages	0

Monitored Object Attributes	Attribute Value
Global	
Object Type	Event Log
Identifier	System (Local)
Description	Monitor the local System event log
Enabled	Yes
Suspended	No
Interval	0
Severity	9
Delay	0
Has Schedule	No
Alarm Type	Discrete
Alarm Object	Simple Alarm

28 Objects Shown

OK

## Global Options Tab

This tab contains option settings that control the overall operation of PageR.

The screenshot shows the 'Options' dialog box with the 'Global Options' tab selected. The dialog has a title bar with a close button. Below the title bar are several tabs: 'Monitored Objects', 'Alarm Objects', 'MSG Files', 'Search Strings', 'Paging', 'Email', 'Messaging', 'SNPP', 'SSH', 'Globals', 'Globals 2', 'Contacts', 'Logging', 'MD Groups', and 'Auto Add'. The 'Globals' tab is currently active. Inside the 'Globals' tab, there is a 'Configuration Name' text field. Below it is a 'Min Global Scan Interval (sec)' spinner set to 30, and an 'Auto Start Scanning' checkbox which is unchecked. A section titled 'Activity Logging' contains several options: 'Detail Level' is a dropdown set to 3; 'Log to disk' is checked; 'Append' is checked; 'File size (KB)' is a spinner set to 100; 'Log to another system' is unchecked; 'System' is a text field; 'Receive logging from another system' is unchecked; 'Port' is a spinner set to 3002; 'Log window size (lines)' is a spinner set to 1000; 'Auto scroll log window' is checked; 'Enable Alarm Broadcast' is unchecked; 'default target:' is a dropdown; 'Log Alarms/Errors to Event Log on:' is a dropdown; and 'Set Global Quiet Times' is a button. Below the 'Set Global Quiet Times' button is an 'Apply Global Quiet to Email' checkbox. To the right of these is a label 'Alarm on Processing Errors with Alarm Object:' followed by a dropdown. At the bottom of the dialog are 'Accept' and 'Cancel' buttons. A status bar at the very bottom reads 'Set wait time between scans in seconds'.

Each option on this tab is explained below:

### Configuration Name

Sets the name associated with the current Configuration. A "configuration" is all of the settings currently in effect and visible in the various Options tabs. See Managing Configurations for more information.

### Interval

Sets the number of seconds PageR sleeps between scans of the monitored objects.

### Auto Start Scanning

If set, PageR will begin scanning and minimize itself at start up. If not set, you must start scanning manually via the Start tool bar button.

### Activity Logging Level of Detail

Ranges from 0-3 and sets the level of detail logged to the Main window log window and the disk activity log. 0 is least detail and 3 is most detailed. Normally, this should be set to 0. All alarms and errors are logged regardless of the level of detail.

**Log to Disk**

Enables activity logging to disk file **PageR.log**.

**Append**

Sets the activity disk log to append when starting PageR.

**Log File Size**

Sets the size of the disk activity log file before wrapping occurs. In K bytes.

**Log to another System**

Enables activity logging messages to be sent to another copy of PageR on another system.

**System**

Name of Windows system or NetWare server to log to. You can click the binoculars to display the IP addressees Name Selection screen.

**Receive Logging from another System**

Enables PageR to receive log messages from another copy of PageR Enterprise on another system and record them in the local logging environment.

**Port**

Sets the TCP/IP port number used for sending and receiving remote logging.

**Log Window Size**

Sets the number of lines of information in the Main window activity log buffer. Controls how far back you can scroll the activity log.

**Auto Scroll Log Window**

If set, any new activity written to the Main window activity log will automatically scroll the activity log to the bottom so that the new activity is visible. If not set and the log is scrolled back, new activity is added to the log but the display is not repositioned.

**Enable Alarm Broadcast**

Globally enables sending of alarm messages to another system or logged on user on the network via the Messenger Service . If set and a target system/user is defined at the Contact level, alarms are sent to that target. If enabled and a target is not defined at the Contact level, alarm messages are sent to the target defined as the default. The alarm appears on the desktop of the target system in a popup box or in the WinPopUp utility. The Messenger Service must be running on the local and target systems. You can select the local Domain name in the drop down list to broadcast alarm messages to all systems in the domain.

**Log Alarms/errors to Event Log**

If set, alarm messages and internal errors are logged to the Application Event Log on the specified system. Leave the system box blank for the local system or type/select another system to receive logged events.

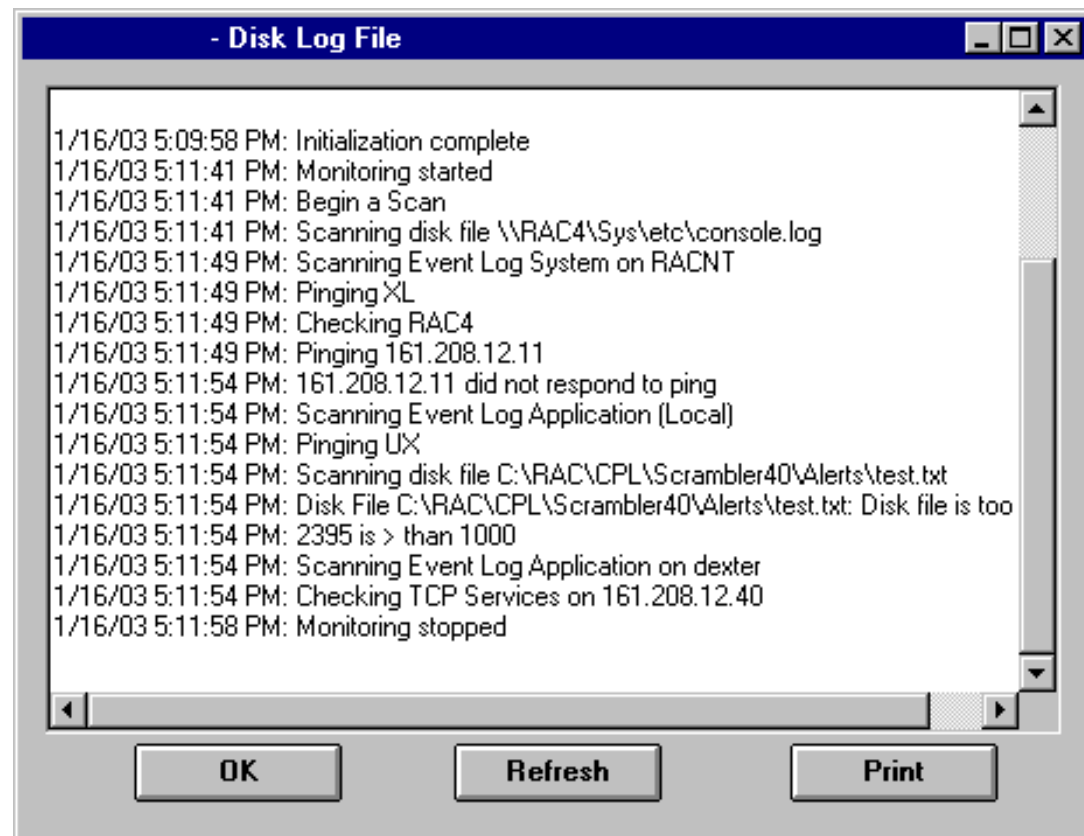
**Set Global Quiet Times**

Quiet time is a period of time (start to stop) during the day where alarm paging is suppressed. This is useful to prevent pages when you are on site or just do not want any pages. You can define multiple quiet periods on the hour or Halfhour for each day of the week. Click the button to display the Quiet Time Selection screen.

### Alarm on Processing Errors with Alarm Object

You can select an Alarm Object from the drop down list if you want to generate an alarm notification when PageR encounters errors during execution. These are not Monitored Object alarms, but errors preventing PageR from functioning normally.

### Disk Log File View Window

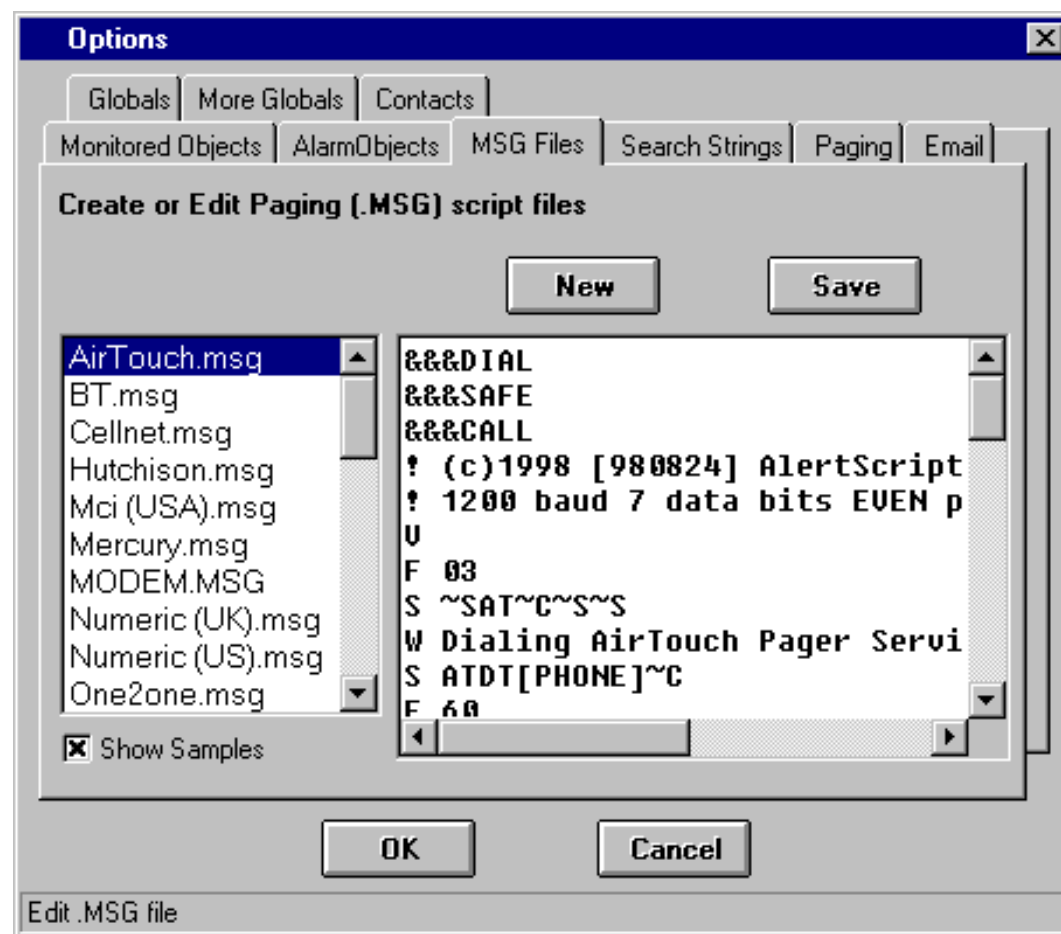


This window allows you to view the PageR activity log file. The activity log file is a longer term recording of the same information that appears in the Main window log box. Depending on configuration, the activity log is restarted each time PageR is started or each new executions log is appended to the previous one. The disk log file will wrap when its size exceeds the configured maximum.

The Disk Log File View window displays a snapshot of the current contents of the activity log file. You can refresh the display with the **DISPLAY** button or print the contents of the log window with the **PRINT** button. Click the **OK** button when you are done viewing the log file.

## Paging Script (.MSG) Files Tab

This tab allows Alert Script , Message Server or Modem paging script files to be created or modified.



The left pane displays a list of the .MSG files present in the Alerts directory. Click **Show Samples** to display the files in the Samples directory. Click on a file to display its contents in the right pane. You can edit the contents in the right pane and click **SAVE** to update the paging file.

If you edit a file in the samples directory and click **SAVE**, the file will be saved in the Alerts directory, thereby preserving the sample files.

Click **NEW** to create a new paging file.

Any text file with valid Alert Script, Message Server or Modem commands can be used as a message file. The .MSG extension is a convention and is not required.

## KEYWORDS

You can use substitution keywords in the paging file, which will be replaced with their run time values when the paging file is processed. Keywords appear as **[keyword]** or **[keyword=defaultvalue]** in the file text. The keywords you can use in paging files are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[ALARM]</b>	expands to the monitored object's alarm message text for the current alarm (used for alphanumeric pagers).
<b>[ALARMX]</b>	expands to extended information about the current alarm (not available on all objects).
<b>[CONTACT]</b>	expands to the name of the Contact being paged, if available.
<b>[PHONE]</b>	expands to the pager phone number defined for the Contact being paged or the global pager phone number.
<b>[PAGERID]</b>	expands to the pager ID number defined for the Contact being paged or the global pager ID number.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

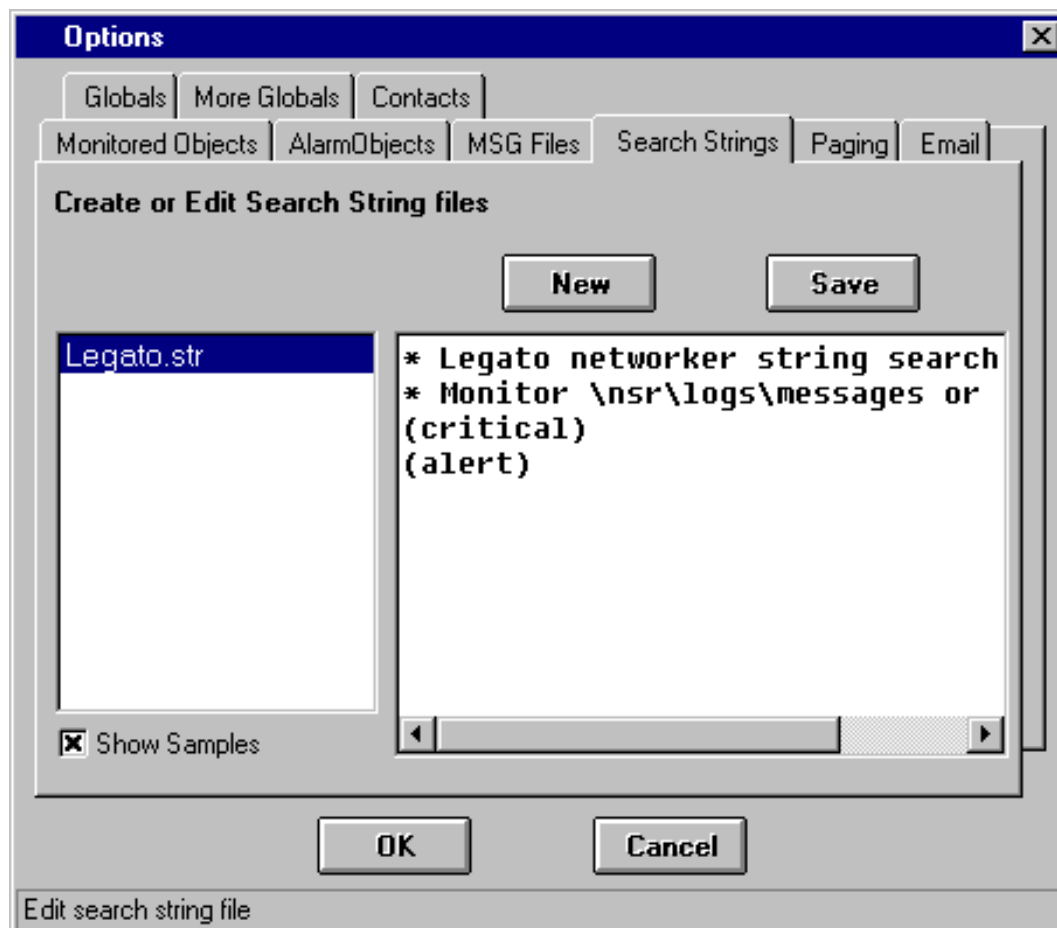
## Search Strings Tab

This tab allows Search String files to be created or modified.

Various monitored objects allow the specification of search strings. Search strings are text strings that are compared to textual representations of monitored object information to determine if alarm conditions exist. On the monitored object add/change screen you may specify a list of search strings separated by semicolons or a disk file that contains a list of search strings, one string to a record. Search strings contain one or more words and may employ pattern matching or Visual Basic Script.

The Options screen contains a simple editor to create and update search string files.





The left pane displays a list of the Search String files (.STR) present in the Search directory. Click **Show Samples** to display the files in the Samples directory. Click on a file to display its contents in the right pane. You can edit the contents in the right pane and click **SAVE** to update the Search String file.

If you edit a file in the samples directory and click **SAVE**, the file will be saved in the Search directory, thereby preserving the sample files.

Click **NEW** to create a new .STR file.

Search String files can be any text file. The .STR extension is just a convention.

### Search String Details

Each line may contain one or more words and is treated as a unit when searching target text for matches. Pattern matching is available. Enclose pattern match strings in quotes.

Examples:

A file with the strings:

```
TEST
TODAY IS MONDAY
"A?C"
"*IS"
```

Strings entered in the box on the MO:

```
TEST;TODAY IS MONDAY;"A?C";"*IS"
```

These strings would match any target text containing the word TEST or the sequence of words TODAY IS MONDAY, or any text that matches the wild card, Such as AXC or ABC. The second pattern would match the target text TODAY IS MONDAY.

A match string can be prefixed with the ! character to invert or NOT the result of the string match. Thus, the string set: **!TEST;!\"ABC\"** would match any target text that does not contain the strings TEST or ABC.

### String Matching with VB Script

You can write Visual Basic Script to perform more complex string matching tasks. VB Script is enclosed in square brackets **[]**. If script is entered in the search string box, each line of the script is terminated with a semicolon. If script is entered in a file, each line of script is on a separate line of the file, with the first line of script starting with a **[** and the last line ending with a **]**. See the discussion of using scripts below for more information.

### Pattern Matching

The pattern-matching features allow you to use wildcard characters, character lists, or character ranges, in any combination, to match strings. The following table shows the characters allowed in pattern and what they match:

<u>Characters in pattern</u>	<u>Matches in string</u>
<b>?</b>	<b>Any single character.</b>
<b>*</b>	<b>Zero or more characters.</b>
<b>#</b>	<b>Any single digit (0–9).</b>
<b>[charlist]</b>	<b>Any single character in charlist.</b>
<b>[!charlist]</b>	<b>Any single character not in charlist.</b>

A group of one or more characters (charlist) enclosed in brackets (**[ ]**) can be used to match any single character in string and can include almost any character code, including digits.

Note: To match the special characters left bracket (**[**), question mark (**?**), number sign (**#**), and asterisk (**\***), enclose them in brackets. The right bracket (**]**) can't be used within a group to match itself, but it can be used outside a group as an individual character.

By using a hyphen (**–**) to separate the upper and lower bounds of the range, charlist can specify a range of characters. For example, **[A–Z]** results in a match if the corresponding character position in string contains any uppercase letters in the range A–Z. Multiple ranges are included within the brackets without delimiters.

Other important rules for pattern matching include the following:

An exclamation point (**!**) at the beginning of charlist means that a match is made if any character except the characters in charlist is found in string. When used outside brackets, the exclamation point matches itself.

A hyphen (**–**) can appear either at the beginning (after an exclamation point if one is used) or at the end of charlist to match itself. In any other location, the hyphen is used to identify a range of characters.

When a range of characters is specified, they must appear in ascending sort order (from lowest to highest). **[A–Z]** is a valid pattern, but **[Z–A]** is not.

The character sequence [] is considered a zero-length string ("").

### Using Scripts for string matching

You can write a VBScript function to perform complex pattern matching tasks. Your script does not need a SUB, FUNCTION or END statements (unless you wish to end before the final line of the script). Exposed to your script is a variable called **teststr** which contains the text to be searched (provided by the monitored object). You indicate a match (which results in an alarm being generated) by setting the variable **match** to true. The Script Globals object and the monitored object that called for the string match, are also exposed through the SG object reference.

Here is a sample script used with the Disk File Monitored Object. It simply looks in the disk file record passed in the teststr variable for the presense of the string "error":

A file with the script:

```
[if instr(1, teststr, "error", 1) <> 0 then  
match=true  
end if]
```

Script entered in the search string box on the MO:

```
[if instr(1, teststr, "error", 1) <> 0 then;match=true;end if]
```

You can use all features of VB Script except for global variables and user written functions or subroutines. Sample scripts are located in the \Search\Sampes directory.

## Paging Notifications Options Tab

This tab configures alarm notification by paging using a Message Server or Modem.

The screenshot shows the 'Options' dialog box with the 'Paging' tab selected. The 'Alarm Paging via Message Server or Modem' section is active. The 'Enable Paging' checkbox is checked. The 'Device Type' is set to 'Modem'. The 'Comm Port' is 'COM2', 'Data Bits' is '8 bits', 'Stop Bits' is '2 bits', 'Baud Rate' is '9600', and 'Parity' is 'None'. The 'Minimum time between pages' is 120, 'Modem Hangup wait' is 30, 'Number of times page is repeated' is 0, and 'Page repeat delay' is 300. The 'AlertScript Paging' checkbox is unchecked. The 'Pager Service Phone Number' and 'Pager/Phone Id' fields are empty. The 'Send MSG files to SPIN directory on system' checkbox is unchecked, and the 'Enable Message Server Polling' checkbox is unchecked. The 'Paging Device Test/Setup' button is visible. The 'OK' and 'Cancel' buttons are at the bottom. The status bar at the bottom reads 'Enable/disable paging with Message Server or Modem'.

To enable paging with a Message Server or Modem, check the **Enable Paging** box.

If paging is enabled, select the **device type** as Message Server or Modem.

Select the appropriate **baud rate**, **parity**, **data** and **stop** bits and the **com port** that the device is attached to.

### Minimum Time Between Pages

Sets the minimum time in seconds that must elapse between page requests sent to the device. This time can vary but should be at least two minutes for the Message Server.

### Modem Hang Up Wait

Sets the amount of time in seconds that PageR waits after sending a page via a Modem before forcing a Hangup of the modem. Usually 20-30 seconds.

### Number of Times Page is Repeated

Sets the number of times that a page for an alarm event is repeated.

### Page Repeat Delay

Sets the time in seconds between repeats of a page if the number of times to repeat is

greater than 1.

**Alert Script Paging**

Check this box to enable Alert Script alphanumeric paging with a modem. See the discussion of Alert Script for more information.

**Pager Service Phone Number**

This is the default pager phone number. This value is substituted for the **[PHONE]** substitution parameter when it appears in a paging file. A phone number defined for a Contact overrides this value. You may type a number in the box or select a number from the drop down list of common pager services.

**Pager ID**

This is the default pager ID string. This value is substituted for the **[PAGERID]** substitution parameter when it appears in a paging file. A pager ID defined for a Contact overrides this value.

**Send Paging files to SPIN directory on system**

Check this box to send paging files to the SPIN directory on another system running PageR instead of processing them locally. If this is checked, enter the name of the other system in the system box.

**Enable Message Server Polling**

Click this box to have PageR send the POLL paging file to the Message Server on a regular basis. The Message Server uses the regular arrival of the POLL file (or any other paging file) to confirm that the local system is up.

**Paging Device Test/Setup**

Click this button to send a paging file to the Message Server or Modem to test the paging function.

## E-Mail Notification Options Tab

This tab configures alarm notification via email.

**Options**

Globals | Globals 2 | Contacts | Logging | MD Groups | Monitored Objects | Alarm Objects | MSG Files | Search Strings | Paging | Email

Default notification email recipient


**MAPI Mail Notification**

☐ Enable Notification via email using MAPI (Exchange)

Profile/Identity  Password

**SMTP Mail Notification**

☐ Enable Notification via email using SMTP

Mail Server   Return Email

☐ Use Alarm text for mail Subject

**Send Test Mail**

**Accept** **Cancel**

Email address of default alarm notification recipient

### Send Notification to (default recipient)

This is the name of the default email user that alarm notification email will be sent to. Used if email recipient is not defined at the Contact level.

### Enable Notification by email using MAPI

Check this box to send email notifications via the MAPI protocol. Requires access to a MAPI capable mail client. If you enable MAPI, enter the profile name and password for access to the mail client. If running in Service Mode, please see Running as a Windows Service for a discussion of using MAPI mail under a Service mode process. Note that in some cases, the MAPI mail client may have to be running in order for mail generated by PageR to be delivered.

### Enable Notification by email using SMTP

Check this box to send email notifications via the SMTP protocol. If enabled, enter the name or IP address of the mail server. You must also enter a valid return email address known to the mail server. This is typically the email address of the person responsible for PageR. If the SMTP server requires authentication, enter the user name and password in the Profile/Password boxes in the MAPI section.

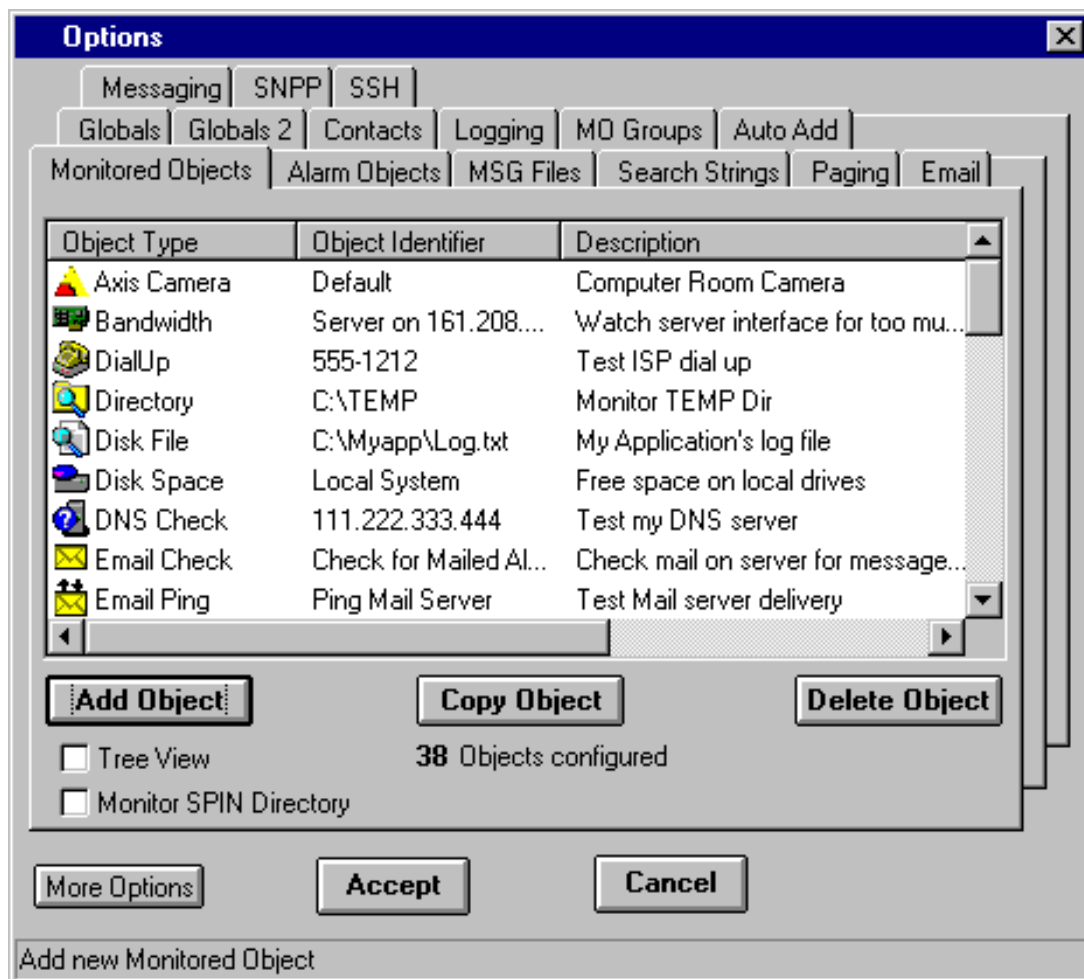
### Use Alarm Text as Mail Subject

Check this box to send the alarm notification message text as the email subject line. Normally, the subject is a generic alarm announcement and the actual alarm message text is in the body of the mail message.

You may click the **Send Test Mail** button to send a test email.

## Monitored Objects Tab

This tab displays the current list of monitored objects and allows you to add, change and delete the objects.



The window area displays the list of currently defined objects that PageR will monitor. Each object has a type, identifier or name, a description and an enabled/disabled indicator.

To create a new object, click **Add Object**. A screen will display allowing you to select from the list of available monitored object types. Select the desired object type and a new window will display allowing you to configure the new object.

To modify an object on the list, place the cursor over the type of an existing object and double click to display a dialog that will allow you to modify the attributes of that object.

To copy an object on the list, place the cursor over an existing object and click once to highlight the object, then click **Copy Object**.

To delete an object from the list, place the cursor over an existing object and click once to highlight the object, then click **Delete Object**.

Click on the column headings to change the sort order of the list.

Check the **Tree View** box to display the Monitored Object List as a Tree View with the Monitored Objects organized into trees for object type, severity and system. This view can help manage large configurations.

Check the **Monitor Spin Directory** box to have PageR monitor the directory displayed for paging files generated by other applications. The directory used can be changed by editing the Registry .



## Event Log Object Add/Change

This screen is used to add or modify Windows Event Log monitored objects.

The screenshot shows the 'Event Log Object Add/Change' dialog box. It has a title bar with a close button. The main area contains several fields and sections:

- Description:** A text box containing 'Monitor the local System event log'.
- Enabled:** A checkbox labeled 'Enabled' which is checked.
- Interval:** A text box containing '0'.
- Severity:** A dropdown menu showing '9'.
- Schedule:** A button.
- Event Log System:** A dropdown menu with a list icon button to its right.
- Event Log Type:** A dropdown menu showing 'System'.
- Alarm Reporting Options:** A section with three checkboxes:
  - ☒ Report all error events
  - ☒ Report all warning events
  - ☒ Report all informational eventsBelow these is a text box for 'Apply Search Strings/File to Events and report matches:' with a 'Browse' button.
- Alarm Notification:** A section with:
  - Alarm Object:** A dropdown menu showing 'Simple Alarm'.
  - Alarm Text:** A text box containing '[TYPE] [IDX]: \p[EVENTTYPE] event: [EVENTDESC]\x[EVENTR'.

At the bottom are 'OK' and 'Cancel' buttons.

### Description

This is an optional description of the monitored object .

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### System Name for Event Log

Enter or select the name of the Windows NT/2000/XP System where the Event Log file resides. Press the drop down button for a list of available systems.

**Event Log Type**

Select the type of Event Log, **System, Security, Application** or other. If you wish to monitor more than one log type, create a separate monitored object for each type.

**Report All Informational Events**

Check this box to generate an alarm when new informational event type record(s) are added to the event log.

**Report All Warning Events**

Check this box to generate an alarm when new warning event type record(s) are added to the event log.

**Report All Error Events**

Check this box to generate an alarm when new error event type record(s) are added to the event log.

**Apply Search Strings/File to Events and Report Matches**

Enter a list of search strings or select a Search String File have the textual description of each event record searched for any matches to the search strings. Any match generates an alarm. More about Search Strings.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[EVENTLOG]</b>	expands to event log name as defined for the MO.
<b>[EVENT]</b>	expands to the event log record description of the event.
<b>[EVENTREC]</b>	expands to the complete event log record formatted as a string.

[EVENTTIME]	expands to the event record date and time.
[EVENTSYSTEM]	expands to the event record originating system.
[EVENTTYPE]	expands to the event record event record type.
[EVENTID]	expands to the event record event ID number.
[EVENTSOURCE]	expands to the event record source application.
[EVENTCATEGORY ]	expands to the event record event category.
[EVENTUSER]	expands to the event record user (account) name.
[TIME]	expands to the current time.
[DATE]	expands to the current date.
[AGENT]	expands to the the application name of "PageR".
[SYSTEM]	expands to the name of this system.

### Event Log Record Object

When using scripts with the Event Log Monitored Object, either via a Task MO invoked by the Alarm Object assigned to the Event Log MO or in a script executed for string matching on Event Log record contents, the event log record currently being processed is available to such scripts as an object. See Event Log Record Object Attributes for more information.

### Notes

On the first scan of an event log, PageR only determines the current end of file (EOF) of the event log. On the next and subsequent scans, PageR checks the current EOF of the event log against the saved EOF and if they are different, PageR then extracts and examines the new records.

## Disk File Object Add/Change

This screen is used to add or change Disk File monitored objects.

**Disk File Monitored Object Add/Change (2)**

Description:  ☒ Enabled

Interval:  Severity:

Disk File:

☐ Close file after scan ☐ Scan entire file ☐ Use Ctrl-Z as Eof

☐ Delete file after scan

**Alarm Options**

☒ Report all new records ☒ Report file not found ☒ Report file found

☐ Report on file size  ☐ Stop on first match

☐ Report on file age  ☐ Advance to EOF

Apply Search Strings/File to disk file records and report matches:

**Alarm Notification**

Alarm Object:

Alarm Text:

Optional description of monitored object

### Description

This is an optional description of the monitored object .

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Disk File

Enter/Browse the name of the disk file to be monitored. Note that the disk file name is not validated unless you click the **Validate** button. The disk file name can be a UNC name of a file on another system.

**Close file after scan**

Normally, the disk file remains open after the first scan to save overhead on subsequent scans. This can cause sharing problems. Select this option to close the file after a scan and reopen it on the next scan.

**Scan entire file**

Normally, the examination of file's contents starts at the eof (end of file) found on the first scan and proceeds forward as the file's size increases. Select this option to have the entire file examined on each scan.

**Use Ctrl-Z as Eof**

Normally, the end of file is determined by the disk file size. However, some applications use the Control-Z character as the end of file maker instead of the file size. Check this box to use Control-Z as the eof marker.

**Delete File after scan**

Check this box to delete the disk file after it has been scanned.

**Report All New Records**

Check this box to generate an alarm when any new record is written to the disk file.

**Report File Not Found**

Normally, if the disk file is not found at scan time, a warning is logged to the activity log , but no alarm is generated. If you set this option, an alarm will be generated if the disk file is not present when scanned. This option is used for the case where the absence of the file signifies an alarm condition.

**Report File Found**

If this option is enabled, an alarm will be generated if the file is present when scanned. This option is used for the case where the presence of the disk file signifies an alarm condition.

**Report on File Size**

If this option is enabled, an alarm will be generated if the disk file size exceeds the size criteria set. Select the appropriate size comparison operator from the drop down list and enter the file size in bytes in the file size box.

**Report on File Age**

If this option is enabled, an alarm will be generated if th disk file age exceeds the age criteria set. Select the appropriate age comparison operator from the drop down list and enter the file age in the file age box. Append a period letter code to the file age from the following list:

s = seconds (default)    n = minutes    h = hours    d = days  
                                 w = weeks  
m = months    y = years

Note that the file age is computed as the time elapsed between the current time and the file's last modified time. Files that are open may not have thier last modified time updated until the file is closed.

**Stop on first match**

Normally, all records are read from the current position of the file to the current end of the file and all string matches are reported. Check this box to stop reading the file on the first string match. The file position is left at the end of the record with the first match and reading will resume there on the next scan (assuming you are not reading the entire file). This option is not compatible with the Report all new records option.

**Advance to EOF**

If the Stop on first match option is selected, you can check this box to have the file position advanced to the current end of file after the first string match is found. The next scan will see only new records.

**Apply Search Strings/File to Disk File and Report Matches**

Enter a list of search strings or select a Search String File to have each new disk file record searched for any matches to the search strings. Any match generates an alarm. More about Search Strings.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[RECORD]</b>	expands to the text of the disk file record.
<b>[SIZEOP]</b>	expands to the file size comparison operator.
<b>[SIZEVAL]</b>	expands to the file size comparison value (bytes).
<b>[LASTSIZE]</b>	expands to the last retrieved actual file size (bytes).
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".

**[SYSTEM]** expands to the name of this system.

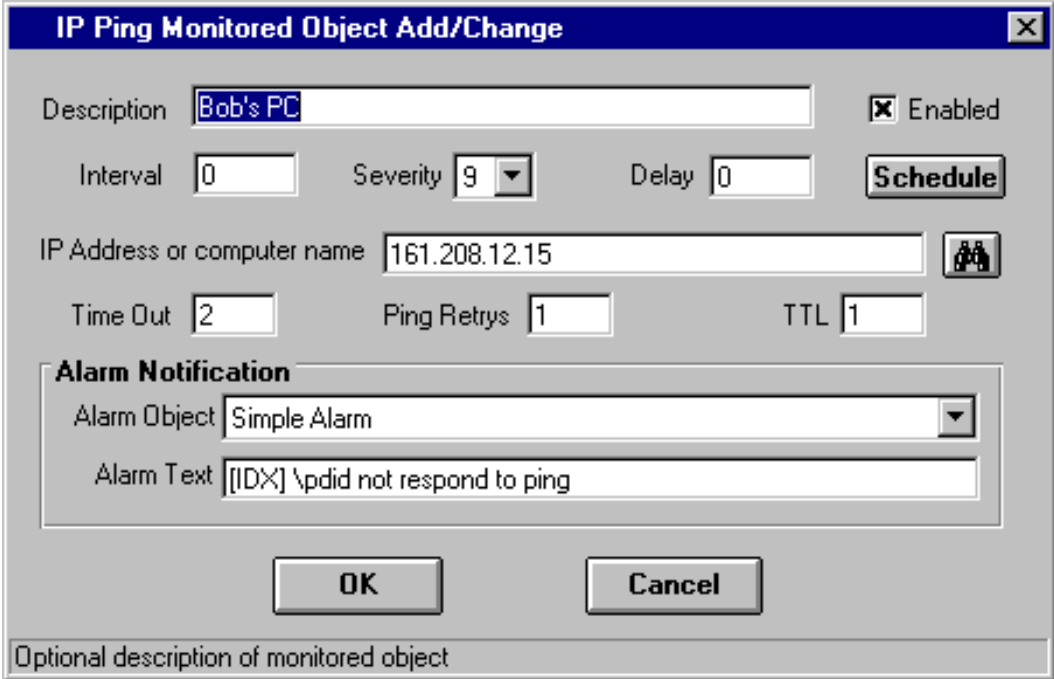
### Notes

On the first scan of a disk file, PageR only determines the current end of file (EOF) of the disk file. On the next and subsequent scans, PageR checks the current EOF of the disk file against the saved EOF and if they are different, PageR then extracts and examines any new information. If the current EOF of the file is found to have changed to a smaller value than that saved on the last scan, the file is assumed to have been recreated, and the new scan starts at the beginning of the file and proceeds up to the new EOF.

If the disk file name contains wildcard characters, the target directory is scanned for a list of files that meet the selection criteria. The most recently created file is selected for processing. After scanning, this file will be closed automatically. On the next scan, the same or a new file may be selected for examination.

## Ping Object Add/Change

This screen is used to add or change a Ping monitored object .



The dialog box is titled "IP Ping Monitored Object Add/Change". It contains the following fields and controls:

- Description:** A text box containing "Bob's PC".
- Enabled:** A checked checkbox.
- Interval:** A text box containing "0".
- Severity:** A dropdown menu showing "9".
- Delay:** A text box containing "0".
- Schedule:** A button.
- IP Address or computer name:** A text box containing "161.208.12.15".
- Time Out:** A text box containing "2".
- Ping Retrys:** A text box containing "1".
- TTL:** A text box containing "1".
- Alarm Notification:** A section containing:
  - Alarm Object:** A dropdown menu showing "Simple Alarm".
  - Alarm Text:** A text box containing "[IDX] \p did not respond to ping".
- OK** and **Cancel** buttons.
- Optional description of monitored object:** A text box at the bottom.

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Interval**

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**TTL**

This is the Time-To-Live value that can be used in ping packets. When TTL is zero, ping packets pass through routers or other packet forwarding devices until they reach the ping target and are returned, or a time occurs indicating that the ping failed. When TTL is set, it acts as a "hop" count and can be used to detect ping failure caused by the failure of a router or intermediate device instead of at the target device. If you wish to use this feature, TTL should be set to the appropriate number of hops (or devices) between the local system and the target system. The Ping MO will test each hop (intermediate device) until reaching the target. If a hop fails, the Ping MO will report the IP address of the last successful hop (device) allowing you to determine the intermediate point of failure. This scheme is essentially the same as using Trace Route tools to locate the point of failure of a ping travelling over multiple hops. A value of zero will disable use of TTL.

**Schedule**

Click to define a Schedule Object. The button label will be **bold** if a Schedule already exists for this monitored object.

**IP Address or Computer Name**

This is the TCP/IP address or name of the system to be monitored via Ping. If a name is used, it must appear in this systems hosts file. You can click the binoculars to display the IP Address/Host Name Selection screen.

**Time Out**

This is the ping operation time out in seconds. This is how long the ping object waits for a reply from the target computer before declaring the ping to have failed.

**Retrys**

This is the number of times a failed ping will be tried before an alarm is generated.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message



text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[DESC]	expands to the monitored object's long description.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.
[TIME]	expands to the current time.
[DATE]	expands to the current date.
[AGENT]	expands to the the application name of "PageR".
[SYSTEM]	expands to the name of this system.

## NT System Object Add/Change

This screen is used to add or change an NT System monitored object .

The screenshot shows a Windows-style dialog box titled "NT System Monitored Object Add/Change". It contains several input fields and a checkbox. The "Description" field is set to "Mail Server". The "Interval" field is set to "0", "Severity" is set to "9" (with a dropdown arrow), and "Delay" is set to "0". The "System Name" dropdown is set to "NT1". The "Enabled" checkbox is checked. Below these fields is a section titled "Alarm Notification" which contains an "Alarm Object" dropdown set to "Alarm with Escalation" and an empty "Alarm Text" text box. At the bottom are "OK" and "Cancel" buttons. A footer area contains the text "Optional description of monitored object".

### Description

This is an optional description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Interval**

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Server Name**

Enter or select the name of the NT Server or Workstation system to be monitored.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

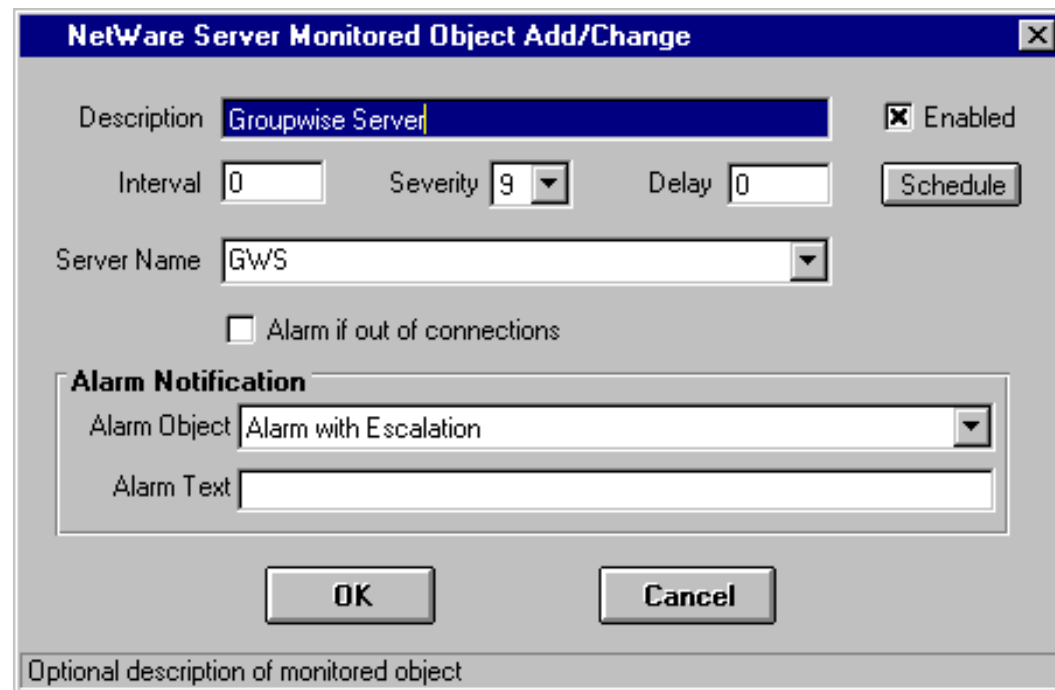
**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

## NetWare Server Object Add/Change

This screen is used to add or change a NetWare Server monitored object .



The dialog box is titled "NetWare Server Monitored Object Add/Change". It contains the following fields and controls:

- Description:** A text field containing "Groupwise Server".
- Enabled:** A checked checkbox labeled "Enabled".
- Interval:** A text field containing "0".
- Severity:** A dropdown menu showing "9".
- Delay:** A text field containing "0".
- Schedule:** A button.
- Server Name:** A dropdown menu showing "GWS".
- Alarm if out of connections:** An unchecked checkbox.
- Alarm Notification:** A section containing:
  - Alarm Object:** A dropdown menu showing "Alarm with Escalation".
  - Alarm Text:** An empty text field.
- OK:** A button.
- Cancel:** A button.
- Optional description of monitored object:** A text area at the bottom.

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

### Server Name

Enter or select the name of the NetWare Server to be monitored.

**Alarm on out of connections**

Check this box to generate an alarm when the server is up but is out of connections. Normally, out of connections does not generate an alarm because the server has been confirmed to be up even if connections are not available. This is only supported when you are using Novell's Client32 client software on the hosting system.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

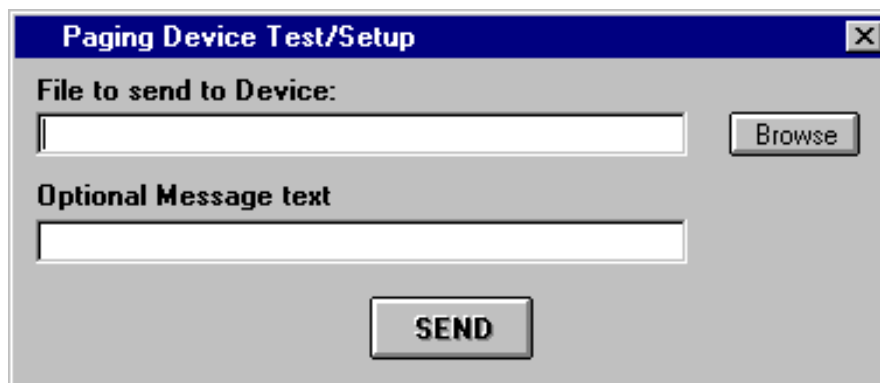
**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

## Paging Device Test

This screen allows a paging file to be sent to the Message Server or Modem paging device to test device configuration and paging files.



Enter or Select a paging file to be sent to the Message Server or Modem configured as the paging device. Press the **SEND** button to send the file to the device. The paging file will be executed and any errors will be displayed in the Main window log area.

The **Optional Message Text** will be substituted for any **[ALARM]** substitution keyword found in the paging file.

## String Searching Event Log Records

In order to allow string searches of Event Logs, an event log record is converted into a textual format before the search is performed. The event's attributes are strung together in a keyword=value semicolon separated list. Thus, the following event record:



Would be converted into the following format for string searching:

**time=6/10/97 8:15:55 AM; system=RACNT; type=Information; source=LPDSVC;  
id=4000; category=NONE; user=N/A; desc=LPD Service started successfully.**

(there are no spaces after the semicolons and no line wrap. The spaces and line wrap shown here are for readability only)

This allows string searches to be used to generate different alarms for particular error numbers (id), user name, systems, applications (source) and event description content. See Search Strings for more information about string searching.

## Running as a Windows Service

### Overview

PageR can be run in two modes, as a normal Windows desktop application and as a Service . PageR is initially installed only as a desktop application. To run as a Service, a second installation step must be performed. After the Service install, PageR can be run as a desktop application or as a Service, but not both at the same time.

When running as a desktop application, PageR is dependent on the current user login to the Windows system. If this user logs out, PageR will be terminated along with all other desktop applications. This does not allow for unattended operation with no user logged onto the system.

Windows Services, on the other hand, run independent of the logged on user and can run at all times the system is up, even when no user is logged on. This mode is better suited to unattended operation.

Service Mode Installation

Running in Service Mode

Using M A P I Mail in Service Mode

Security Issues in Service Mode

## Service Mode Installation

To enable PageR for Service Mode operation, go to the More Global Options tab. Enter an appropriate user account and click the **Install as a Service** button.

To remove PageR from the Service Manager (disable Service Mode operation), go to the More Global Options tab and click the **Uninstall as a Service** button.

When installed in the Service Manager, PageR is set up as **Manually started**, runs under the user account you enter. Manually started means that you must go to the Service Manager and select the PageR service and click the Start button to start PageR running as a service. You can change this to **Automatic Start** to have PageR started whenever the system is brought up.

Services don't run on the desktop, so do not have a security context provided by the user login process. In order to have a security context, a Service is configured with a user account and the Service Manager will start the Service as if it was logged on as that user. You must select an appropriate user account and enter it in the boxes on the More Global Options Tab before clicking the Install as a Service button. You can leave the user account blank and the Service will be installed to run as the **Local System Account**. This account has adequate security for local monitored objects but may not allow access to objects that exist on other systems. See Security and Impersonation for more information.

## Running in Service Mode

When PageR is installed as a Service, it can be run in two ways. First, if PageR is not already executing as a Service, you can run it normally, as a desktop application. If PageR is not running on the desktop, you can go the Services Manager applet in the Control Panel and start PageR running as a Service. PageR cannot be run as a Service and a desktop application at the same time with the exception of **Maintenance Mode** (see below).

When run as a Service, PageR will automatically begin scanning the configured monitored objects when started. No screens will be displayed. Alerts will be processed just as when PageR is run as a desktop application, there is just no visible user interface. You can use the Web Status feature or the Instant Messaging feature to monitor the PageR service.

You can use the Services Manager applet in the Control Panel to **Pause** the PageR Service. If this case, scanning of monitored objects and alert processing is suspended. You can click the **Continue** button to resume scanning and alert processing. You can shutdown the PageR Service with the **Stop** button on the Services Manager.

When running in Service Mode, Alerts, errors or other important information are logged to the Application Event Log on the local system as well as to the Web Status display and the disk log file (if enabled).

It is recommended that the initial evaluation and configuration building be done running PageR as a desktop application and then shift to running in Service Mode when the configuration is stable.

If PageR is running as a Service and you run PageR on the desktop, the desktop PageR will ask if you wish to enter **Maintenance Mode**. If you answer no, PageR will shutdown, as you cannot run PageR as a Service and a desktop application at the same time. If you answer yes, thereby entering Maintenance Mode, the desktop instance of PageR will continue to execute, but will only allow changes to the configuration. No other operations can be performed. If you save the configuration, when you exit, PageR will ask if you wish to restart the PageR Service so the Service will load the changed configuration.

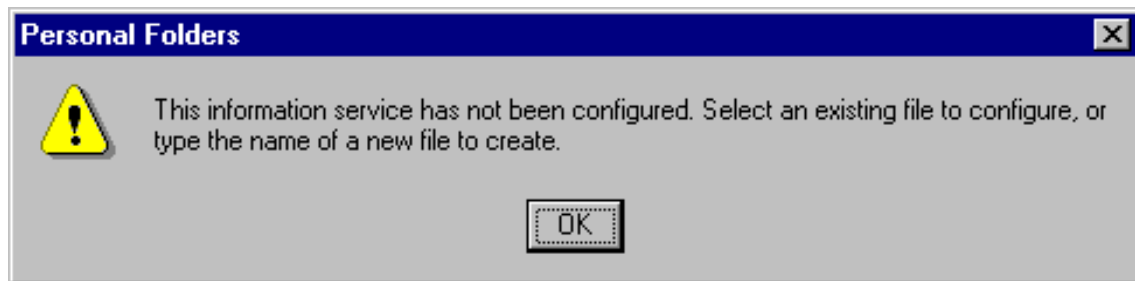
## Using MAPI Mail in Service Mode

When running Service Mode, there are problems with using MAPI mail to deliver alarm messages. Due to limitations in MAPI's design, it does not function well when used by a Service Mode process. This section discusses these issues.

When running in Service Mode, the service process can place MAPI mail messages into a MAPI mail box, but those messages will not be processed until a desktop MAPI application (such as Exchange) is executed. You must be running Exchange (InBox) on the desktop to have mail generated by PageR delivered immediately. This is not possible if there is no desktop session logged on. If Exchange cannot be run while PageR is running, use SMTP mail for mailing alarm messages.



If you do use MAPI mail in Service Mode, MAPI requires special configuration for Service Mode use. When running PageR in Service Mode, the first time mail is submitted to MAPI, PageR will create a MAPI profile for its own use. When this occurs, you will see the following message box:



Click OK. A file selection dialog will appear. It will list MAPI Post Office (.PST) files available on the system. Select the .PST file used by an administrative user. The MAPI profile created by PageR will be attached to this post office and MAPI messages generated by PageR will be submitted to the administrative users outgoing mail folder. Exchange must be run for this user to send the mail from the outgoing folder to the recipient.

NOTE: When using MAPI in Service Mode, the MAPI login user name that is entered on the email Notification Options Tab should be PageR. No password should be used.

Microsoft expects to resolve the problems with MAPI mail in Service Mode with Windows NT 5.0.

## Global Options 2 Tab

This tab contains additional option settings that control the overall operation of PageR.

**Options**

Monitored Objects Alarm Objects MSG Files Search Strings Paging Email

Messaging SNPP SSH

Globals **Globals 2** Contacts Logging MO Groups Auto Add

☒ **Audible Alarms** exclamation Browse

**Icon Selection**

Ok Informational Warning Error

**Service Mode Operation**

**Install as a Service**

Domain  User  Password

**Web Status Service**

☒ Enable Port 1088 User  Password

☒ Log Requests Admin User  Password

☐ Disable security check on manual paging

☐ Scan in Severity Order ☐ Scan changed only **Set Global Schedule**

**More Options** **Accept** **Cancel**

Enables Audible alarm notification

Each option on this tab is explained below:

### Audible Alarms

Enables sounding of an audible alarm when an alarm is detected by PageR. Audible alarms can be a sound file (.wav) or the name of a Windows NT System sound (such as "Exclamation") or the word **speak** to have alarms spoken. You may browse for .wav files. Several .wav files are included with PageR.

### Icon Selection

You can select your own icons to be associated with messages and alarms. The default icons are displayed and you can click on one of the icons to display a browse window. Use the browse window to select an icon file to be used in place of the default.

### Service Mode Operation

Use these items to configure PageR for use as an Windows Service. Click the **Install as a Service** button to install PageR as a Service. Once installed, this button can be clicked again to uninstall PageR as a Service. For some types of monitored objects, you may need to identify a local or domain user for PageR to impersonate while running as a Service. If a user is identified, PageR will logon as that user when running as a Service and obtain the

users security credentials. This "impersonation" then allows PageR to access restricted objects such as disk files on other systems and the Service Control Manager on other systems. If you wish to use impersonation, enter the user account information before clicking Install as a Service.

### **Web Status Service**

The Web Status Service allows a web browser to be used to display PageR status information from another system. You can also perform control tasks such as starting/stopping monitoring, alarm resets and suspending/resuming monitoring of individual objects. See the discussion of the Web Status Service for information on the use of the service. In order to use the Web Status Service you must enable it here. If you already have a web server running on your system, you can select an alternate TCP/IP port number to use. You can define a user name and password that the browser user must supply to access the Web Status Service.

### **Log Status Requests**

Enables logging of Web Status requests serviced to the Activity log .

### **Disable Security Check on Manual Paging**

If you apply security to Web Status by entering a user name and password, you can disable security checking for the Web Status Manual Paging feature. This will allow any browser to submit a manual page, but not access any other part of Web Status. In order to access the Manual Paging feature directly, use the following URL in the browser:

**`http://ip address/name of system<:portnumber>/WebStatus5.html`**

### **Scan in Severity Order**

Normally, Monitored Objects are scanned in the order they were created. Check this box to scan the objects in Severity order, starting with Severity 0 and continuing through Severity 9. Within a Severity level, objects are scanned in the sort order of their description text.

### **Scan Changed Only**

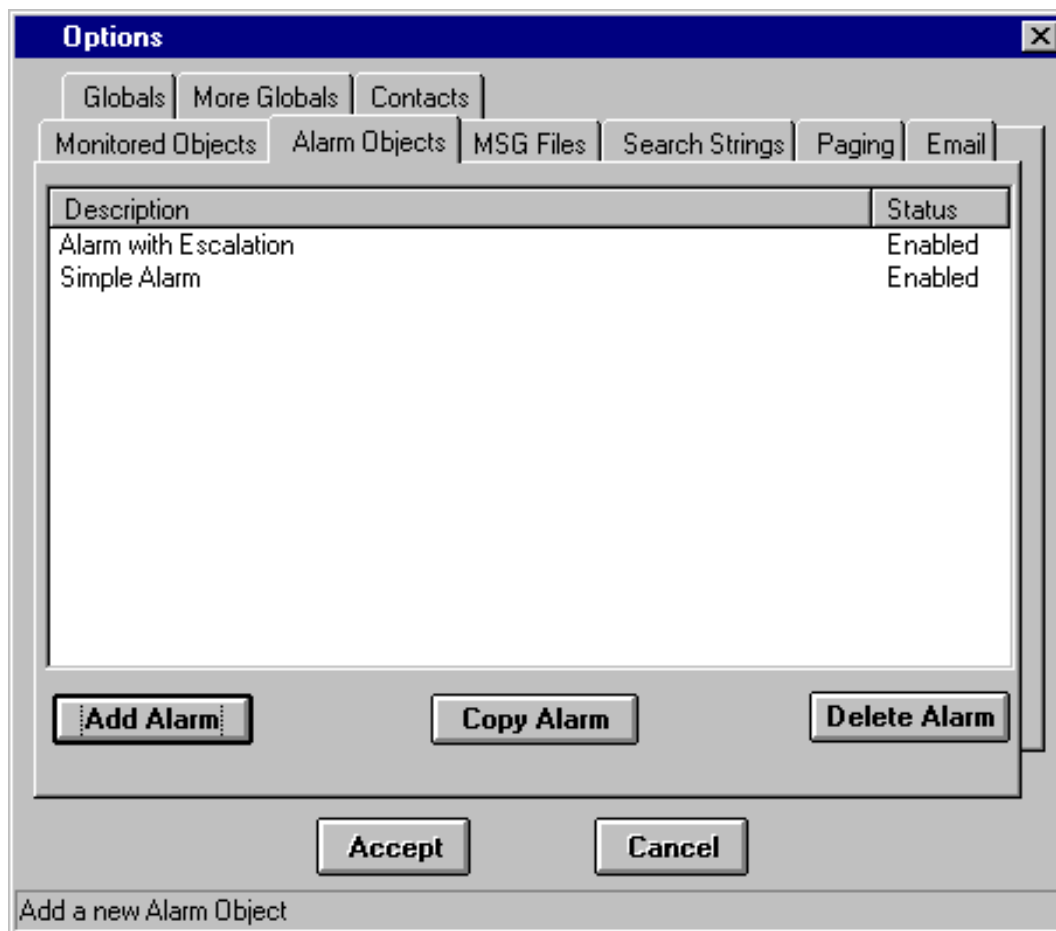
If you check this option, then when you start scanning, only new or changed MOs will be scanned. This allows you to more easily test changes to large configurations. This option is not retained when you shutdown and restart.

### **Set Global Schedule**

Click to define a global Schedule object . The global Schedule is applied to every monitored object at scan time to determine if the MO should be scanned. Schedules at the MO level are applied if the MO passes the global Schedule.

## Alarm Objects Tab

This tab shows the list of Alarm Objects, allowing them to be created, modified or deleted.



This screen shows a list of the Alarm Objects that have been defined. Alarms objects contain alarm notification information that tells PageR what actions to take when an alarm occurs. Alarm Objects are attached to Monitored Objects. An Alarm Object can be shared by multiple Monitored Objects.

To create a new Alarm Object, click the **Add Alarm** button. To modify an existing Alarm Object, double click the Alarm Object description. To copy an Alarm Object, highlight the object by single clicking on the description and then clicking on the **Copy Alarm** button. To delete an Alarm Object, highlight the object by single clicking on the description and then clicking on the **Delete Alarm** button.

## Alarm Object Add/Change

This screen is used to add or change an Alarm Object. An Alarm Object defines the notification actions to be taken for an alarm event. Alarm Objects are attached to Monitored Objects, defining what notification actions will be taken for an alarm on that object.

Alarm objects can define a simple notification or a notification escalation schedule, which allows for alarm notification to multiple contacts and alarm notification escalation. The screen has a tab with two options, one for a simple alarm notification and one for an alarm escalation schedule. Whichever tab is displayed, that is the notification type that will be used.

Here is an example of a simple alarm notification:

The screenshot shows a dialog box titled "Alarm Object Add/Change". At the top, there is a "Description" field containing "Simple Alarm" and an "Enabled" checkbox which is checked. Below this are two tabs: "Simple Alarm Notification" (selected) and "Alarm Escalation Schedule". The "Simple Alarm Notification" tab contains several fields: "Pager Script" with a "Browse" button, "Email Alarm Msg to" with a text field, and "Send Alarm Msg to" with a dropdown menu. Below these are four checkboxes: "Override Global Quiet Time", "Override Contact Quiet Time", "Notify on Alarm Cancel", and "Repeat Escalation Schedule". There is also a "Play Sound File" field with a "Browse" button. At the bottom of the tab is a section titled "Execute Windows Command or Task" with four fields: "On Alarm Start", "On Alarm Cancel", "On Alarm Task", and "On Cancel Task", each with a "Browse" button or a dropdown menu. At the very bottom of the dialog are "OK" and "Cancel" buttons. A status bar at the bottom left reads "Description of Alarm object".

### Description

This is a user defined description of the Alarm Object.

### Enabled

Enables/disables alarm notification by the Alarm Object.

**Paging (.MSG) File**

If you wish to execute a page for the alarm, enter/select the appropriate paging file name. If you wish to send an SNPP page, enter the word **SNPP**.

**E-Mail Alarm Msg To**

If you wish to send an email message for the alarm, enter the email recipients name.

**Send Alarm Msg To**

If you wish to send a broadcast message to another system for the alarm, enter/select the target systems name.

When an alarm occurs, notification is not performed if the current time is in a Quiet Time . Quiet times can be defined at the global level or at the Contact level.

**Override Global Quiet Time**

Perform alarm notification even during global quiet times.

**Override Contact Quiet Time**

Perform alarm notification even during Contact quiet times.

**Notify on Alarm Cancel**

Generates an alarm notification (but the object does not go into a new alarm state) when an in progress alarm clears.

**Repeat Escalation Schedule**

When using an escalation notification schedule, check this box to have the shedule repeated until the alarm clears. Normally, after the schedule is completed, no further notifications are sent. For Persistent alarm type monitored objects, the escalation schedule repeat starts on the next scan . For Discrete alarm type monitored objects, the escalation schedule repeat starts on the next new alarm event detected by the monitored object.

**Play Sound File**

Plays sound when an alarm is detected. Sounds can be a sound file (.wav) or the name of a Windows System sound (such as "Exclamation"). You may browse for .wav files. Several .wav files are included in the \Sounds directory.

**Execute Windows Command**

Enter a program, batch or command file name and any parameters in the box to execute an external application when an alarm event starts and/or when the event ends or is cancelled. You can use substitution parameters on the command to pass information about the alarm to the external application. The substitution parameters available are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[DESC]	expands to the monitored object's long description.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.

<b>[ALARM]</b>	expands to the monitored object's current alarm message.
<b>[ALARMX]</b>	expands to extended information about the current alarm (not available on all objects).
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

**Execute Task**

You can execute a Task Monitored Object on alarm start or end. The On Alarm Start Task is executed when an alarm starts and on each redetection (escalation) of an alarm. The Start Task is also executed when an alarm is cleared automatically (not by a user manually clearing an alarm) and if the On Cancel Task is not defined. If an On Cancel Task is selected, that Task will be executed on a manual or automatic alarm clear and the On Start Task will not be executed.

Here is an example of an alarm object with an escalation schedule:

**Alarm Object Add/Change**

Description:  ☒ Enabled

**Simple Alarm Notification** | **Alarm Escalation Schedule**

Alarm	Contact 1	Contact 2	Contact 3	Contact 4
1	Operators			
2	John Doe			
3				
4				

☐ Override Global Quiet Time      ☐ Override Contact Quiet Time  
☐ Notify on Alarm Cancel      ☐ Repeat Escalation Schedule

Play Sound File:

**Execute Windows Command or Task**

On Alarm Start:

On Alarm Cancel:

On Alarm Task:

On Cancel Task:

Description of Alarm object

The Alarm Escalation Schedule tab shows a matrix that controls notification. There are 20 notification periods, defined by rows. Each notification period can have up to 10 Contacts. A Contact cell in a row can contain the name of an individual Contact, the name of a Contact group or **All** for all contacts. Double click on a cell to change its value. A list box will appear showing all Contacts and groups that are available. Select an item on the list to update the cell. To delete a Contact in a cell, single click on the cell and press the DEL key.

The notification periods (rows) correspond to each scan interval (global or monitored object) that an alarm persists for. When a scan is performed and an alarm detected for a monitored object, the alarm object notifies the contacts defined on row 1. When the next scan is performed, if the alarm is still in progress, the alarm object notifies the Contacts on row 2. This proceeds until the alarm is cleared or all 20 periods have been processed.

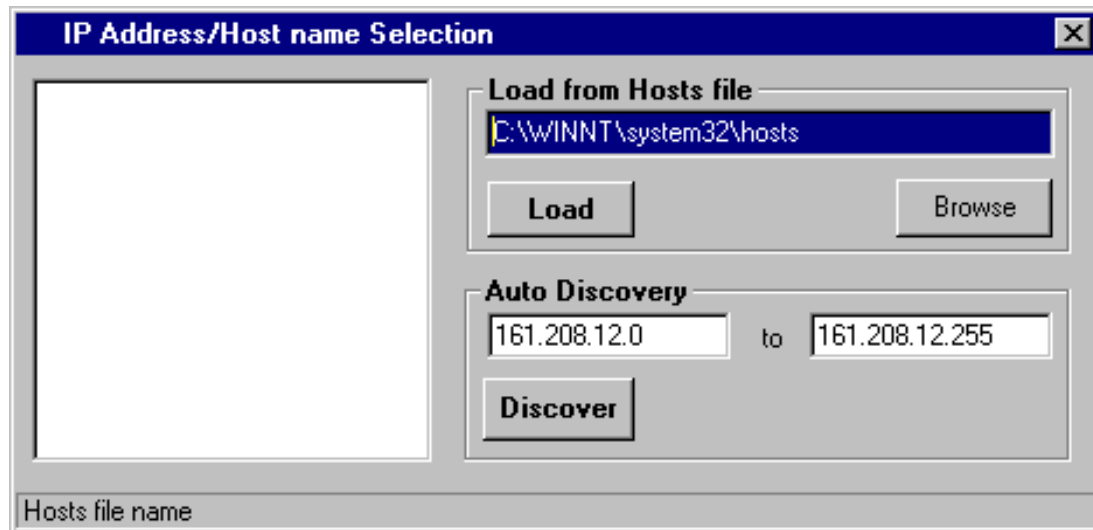
When processing a period (row), all Contacts defined on that row, and all Contacts that are members of any group defined on that row, are notified of the alarm (per configuration of each Contact).



Alarm notification processing is influenced by the Alarm Type of the monitored object being processed.

## IP Address/Host name Selection

This screen presents a list of known IP Addresses or Host names for selection. You can load the list from a hosts file or auto discover IP hosts on the network.



When this screen is first displayed, the address list and host name boxes will be blank and the starting and ending IP address range boxes will be prefilled with the IP address range of the local network. You may enter/browse a hosts file name and then click **Load** to load that hosts file into the address list box.

You may also click **Discover** to scan the network by pinging the IP address range defined by the starting and ending IP addresses and build the address list based on replies to the pings. If you click **Discover**, this button changes to **Stop**, which you can click to stop the auto discovery process.

Once a list of host names or IP addresses have been loaded into the address list, this list is retained and is displayed if you return to this screen at a later time. The host file name is also retained.

Click on an address or host name to select it and close this screen.

## Service Object Add/Change

This screen is used to add or change a Windows Service monitored object .

The screenshot shows a dialog box titled "NT Service Monitored Object Add/Change". It contains the following fields and controls:

- Description:** A text box containing "World Wide Web Publishing Service".
- Enabled:** A checkbox labeled "Enabled" which is checked.
- Interval:** A text box containing "0".
- Severity:** A dropdown menu showing "9".
- Delay:** A text box containing "0".
- Server Name:** A dropdown menu.
- Service Name:** A dropdown menu showing "World Wide Web Publishing Service".
- Load List:** A button next to the Service Name dropdown.
- Alarm Settings:** Four checkboxes: "Alarm if never started" (checked), "Alarm if paused" (checked), "Attempt Restart" (checked), and "Alarm on good restart" (unchecked).
- Alarm Notification:** A section containing:
  - Alarm Object:** A dropdown menu showing "Simple Alarm".
  - Alarm Text:** An empty text box.
- Buttons:** "OK" and "Cancel" buttons at the bottom.
- Footer:** A text box labeled "Optional description of monitored object" at the very bottom.

### Description

This is an optional description of the monitored object. If blank, it is set to the service Display Name (long name, as appears in the Services control panel applet).

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

### Server Name

Enter or select the name of the Windows NT/2000/XP Server or Workstation system where

the service to be monitored is run.

**Service Name**

This is the Display Name of the Service to be monitored. The Display name is the name of the service that appears in the Services control panel applet. You must select a service name from the drop down box. Click the **Load** button after entering the Server Name to retrieve a list of the services configured on that system. The Identifier for a service is the service Service Name or short name. This name is not normally seen by users but is used as the identifier due to its shorter length. The service name is combined with the system name where the service is located to form the Monitored Object Identifier.

**Alarm if never started**

If a service being monitored is not running it generates an alarm. This excludes services that have not been started since the last reboot of the system. A service would not be considered to have failed if it had never been started. Check this box to have services that have not been started to also generate an alarm.

**Alarm if paused**

Normally, paused services do not generate an alarm. Check this box to have paused services generate an alarm.

If a service stops, either intentionally or by failure, two exit codes are available when the alarm is generated. One is the Win32 Exit Code. This reflects an exit status code posted by the Win32 Service Control Manager. The service itself may also post an exit code. These codes are available to substitute into a custom alarm message (see below).

If an alarm is generated for a service, this means that the service is not running. That could be because the service was stopped, paused or failed. If the service is restarted, the alarm will be cleared automatically.

**Attempt Restart**

If this option is enabled, PageR will make one attempt to restart a failed service. If restart is successful, the alarm is cleared. If the restart fails, an alarm is generated. In order to restart a service while running PageR in Service Mode, you must have PageR impersonate an Admin level user that allows access to the system where the service to be restarted resides.

**Alarm on good restart**

Normally, if Attempt Restart is selected, and the restart of the service is successful, an alarm is not generated. Check this box to generate an alarm even if the service is successfully restarted.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

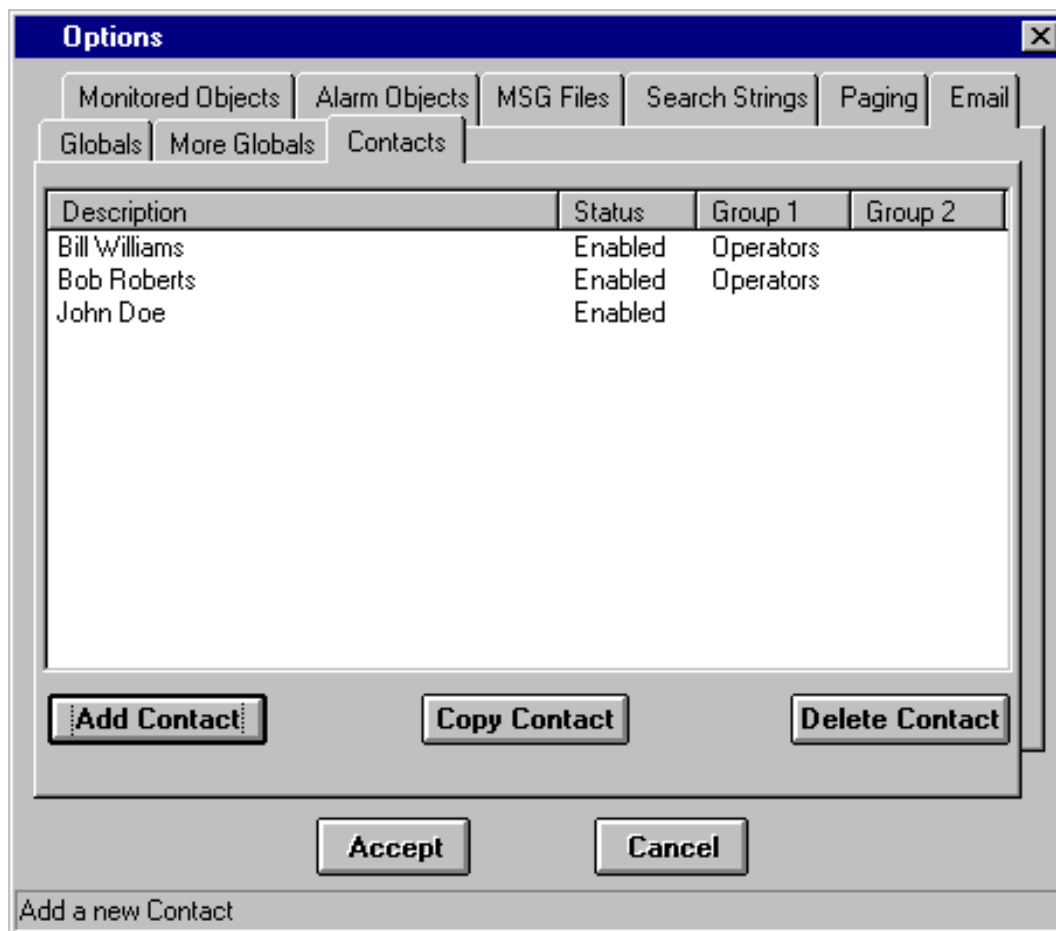
**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be expanded to their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[DESC]	expands to the monitored object's long description.
[SVCNAME]	expands to the service name.
[DISPNAME]	expands to the service display name.
[TARGET]	expands to the target system name.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.
[STATE]	expands to the service's current state.
[WINEXIT]	expands to the service's Win32 Exit Code.
[SVCEXIT]	expands to the service's own Exit Code.
[TIME]	expands to the current time.
[DATE]	expands to the current date.
[AGENT]	expands to the the application name of "PageR".
[SYSTEM]	expands to the name of this system.

## Contact Objects Tab

This tab shows the list of Contact Objects, allowing them to be created, modified or deleted.



This screen shows a list of the Contact Objects that have been defined. Contact objects contain information about Contacts that tells PageR what actions to take when the Contact is to be notified on an alarm. Contact Objects are attached to Alarm Objects. A Contact Object can be shared by multiple Alarm Objects.

To create a new Contact Object, click the **Add Contact** button. To modify an existing Contact Object, double click the Contact Object description. To copy an Contact Object, highlight the object by single clicking on the description and then clicking on the **Copy Contact** button. To delete an Contact Object, highlight the object by single clicking on the description and then clicking on the **Delete Contact** button.

## Security and Impersonation

Security considerations when running in Service Mode.

When running as a desktop application, PageR uses the security context of the logged on user account. All access to local and network resources are controlled by this context.

When running as a service, PageR by default runs under a special account called the **Local System Account**. This account gives free access to local resources and some network resources. In order to have greater access, it becomes necessary to have PageR **"impersonate"** an actual user with the appropriate access. To do this, you supply PageR with a valid user account name and password (done at Service Install). PageR running as a service then performs a batch login to that user account and assumes the user security context. This context now gives the PageR service access to all resources available to the user.

Impersonation of a user with more access than Local System is required to access disk files on other systems via a UNC file name. It is required for NT Performance Counter, NT Service, WMI Query and Win32 Process MOs that target another system. Logging via Instant Messaging also requires impersonation.

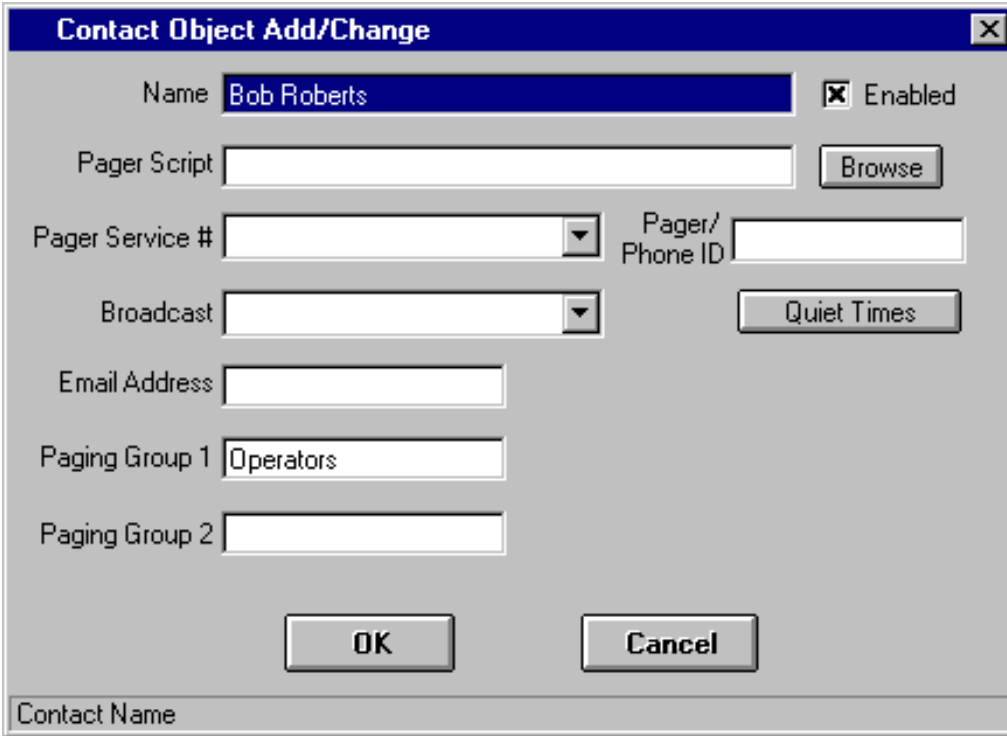
When impersonation is required, use an **Admin level** user on the local system, or in a domain environment, on the primary domain controller.

The Admin user account you use for impersonation, or the Administrators group that it belongs to, must be assigned two special user rights. Add the user rights **"Logon as a Batch Job"** and **"Act as Part of the Operating System"** to the user or group with the User Manager on the system where the account is located.

---

## Contact Object Add/Change

This screen is used to add or change a Contact Object . A Contact Object defines a person to be notified of an alarm and how that notification is to be performed.



The dialog box is titled "Contact Object Add/Change" and contains the following fields and controls:

- Name:** A text field containing "Bob Roberts".
- Enabled:** A checkbox that is checked.
- Pager Script:** A text field with a "Browse" button next to it.
- Pager Service #:** A dropdown menu.
- Pager/Phone ID:** A text field.
- Broadcast:** A dropdown menu with a "Quiet Times" button next to it.
- Email Address:** A text field.
- Paging Group 1:** A text field containing "Operators".
- Paging Group 2:** A text field.
- Buttons:** "OK" and "Cancel" buttons at the bottom.
- Status Bar:** A label "Contact Name" at the bottom left.

### Description

This is a user defined description of the Contact. Normally it is the name of person to be notified.

### Enabled

Enables/disables alarm notification to the Contact.

### Pager Script

If you wish to page the Contact, enter/select the appropriate paging file name. If you wish to send an SNPP page, enter the word **SNPP**.

### Pager Phone Number

This is the phone number of the pager or paging service to use for paging. It is substituted for the **[PHONE]** substitution parameter in the paging script. You may type a number in the box or select a number from the drop down list of common pager services.

### Pager ID

This is the pager ID for a paging service to use for paging. It is substituted for the **[PAGERID]** substitution parameter in the paging script.

### BroadCast

If you wish to send a broadcast message to the Contact on another system, enter/select the target systems name.

### E-Mail Address

If you wish to send an email notification to the Contact, enter the Contacts email address.

### Paging Group

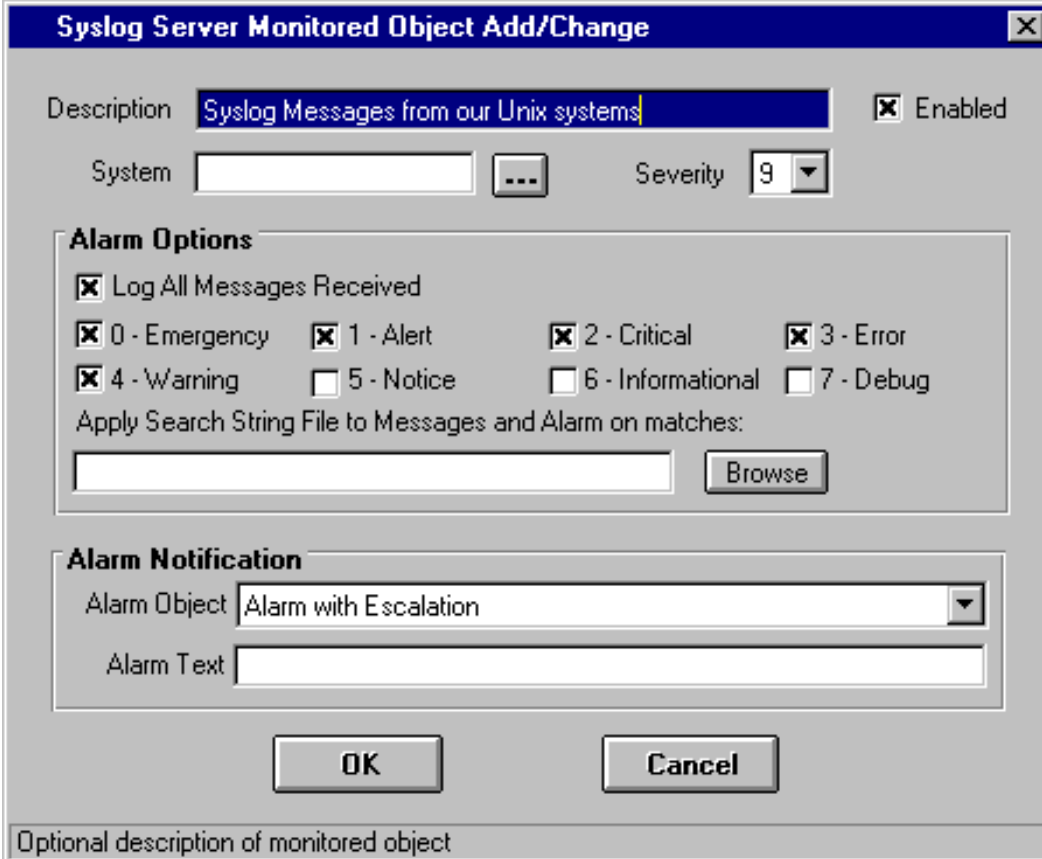
A Contact can optionally be in two paging groups. Enter any group name you wish to use. Contacts with the same group names are automatically linked into the groups.

### Quiet Time

Click the button to display the Quiet Time Selection screen to define quiet time periods for the Contact.

## Syslog Object Add/Change

This screen is used to add or change a Syslog monitored object. The Syslog object allows Syslog messages to be received from Unix systems or other Syslog clients and processed for alarms.



The dialog box is titled "Syslog Server Monitored Object Add/Change". It contains the following fields and controls:

- Description:** A text field containing "Syslog Messages from our Unix systems".
- System:** A text field with a browse button (three dots).
- Severity:** A dropdown menu set to "9".
- Enabled:** A checked checkbox.
- Alarm Options:**
  - ☒ Log All Messages Received
  - ☒ 0 - Emergency, ☒ 1 - Alert, ☒ 2 - Critical, ☒ 3 - Error
  - ☒ 4 - Warning, ☐ 5 - Notice, ☐ 6 - Informational, ☐ 7 - Debug
  - Apply Search String File to Messages and Alarm on matches:
    - A text field for the search string.
    - A "Browse" button.
- Alarm Notification:**
  - Alarm Object:** A dropdown menu set to "Alarm with Escalation".
  - Alarm Text:** A text field.
- Buttons:** "OK" and "Cancel".
- Footer:** "Optional description of monitored object".

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from



monitoring.

**System**

Allows the monitored object to be associated with a specific host via host name or IP address. Messages from the identified host will be processed only by this monitored object. One Syslog monitored object can be defined with this field left blank. That monitored object is the default Syslog monitored object and will process all syslog messages not handled by Syslog monitored objects associated with specific systems.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Log All Messages Received**

Enable to record all Syslog messages received on the Activity Log window even if the messages do not result in an alarm.

**Alarm on Message Level**

Identify the Syslog message priority levels (0-7) that should generate an alarm.

**Apply Search Strings/File to Messages and Alarm on Matches**

Enter a list of search strings or select a Search String File to have each Syslog message searched for any matches to the search strings. Any match generates an alarm. String search is only performed if the message level does not generate an alarm. More about Search Strings.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string. Will be name or IP address of associated host system or blank for default.
[IDX]	expands to the formatted identification string. Same as [ID] except for the default Syslog MO. Then this expands to "Default".
[DESC]	expands to the monitored object's long description.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.

<b>[SENDER]</b>	expands to the IP address of the sending system.
<b>[LEVEL]</b>	expands to the severity level code in the message.
<b>[FACILITY]</b>	expands to the facility code in the message.
<b>[MSG]</b>	expands to the text of the Syslog message.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

**Notes**

Syslog is a logging facility used on Unix and other systems. It is a central message logging tool used by applications and operating systems. One of Syslog's features is the forwarding of messages to other systems over the network. You can configure Syslog to forward messages to the system on which PageR is running and this monitored object will receive and process them. In this manner, PageR can be used to monitor Unix systems and other systems that employ Syslog.

This monitored object is of the Server/listener type in that it does not perform any "scanning" function. Instead, this object creates a server that listens on the network for Syslog messages and processes them when they arrive. Only one default instance of the Syslog object can be created.

## Web Page Object Add/Change

This screen is used to add or change a Web Page monitored object . This object monitors a web server by determining if the specified page can be Downloaded and optionally how long it takes.

**Web Page Monitored Object Add/Change**

Description: Intranet Web Server ☒ Enabled

Interval: 0 Severity: 9 Delay: 0

Page URL: https://dexter

Time Out: 10

User Name: dexter

Password: xxxxxx

Link Level: 0

Microsoft Internet Information Server

Search Strings/File

**Alarm Notification**

Alarm Object: Alarm with Escalation

Alarm Text: [TYPE] [IDX]: \p[STATUS]\x[HTTPSTATUS]

Done

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Page URL**

This is the URL (Universal Resource Locator) address of the web page to be Downloaded. You can click on the **Display** button to test the URL (by Downloading and viewing the page in the viewing box). An alarm is generated if the page fails to download at scan time.

**Time Out**

This is the amount of time allowed for the download. If the download takes longer than this time, an alarm is generated. Set to zero to disable time out checking.

**User Name**

If the page or web server requires a user name for access, enter it here. Only "Basic" HTTP authentication is supported.

**Password**

If the page or web server requires a password, enter it here.

**Link Level**

Controls how many levels of page links (HTML A tag) are downloaded below the target page. Level 0 does not load any page links found on the target page. Frames are always downloaded.

**Check Images**

Enables download of image files as part of the web page checking process.

**Search Strings/File**

Enter a list of search strings or select a Search String File to have the Web Page's HTML text searched for any matches to the search strings. Any match generates an alarm. More about search strings.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.

- [ALARMID]** expands to the unique numeric identifier for the monitored object's current alarm event.
- [TIME]** expands to the current time.
- [DATE]** expands to the current date.
- [AGENT]** expands to the the application name of "PageR".
- [SYSTEM]** expands to the name of this system.

### Notes

The Web Page monitored object relies on Microsoft's **Wininet.dll** for internet services. Wininet.dll must be installed on your system in order to use the Web Page object. To install Wininet.dll on NT 4.0 systems **without Internet Explorer**, execute the program **WintDist.exe** in the install directory. On NT 3.51, execute the **Wint351.exe** program in all cases. This will install and configure Wininet.dll for use.

## Quiet Time Selection

This screen is used to set the Quiet Time periods for Contacts or globally.

The dialog box titled "Quiet Times Selection" contains a grid for selecting quiet times. The grid has 7 rows representing the days of the week (M, T, W, T, F, S, S) and 24 columns representing the hours of the day (0 to 23). Each cell in the grid is currently empty, indicating no quiet time is currently selected. Below the grid are two buttons: "OK" and "Clear".

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
M																								
T																								
W																								
T																								
F																								
S																								
S																								

The matrix on this screen shows the seven days of the week and the 24 hours of each day in a 24 hour format. Each cell in the matrix represents one hour of the day. You can set a cell to be quiet for the entire hour (cell is shown red), quiet for the first half of the hour (cell is shown yellow) or quiet for the second half of the hour (cell shown purple).

To set quiet times, click (drag ok for block select) on a cell, then select the desired time range from the menu:

Entire hour - RED

Minutes 0-29 - YELLOW

Minutes 30-59 - PURPLE

In the example above, quiet times are:

**Tuesday, 12:00 pm (noon) through 12:59 pm**

**Thursday, 4:30 am through 7:29 am**

**All day Saturday**

You can press **Clear** to erase all quiet times defined.

## FTP File Get Object Add/Change

This screen is used to add or change an FTP File Get monitored object. This object is used to retrieve disk files from other systems for local examination or delivery to the SPIN directory for paging.

The screenshot shows a Windows-style dialog box titled "FTP File Get Monitored Object Add/Change". It contains several input fields and checkboxes. At the top, there is a "Description" field with the text "Pull log file from Unix system" and an "Enabled" checkbox which is checked. Below this are fields for "Interval" (set to 0), "Severity" (a dropdown menu showing 9), and "Timeout" (set to 15), followed by a "Schedule" button. The "Remote Source" section includes a "Host" field (UX), a "User" field (root), and a "Password" field (masked with asterisks). There is also a "Path" field (/usr/spool/lp) and a "File" field (lpd.log). A checkbox for "Purge Source file after transfer" is unchecked, and a "Path separator character" field contains a forward slash. The "Local Target" section has a "Path" field (C:\TEMP) and a "File" field (lpd.log). It also includes checkboxes for "Add date/time file extension" (unchecked), "Ascii" (checked), "Binary" (unchecked), and "EBCDIC" (unchecked). To the right of these fields is a file explorer window showing the directory structure of C:\, with "TEMP" selected. At the bottom are "OK" and "Cancel" buttons, and a small text area labeled "Description of Monitored Object".

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Timeout

This is a timeout value in seconds that will be applied to communications with the remote system.

**Remote Source** defines the source location of the files(s) to be retrieved. You can enter the information manually or click the binoculars to the right of the file box to invoke the FTP File Explorer screen. The FTP File Explorer can be used to access the source system and navigate its directories to locate the source file.

**Host**

Host name or IP address to get file from. Click the binoculars to see a list of available hosts/addresses.

**User**

A valid user name on the source host system giving appropriate access.

**Password**

Password for the user name on the source host system.

**Path**

Directory path of the source file on the source host system.

**File**

File name of the file to be retrieved from the source system. May include wild cards appropriate for the source system to retrieve all matching files in the directory defined by the path.

**Purge Source After Transfer**

Check this option to purge the source file after transfer to the local system.

**Local Target** defines where on the local system the retrieved file(s) will be stored.

**Path**

This is the local directory path where the retrieved file will be stored. You can use the directory explorer window to locate the desired directory.

**File**

This is the name of the file when stored locally. If no name is specified, the source file name will be used. If you specify a name here and more than one file is retrieved from the source system, the files will overlay each other unless you add an extension as discussed below.

**Add Date/Time File Extension**

Check this box to remove any extension on retrieved files and add an extension made up of the date and time.

**Ascii**

Transfer the file in Ascii mode.

**Binary**

Transfer the file in Binary mode.

**EBCDIC**

Transfer the file as EBCDIC source and convert to Ascii.

**Notes**

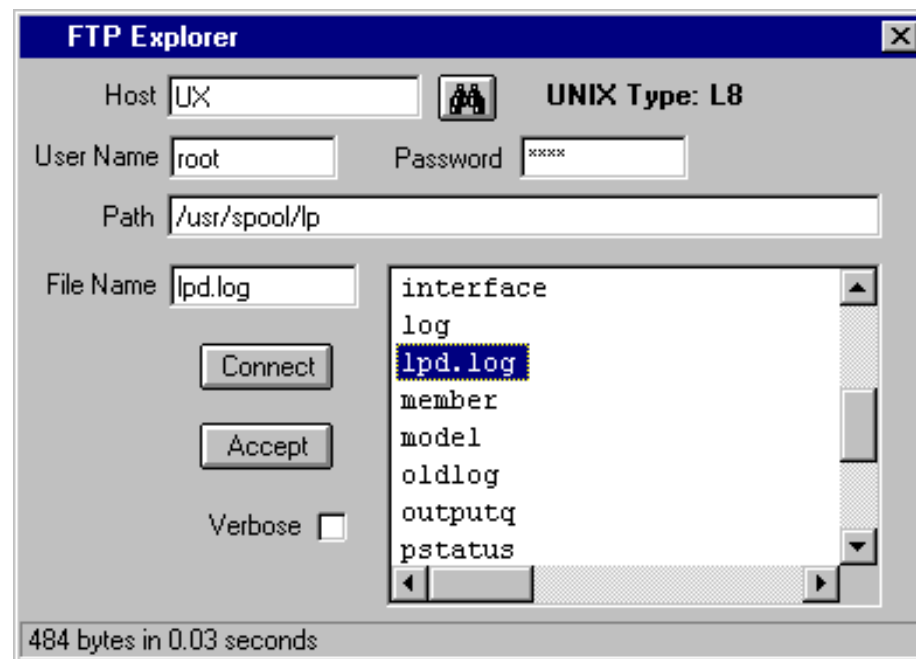
On each scan, this object will attempt to retrieve the specified file(s) from the source computer. If the files are not found, no action is taken. If the retrieved file has the same



name as an existing local file, the local file is overlaid with the retrieved file. If the object cannot gain access to the source host system, an error will be logged to the Activity Log .

## FTP Explorer

This screen is used to explore other systems to locate source files for FTP retrieval.



### Host

Host name or IP address to get file from. Click the binoculars to see a list of available hosts/addresses.

### User

A valid user name on the source host system giving appropriate access.

### Password

Password for the user name on the source host system.

### Path

Directory path of the source file on the source host system.

### File

File name of the file to be retrieved from the source system. May include wild cards appropriate for the source system to retrieve all matching files in the directory defined by the path.

Enter the Host name, user name and password and an initial path and click **Connect**. You will be connected via FTP to the host system and the contents of the initial path displayed in the view box. If you enter a file name in the file box before connecting, the only files

matching the file name will be shown in the view box.

Once connected to the host system and files or directories appear in the view box, you can navigate the host by changing the path/file name or by clicking on directories in the view box.

When the desired file is located, you can type its name in the File name box or select a file name in the view box by clicking it.

You can accept the Host, user, password, path and file name information and return it to the FTP File Get Object Add/Change screen by clicking **Accept**.

### **Verbose**

Enable this option to see a verbose directory list from the host system in the view box.

## **Web Status Service**

The Web Status Service allows network users to use a Web Browser to access PageR over the network for status information and some control functions.

When PageR is running as a Service, or you are working away from the system on which PageR is running, you can use a web browser (Netscape 3.0 or later, Internet Explorer 3.0 or later) to access PageR remotely and view global status information, monitored object status, the Activity Log and perform some control functions.

To enable Web Status Service, you must check the appropriate box on the More Global Options tab. Web Status service uses port number 1088 by default. If you wish to use another port, enter that port number in the port number box. If you wish to restrict access to the Web Status Service, enter a user name and optional password. The user name and password must be entered by the browser user.

At your browser, enter one of the following URLs to access the Web Status Service:

**http://ipaddress:port** or **http://systemname:port**

Examples:

**http://192.50.5.2:1088** or **http://mynt:1088**

System name or ip address is of the system where PageR is running. You must include the port number as shown. Once you have successfully accessed the Web Status Service, bookmark the URL for future use.

The main status page shows global status information about the current state of PageR and a list of monitored objects and their states. Objects in alarm state are shown in red. You can click on an objects type field to see a more detailed view of object status.

On the main status page you can start/stop monitoring, enable/disable paging and display a view of the PageR Activity Log. The main status page updates automatically on a period slightly longer than the current scan Interval setting. Note that stopping scanning will stop

all paging.

On the monitored object detail page, you can suspend/resume monitoring of the object and clear any in progress alarm. This page updates automatically.

The Activity Log page shows the current PageR Activity Log, most recent entry first. This page updates automatically.

## Paging Queue

This window shows the Page Requests queued for processing.

- Paging Queue						
Last Page at <b>4/16/98 9:53:09 AM</b>			Page Delay <b>120</b>			
Object	Identifier	Alarm Id	Type	Status	Created	Last Paged
Event Log	System (Local)	6	Simple	Active	4/16/98 10:14:48 AM	
Disk File	C:\Myapp\Lo...	8	Schedule	New	4/16/98 10:14:48 AM	
Disk File	C:\Myapp\Lo...	8	Schedule	New	4/16/98 10:14:48 AM	
NT Server	NT1	9	Schedule	New	4/16/98 10:14:55 AM	
NT Server	NT1	9	Schedule	New	4/16/98 10:14:55 AM	
NW Server	GWS	10	Schedule	New	4/16/98 10:14:55 AM	
NW Server	GWS	10	Schedule	New	4/16/98 10:14:55 AM	
Ping	161.208.12.15	11	Simple	New	4/16/98 10:15:02 AM	
Web Page	http://www....	12	Schedule	New	4/16/98 10:15:04 AM	
Web Page	http://www....	12	Schedule	New	4/16/98 10:15:04 AM	

When alarm notification includes paging, a Page Request is generated and added to the Paging Queue. PageR processes the page requests in the queue by executing the first page request in the queue that is not completed and not waiting for the delay between page repeats.

You may delete a waiting page request by clicking on the Object type to select the request and then pressing the **DEL** key.

### Object

This is the object type of the monitored object that generated the page request.

### Identifier

This is the unique identifier of the monitored object that generated the page request.

### Alarm ID

Unique alarm ID number assigned to each alarm.

### Type

This is the type of page request:

<b>Simple</b>	A simple page request
<b>Scheduled</b>	Created from an escalation schedule
<b>SPIN</b>	From the SPIN directory

Note that the difference between Simple and Scheduled requests is in repeats of the page. Simple requests will be repeated per the settings on the Paging Notification Options tab. Scheduled pages are not repeated, since additional pages are defined by the schedule itself. SPIN pages are treated like simple pages.

#### Status

This is the status of the page request:

<b>New</b>	A new request, not yet processed
<b>Active</b>	The request is being processed
<b>Repeat(n)</b>	Waiting to be repeated, n more times
<b>Completed</b>	Request Completed

#### Created

Date and time the page request was generated.

#### Last Paged

Date and time the page request was last executed.

#### Contact

The Contact (if any) that is the target of the page request.

#### Page File

The paging file that will be used for the page request.

#### Message

The alarm message text that will be sent by substituting for the **[ALARM]** substitution keyword in the paging file.

## Paging Overview

Paging is accomplished by copying a disk file to a com port on the system. The com port is expected to be connected to a modem or Message Server . The disk file is expected to contain commands for the modem or Message Server. This is a simple model with great flexibility.

The disk file is called a Paging file and has the extension .MSG by convention (it is not required). The file contains instructions for operating the modem or Message Server.

When doing simple numeric paging with a modem, the file contains the required modem commands to cause the modem to dial the pager number and optionally supply numeric information to the pager service .

When using the Message Server, the file contains the Alert Script commands to direct the Message Server to perform the desired alphanumeric page.

Finally, you can perform alphanumeric pages with a modem using Alert Script commands and having PageR execute the commands in software, thereby emulating the Message Server.

As an alternative to modem based paging, you can send pages over the internet to a paging service provider via the Simple Network Paging Protocol (SNPP).

---

## Simple Modem Paging

Simple Modem paging is done by creating a msg file with modem commands that will cause the modem to dial your pager service. The file is copied to the modem via the com port and paging is the responsibility of the modem. There is no status checking or guarantee of page delivery.

Select Modem as the Device Type on the Paging Notification Options tab but do not select Alert Script Paging.

There are example paging files in the Samples directory.

## Message Server Paging

Paging with a Message Server device is done by copying a file containing Alert Script commands to the Message Server via a com port. The Alert Script commands direct the Message Servers paging activity and paging is the responsibility of the Message Server. While page delivery is very reliable with the Message Server, PageR is unable to verify delivery of the page or report errors encountered by the Message Server.

Alert Script programming of the Message Server is covered in the Message Server documentation.

Select Server as the Device Type on the Paging Notification Options tab and do not select Alert Script Paging.

There are example paging files in the Samples directory.

## Alert Script Alphanumeric Paging

PageR emulates the Message Server in software and can execute Alert Script to perform alphanumeric Paging with a modem. When using Alert Script to page, PageR can guarantee delivery of the page to the pager service and report any errors detected in the process.

When using alphanumeric paging, extensive information about the alarm can be sent in the page request using substitution parameters in the .msg file.

Select Modem as the Device Type and Alert Script Paging on the Paging Notification Options tab.

PageR can execute a subset of the Alert Script language used by the Message Server. Any Alert Script commands not supported by PageR are ignored. Here are the Alert Script commands you can use for alpha numeric paging by PageR:

Command	Description
<b>!</b>	All characters on a line after the exclamation point are treated as comments.
<b>D [-]nn</b>	Jump nn lines in the script file if DCD signal from modem is not HIGH. If HIGH, continue with the next line.
<b>E nn text</b>	Error command. Script processing is terminated and error code nn and the error message text is displayed in the Activity Log window. A value of 00 indicates successful completion of the script.
<b>F nn</b>	For nn times, execute the next L command to create a for-loop.
<b>L [-]nn</b>	Jump nn lines until the loop count defined by the previous F command is exhausted. If loop count exhausted, continue with next line.
<b>G [-]nn</b>	Jump nn lines in the script file.
<b>P b pr d s po</b>	Configures modem port. Must be first non-comment line in .MSG file. Overrides Paging Options Tab settings. b = baud rate pr = parity (NONE, EVEN, ODD) d = data bits (7 or 8) s = stop bits (1 or 2) po = port (COM1, COM2 etc) Example: P 9600 NONE 7 1 COM1
<b>R tt/text1/text2</b>	Wait for input from modem for tt seconds. If error or time out, execute the next line in the script. If the input contains the string of characters defined by text1, execute the second line after the R command. If the input contains the string defined by text2, execute

the third line after the R command. If input is received but the string(s) are not matched, continue with the fourth line after the R command (or third if only one string is specified).

<b>S sendtext</b>	Send text to modem. Text can contain special commands prefixed by a tilde ~ character:
C	send a carriage return
D	pause .1 second
E	send ENQ character
L	send a line feed
S	pause 1 second
<b>W text</b>	Write text to Activity Log window.
<b>V</b>	Verbose operation. Logs all script activity to the Activity Log window.

Here is a sample Alert Script page file that shows a complex paging sequence. The steps to access the pager service are as follows:

Dial the Pager service.

When connected, type carriage returns until the **ID=** prompt from the service appears.

Type M in response to the ID= prompt (indicates you want to send a message).

The pager service prompts **Pager ID** for an account ID number.

Type the ID number in response.

If the ID is accepted, the service prompts **Message:**.

Type the desired message ending with a carriage return.

Disconnect from the paging service.

The Alert Script file to perform this paging sequence would be:

```
F 03          ! Try dialing 3 times
S ~S~SAT~C~S~S ! Send ATcr with pauses
W Dialing Pager Service at [PHONE]
S ATDT[PHONE]~C ! Send modem dial command
F 20          ! Loop wait for DCD, 20 times
S ~S          ! Wait 1 second
D 02          ! Go forward 2 lines if no DCD
G 05          ! Go forward 5 lines
L -03         ! Loop back to wait for no DCD
W Call did not complete, will retry
L -09         ! Loop back to retry dial
E 01 Call would not complete
R 20/CONNECT  ! Dial ok, wait 20 sec for connect
E 02 Connect not detected
W Connected
```

```
F 10          ! Loop until cr produces id= prompt
S ~C~S       ! Cr to get id= prompt
R 01/ID=     ! Check for id= prompt
G 02        ! Time out
G 03        ! Got id=
L -04       ! Loop back to cr
E 03 ID= prompt not detected
S M~C       ! Respond with M
R 30/Pager ID? ! Wait for pager id prompt
E 04 Pager ID? Prompt not detected
S [PAGERID]~C~S
W Pager ID [PAGERID] sent
R 30/Message: ! Wait for message prompt
E 05 Message: prompt not detected
S [TYPE] [ID] [ALARM]~C
W Message sent
S ~S~S+++~S~S
W Disconnecting
S ATH0~C~S
W Page complete
E 00
```

---

There are example paging files in the Samples directory.

## Monitored Object List

This is a complete list of the network objects supported by PageR Enterprise.

**Monitored** Objects are objects that are checked (probed/examined) by PageR on a regular basis.

---

### Event Log

Detects new event records in the System, Application, Security or other event logs on the local or any remote NT/2000/XP system. Alarms are raised based on the severity of the event or by keyword matching on the content of the event record text.

### NT System

Checks NT system to determine if it is up. Alarm is raised if the NT system does not respond to a probe.

### Windows 2000 System

Checks 2000 system to determine if it is up. Alarm is raised if the 2000 system does not respond to a probe

### Windows XP System

Checks XP system to determine if it is up. Alarm is raised if the XP system does not respond to a probe

### Windows System

Checks any Windows system to determine if it is up. Alarm is raised if the Windows system



does not respond to a probe. Supports Windows NT/2000/XP/2003/VISTA.

**Disk Space**

Monitors disk volume free space on Windows systems. Alarm raised if free space falls below a specified amount or percent of total space.

**Disk Drives**

Monitors the physical disk drives on Windows systems. Alarm raised if problems are found.

**NetWare Server**

Checks NetWare server to determine if it is up. Alarm is raised if the server does not respond to a probe.

**TCP/IP Device (Ping)**

Checks any device supporting TCP/IP by pinging it. Alarm is raised if the device does not respond to a ping .

**Host Process**

Checks host system (via Telnet) for a list of processes expected to be present. Alarm is raised if a process is not present.

**Host Volume**

Checks host system (via Telnet) for disk volume free space. Alarm is raised if volume free space drops below a selected threshold.

**Host Login**

Checks availability of host systems and performs monitoring functions by logging on to the host.

**Disk File**

Examines new records in disk files and checks for alarm conditions by matching the files contents against a list of words or phrases.

**Service**

Checks Windows Services on the local or remote NT/2000/XP system and raises an alarm if the service is not running. Can attempt to restart failed services.

**Performance Counter Query**

Checks Windows Performance Counters on the local or remote NT/2000/XP system and raises an alarm if counter values are out of tolerance.

**Win32 Process checking**

Checks a list of processes on the local or remote Windows 32 bit system to ensure the processes are running. Raises an alarm if a process is not present.

**Windows Management Instrumentation (WMI) Query**

Checks WMI objects on the local or remote Windows system and raises an alarm if WMI object values are out of tolerance.

**Windows Management Instrumentation (WMI) Events**

Monitors the local or remote Windows system using WMI eventing and raises an alarm if WMI detects the defined events.

**Domain Name System**

Checks DNS servers and raises an alarm if the server does not respond or incorrectly resolves sample requests.

**SNMP Query**

Checks SNMP Mib object values on SNMP agents and raises an alarm if object values are out of tolerance.

**TCP Services**

Checks the availability of TCP Network Services (such as FTP, SMTP, HTTP and more) on selected systems.

**Web Page**

Checks web servers by downloading a specified web page from the server. Raises an alarm if the page fails to download or takes too long.

**Email Check**

Reads email messages on mail server and scans them for text strings. Generate alarm or execute Task if strings found.

**Email Ping**

Sends a unique mail message to a mail server and tries to read that message back in a set time period to monitor timely mail delivery.

**Bandwidth**

Monitors network traffic on a target system's network interfaces. Generates alarm if the traffic level exceeds preset thresholds.

**Directory**

Monitors a Windows disk directory and generates an alarm if total file size or count exceeds preset thresholds.

**DialUp**

Dial a modem number and test for successful connection in the allowed time.

**SQL Query**

Execute an SQL query against an SQL server and test for successful completion.

**Hosting System**

When PageR Enterprise is used with the Message Server device, the Message Server can detect failure of the system to which it is attached and execute a page notification.

**Room Alert™ Environment Monitor**

PageR can monitor a Room Alert environment monitoring device attached to the com port of the NT system where PageR is running. Using Room Alert, PageR can detect a variety of environmental problems. The Room Alert device and environmental sensors are available from CPL Systems.

**Room Alert PLUS™ Environment Monitor**

PageR can monitor a Room Alert PLUS environment monitoring device attached to the com port of the system where PageR is running. Using Room Alert PLUS, PageR can detect a variety of environmental problems. The Room Alert PLUS device and environmental sensors are available from CPL Systems.

**Failsafe Server™ Environment Monitor**

PageR can monitor the environmental sensor port of the Failsafe Server device attached to the com port of the system where PageR is running. Using Failsafe Server, PageR can detect a variety of environmental problems. The Failsafe Server and environmental sensors are available from CPL.

**Server/Listener** Objects create a service that waits for and responds to external events directed to PageR.

---

**Syslog Server**

Receives Syslog logging messages from Unix systems and raises alarms as needed based on message severity or searching the message for specified words or phrases. Allows PageR to monitor Unix host systems.

**SNMP Trap Server**

Receives SNMP Trap messages from SNMP agents and raises alarms. Allows PageR to handle SNMP Traps.

**Axis Video Camera**

Receives Motion Detection messages from Axis video camera and generates alarms. Can also capture and record images from cameras on a regular basis.

**Utility/Action** Objects are objects that perform some utility function on a regular basis.

---

**ePage**

On a regular basis, examines messages in a mailbox and generates page requests based on the messages. Allows users to page Contacts by sending an email.

**FTP File Get**

On a regular basis, retrieves disk files from system supporting FTP. Used to bring disk log files to the local system for examination by the Disk File monitored object or to retrieve paging script files generated on other systems.

**Heart Beat**

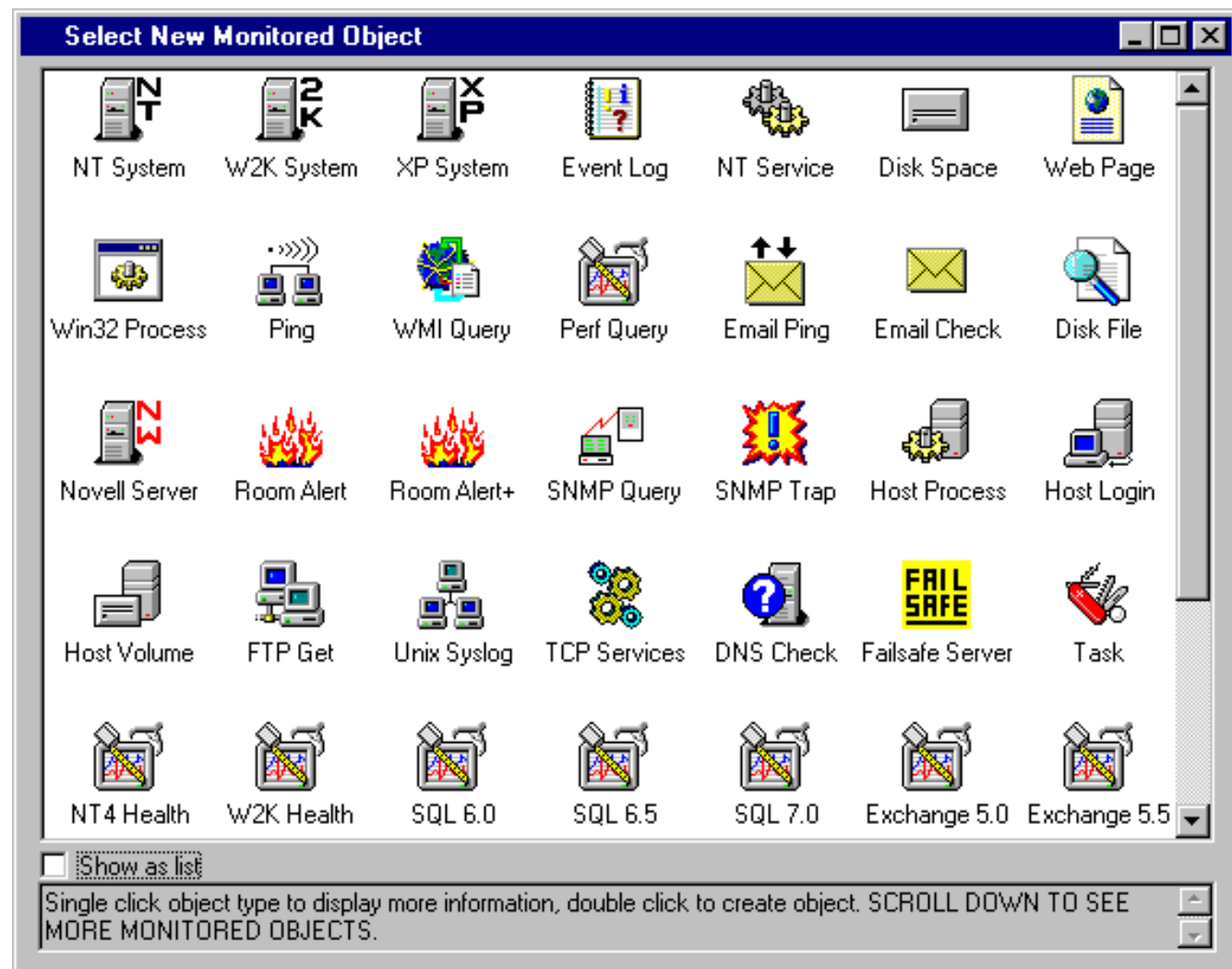
On a regular basis, generates a notification that tells the recipient that PageR is running.

**Task**

A task object will execute a script, command file or program on a repetitive basis or as part of an alarm response. Tasks can also be used to create user defined monitored objects.

## Select New Monitored Object

Allows selection of new object to be created.

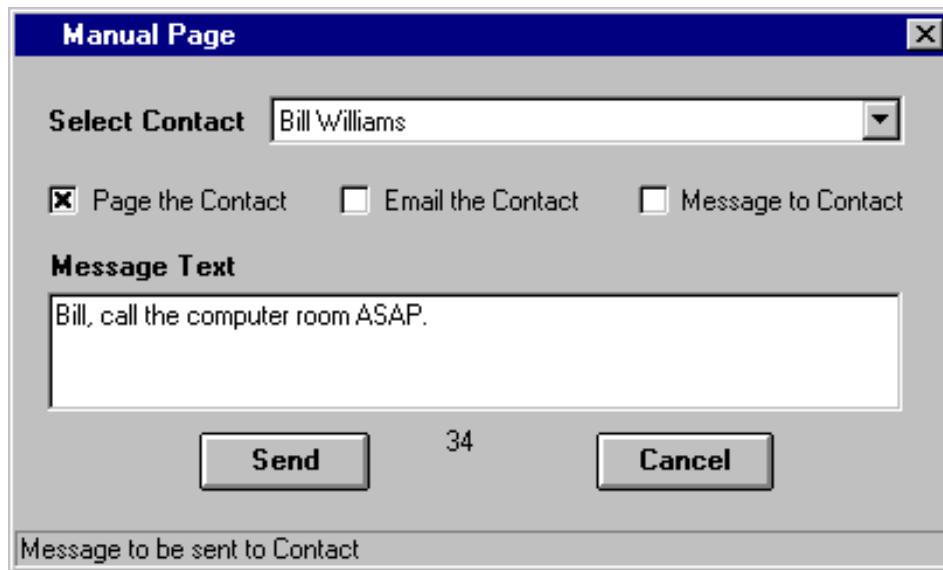


Each Icon represents a Monitored Object Type. You can single click on an Icon to get an extended description of the object displayed in the status area at the bottom of the window. Double click an Icon to create a new instance of that object. The Object specific configuration screen will then be displayed.

If a monitored object icon is grayed out, you have PageR Standard Edition and the grayed object is not available in the Standard Edition. It can also mean that the MO is a server type object (like Syslog for example) where only one instance of the object is allowed, and that instance already exists

## Manual Page

Manually send a page, email or message to Contact(s).



The image shows a Windows-style dialog box titled "Manual Page". It has a blue title bar with a close button (X) in the top right corner. Inside the dialog, there is a "Select Contact" label followed by a text box containing "Bill Williams" and a dropdown arrow. Below this are three checkboxes: "Page the Contact" (checked), "Email the Contact" (unchecked), and "Message to Contact" (unchecked). Underneath the checkboxes is a "Message Text" label followed by a large text area containing the text "Bill, call the computer room ASAP.". At the bottom of the dialog are two buttons: "Send" and "Cancel". Below the "Send" button is the number "34". At the very bottom of the dialog is a status bar with the text "Message to be sent to Contact".

You can use this screen to manually send a page, email or popup message to a Contact or group of Contacts. The Contact's configuration provides the information needed to perform paging, email or message delivery. Simply select a Contact from the list, select the desired delivery method and type the message you would like sent.

When paging, the message text is substituted for the **[ALARM]** substitution keyword in the paging (MSG) file configured for the Contact.

When paging, a page request is entered into the page queue and will be executed the next time Alarm Notifications are processed. Scanning must be started.

The Web Status facility allows Manual Pages to be sent from your web browser.

## Performance Counter Query object Add/Change

This screen is used to add/change Windows Performance Counter Query objects.

NT Performance Counter Query Object Add/Change

Identifier:

Description:  ☒ Enabled

Interval:  Severity:  Delay:

System Name:

Performance Counters defined for this query	Relop	Value
\\LogicalDisk[_Total/_Total]\\% Free Space	<	10

Evaluation Script File:

**Alarm Notification**

Alarm Object:

Alarm Text:

Optional short name for monitored object

### Identifier

This is a short label that is used to identify this Windows Performance Query object .

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

#### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

#### System Name

Enter or select the name of the Windows Server or Workstation system on which the query will be executed.

#### Performance Counters Defined for this Query

This grid list shows the Performance Counters that have been attached to the Query object. The following attributes are defined for each counter:

Attribute	Description
<b>Path</b>	This is the "path" or full name of the counter.
<b>Relop</b>	This is the relational operator used to compare the counter value to the test value.
<b>Value</b>	This is the test value. The counter value is compared to this value to determine if an alarm is to be generated. If " <b>countervalue relop testvalue</b> " is true, an alarm is generated. The test value is always numeric.
<b>On Error</b>	Controls what happens if an error occurs while retrieving the counter value. Can be one of: <b>Ignore</b> = ignore the error, skip the counter <b>Alarm</b> = generate an alarm indicating that the counter could not be retrieved.
<b>Alarm Mode</b>	Controls when alarms are generated for a "true" comparison of the counter value and test value. Can be one of: <b>Each Time</b> = generate an alarm on each scan that the comparison is "true".  <b>Average</b> = generate an alarm when the average of the counter value, over some number of consecutive scans, compares "true" to the test value. The number of scans over which to average is set in Mode Value.  <b>Persistent</b> = generate an alarm when the counter value compares "true" to the test value, for some number of consecutive scans. The number of scans is set in Mode Value.  <b>Disabled</b> = counter value is retrieved but not tested.
<b>Mode Value</b>	Sets the number of scans to average counter values on <b>Average</b> Alarm mode or the number of scans of consecutive "true" comparison of values on <b>Persistent</b> Alarm Mode.

You can use the scroll bar to shift the columns left and right. To change a field, left click on it and you will be presented with a drop down menu of choices for the field or a box in which to enter numeric values.

You can click on a counter path name and then click **Del** to delete a counter or click **Add** to add a new counter to the query.

Clicking **Add** displays the Performance Counter Explorer, which allows you to navigate the performance counters defined for a system and select counters to add to the query. If the query is for a different system than the one on which you are running this program, select that system in the System Name box before clicking Add. This will cause the Performance Counter Explorer to explore the counters defined on that system.

### Evaluation Script File

Normally, this MO retrieves the Performance Counter values and then does the threshold checking as defined for each counter. As an alternative, you can specify a file name containing VB script that will be executed to evaluate the counters. In this mode, the counter values are retrieved but no threshold processing is done. Instead, the named script file is executed. That script can access all of the attributes for the Performance Counter Query MO and the counter attributes and current values. Thus, you can write your own evaluation code for the counter properties. There is an example script in **\Scripts\Samples\PerfCounterTest.txt**.

### Alarm Object

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

### Alarm Text

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be expanded to their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[IDX]</b>	expands to the monitored object's identification string and includes the target system name.
<b>[TARGET]</b>	expands to the target system name.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[PATH]</b>	expands to the full counter path that caused the current alarm.



<b>[NAME]</b>	expands to the counter name without it's object path.
<b>[RELOP]</b>	expands to the relop for the counter that caused the current alarm.
<b>[TEST]</b>	expands to the test value defined for the counter that caused the current alarm.
<b>[VALUE]</b>	expands to the actual retrieved counter value for the counter that caused the current alarm.
<b>[COUNTER]</b>	expands to a formatted string with full counter path, relop, test value and current value giving a complete description of the counter.
<b>[COUNTERN ]</b>	same as [COUNTER] but with counter name instead of full path.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

### Notes

Here are some examples to help understand how the Performance Query object operates. Lets say that a query contains two counter definitions:

```
CPU_BUSY% > 75  
TOTAL_FREE_DISK% < 15
```

When the query is executed, the values for the two counters are retrieved and tested. If the actual value of CPU\_BUSY% is more than 75, an alarm will be generated. If the actual value of TOTAL\_FREE\_DISK% is less than 15, an alarm will be generated. If a query has one or more counters in alarm state, the query object is in the alarm state. If all counters that had alarms come back into tolerance on a subsequent scan, the alarm state of the query object will be cleared.

Now lets modify the examples:

```
CPU_BUSY% > 75 averaged 5  
TOTAL_FREE_DISK% < 15 persistent 10
```

In this case, for CPU\_BUSY%, five queries are executed and the values retrieved for the counter and accumulated and then the average is compared to the test value. If the average is greater than 75, an alarm is generated. Once five values have been accumulated, the average is taken over the last five values on each subsequent scan.

For TOTAL\_FREE\_DISK%, ten queries are executed and if each query's retrieved value was less than 15%, an alarm is generated. If any value is equal to or greater than 15, the accumulation starts over. Only if the actual value is less than 15 on each of the last 10 scans

is an alarm generated.

Please note that many Performance Counter values are already averaged or accumulated over the time between scans. The average and persistent alarm modes are intended for application over multiple scan periods. Be sure to read the counter description on the Performance Counter Explorer screen carefully when setting up counters.

The Logical Disk Performance Counters are not enabled on Windows systems by default. To use the Logical Disk counters you must open a DOS window and issue the command:

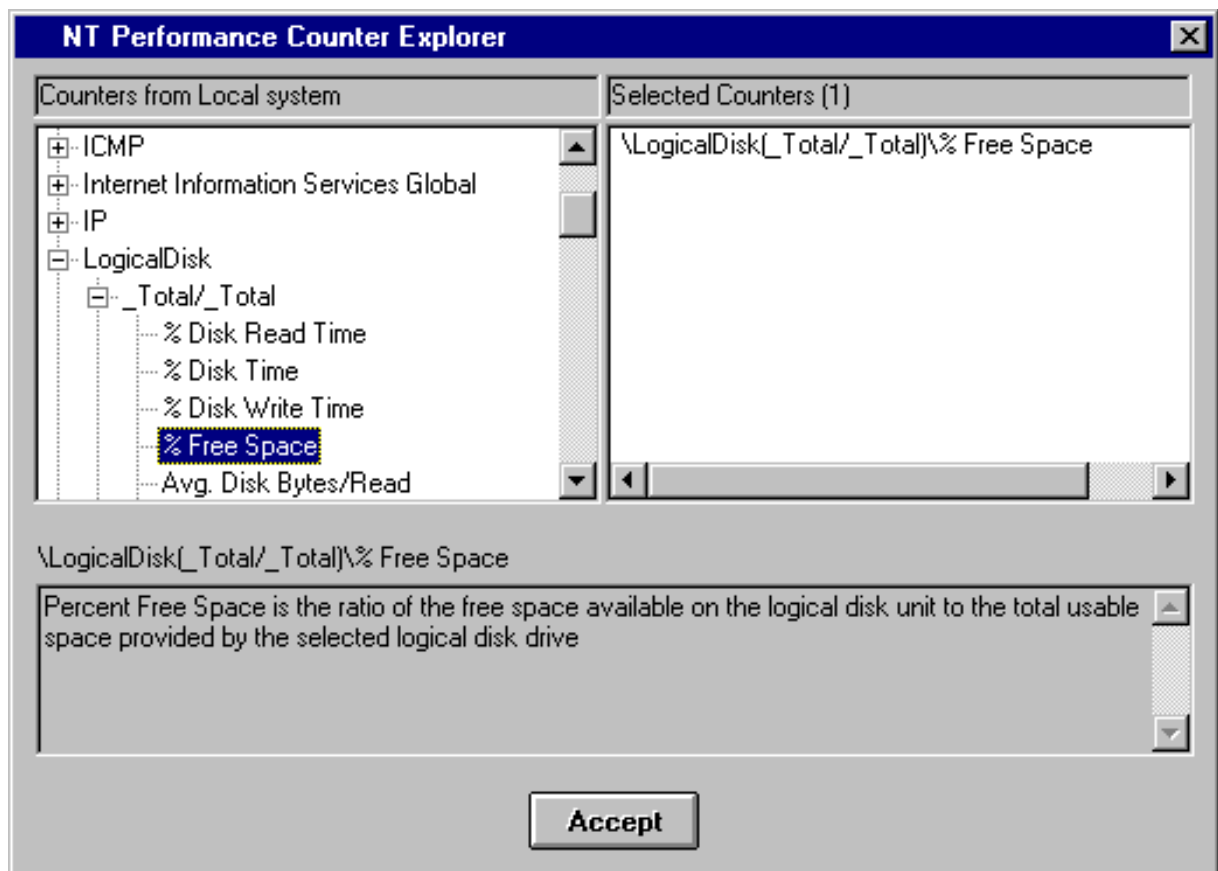
**diskperf -y**

### Warning

If you create a new Performance Counter MO from one of the Pre-Defined monitored Objects, the new MO will be pre-filled with counters appropriate to the area to be monitored. The counter values can be customized or counters can be added or deleted as needed. Note that the **SQL 2000 (and later)** pre-defined Performance Counter MO will not work as originally setup when you add the MO. The counters in the pre-defined MO use the SQL **Instance name** SQLServer. This works for pre-2000 versions of SQL. With SQL 2000 and later, SQL is configured to have one or more **user named** Instances. There is no good way to determine what Instance(s) exist on a system or if more than one Instance exists, which one you want to monitor with the new MO. So, after adding an SQL 2000 (or later) pre-defined MO, you must click the Add button and display the Performance Counter Explorer for the target system. Then locate the SQL Instance you wish to monitor. An SQL Instance will appear as **MSSQL\$InstanceName** in the counter tree. Select some counter from the Instance you wish to monitor. This can be a counter you are interested in or just any counter you select. Click OK to return from the Explorer. The SQL Instance name you have selected will be automatically detected and the default Instance name of SQLServer will be replaced by your actual Instance Name. You can either keep or delete the counter you added to cause the Instance name update.

## Performance Counter Explorer

This screen is used to explore the Performance Counters available on a Windows system and add them to a Performance Counter Query object .



This screen allows you to explore the Performance Counters defined on a Windows System. The left pane shows the counters on the system. The right pane shows any counters selected to be added to the Performance Query object you came from.

Initially, the left pane shows the list of system **"objects"** for which counters are defined. You can click on objects to expand them into lists of **"instances"** or **"counters"**.

A counter **path** is the concatenation of the system object, instance (if applicable) and counter names separated by Backslashes.

Simple objects, ones that have no "instances", will expand into a list of the performance counters defined for the object. You can click on a counter name to see a description of the counter displayed in the area at the bottom of the screen. You can double click a counter name to add it to the list of counters selected to be added to the Query object. Selected counters appear in the right pane. You may select a counter in the right pane and press the **DEL** key to remove it from the selected counter list.

When you have selected all of the counters you want, click **Accept** to add the list of counters to the Performance Query object. You will be returned to the Query object screen where you can define the relops and test values for the counters just added.

Complex system objects have "instances" of the object and each instance will expand into a list of performance counters for that instance. An example of instances can be found under the Logical Disk system object. There is an "instance Total" and then an instance for each logical drive on the system, for example "instance C". So the value of counter "% Free Space" can be retrieved for the C logical drive or the total of all logical drives.

## Monitored Object Alarm Types

Monitored Objects have an attribute called **Alarm Type**. Currently there are two Alarm types, **Discrete** and **Persistent**.

### Discrete Alarms

This type of monitored object generates alarms that are "point" alarms. That is, each alarm generated by the object is not connected to any other and typically these alarms do not represent a "state" of the monitored object. The alarm is a "reporting" of an event that has no time duration aspect.

An example of this is the Event Log Object. Each event record that is found to generate an alarm, is processed and an alarm generated and processing continues.

### Persistent Alarms

This type of object generates an alarm when its state changes. An alarm begins when the state changes and persists or continues until the state changes again.

An example of this is the Ping Object. When a system fails to respond to a ping, it enters the alarm state and an alarm is generated. The system continues in alarm state (it is "down") until the system responds to the ping, ending the alarm state (it is back "up").

### Discrete Alarm Processing

When a Discrete alarm type monitored object reports its first alarm, an alarm (notification action) is generated and the object enters the "alarm" state. The alarm state is really just a highlighting action that allows the user of PageR to see that the object has one or more alarms in progress on the object status display screens. Any new alarm encountered while in the alarm state generates a new alarm notification action and the object continues in the alarm state. The alarm state for the Discrete alarm object continues until it is explicitly reset by the user on the Status display screen or scanning stops and restarts.

### Persistent Alarm Processing

When a Persistent alarm type monitored object encounters an alarm, an alarm is generated and the object enters the alarm state. Once in the alarm state, the object is tested on each scan to see if the alarm condition persists. If it does, this is logged to the Activity window but no new alarm is generated. If on a subsequent scan, the alarm condition no longer exists, the alarm state of the monitored object is cleared. The alarm state of a persistent object may be reset by the user on the Status display screen. The alarm will be reset if scanning stops and restarts.

## Monitored Object Alarm Types

---

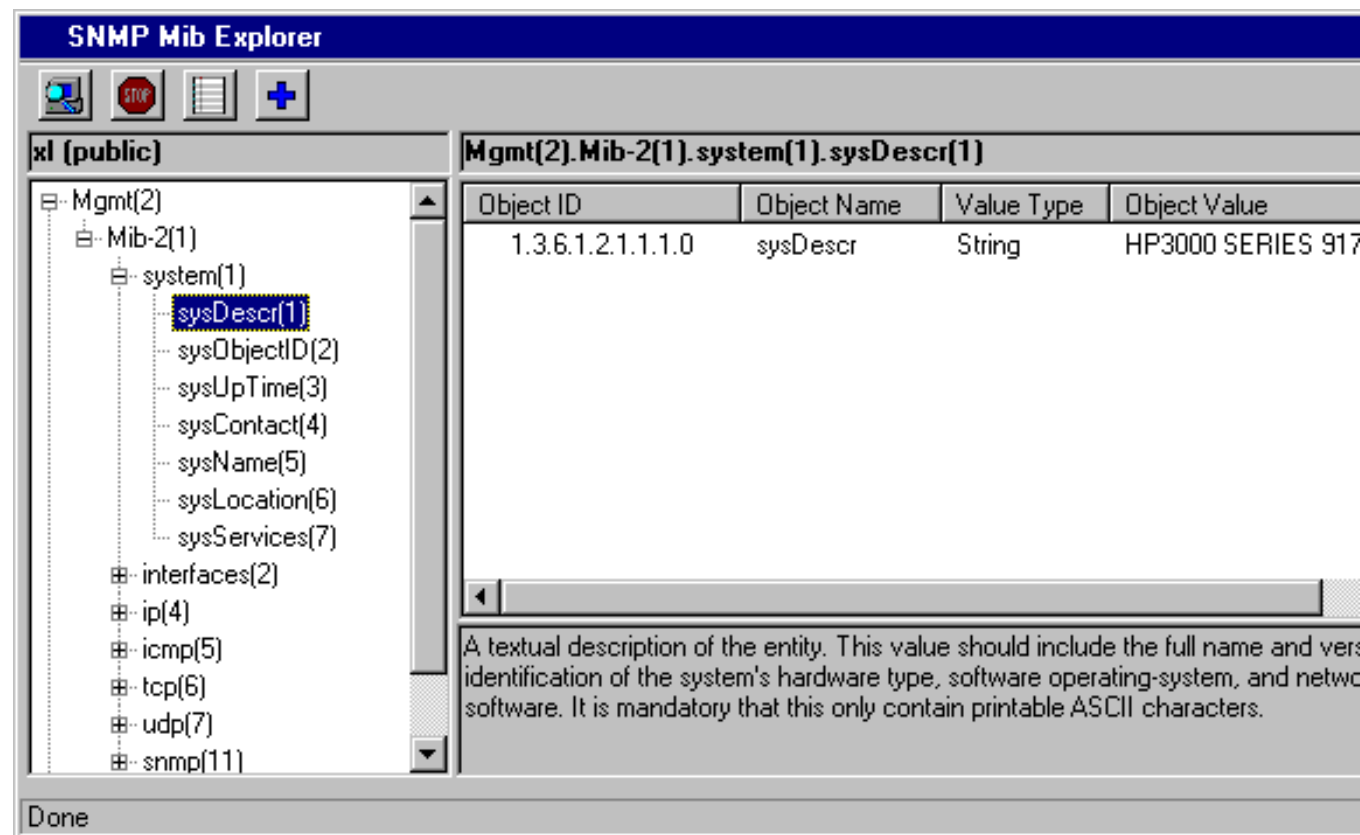
**Discrete****Persistent**

---

Event Log	NT System
Disk File Scan	NetWare Server
Syslog	Ping
SNMP Trap	Service
Host Login	NT Performance Counter Query
Task	SNMP Query
Email Check	Failsafe Server
ePage	Disk Space
Heart Beat	WMI Query
	Room Alert
	TCP Service
	Web Page
	UDP Service
	DNS Check
	Host Process
	Host Volume
	W2K System
	XP System
	EMail Ping
	DialUp
	Directory
	Bandwidth

## SNMP Mib Explorer

This screen displays the SNMP Mib retrieved from an SNMP enabled system. You can select Mib objects to be added to the SNMP Query you came from.



This screen is used to explore the SNMP Mib implemented in an SNMP enabled system (agent). Click the **System** button on the tool bar to retrieve (walk) the Mib from the target system. This can take several seconds.

Once the Mib is retrieved, it is presented in a tree view in the left pane. Mibs are organized in a hierachial fashion. When you reach the end of a branch in the Mib tree, at an actual Mib data object , the object's information and current value are displayed in the right pane.

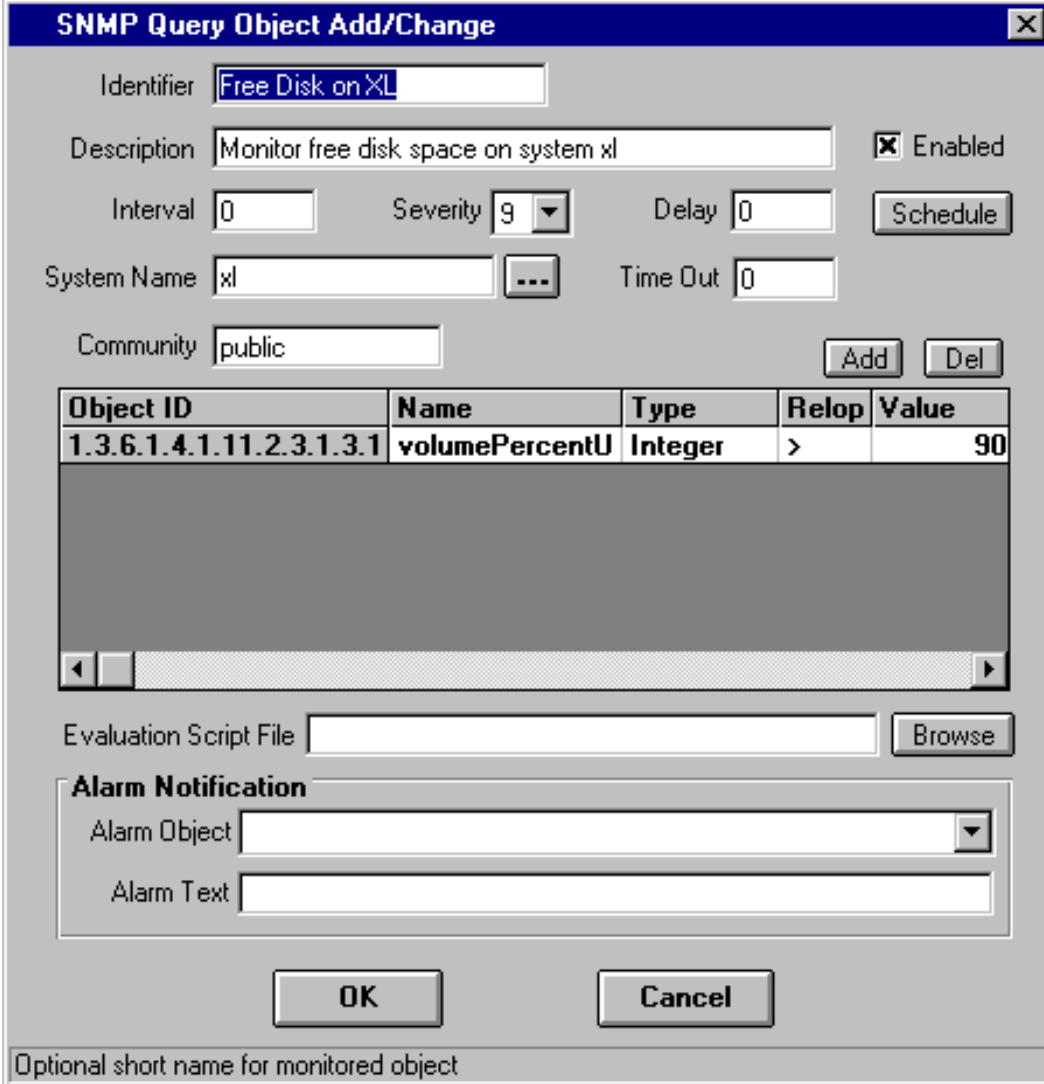
You may also click the **Full Mib List** button to display the Mib in a full linear list in the right pane. If you left click on an object in the right pane, the tree view will be adjusted to show the object's location in the Mib tree. If available from a Mib file, the object's description will be displayed below the right pane. Any time you right click on an object, It's current value to retrieved from the target system and displayed.

You can left click an object in the right pane to select it to be added to the SNMP Query you came from. A blue plus sign will display to show selected objects. You may left click again to deselect an object.

When all desired objects are selected, click the **Plus** button to add your selected objects to the SNMP Query you came from and return to that Query.

## SNMP Query Object Add/Change

This screen is used to add/change SNMP Query objects.



The dialog box is titled "SNMP Query Object Add/Change". It contains several input fields and a table.

Fields:

- Identifier: Free Disk on XL
- Description: Monitor free disk space on system xl
- Interval: 0
- Severity: 9 (dropdown)
- Delay: 0
- System Name: xl (with a browse button "...")
- Time Out: 0
- Community: public
- Buttons: Add, Del
- Evaluation Script File: (with a Browse button)
- Alarm Notification section:
  - Alarm Object: (dropdown)
  - Alarm Text: (text field)
- Buttons: OK, Cancel
- Optional short name for monitored object: (text field)

Table:

Object ID	Name	Type	Relop	Value
1.3.6.1.4.1.11.2.3.1.3.1	volumePercentU	Integer	>	90

### Identifier

This is a short label that is used to identify this SNMP Query object .

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**System Name**

Enter or select the name or IP address of the system on which the query will be executed. Click the ... button to select from a list of known SNMP systems on your network.

**Community**

Enter the community name to use on the query.

**SNMP Objects Defined for this Query**

This grid list shows the SNMP Object Ids that have been attached to the Query object. The following attributes are defined for each object:

Attribute	Description
<b>Object ID</b>	This is the SNMP Object ID of the object to query.
<b>Name</b>	This is the textual name of the object. Only available if the object ID is found in one of the installed Mib files.
<b>Type</b>	This is the object's SNMP data type.
<b>Relop</b>	This is the relational operator used to compare the object's value to the test value.
<b>Value</b>	This is the test value. The object's value is compared to this value to determine if an alarm is to be generated. If " <b>objectvalue relop testvalue</b> " is true, an alarm is generated. The test value is always numeric.
<b>On Error</b>	Controls what happens if an error occurs while retrieving the SNMP object value. Can be one of: <b>Ignore</b> = ignore the error, skip the object <b>Alarm</b> = generate an alarm indicating that the object could not be retrieved.
<b>Alarm Mode</b>	Controls when alarms are generated for a "true" comparison of the object value and test value. Can be one of: <b>Each Time</b> = generate an alarm on each scan that the comparison is "true". <b>Average</b> = generate an alarm when the average of the object value, over some number of consecutive scans, compares "true" to the test value. The number of scans over which to average is set in Mode Value.



**Persistent** = generate an alarm when the object value compares "true" to the test value, for some number of consecutive scans. The number of scans is set in Mode Value.

**Disabled** = object value is retrieved but not tested.

**Mode Value** Sets the number of scans to average object values on **Average** Alarm mode or the number of scans of consecutive "true" comparison of values on **Persistent** Alarm Mode.

You can use the scroll bar to shift the columns left and right. To change a field, left click on it and you will be presented with a drop down menu of choices for the field or a box in which to enter numeric values.

You can click on an object ID and then click **Del** to delete the object or click **Add** to add new objects to the query. You can click on the **Name** of an object to enter your own name for that object.

Clicking **Add** displays the SNMP Mib Explorer, which allows you to retrieve and explore the SNMP Mib implemented on the target system and select objects to add to the query.

### Evaluation Script File

Normally, this MO retrieves the SNMP object values and then does the threshold checking as defined for each object. As an alternative, you can specify a file name containing VB script that will be executed to evaluate the objects. In this mode, the object values are retrieved but no threshold processing is done. Instead, the named script file is executed. That script can access all of the attributes for the SNMP Query MO and the SNMP object attributes and current values. Thus, you can write your own evaluation code for the objects. There is an example script in **\Scripts\Samples\SNMPObjectTest.txt**.

### Alarm Object

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

### Alarm Text

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be expanded to their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[IDX]</b>	expands to the monitored object's unique identification string plus the target system.
<b>[DESC]</b>	expands to the monitored object's long description.

<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TARGET]</b>	expands to the target system name or IP address.
<b>[OBJECT]</b>	expands to the full description of the object that caused the current alarm, including the relop, test value and current value.
<b>[OBJNAME]</b>	expands to the name of the object that caused the current alarm.
<b>[COMMUNITY ]</b>	expands to the community name.
<b>[OBJID]</b>	expands to the object ID of the object that caused the current alarm.
<b>[RELOP]</b>	expands to the relop for the object that caused the current alarm.
<b>[TEST]</b>	expands to the test value defined for the object that caused the current alarm.
<b>[VALUE]</b>	expands to the actual retrieved object value for the object that caused the current alarm.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

### Notes

SNMP enable systems (agents) expose a virtual data structure called a MIB or Management Information Base. An SNMP management application (manager) like PageR can query agents for the values of data items or objects, defined by the agent's Mib. The retrieved value can be compared to a test value to determine if an alarm condition exists. Mib data items, or objects, are assigned a unique identifier called an object ID. The definition of objects in a Mib is defined in a schema, called a Mib file. The Mib file describes the Mib objects including their type and purpose. The agent implements the Mib schema on the agent's system and the management application uses the Mib file to determine what objects are available on the agent.

PageR ships with a standard set of Mib files. If a device on your network is not covered by one of the supplied Mib files, please contact tech support. In all likelihood a Mib file for your device can be obtained and processed for use with PageR.

You determine what Mib objects are available on an agent system and add them to an SNMP Query by using the SNMP Mib Explorer.

Here are some examples to help understand how the SNMP Query monitored object operates. Let's say that a query contains two SNMP objects:

CpuBusy > 75

TotalFreeDisk < 15

When the query is executed, the values for the two objects are retrieved and tested. If the actual value of CpuBusy is more than 75, an alarm will be generated. If the actual value of TotalFreeDisk is less than 15, an alarm will be generated. If a query has one or more objects in alarm state, the query object is in the alarm state. If all objects that had alarms come back into tolerance on a subsequent scan, the alarm state of the query object will be cleared.

Now lets modify the examples:

CpuBusy > 75 averaged 5  
TotalFreeDisk < 15 persistent 10

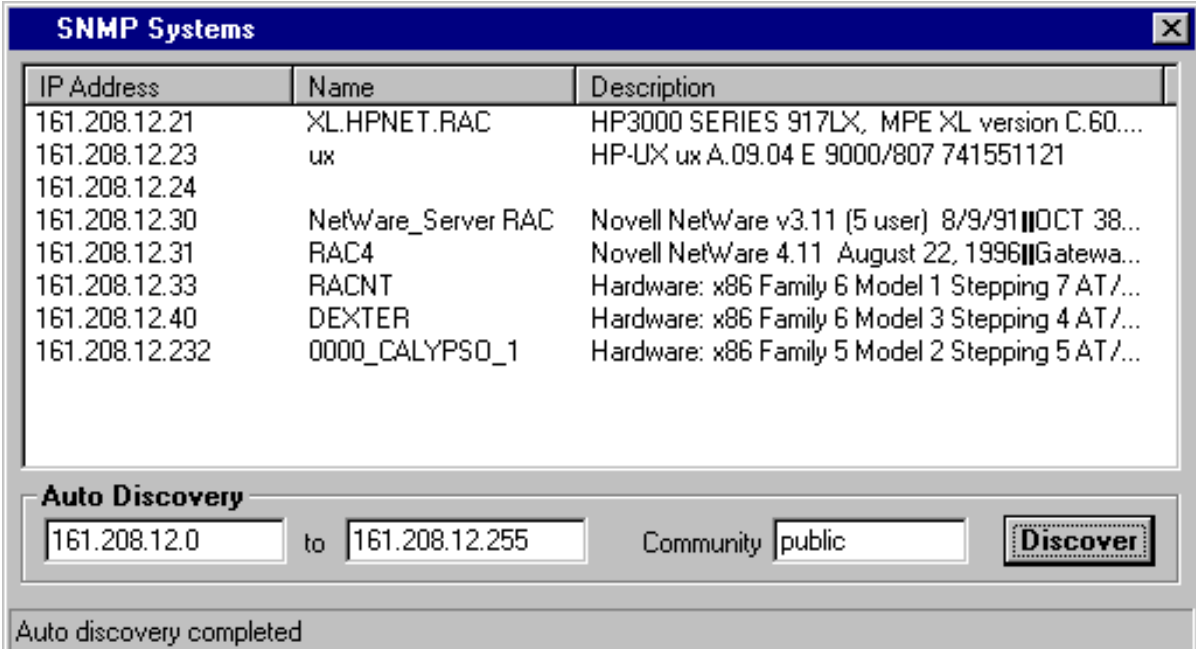
In this case, for CpuBusy, five queries are executed and the values retrieved for the object and accumulated and then the average is compared to the test value. If the average is greater than 75, an alarm is generated. Once five values have been accumulated, the average is taken over the last five values on each subsequent scan.

For TotalFreeDisk, ten queries are executed and if each query's retrieved value was less than 15%, an alarm is generated. If any value is equal to or greater than 15, the accumulation starts over. Only if the actual value is less than 15 on each of the last 10 scans is an alarm generated.

Please note that many SNMP object values are already averaged or accumulated numbers. The average and persistent alarm modes are intended for application over multiple scan periods. Be sure to read the object description on the SNMP Mib Explorer screen carefully to make sure the way you test an object is consistent with it's content.

## SNMP Systems

This screen shows a list of SNMP enabled systems detected on your network. You can select a system to be returned to the SNMP Query you came from.



The screenshot shows a window titled "SNMP Systems" with a table of detected systems and an "Auto Discovery" section at the bottom.

IP Address	Name	Description
161.208.12.21	XL.HPNET.RAC	HP3000 SERIES 917LX, MPE XL version C.60...
161.208.12.23	ux	HP-UX ux A.09.04 E 9000/807 741551121
161.208.12.24		
161.208.12.30	NetWare_Server RAC	Novell NetWare v3.11 (5 user) 8/9/91 OCT 38...
161.208.12.31	RAC4	Novell NetWare 4.11 August 22, 1996 Gatewa...
161.208.12.33	RACNT	Hardware: x86 Family 6 Model 1 Stepping 7 AT/...
161.208.12.40	DEXTER	Hardware: x86 Family 6 Model 3 Stepping 4 AT/...
161.208.12.232	0000_CALYPSO_1	Hardware: x86 Family 5 Model 2 Stepping 5 AT/...

**Auto Discovery**

161.208.12.0 to 161.208.12.255 Community public **Discover**

Auto discovery completed

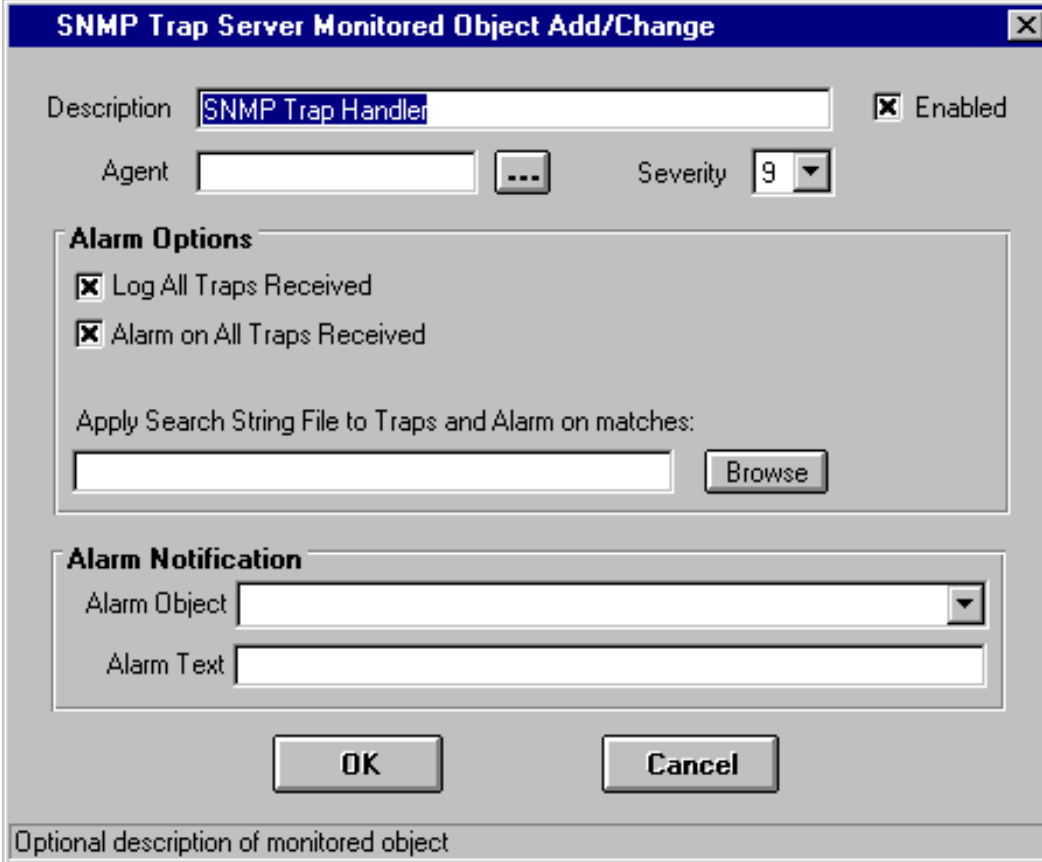
When this screen is displayed, a list of SNMP enabled systems (agents) known to be on your network is displayed. If the list is blank, you can use the Auto Discovery feature to automatically scan the network and discover systems with SNMP agents. Once established, the list is retained until PageR is shutdown.

Double click on the IP address of the desired system to select it and return to the SNMP Query screen you came from.

To Auto Discover SNMP systems, modify the starting and ending IP address ranges as needed and click **Discover**. You may click **Stop** to terminate auto discovery.

## SNMP Trap Object Add/Change

This screen is used to add or change the SNMP Trap monitored object. The SNMP Trap object allows SNMP Trap messages to be received from SNMP Agents and processed for alarms.



The dialog box is titled "SNMP Trap Server Monitored Object Add/Change". It contains the following fields and controls:

- Description:** A text field containing "SNMP Trap Handler".
- Enabled:** A checkbox that is checked.
- Agent:** A text field with a browse button (three dots) to its right.
- Severity:** A dropdown menu showing the value "9".
- Alarm Options:** A section containing two checked checkboxes: "Log All Traps Received" and "Alarm on All Traps Received". Below these is a text field for "Apply Search String File to Traps and Alarm on matches:" with a "Browse" button.
- Alarm Notification:** A section containing a dropdown menu for "Alarm Object" and a text field for "Alarm Text".
- Buttons:** "OK" and "Cancel" buttons at the bottom.
- Footer:** A text field labeled "Optional description of monitored object".

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Agent

This is the IP address or name of the SNMP Agent system. The Agent system is the source of SNMP traps. Only traps from the specified Agent will be processed by the monitored object. You may create one Trap monitored object with a blank Agent field. That object is the default trap monitored object and will handle all traps not processed by any Agent specific monitored object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Log All Traps Received

Enable to record all SNMP Trap messages received on the Activity Log window even if the

messages do not result in an alarm.

### Alarm on All Traps Received

Generate an alarm for all SNMP Traps received.

### Apply Search Strings File to Messages and Alarm on Matches

Enter or select a Search String File name to have each trap message searched for any matches to strings or words defined in the search string file. More about Search Strings. The trap message is converted from the raw SNMP format to a formatted text string. This formatted string is searched using the search string file.

### Alarm Object

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

### Alarm Text

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string. This is the value of the Agent field.
[DESC]	expands to the monitored object's long description.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.
[SOURCE]	expands to the IP address or name of the sending system.
[TRAPTEXT]	expands to the formatted text of the trap message.
[SYSNAME]	expands to the name of the sending system, as retrieved from that system.
[SYSIP]	expands to the IP address of the sending system.
[SYSDISC]	expands to the system description text retrieved from the sending system.
[SYSLOC]	expands to the location text retrieved from the sending system.
[SYSCON]	expands to the contact name retrieved from the sending system.
[COMMUNITY]	expands to the community name under which the trap was sent.

<b>[TRAPOID]</b>	expands to the trap's SNMP object ID.
<b>[TRAPNUM]</b>	expands the trap's number.
<b>[TRAPNAME]</b>	expands to the textual name of the trap if found in one of the SNMP MIBs.
<b>[STIME]</b>	expands to the time the trap was generated. This is from the point of view of the SNMP agent and is in clock ticks since the agent was initialized.
<b>[OID1]</b>	expands to the object ID of the first additional SNMP object returned in the trap message, if any.
<b>[OIDNAME1]</b>	expands to the name of the object ID described above.
<b>[VAL1]</b>	expands to the value of the object ID described above.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

### Notes

When systems with SNMP support (agents) experience events, they may send notification messages or "traps" to an SNMP management application (manager). This monitored object allows PageR to function as an SNMP manager, receiving and process SNMP traps to perform an alerting function.

SNMP agents must be configured to send traps and the system on which PageR is running must be configured as the trap destination.

In order to employ the textual name associated with an SNMP trap, the SNMP MIB file for the agent must be installed in the Mibs directory of the PageR install directory. PageR is shipped with a standard set of Mib files. If your agent's Mib file is not included, please contact tech support. In all likelihood, the Mib file for your agent can be obtained and processed for use with PageR.

To enable string matching against trap messages, the raw SNMP trap message is formatted into a text string. Each component of the message is identified with a keyword and value. An example of a formatted trap message is:

```
time=6/10/97 8:15:55 AM; Name=RACNT; IP=161.208.12.33; Com=public;  
TOid=1.3.6.1.2.1.11; TNum=2; TName=LinkDown ; TTime=1003466781; Desc=Exchange  
Server; Loc=Computer Room; Con=John Doe; Oid=1.3.6.1.2.1.5.0; OidName=abc;  
Val=165
```

In this example, there are spaces after the semicolons. The spaces are shown to assist in correct formatting by the Help system. These spaces are not present in an actual formatted message string. The components of the formatted message are:

<b>Keyword</b>	<b>Description</b>
<b>time</b>	the time the trap message was received.
<b>Name</b>	the name retrieved from the sending system.
<b>IP</b>	the IP address of the sending system.
<b>Com</b>	the community name the trap was sent under.
<b>TOid</b>	the trap's SNMP object ID.
<b>TNum</b>	the trap number.
<b>TName</b>	the name of the trap retrieved from the agents Mib file.
<b>TTime</b>	the time of the trap in clock ticks at the sending system.
<b>Desc</b>	the system description text retrieved from the sending system.
<b>Loc</b>	the location text retrieved from the sending system.
<b>Con</b>	the contact name retrieved from the sending system.
<b>Oid</b>	the object ID of an SNMP object in the sending system's Mib that is applicable to the trap. zero to n groups of Oid, OidName and Val components may appear.
<b>OidName</b>	the object name of the object ID described above.
<b>Val</b>	the value of the object ID described above.



## Task Object Add/Change

This screen is used to add or change Task Monitored Objects. Task objects can be used to perform functions on a scheduled basis or in response to alarms. Tasks can also be used to create your own Monitored Objects.

The screenshot shows the 'Task Object Add/Change' dialog box. It has a title bar with a close button. The main area contains several fields and controls: 'Identifier' with a text box containing 'Sample Task' and a checked 'Enabled' checkbox; 'Description' with a text box containing 'Execute a sample VBScript task'; 'Interval' with a text box containing '0', 'Severity' with a dropdown menu showing '9', and 'Delay' with a text box containing '0'. There is a 'Schedule' button. Below these is a 'Task File' section with a text box containing 'C:\RAC\CPL\Scrambler13\Scripts\MODump.txt' and a file icon button. Below that is a 'Parameters' text box. There are four checkboxes: 'VBScript', 'JScript', 'NT cmds', and 'Program'. There are 'Edit' and 'Validate' buttons. Below these are two checkboxes: 'Execute on Scan' (checked) and 'Execute on Clock' (unchecked), followed by 'Time Out' with a text box containing '10' and 'Allow UI' (unchecked). Below this is an 'Alarm Notification' section with 'Alarm Object' (a dropdown menu) and 'Alarm Text' (a text box). At the bottom are 'OK' and 'Cancel' buttons. A status bar at the very bottom says 'Identifying name for Monitored Object'.

### Identifier

This is a short label that is used to identify this Task object .

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude the object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time (seconds) that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Time Out**

This is the maximum number of seconds that the task is allowed to run. Zero sets no time out.

**Allow UI**

Check this box to allow scripts run by this MO to display user interface elements, such as message boxes. Note: If you allow user interface elements and set a timeout, if the script times out, a message box is displayed by the script engine notifying the user of the timeout and the user must click OK to continue execution. PageR will be stopped until this message box is cleared. Also note that user interface elements are never allowed when PageR is running as a Service .

**Task File**

This is the disk file that contains the task to be performed. The task file may contain a script written in VBScript or JScript, or the file may be an NT command file or program file to be executed. You may click the Explore button to browse for the file.

**Task File Type**

Select the appropriate task file type for the task file contents.

**Parameters**

Enter any parameter data you want passed to the script, command file or program. Parameters are delimited by space, comma or semi-colon characters. Parameters with embedded spaces can be enclosed in quotes. Substitution parameters will be replaced by their actual values before being passed.

**Edit**

Click this button to launch Notepad to edit the named task file or create a new task file. If you create a new file, you will need to assign a name to it when you save it and then enter that name in the task file box.

**Validate**

If the task file contains VBScript or JScript, you may click this button to perform a static validation of script syntax. Any errors found will be displayed with the line and column where the error was found in the script file.

**Execute on Scan**

Check this box to have PageR execute this task on each scan of the monitored objects, subject to any schedule you may define.

**Execute on Clock**

Check this box to have PageR check this task for execution on each clock tick (one second) to determine if the task should be executed per the schedule you define. A schedule must be defined when using clock ticks to trigger task execution.

**Schedule**

Click this button to define a time schedule for task execution. If a schedule has been defined for the task, the word Schedule on the button will appear in bold.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be expanded to their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID] or [IDX]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[FILENAME]</b>	expands to the task file name.
<b>[INTERVAL]</b>	expands to the Interval seconds.
<b>[DELAY]</b>	expands to the Delay seconds.
<b>[SEVERITY]</b>	expands to the Severity value.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

**Notes**

The Task Monitored Object has many functions and details. In general, a task is a function that is performed by a script, command or program file. Tasks can be executed on a repetitive basis or in response to alarms.

**Task Triggering**

Tasks are executed in two ways, repetitively or in response to an alarm. For repetitive execution, a task object is set to execute on each Scan or clock tick. At scan time for the task or on each clock tick, the task is executed. However, if an interval value or schedule has been defined, task execution may be deferred per the interval value or schedule. A schedule is contained in a Schedule Object and can be attached to a task.

A task may also be attached to an Alarm Object to be executed when an alarm is processed

by the Alarm object. When a task is executed by an Alarm object, any interval value or schedule defined for the task is ignored.

### Special Functions

When a Task executes a script, command or program file, information from PageR is made available to the executing object. For scripts, a special object called **SG** (script globals) is available in the script. This object has many properties and methods that a script can use to obtain information about PageR and to control PageR's operation. For command and program files, PageR provides extensive substitution parameters that can be used after the task file name to pass information to the command file or program.

For more information see Using Task Objects.

### Notice

To use VBScript or JScript, you must install the **Windows Scripting Host** from Microsoft. WSH is typically installed with Internet Explorer but is also available for download from the Microsoft web site. See [www.microsoft.com/scripting](http://www.microsoft.com/scripting) for downloads and documentation.

## Using Scripts

Scripts written in VBScript or JScript, as supported by the Windows Scripting Host (WSH) can be executed by Task objects. See [www.microsoft.com/scripting](http://www.microsoft.com/scripting) for detailed information about Microsoft's scripting tools. Sample scripts are provided in the \Scripts\Samples directory.

### Sub Main

Your script must have a **Sub Main** procedure. You can have any number of procedures and global variables, but one procedure must be called Sub Main. This Sub Main procedure is executed by the Task object to start your script. If you are passing parameters to the script, you must add an array parameter to the Sub Main statement. Each passed parameter is available in the array starting with array subscript zero (example: Sub Main( MyParms() ).

### Script Globals Object

The Task object that hosts your script exposes an object for your use called the Script Globals Object. This object is access in your script with the object name **SG**. There are an extensive number of data attributes and functions exposed by SG. See below for details.

### Accessing WSH Scripting Objects

Normally, WSH exposes the **Wscript** object to scripts. Wscript allows access to information about WSH and to the CreateObject method. CreateObject is used to create all other types of WSH or Scripting Run Time Library objects.

The Wscript object is **not** available in the Task object scripting environment. Instead, use the Script Globals method **CreateObject** to create the objects normally available via Wscript. Here is how you would gain access to the WSH Shell object:

```
Set SHO = SG.CreateObject("Wscript.Shell")
```

Here is how you would access the FileSystemObject in the scripting run time library:

```
Set fso = SG.CreateObject("Scripting.FileSystemObject")
```

### **Script Directories**

The PageR installation creates a Scripts directory in the PageR install directory to give you a place to keep any scripts you create. Below Scripts is the Samples directory, which contains sample scripts supplied with PageR.

### **Script Global Object Attributes**

These are the data items exposed by the Script Globals object. Unless otherwise noted, all attributes are readonly.

<b>Attribute</b>	<b>Description</b>
<b>AlarmSound</b>	Returns the sound file name for audible alarms.
<b>AOValid</b>	Returns "True" or "False". True indicates that there is an alarm object available. See discussion below.
<b>COCount</b>	Returns the number of Contact objects defined.
<b>CompanyName</b>	Returns company information about the vendor of this product.
<b>CurrentAlarms</b>	Returns the number of alarms currently in progress.
<b>DefMailTo</b>	Returns the default email notification recipient.
<b>DefMsgTo</b>	Returns the default message broadcast target name.
<b>ErrorCount</b>	Returns the number of processing errors encountered in the current execution of PageR.
<b>GlobalPagerID</b>	Returns the global pager ID.
<b>GlobalPhoneNumber</b>	Returns the global pager phone number.
<b>HostFileName</b>	Returns the hosts file being used.
<b>Interval</b>	Returns the scan interval value.
<b>LastAlarmID</b>	Returns the last alarm ID number assigned.
<b>LastAlarmStart</b>	Returns the start date and time of the last alarm processed.
<b>LastScanTime</b>	Returns the date and time the last scan was performed.
<b>LicenseeName</b>	Returns the name of the entity to which PageR is licensed.
<b>Major</b>	Returns the major component of PageR's version.

<b>Minor</b>	Returns the minor component of Scramber's version.
<b>MOCOUNT</b>	Returns the number of monitored objects defined.
<b>MonitorStartTime</b>	Returns the date and time the current monitoring run started.
<b>MOValid</b>	Returns "True" or "false". True if the monitored object that triggered the task is available.
<b>Name</b>	Returns the name of this application.
<b>NTBuild</b>	Returns the Windows build number.
<b>NTMajor</b>	Returns the major component of the Windows version number.
<b>NTMinor</b>	Returns the minor component of the Windows version number.
<b>NTNote</b>	Returns the Windows version note. Typically shows the service pack installed.
<b>NumberOfScans</b>	Returns the total number of scans since PageR was started.
<b>PagesSent</b>	Returns the total number of pages sent since PageR was started.
<b>PagingEnabled</b>	Returns "True" or "False". True if paging is enabled.
<b>Path</b>	Returns directory path where Scramber is running.
<b>Revision</b>	Returns PageR revision number.
<b>ServiceMode</b>	Returns "True" or "False". True if PageR is operating as an Windows Service.
<b>SmtpHost</b>	Returns the name of the SMTP mail server.
<b>SmtpReturnAddresses</b>	Returns the SMTP mail return address.
<b>SpinDirectory</b>	Returns the name of the Spin directory.
<b>StartUpTime</b>	Returns the date and time this execution of PageR started.
<b>SystemName</b>	Returns this system's name.
<b>Title</b>	Returns the title of this application.
<b>TotalAlarms</b>	Returns the total number of alarms processed since PageR started.

Here are some examples of accessing data attributes:

```
msgbox "object count=" & SG.MOCount  
if SG.TOValid = "True" msgbox "Task is available"
```

### **Script Global Object Methods**

A Script Global Method that returns a value must have its parameters enclosed in parenthesis. Methods that do not return values should not use parenthesis. These are the methods exposed by the Script Globals object:

#### **Alarm Msg1, Msg2**

Sets the Task object executing the script into alarm state. The alarm will be processed when the script terminates. Alarm processing is controlled by the Alarm object attached to the Task object. Msg1 is the alarm message and msg2 is for more detailed information about the alarm. This function allows Task objects to function as user defined Monitored objects.

```
SG.Alarm "This is my alarm", "This alarm was triggered by a script"
```

#### **AOGet(attrname)**

Returns named data attribute value if an alarm object is available.

```
Msgbox = SG.AOGet("desc")
```

#### **Clear**

Clears persistent storage for the task.

```
SG.Clear
```

#### **COFind(name)**

Given a Contact object identifier or object id, returns the index of the Contact object in the Contacts collection so that the Contact may be accessed via COGet or COSet.

```
idx = SG.COFind("John Doe")
```

#### **COGet(attributename, index)**

Given a Contact index (from COFind), get the value of the Contact object attribute requested. Attributes **objectid**, **enabled** and **desc** are supported.

```
attrval = SG.COGet("desc", idx)
```

#### **COSet(attributename, attributevalue, index)**

Given a Contact Index (from COFind), set the name attribute to the given value. Attribute **enabled** can be set.

```
SG.COSet("enabled", "true", idx)
```

#### **CreateObject(objectname)**

Creates named ActiveX object and returns a pointer to the object. Objects created with CreateObject should be released with ReleaseObject.

```
Set wsh = SG.CreateObject("Wscript.Shell")
```

**ErrorLog Severity , Text**

Write the text to the PageR log window as an error. Severity can be set with constant objects SG.LogInfo, SG.LogWarn and SG.LogCritical.

```
SG.ErrorLog SG.LogWarn, "This is a warning from my script"
```

**FormatSize(sizeinbytes)**

Takes a file size in bytes and returns a string with the size formatted into bytes, Kbytes, Mbytes or Gbytes as appropriate.

```
svar = FormatSize(filesize)
```

**GetEventRecObj**

Returns an object reference to an Event Log record Object. Can be used when a script is executed by a Task invoked by an Event Log Monitored Object or by a script executed by an Event Log MO for string matching. See Event Log Record Object Attributes for the list of attributes exposed by this object.

```
Set evtobj = SG.GetEventRecObj
```

**GetObj(name)**

Returns an object reference from persistent storage. Object reference must have been saved with PutObj.

```
Set myobj = SG.GetObj("myobj")
```

**GetVar(name)**

Returns the value of a variable from persistent storage. Variable must have been saved with PutVar.

```
myvar = SG.GetVar("myvar")
```

**MOGet(Attr)**

Returns named data attribute value from the monitored object that executed the script or from a specific object in the global collection of monitored objects. If you want to retrieve attributes for a specific monitored object in the collection, specify the object's index number before the attribute name. This index is the object position in the collection in the order the objects are loaded at start up. The number of objects can be obtained from SG.MOCount, allowing you to iterate the object list.

```
msgbox SG.MOGet("desc")  
msgbox SG.MOGet("moidx=3:desc")
```

**MOReset**

Resets the alarm condition of the monitored object that triggered task execution. Can be used to terminate alarm processing for the monitored object.

**PutObj name, objref**

Stores an object reference variable in persistent storage under the name specified.



**SG.PutObj "wsh", Wsh**

**PutVar name, variable**

Stores a variable in persistent storage under the name specified.

**SG.PutVar "myvar", myvar**

**ReBoot(system)**

This function will initiate a shutdown and restart of the named Windows system. Specify an empty string to reboot the local system. PageR will shutdown immediately in preparation for system shutdown. To reboot a remote system, the user executing PageR or the impersonation user must exist on the target system or as a domain user and have the **Force Shutdown From a Remote System** User Right enabled. Returns a value of false if the reboot cannot be executed.

**SG.ReBoot("") or SG.ReBoot("SYSX")**

**ReleaseObject Object**

Used to release object pointers created with CreateObject. Failure to release objects may cause memory leaks.

**SG.ReleaseObject FSO**

**Reset**

Resets the alarm condition on the Task object that is executing the script.

**SendMail Recipient, Text, Subject, AttachmentFileName**

Sends an email message via the PageR mail configuration. Email must be enabled.

**SG.SendMail "Bob@myco.com", "Bob - call John right away"**

**SendNetMessage Target, Text**

Sends a broadcast message (popup) to the target user/system if message broadcast is enabled.

**SG.SendMessage "Bob", "Bob, call John right away"**

**SendPage ContactName, Msg**

Sends a page to the Contact named via the contact's configuration. Paging must be enabled.

**SG.SendPage "Bob", "Bob, call office now"**

**StopScan**

Causes PageR to stop scanning when the script terminates.

**TOGet(Attr)**

Returns the named data attribute value for the Task object that is executing the script.

**msgbox SG.TOGet("desc")**

**Trace Text**

Write a message to PageR's internal tracing log.

**SH.Trace "This is a trace message from my script"**

**WriteLog Level, Severity , Text**

Write a message to the PageR Activity log window. Level is a number from 0-3 that indicates the log level of the message. Severity can be set with the constants SG.LogInfo, SG.LogWarn and SG.LogCritical.

**SG.WriteLog 0, SG.LogWarn, "This is a message from my script"**

**Task, Alarm and Monitored Objects**

When a script is executed, the attributes of the Task object that is executing the script are available through the TOGet method. If the task is executed on behalf of an Alarm object, the Alarm object's attributes available through the AOGet method and the Monitored object's (that called the Alarm object) attributes are available through the MOGet method. Use the AOValid and MOValid SG attributes to determine if the Alarm and Monitored objects are available for access. At all times, you may access the list of defined Monitored objects through MOGet using the index number of the monitored object you wish to query.

For example, here is a script that iterates the Monitored object list and displays each object's description:

```
Sub Main
  set WSH = sg.CreateObject("Wscript.Shell")
  i = sg.mocount
  for j=1 to i
    msg = "(" & j & ")" & sg.moget("moidx=" & j & ":desc")
    i = wsh.popup(msg, 10, "Test", 33)
    if i = 2 then exit for
  next
End Sub
```

**Persistent Storage**

Task objects that execute scripts retain global variables during the scanning process. This means the Task can retain data in global variables for the length of the scan run. However, such global variables are lost when scanning stops. Thus data cannot be retained over multiple starts and stops of the scanning process. However, the Script Global object provides support for persistent data storage for a task. You can store and retrieve variables and object references thereby persisting data over multiple scans. Persistent storage exists as long as the product is executing.

## Using Task Objects

Task Monitored Objects are used to execute user written script, command or program files. Much of the power of this function is in the information and functions that PageR makes available to the script, command or program file.

Task Objects can be used in two ways. One is to use a Task to execute a function on a repetitive basis or to create your own Monitored Object by writing a script and using a Task to execute it on a repetitive basis. In this case, the Task is set to be run by the Scan process each time a scan is performed (See the additional discussion later in this topic).

The second use of the Task Object is to perform a function in response to an Alarm. In this case, the Task is NOT set to be run by the Scan process and is instead associated with an Alarm Object. In this case, the Task is executed by the Alarm object when it processes an Alarm.

### Using Scripts

Beyond passing parameters to scripts, scripts have extensive access to information and functions from within PageR, via the **SG** (script globals) object that PageR exposes to scripts. Using this information and the extensive capability available to scripts via Windows Scripting Host and the Scripting Run Time Library (SCRUN.DLL), there is practically no limit to what can be done with scripts.

#### Using Scripts

### Using Command or Program files

When a Task object executes a script, command or program file, you may enter substitution parameters in the parameters box. These substitution parameters are replaced by the appropriate values before executing the file. The command file or program can access these parameters just as if the file had been executed from the Windows command prompt. This scheme passes data into the command or program file, but does not provide a mechanism for the file to pass data back or to control PageR.

### Using the Task Object to create your own Monitored Object

You can use the task object to create your own monitored object. You must use VBScript or JScript to do this. You set up a Task to **execute on scan** (with optional schedule) and write a script file to perform whatever monitoring function you wish. PageR exposes methods through the Script Global object that allows your script to trigger an alarm, just like any other Monitored Object. See the discussion on Using Scripts for more information.

### Notice

To use VBScript or JScript, you must install the **Windows Scripting Host** from Microsoft. WSH is typically installed with Internet Explorer but is also available for download from the Microsoft web site.

## Command/Program file substitution parameters

When a Task object executes a Windows command or program file, substitution parameters may be used in the Task object's file name box after the file name. The parameters will be replaced by their actual values before the command or program is executed.

The substitution parameters are:

Attribute	Description
[ALARMSOUND]	Returns the sound file name for audible alarms.
[AOVALID]	Returns "True" or "False". True indicates that there is an alarm object available. See discussion below.
[COMPANY]	Returns company information about the vendor of this product.
[CURRALARMS]	Returns the number of alarms currently in progress.
[DEFMAILTO]	Returns the default email notification recipient.
[DEFMSGTO]	Returns the default message broadcast target name.
[ERRORCOUNT]	Returns the number of processing errors encountered in the current execution of PageR.
[GLOBALPAGERID]	Returns the global pager ID.
[GLOBALPHONE]	Returns the global pager phone number.
[HOSTFILE]	Returns the hosts file being used.
[INTERVAL]	Returns the scan interval value.
[LASTALARMID]	Returns the last alarm ID number assigned.
[LASTALARMSTART]	Returns the start date and time of the last alarm processed.
[LASTSCANTIME]	Returns the date and time the last scan was performed.
[LICENSEE]	Returns the name of the entity to which PageR is licensed.
[MAJOR]	Returns the major component of PageR's version.
[MINOR]	Returns the minor component of Scramber's version.
[MOCOUNT]	Returns the number of monitored objects defined.
[MONITORSTART]	Returns the date and time the current monitoring run started.

<b>[MOVALID]</b>	Returns "True" or "false". True if the monitored object that triggered the task is available.
<b>[NAME]</b>	Returns the name of this application.
<b>[NTBUILD]</b>	Returns the Windows build number.
<b>[NTMAJOR]</b>	Returns the major component of the Windows version number.
<b>[NTMINOR]</b>	Returns the minor component of the Windows version number.
<b>[NTNOTE]</b>	Returns the Windows version note. Typically shows the service pack installed.
<b>[NUMBERSCAPNS]</b>	Returns the total number of scans since PageR was started.
<b>[PAGESENT]</b>	Returns the total number of pages sent since PageR was started.
<b>[PAGINGENABLED]</b>	Returns "True" or "False". True if paging is enabled.
<b>[PATH]</b>	Returns directory path where Scramber is running.
<b>[REVISION]</b>	Returns PageR revision number.
<b>[SERVICEMODE]</b>	Returns "True" or "False". True if PageR is operating as an Windows Service.
<b>[SMTPHOST]</b>	Returns the name of the SMTP mail server.
<b>[SMTPRETURNADDRESS]</b>	Returns the SMTP mail return address.
<b>[SPINDIRECTORY]</b>	Returns the name of the Spin directory.
<b>[STARTUPTIME]</b>	Returns the date and time this execution of PageR started.
<b>[SYSTEMNAME]</b>	Returns this system's name.
<b>[TITLE]</b>	Returns the title of this application.
<b>[TOTALALARMS]</b>	Returns the total number of alarms processed since PageR started.

Here is an example Task file name with substitution parameters:

**C:\CMDFILES\MYCMD.CMD [SYSTEMNAME] [TITLE] [TOTALALARMS]**

**Access to Task, Alarm and Monitored Object information**

When a Task object executes a command or program file, information about the task object is always available. If the Task was executed on behalf of an Alarm object, the Alarm object and Monitored object that triggered the alarm, are also available.

In order to substitute data attributes from these objects, you must use the following syntax for the substitution parameters:

[TO:attrname]  
[MO:attrname]  
[AO:attrname]

In each case, the attrname is an attribute name exposed for the particular object. See the attribute lists for Using Scripts objects and Pull Down Menus objects. An example of substituting the Task object's description would be:

[TO:desc]

**Alarm Object Attributes**

These are the data attributes for Alarm objects that are available with the Script Globals method AOGet(attrname).

Attribute	Description
type	Returns the object type. Will be "Alarm".
id	Returns unique alarm object identification number.
desc	Returns Alarm object description.
msgfile	Returns the paging file (.msg) defined for the Alarm.
msgto	Returns the broadcast message target for the Alarm.
mailto	Returns the email recipient for the Alarm.
startcmd	Returns the Windows command to be executed at Alarm start.
cancelcmd	Returns the Windows command to be executed at Alarm cancel.
notifytype	Returns the Alarm notification type. Will be "Simple" or "Schedule".

An example of getting Alarm object data attributes in a script would be:

```
adesc = SG.AOGet("desc")
```

---

## Monitored Object Attributes

These are the data attributes for Monitored objects that are available with the Script Globals method MOGet(attrname).

This is the list of attributes available for all Monitored Objects.

Attribute	Description
<b>type</b>	Returns the monitored object type.
<b>objectid</b>	Returns unique object identification number.
<b>id</b>	Returns identification string assigned by user or automatically for some MOs.
<b>idx</b>	Returns extended identification string. Typically is user assigned id string and other pertinent information about the MO such as target system.
<b>desc</b>	Returns the MO description.
<b>interval</b>	Returns the MO scan interval (seconds).
<b>delay</b>	Returns the MO alarm delay period (seconds).
<b>severity</b>	Returns the MO severity level number.
<b>alarminprogress</b>	Returns "True" or "False". True if an alarm is in progress on the MO.
<b>alarmintervals</b>	Returns the number of scans that the current alarm has persisted.
<b>alarmtype</b>	Returns the MOs alarm type. Will be "Discrete" or "Persistent".
<b>alarmid</b>	Returns the unique alarm id number assigned to the last alarm generated by the MO.
<b>alarmmsg</b>	Returns the last alarm message generated by the MO.
<b>alarmmsg2</b>	Returns the second level alarm message last generated by the MO.
<b>alarmtext</b>	Returns the alarm message template defined for the MO.
<b>lastaction</b>	Returns the date and time of the last update to the MO.

<b>lastscan</b>	Returns the date and time of the last scan of the MO.
<b>alarmcount</b>	Returns the number of alarms experienced by the MO.
<b>scancount</b>	Returns the number of times the MO has been scanned.
<b>lastalarmstart</b>	Returns the date and time of the start of the last alarm experienced by the MO.
<b>lastalarmend</b>	Returns the date and time of the end of the last alarm experienced by the MO.

Each Monitored object exposes additional attributes as listed below.

#### **Bandwidth**

These are the monitored object level attributes:

<b>Attribute</b>	<b>Description</b>
<b>system</b>	Returns the target system.
<b>community</b>	Returns the SNMP community string.
<b>interfaces</b>	Returns the number of network interfaces defined.

For each interface object defined, attributes may be retrieved using the special syntax shown here:

**ifenabled = SG.MOGet("interface=1:enabled")**

The interface=n syntax indicates which interface object to retrieve the attribute for. The attributes for an Interface object are:

<b>Attribute</b>	<b>Description</b>
<b>index</b>	Returns the interface index number.
<b>enabled</b>	Returns the enabled for monitoring flag (true/false as string).
<b>desc</b>	Returns the interface description string.
<b>inthreshold</b>	Returns alarm threshold value for input.
<b>inpct</b>	Returns true if threshold is a percent.
<b>outthreshold</b>	Returns alarm threshold value for output.
<b>outpct</b>	Returns True if threshold is a percent.
<b>status</b>	Returns last interface status. 1 = up, 2 = down.
<b>speed</b>	Returns actual speed of the interface in bits per second.
<b>lastinoctets</b>	Returns the last input byte count from the interface.



<b>lastinerrors</b>	Returns the last input error count from the interface.
<b>lastindiscards</b>	Returns the last input discard count from the interface.
<b>lastinbps</b>	Returns the last input bandwidth used in bits per second for the last scan interval.
<b>lastoutoctets</b>	Returns the last output byte count from the interface.
<b>lastoutererrors</b>	Returns the last output error count from the interface.
<b>lastoutdiscards</b>	Returns the last output discard count from the interface.
<b>lastoutbps</b>	Returns the output bandwidth used in bits per second for the last scan interval.

**Event Log**

<b>Attribute</b>	<b>Description</b>
<b>eventlogtype</b>	Returns the event log type. "System", "Security" or "Application".
<b>eventrecord</b>	Returns the event log record as a formatted string.
<b>systemname</b>	Returns the name of the system where the event log is located.
<b>GetEventRecObj</b>	This is a standalone method that returns an object reference to an event log record object for the current event log record. Called as follows: Set evtobj = SG.GetEventRecObj

**DialUp**

<b>Attribute</b>	<b>Description</b>
<b>number</b>	Returns the phone number to be tested.
<b>timeout</b>	Returns the timeout value.
<b>laststatus</b>	Returns the status of the last dial up attempt.
<b>lastconnect</b>	Returns the date & time of last successful connection.

**Directory**

<b>Attribute</b>	<b>Description</b>
<b>dirpath</b>	Returns the directory path being monitored.
<b>alarmonsize</b>	Returns the alarm on size flag (true/false as string).
<b>alarmonsizechange</b>	Returns the alarm on size change flag.
<b>size</b>	Returns size threshold value.

<b>sizeop</b>	Returns size relative operator .
<b>lastsize</b>	Returns the last size value of the directory.
<b>alarmonfiles</b>	Returns the alarm on file count flag.
<b>alarmonfileschange</b>	Returns the alarm on file count change flag.
<b>files</b>	Returns the file count threshold value.
<b>filesop</b>	Returns the file count relative operator.
<b>lastcount</b>	Returns the last file count of the directory.

**Disk File Scan**

<b>Attribute</b>	<b>Description</b>
<b>record</b>	Returns the disk file record as a string.
<b>filename</b>	Returns the disk file name.
<b>sizeop</b>	Returns the file size comparison operator.
<b>sizeval</b>	Returns the file size comparison value in bytes.
<b>lastsize</b>	Returns the last retrieved actual file size in bytes.

**Disk Space**

These are the monitored object level attributes:

<b>Attribute</b>	<b>Description</b>
<b>sysname</b>	Returns the target system.
<b>volumes</b>	Returns the number of disk volume objects defined.

For each Volume object defined, attributes may be retrieved using the special syntax shown here:

**volname = SG.MOGet("volume=1:name")**

The volume=n syntax indicates which Volume object to retrieve the attribute for. The attributes for a Volume object are:

<b>Attribute</b>	<b>Description</b>
<b>name</b>	Returns the volume name.
<b>label</b>	Returns the volume label.
<b>fs</b>	Returns the name of the volume's file system.

<b>size</b>	Returns total size of the volume in bytes.
<b>free</b>	Returns the current actual free bytes for the volume.
<b>pctfree</b>	Returns the current percent of free space for the volume.
<b>enabled</b>	Returns the "True" if the volume is enabled for scanning, "False" if not.
<b>lasterror</b>	Returns last error description encountered checking the volume.
<b>alarm</b>	Returns "True" or "False". True if the volume object is in the alarm state.
<b>thresholdtype</b>	Returns the threshold measurement type. Blank for actual bytes, "PCT" for percent free.
<b>threshold</b>	Returns the threshold value.

**DNS Check**

<b>Attribute</b>	<b>Description</b>
<b>request</b>	Returns the request string sent to the DNS server.
<b>replytest</b>	Returns the expect reply string.
<b>reply</b>	Returns the last reply string received from the server.
<b>server1</b>	Returns DNS server address.
<b>server2</b>	Returns DNS server address.
<b>server3</b>	Returns DNS server address.
<b>lasterror</b>	Returns the last error message generated by the MO.
<b>timeout</b>	Returns the time out value.
<b>retry</b>	Returns the number of retries value.

**Email Check**

<b>Attribute</b>	<b>Description</b>
<b>server</b>	Returns the mail server name/ip address.
<b>protocol</b>	Returns the mail protocol, "POP3" or "MAPI".
<b>username</b>	Returns the mail server login user name.
<b>password</b>	Returns the mail server login password.

<b>examinesubject</b>	Returns "true" or "false".
<b>examinebody</b>	Returns "true" or "false".
<b>alarmanymessage</b>	Returns "true" or "false".
<b>deleteallmessages</b>	Returns "true" or "false".
<b>deletealarmmessages</b>	Returns "true" or "false".
<b>subject</b>	Returns the mail message subject.
<b>body</b>	Returns the mail message body.
<b>from</b>	Returns the mail message FROM field.
<b>date</b>	Returns the date the mail message was created.
<b>sender</b>	Returns the mail message SENDER field.
<b>replyto</b>	Returns the mail message REPLYTO field.
<b>to</b>	Returns the mail message TO field.
<b>cc</b>	Returns the mail message CC field.
<b>mailer</b>	Returns the mail message MAILER field.
<b>organization</b>	Returns the mail message ORGANIZATION field.
<b>priority</b>	Returns the mail message PRIORITY field.

<b>Email Ping Attribute</b>	<b>Description</b>
<b>server</b>	Returns the mail server name/ip address.
<b>protocol</b>	Returns the mail protocol, "POP3" or "MAPI".
<b>username</b>	Returns the mail server login user name.
<b>password</b>	Returns the mail server login password.
<b>recipient</b>	Returns recipient of the mail ping message.
<b>timeout</b>	Returns the mail ping timeout value.
<b>date</b>	Returns the mail message create date.

**Ping**

<b>Attribute</b>	<b>Description</b>
<b>name</b>	Returns the name or address assigned by the user.
<b>address</b>	Returns ip address resolved if the user assigns a name instead of address.

**NT/2000/XP System**

<b>Attribute</b>	<b>Description</b>
<b>system</b>	Returns the monitored system's name.

**NetWare Server**

<b>Attribute</b>	<b>Description</b>
<b>server</b>	Returns the monitored NeWare server's name.
<b>providertype</b>	Returns name of the network provider module used to reach the NetWare server.

**FTPGet**

<b>Attribute</b>	<b>Description</b>
<b>hostname</b>	Returns the host system name.
<b>username</b>	Returns the user name that will be used to login to the host system.
<b>hostdir</b>	Returns the directory where the target file will be retrieved from the host system.
<b>hostfile</b>	Returns the file name that will be retrieved from the host system.
<b>localdir</b>	Returns the local directory into which the retrieved file will be placed.
<b>localfile</b>	Returns file name that will be assigned to the retrieved file.

**Service**

<b>Attribute</b>	<b>Description</b>
<b>system</b>	Returns the system name where the service is located.
<b>service</b>	Returns the service's unique name.
<b>displayname</b>	Returns the service's long display name.
<b>laststate</b>	Returns the last state code retrieved from the service.
<b>lastwin32exitcode</b>	If the service is terminated, returns the Win32 exit code.
<b>lastserviceexitcode</b>	If the service is terminated, returns the exit code set by the

service.

### **Performance Query**

These are the query level attributes:

<b>Attribute</b>	<b>Description</b>
<b>system</b>	Returns the target system.
<b>counters</b>	Returns the number of performance counters contained in the query.

For each Counter object contained in the query, attributes may be retrieved using the special syntax shown here:

**snmpoid = SG.MOGet("counter=2:oid")**

The counter=n syntax indicates which Counter object to retrieve the attribute for. The attributes for a Counter object are:

<b>Attribute</b>	<b>Description</b>
<b>path</b>	Returns the Counter Path for the counter.
<b>name</b>	Returns the Counter name without path.
<b>desc</b>	Returns a formatted description of the Counter object including name, relop and the current and test values.
<b>descp</b>	Returns same as desc but includes full counter path.
<b>currval</b>	Returns the last value retrieved from the target system for the Counter object.
<b>testval</b>	Returns the test value defined for the Counter object.
<b>relop</b>	Returns the relative operator used to compare the current value of the Counter object on the target system to the test value to determine if an alarm condition exists.
<b>alarm</b>	Returns "True" or "False". True if the Counter object is in the alarm state.
<b>lasttest</b>	Returns the date and time that the target system was queried and the Counter object's current value was compared with the test value.

### **Room Alert**

<b>Attribute</b>	<b>Description</b>
<b>sensortype</b>	Returns the sensor type label.
<b>sensornumber</b>	Returns the sensor number on the Room Alert device .

<b>normalsignal</b>	Returns the normal signal level (HI or LO) for the sensor.
<b>comport</b>	Returns the com port the Room Alert device is attached to.

**Syslog**

<b>Attribute</b>	<b>Description</b>
<b>sender</b>	Returns the system that last sent a syslog message.
<b>msg</b>	Returns the text of the last syslog message.
<b>facility</b>	Returns the facility code from the last syslog message.
<b>level</b>	Returns the message severity level from the last system message.

**SNMP Trap**

<b>Attribute</b>	<b>Description</b>
<b>traptext</b>	Returns the trap message as a formatted string.

**SNMP Query**

These are the query level attributes:

<b>Attribute</b>	<b>Description</b>
<b>system</b>	Returns the target system.
<b>community</b>	Returns the SNMP community name.
<b>objects</b>	Returns the number of MIB objects contained in the query.

For each MIB object contained in the query, the following attributes may be retrieved using the special syntax shown here:

**snmpoid = SG.MOGet("object=2:oid")**

The object=n syntax indicates which MIB object to retrieve the attribute for. The attributes for a MIB object are:

<b>Attribute</b>	<b>Description</b>
<b>oid</b>	Returns the MIB object's SNMP object id.
<b>name</b>	Returns the MIB object's name.
<b>desc</b>	Returns a formatted description of the MIB object including the current state of the object.
<b>datatype</b>	Returns the SNMP data type of the MIB object.
<b>currval</b>	Returns the last value retrieved from the target system's MIB for the MIB object.

<b>testval</b>	Returns the test value defined for the MIB object.
<b>relop</b>	Returns the relative operator used to compare the current value of the MIB object on the target system to the test value to determine if an alarm condition exists.
<b>alarm</b>	Returns "True" or "False". True if the MIB object is in the alarm state.
<b>lasttest</b>	Returns the date and time that the target system was queried and the MIB object's current value was compared with the test value.

**Task**

<b>Attribute</b>	<b>Description</b>
<b>filename</b>	Returns the Task file name.
<b>language</b>	Returns the task file language.

**Web Page**

<b>Attribute</b>	<b>Description</b>
<b>errortext</b>	Returns the text of the last error encountered while downloading the target web page.

**Win32 Process**

These are the query level attributes:

<b>Attribute</b>	<b>Description</b>
<b>system</b>	Returns the target system.
<b>processes</b>	Returns the number of process objects that are defined for the MO.

For each process object contained in the query, attributes may be retrieved using the special syntax shown here:

**proc = SG.MOGet("process=2:name")**

The process=n syntax indicates which process object to retrieve the attribute for. The attributes for a process object are:

<b>Attribute</b>	<b>Description</b>
<b>name</b>	Returns the process name.
<b>status</b>	Returns the processes current status. Either "OK" or description of current process alarm.
<b>alarm</b>	Returns "True" or "False". True if the process object is in the alarm state.



<b>alarmcount</b>	Returns the number of alarms detected for the process object for the current alarm episode.
<b>alarmtotal</b>	Returns the total number of alarms detected for the process object since scanning was started.
<b>lastalarmstart</b>	Returns the date and time of the start of the current alarm episode for the process object.
<b>lastalarmend</b>	Returns the date and time of the end of the last alarm episode for the process object.
<b>lasttest</b>	Returns the date and time that the target system was queried and the process object was checked.

### **WMI Query**

These are the query level attributes:

<b>Attribute</b>	<b>Description</b>
<b>system</b>	Returns the target system.
<b>objects</b>	Returns the number of WMI objects (properties) that are defined for the query.

For each WMI object contained in the query, attributes may be retrieved using the special syntax shown here:

**wmipath = SG.MOGet("object=2:classpath")**

The object=n syntax indicates which WMI object to retrieve the attribute for. The attributes for a WMI object are:

<b>Attribute</b>	<b>Description</b>
<b>classpath</b>	Returns the object's Class Path. This is the class name, property name, key name and key value that uniquely defines the object instance and property identified by the object.
<b>class</b>	Returns the object's WMI class name only.
<b>key</b>	Returns the name of the object property used as a key to an instance of the object.
<b>keyvalue</b>	Returns the key value used to select an instance of the object.
<b>propertyname</b>	Returns the object property name being returned for testing.
<b>object</b>	Returns a formatted description of the WMI object property including name, relop and the current and test values.
<b>objectp</b>	Returns same as object but includes full WMI object path.
<b>currval</b>	Returns the last value retrieved from the target system for the

	WMI object property.
<b>curvalvalid</b>	Returns "true" if the current value was successfully retrieved on the last scan of the MO. "false" if there was an error retrieving the WMI object property value.
<b>testval</b>	Returns the test value defined for the WMI object property.
<b>relop</b>	Returns the relative operator used to compare the current value of the WMI object property on the target system to the test value to determine if an alarm condition exists.
<b>alarm</b>	Returns "True" or "False". True if the WMI object is in the alarm state.
<b>alarmcount</b>	Returns the number of alarms detected for the WMI object property for the current alarm episode.
<b>alarmtotal</b>	Returns the total number of alarms detected for the WMI object property since scanning was started.
<b>lastalarmstart</b>	Returns the date and time of the start of the current alarm episode for the WMI object property.
<b>lastalarmend</b>	Returns the date and time of the end of the last alarm episode for the WMI object property.
<b>lasttest</b>	Returns the date and time that the target system was queried and the WMI object property's current value was compared with the test value.

## Schedule Object Change

This screen is used to update the scan/execution schedule for a Monitored Object or globally.

Monitored objects are normally executed or scanned on each scan interval. You can attach a Schedule to a Monitored Object to further control when the object will be scanned. You can also define a global Schedule. If a global schedule exists and the monitored object passes that schedule, any schedule defined at the monitored object level is then applied.

**Schedule Add/Change for Ping: 161.208.12.15**

**Check Schedule**  
☐ Never ☐ One Time ☒ Every Scan

**Minimum Scan Period**  
 Seconds  Intervals

Only on day(s) of week:  
M T W T F S S  
☐ ☐ ☐ ☐ ☐ ☐ ☐

Only on day(s) of month:  
1 2 3 4 5 6 7 8 9 10  
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐  
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐  
☐ ☐ Last Day

Only in these time ranges:  

Start	End

Add/edit time range

Depends on these objects: **Add**

Object Type	Identifier
TCP Services	161.208.12.21

**OK** **Cancel** **Clear**

Schedule is checked for each scan of Monitored Object and scan is performed subject to the rest of the schedule setting

**Never**

When this option is selected, the schedule criteria are not applied and the Monitored Object is scanned on each scanned interval.

**One Time**

When this option is checked, the MO will be scanned one time during the current scanning run. When that single scan occurs can be controlled by selecting other scheduling options.

**Every Scan**

When this option is checked, the schedule will be checked on every scan of the Monitored Object.

You must select Never, One Time or Every Scan. When One Time or Every Scan is selected, the MO is considered scheduled to be scanned unless disqualified by any of the other settings. If you configure a schedule, you can select Never to disable (but retain) the schedule. If you click the **Clear button** and then click OK, the schedule will be completely deleted.

**Seconds**

When scanning an MO more than once, scan only when this number of seconds has elapsed since the last scan of the MO.

**Intervals**

When scanning an MO more than once, scan only when this number of scanning runs have elapsed since the last scan of the MO.

**Only on Days of Week**

Only scan the MO on the selected days of the week.

**Only on Days of Month**

Only scan the MO on the selected days of the month.

**Only in These Time Ranges**

Only scan the MO if the current time falls into any of the time ranges defined. You add a time range by typing the range in the box below the list. Enter a starting time, starting time "to" ending time or "to" ending time to create time ranges. To delete a range, click on it and press the DEL key.

**Depends on These Monitored Objects**

You can defer the scanning of the MO if any other selected MO is in the alarm state. Click **Add** to add MOs to the Dependency list. Select an MO and press the **DEL** key to delete an MO from the list. Monitored Object dependancy is not allowed on global Schedules.

**Notes**

When a schedule is checked for execution (One Time or Every Scan), each scheduling option is checked and if none of the defined options disqualifies execution, the MO will be scanned. For example:

If you check repeating every 360 seconds, on Tuesday, on the 5th of the month during the hours of 8 AM to 5 PM...

The MO will be scanned every hour (approximate since scans are triggered by the global scan timer) only if it is the 5th day of the month and that day is Tuesday and the current time is between 7:59 AM and 5:00 PM.

## Room Alert Object Add/Change

This screen is used to add or change a Room Alert object . The Room Alert object monitors a Room Alert™ environment monitoring device attached to the local system.

Room Alert™ is a hardware device that interfaces a variety of environmental sensors (such as temperature, water, smoke, power, etc) to a COM port on the local system. PageR can monitor the Room Alert hardware device (called an ID box) via the COM port and generate alarms when abnormal environmental conditions are detected. Room Alert and environmental sensors are available from CPL Systems.

**Room Alert Monitored Object Add/Change**

Identifier  ☒ Enabled

Description

Interval  Severity  Delay

Com Port  Sensor Number  Normal signal

Sensor Type  ☐ Simulate RA Alarm

**Alarm Notification**

Alarm Object

Alarm Text

Identifying name for Monitored Object

**Identifier**

This is a short user defined label used to identify this Room Alert object.

**Description**

This is an optional description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Interval**

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Com Port**

Select the COM port that the Room Alert device is attached to.

**Sensor Number**

Each Room Alert device supports 4 sensors. Select the sensor (number) that is to be monitored.

**Normal Signal**

Set the signal level (LO or HI) that is returned by the attached sensor for NORMAL conditions.

**Sensor Type**

Select or type a descriptive label that identifies the attached sensor.

**Simulate RA Alarm**

Check this box to test the MO without a Room Alert device attached to the system. Alarms are simulated and cleared on alternating scans of this MO.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[DESC]	expands to the monitored object's long description.
[SENSORTYPE]	expands to the sensor type label.
[SENSORNUMBER ]	expands to the sensor number.
[NORMALSIGNAL]	expands to LO or HI, the normal signal value.
[COMPORT]	expands to the com port for the Room Alert device.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.
[TIME]	expands to the current time.
[DATE]	expands to the current date.
[AGENT]	expands to the the application name of "PageR".

**[SYSTEM]** expands to the name of this system.

## TCP Services Object Add/Change

This screen is used to add or change a list of TCP Services which will be monitored on a selected system.

The screenshot shows a dialog box titled "TCP Services Object Add/Change". It contains several fields and lists for configuring a monitored TCP service.

- Description:** A text field containing "Basic TCP services".
- Enabled:** A checkbox that is checked.
- Interval:** A numeric field set to 0.
- Severity:** A dropdown menu set to 9.
- Delay:** A numeric field set to 0.
- Schedule:** A button.
- System:** A text field containing "161.208.12.21" and a browse button (...).
- Time Out:** A numeric field set to 5.
- Available TCP Services:** A list box containing: 3COM-TSMUX (106), AUTH (113), BACKUP-EXPRESS (6123), BFTP (152), BGP (179), BOOTPS (67), and BTRIEVE (3351).
- Monitored TCP Services:** A list box containing: FTP (21), HTTP (80), and SMTP (25).
- Add >>:** A button between the two lists.
- Remove:** A button between the two lists.
- Extension Script File:** A text field with a browse button (...).
- Extension Script Parameters:** A text field.
- Alarm Notification:** A section containing:
  - Alarm Object:** A dropdown menu.
  - Alarm Text:** A text field containing "[TYPE] on [IDX]: \p[SVCNAME] not responding".
- OK:** A button.
- Cancel:** A button.
- Optional description of monitored object:** A text area at the bottom.

### Description

This is an optional description of the monitored object .

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or



global interval.

**System**

Enter/select the host name or IP address of the system on which TCP Services will be monitored.

**Time Out**

This is the number of seconds to wait for a connection response from a TCP Service before posting an alarm.

**Available TCP Services**

This is a list of known TCP Services. For each service, the name by which it is known and the TCP port number it is assigned to are shown. You may add your own services to this list by placing a list of those services into a disk file called **LocalTcpSvcs.txt** in the install directory. The format of this file should follow the format of TcpSvcs.txt. Do not change TcpSvcs.txt.

**Monitored TCP Services**

This is the list of the TCP Services selected to be monitored. You may add services by selecting them in the Available Services box and clicking **Add**. You may remove services by selecting them and clicking **Remove**.

**Extension Script File**

This field identifies a VBScript file that will be executed for a particular service once a connection to the service has been established. Click on a service in the Monitored TCP Services list to see the script file assigned to a service. See below for more information.

**Extension Script Parameters**

This field contains any parameters to be passed to the extension script (if any) for a service.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string, the name or IP address of the target system.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.

- [SVCNAME]** expands to the name and port number of the TCP Service that has failed testing.
- [SVCERROR]** expands to a description of the error when a service fails testing.
- [TIME]** expands to the current time.
- [DATE]** expands to the current date.
- [AGENT]** expands to the the application name of "PageR".
- [SYSTEM]** expands to the name of this system.

### Notes

This monitored object verifies TCP Service availability by attempting to connect to each service selected on the identified system. Any failed connection will generate an alarm.

You can extend TCP Service checking by associating a script file with a service. When a service is selected in the Monitored Services List, you can set the script file and any require parameters and this information will be retained for the service. Sample scripts are provided in the **\Scripts\Samples** directory.

The purpose of extension scripts is to allow the user to program service checking beyond simply establishing a connection. If a service has a script file defined, once a connection to the service has been established, the script will be executed and the socket connection to the service is exposed to the script in the socket object. This allows the script to communicate with the service. The script can then make whatever tests of the service are appropriate.

The samples include a simple example that tests the TCP **Echo** (port 7) service by simply sending data to the port and reading back the echo (**TcpEchoCheck.txt**). A much more extensive example is provided for the **DNS** (port 53) service. This script will take a domain name and expected IP address from the parameters field and perform an actual DNS name resolution (**TcpDnsCheck.txt**).

## Failsafe Server Object Add/Change

This screen is used to add or change a Failsafe Server™ object . The Failsafe Server object monitors the environment monitoring port of the Failsafe Server attached to the local system.

The Failsafe Server™ is a hardware device that interfaces to a variety of environmental sensors (such as temperature, water, smoke, power, etc). PageR can communicate with the Failsafe Server via a COM port on the local system. PageR can then generate alarms when abnormal environmental conditions are detected by the server. The Failsafe Server and environmental sensors are available from CPL Systems.

The screenshot shows a Windows-style dialog box titled "Failsafe Server Monitored Object Add/Change". It contains several input fields and controls:

- Identifier:** A text box containing "Compuer Room" (note the typo).
- Enabled:** A checkbox that is checked, labeled "Enabled".
- Description:** A text box containing "Monitor Computer Room Temperature".
- Interval:** A numeric spin box set to "0".
- Severity:** A dropdown menu set to "9".
- Delay:** A numeric spin box set to "0".
- Schedule:** A button.
- Com Port:** A dropdown menu set to "1".
- Sensor Number:** A dropdown menu set to "1".
- Normal signal:** A dropdown menu set to "LO".
- Sensor Type:** A dropdown menu set to "TEMPERATURE".
- Simulate FS Alarm:** An unchecked checkbox.
- Alarm Notification:** A section containing:
  - Alarm Object:** A dropdown menu.
  - Alarm Text:** A text box.
- Buttons:** "OK" and "Cancel" buttons.
- Footer:** A label "Identifying name for Monitored Object".

### Identifier

This is a short user defined label used to identify this monitored object.

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on

this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Com Port**

Select the COM port that the Failsafe Server is attached to.

**Sensor Number**

Each Failsafe Server supports 5 sensors. Select the sensor (number) that is to be monitored.

**Normal Signal**

Set the signal level (LO or HI) that is returned by the attached sensor for NORMAL conditions.

**Sensor Type**

Select or type a descriptive label that identifies the attached sensor.

**Simulate FS Alarm**

Check this box to test the MO without a Failsafe Server attached to the system. Alarms are simulated and cleared on alternating scans of this MO.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[DESC]	expands to the monitored object's long description.
[SENSORTYPE]	expands to the sensor type label.
[SENSORNUMBER]	expands to the sensor number.
[NORMALSIGNAL]	expands to LO or HI, the normal signal value.
[COMPORT]	expands to the com port for the Failsafe Server.

<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

**Notes**

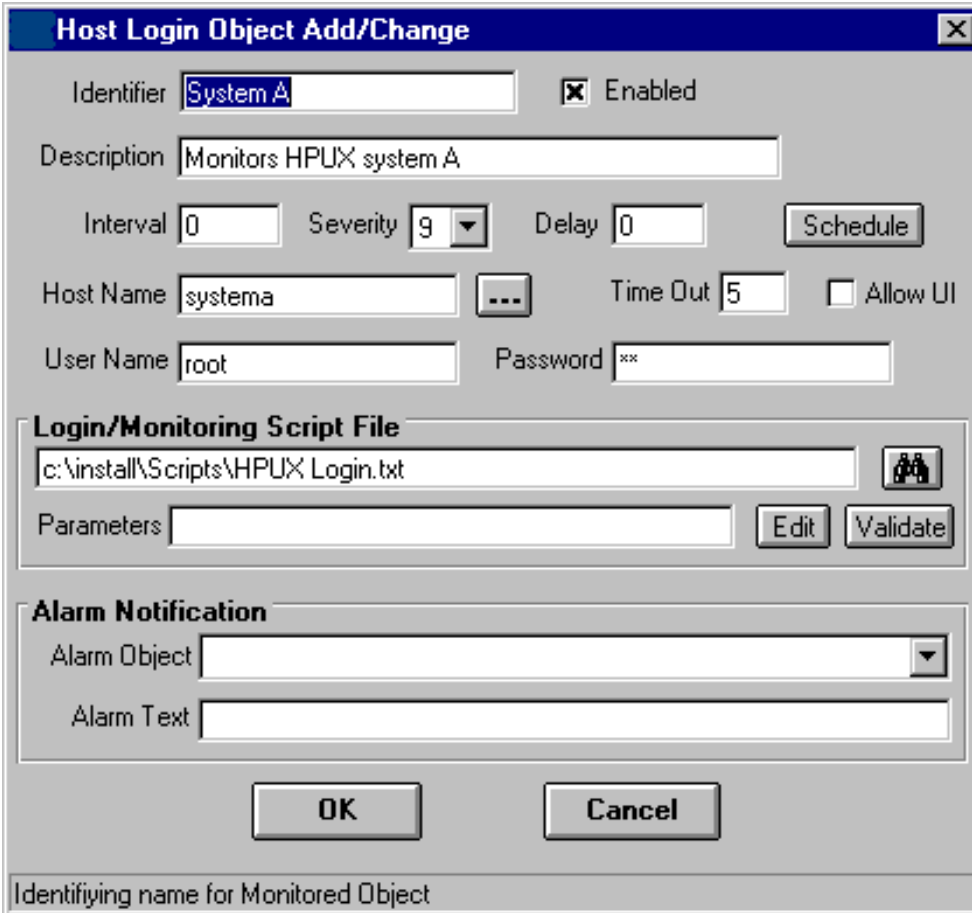
To use this monitored object, you must set the Paging Options Tab fields shown below as indicated:

Set the Device Type to **SERVER**  
Set the Data Bits to **8**  
Set the Stop Bits to **1**  
Set the Speed to **9600**  
Set the Parity to **NONE**

You do not have to enable paging to use this object.

## Host Login Object Add/Change

This screen is used to add or change Host Login Monitored Objects. Host Login objects can be used to perform host system availability checking and monitoring.



The dialog box is titled "Host Login Object Add/Change". It contains several fields and controls:

- Identifier:** A text field containing "System A".
- Enabled:** A checkbox that is checked.
- Description:** A text field containing "Monitors HPUX system A".
- Interval:** A text field containing "0".
- Severity:** A dropdown menu showing "9".
- Delay:** A text field containing "0".
- Schedule:** A button.
- Host Name:** A text field containing "systema" and a browse button (...).
- Time Out:** A text field containing "5".
- Allow UI:** An unchecked checkbox.
- User Name:** A text field containing "root".
- Password:** A text field containing "xx".
- Login/Monitoring Script File:** A text field containing "c:\install\Scripts\HPUX Login.txt" and a browse button (icon of two people).
- Parameters:** A text field.
- Edit:** A button.
- Validate:** A button.
- Alarm Notification:** A section containing:
  - Alarm Object:** A dropdown menu.
  - Alarm Text:** A text field.
- OK:** A button.
- Cancel:** A button.
- Identifying name for Monitored Object:** A label at the bottom.

### Identifier

This is a short label that is used to identify this object .

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude the object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time (seconds) that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Time Out**

This is the time out used on communications with the host system. Zero sets no time out.

**Allow UI**

Check this box to allow scripts run by this MO to display user interface elements, such as message boxes. Note: If you allow user interface elements and set a timeout, if the script times out, a message box is displayed by the script engine notifying the user of the timeout and the user must click OK to continue execution. PageR will be stopped until this message box is cleared. Also note that user interface elements are never allowed when PageR is running as a Service .

**Host Name**

This is the name or IP address of the host system to be logged on to. You may click the explore button to select a host from the hosts file or scan the network for systems.

**User Name**

This is the user name on the host system that will be used to log on to the host system. A fully privileged user is recommended.

**Password**

This is the password for the user name specified above.

**Login/Monitoring Script File**

This is the disk file that contains the login script to be performed. The script file contains a script written in VBScript that performs the host login, logout and optional monitoring. See the notes section below for more details on this script. You may click the Explore button to browse for the file.

**Parameters**

Enter any parameter data you want passed to the script. Parameters are delimited by space, comma or semi-colon characters. Parameters with embedded spaces can be enclosed in quotes. Substitution parameters will be replaced by their actual values before being passed. The actual parameters used are dictated by the requirements of the script file selected. See the notes section below for more details.

**Edit**

Click this button to launch Notepad to edit the named script file or create a new script file. If you create a new file, you will need to assign a name to it when you save it and then enter that name in the script file box.

**Validate**

You may click this button to perform a static validation of the script's syntax. Any errors found will be displayed with the line and column where the error was found in the script file.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be expanded to their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID] or [IDX]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[HOST]</b>	expands to the host name.
<b>[USER]</b>	expands to the user name.
<b>[SCRIPTFILE]</b>	expands to the script file name.
<b>[INTERVAL]</b>	expands to the Interval seconds.
<b>[DELAY]</b>	expands to the Delay seconds.
<b>[SEVERITY]</b>	expands to the Severity value.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

#### Notes

The Host Login Monitored Object provides availability checking and monitoring functions. The actual login and logout, and any monitoring functions are performed by the Login/Monitoring script. This is a VBScript script designed to login to the host system, perform optional monitoring tasks and then logout.

When the Host Login MO is scanned, it executes the **Login()** routine in the script. That function performs the login to the host, typically using the Telnet protocol provided by a custom control (OCX). Successfully logging in to the host system confirms its availability. If the login is successful, the MO then calls the **Monitor()** routine in the script. If monitoring functions are defined in the script, they will be performed and appropriate alarms, if any, generated. Finally, the MO calls the **Logout()** routine in the script to close the connection to the host.

Sample scripts are provided for popular host systems in the **\Scripts\Samples** directory. These scripts must be edited by the user to tailor them to each host environment. For



instance, the login prompt, user name prompt, password prompt and command prompt employed by the target host must be defined in the script. Sometimes, due to special circumstances or optional security programs, the scripts must be customized to respond correctly to host prompts and complete the login.

Each sample script contains basic monitoring functions applicable to the host system. These functions are commented out. The user must uncomment any desired functions and customize parameters as needed. Additionally, the user is free to modify or expand the script capabilities, following the pattern of host communication shown in the samples.

Any script selected from the \Scripts\Samples directory is saved into the Scripts to preserve the samples in their original state.

### Special Script Functions

When the Login script is executed, information from PageR is exposed to the script. A special object called **SG** (script globals) is available in the script. This object has many properties and methods that a script can use to obtain information about PageR and to control PageR's operation.

For more information see Using Scripts

### Notice

To use Login scripts (VBScript), you must install the **Windows Scripting Host** from Microsoft. WSH is typically installed with Internet Explorer but is also available for download from the Microsoft web site. See [www.microsoft.com/scripting](http://www.microsoft.com/scripting) for downloads and documentation.

## Room Alert PLUS Object Add/Change

This screen is used to add or change a Room Alert PLUS object . The Room Alert PLUS object monitors a Room Alert PLUS™ environment monitoring device attached to the local system.

Room Alert PLUS™ is a hardware device that interfaces a variety of environmental sensors (such as temperature, water, smoke, power, etc) to a COM port on the local system. PageR can monitor the Room Alert PLUS hardware device via the COM port and generate alarms when abnormal environmental conditions are detected. Room Alert PLUS device and environmental sensors are available from CPL Systems.

**Room Alert PLUS Monitored Object Add/Change**

Identifier  ☒ Enabled

Description

Interval  Severity  Delay

Com Port  Sensor Number  Normal signal

Sensor Type  ☐ Simulate RA+ Alarm

**Built in sensors**

☐ Flood ☒ Main Power ☒ Power 2 ☒ Dead Box

**Alarm Notification**

Alarm Object

Alarm Text

Identifying name for Monitored Object

### Identifier

This is a short user defined label used to identify this Room Alert PLUS object.

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Com Port**

Select the COM port that the Room Alert device is attached to.

**Sensor Number**

Each Room Alert device supports 3 user sensors. Select the sensor (number) that is to be monitored.

**Normal Signal**

Set the signal level (LO or HI) that is returned by the attached sensor for NORMAL conditions.

**Sensor Type**

Select or type a descriptive label that identifies the attached sensor.

**Simulate RA+ Alarm**

Check this box to test the MO without a Room Alert PLUS device attached to the system. Alarms are simulated and cleared on alternating scans of this MO.

**Flood**

Check this box to enable monitoring of the built-in flood sensor. Flood sensor pick up must be wired to the Flood sensor contacts on the Room Alert PLUS device.

**Main Power**

Check this box to enable monitoring of the power supply to the Room Alert PLUS device.

**Power 2**

Check this box to enable monitoring of the alternate power supply. Typically, the Main Power sensor monitors output from a UPS system, and power 2 monitors the power input to the UPS. This way if there is loss of power to the UPS, you can be alerted that the UPS is active and you have x minutes of power left.

**Dead Box**

Check this box to monitor for loss of Main Power and battery backup or for disconnection of box from local system.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the

default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[SENSORTYPE]</b>	expands to the sensor type label.
<b>[SENSORNUMBER]</b>	expands to the sensor number.
<b>[NORMALSIGNAL]</b>	expands to LO or HI, the normal signal value.
<b>[COMPORT]</b>	expands to the com port for the Room Alert device.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

## Email Check Object Add/Change

This screen is used to add or change an Email Check Monitored Object. Email Check Objects read email messages and scan the message content, generating alarms when defined search strings are found.

**Email Check Monitored Object Add/Change**

Identifier:  ☒ Enabled

Description:

Severity:  Delay:

POP3 ☒ Mail Server:

MAPI ☐ User Name:  Password:

Recipient:

☐ Alarm any message ☒ Examine Subject ☒ Examine Body

☐ Delete all messages ☒ Delete alarm msgs ☐ Paging Mode

Apply Search Strings/File/Script to mail messages and report matches:

**Alarm Notification**

Alarm Object:

Alarm Text:

Unique Identifier (name) for this object

### Identifier

This is a unique identifying name or title for the monitored object.

### Description

This is an optional extended description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm

notification is performed. This should be equal to or greater than a multiple of the object or global interval .

**POP3/MAPI**

Select the mail protocol to use to attach to the mail server where the messages to be examined reside.

**Mail Server**

Enter the name or IP address of the mail server where the messages to be examined reside.

**User Name**

Enter the user name used to logon to the mail server and retrieve mail.

**Password**

Enter the password for the user name entered in the previous field.

**Recipient**

Only messages addressed to this email address will be examined.

**Alarm Any Message**

Generate an alarm when any mail message is found.

**Examine Subject**

Examine the subject of mail messages for the search strings.

**Examine Body**

Examine the body of mail messages for the search strings.

**Delete All Messages**

Delete all mail messages found.

**Delete Alarm Messages**

Delete only mail messages that result in an alarm.

**Paging Mode**

Check this box to enable Paging Mode. In this mode, email messages selected for processing (only Recipient is considered to filter messages) are expected to have a list of Contact names in the message subject line. Contact names are separated by semicolons. The first 80 characters of the message body will be sent to each Contact via paging, per the paging options setup for the Contacts. Can be used to send pages to PageR Contacts by sending an email message to be found and processed by PageR.

**Apply Search Strings/File/script to Messages and Report Matches**

Enter a list of search strings or select a Search String/Script File to have the subject and/or body of each mail message searched for any matches to the search strings. Any match generates an alarm. More about Search Strings.

**Alarm Object**

Identifies the Alarm or Task Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm and Task Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[SERVER]</b>	expands to the name/IP address of the mail server.
<b>[SUBJECT]</b>	expands to the SUBJECT field of the mail message.
<b>[BODY]</b>	expands to the body of the mail message.
<b>[FROM]</b>	expands to the FROM field of the mail message.
<b>[SENDER]</b>	expands to the SENDER field of the mail message.
<b>[TO]</b>	expands to the TO field of the mail message.
<b>[CC]</b>	expands to the CC field of the mail message.
<b>[REPLYTO]</b>	expands to the REPLY-TO field of the mail message.
<b>[MSGID]</b>	expands to the unique mail message identifier assigned by the mail server.
<b>[MAILER]</b>	expands to the name of the mail client that created the message.
<b>[ORG]</b>	expands to the name of the organization that owns the mail server.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

## Email Ping Object Add/Change

This screen is used to add or change an Email Ping Monitored Object . Email Ping object sends a unique mail message to a mail server then tries to read that message back from the server within the allotted time. Used to monitor successful and timely mail delivery.

**Email Ping Monitored Object Add/Change**

Identifier:  ☒ Enabled

Description:

Severity:  Delay:

☒ POP3 ☐ MAPI Mail Time out:

**Outgoing Mailbox**

Mail Server:

User Name:

Password:

Recipient:

**Incoming Mailbox**

Mail Server:

User Name:

Password:

Recipient:

**Alarm Notification**

Alarm Object:

Alarm Text:

Unique Identifier (name) for this object

**Identifier**

This is a unique identifying name or title for the monitored object.

**Description**

This is an optional extended description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.



**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval .

**POP3/MAPI**

Select the mail protocol to use to send and retrieve the ping mail messages.

**Mail Timeout**

Enter the maximum time in seconds for ping mail message retrieval before an alarm is generated.

You can define separate systems for mail submission and mail delivery. This allows ping of mail relays.

**Outgoing Mail Server**

Enter the name or IP address of the POP3 (SMTP) mail server where the ping messages will be sent. Defaults to the Incoming mail server. Not used for MAPI .

**Outgoing User Name**

For POP3 (SMTP), enter the user name used to logon to the mail server to send the ping mail message (if needed). For MAPI, enter the mail client profile name that will be used to send the mail ping message.

**Outgoing Password**

Enter the password for the user/profile name entered in the previous field.

**Outgoing Recipient**

Mail address to which the ping mail message will be sent. This address must be delivered to the incoming mail box. Defaults to the Incoming Recipient.

**Incoming Mail Server**

Enter the name or IP address of the POP3 mail server where the ping messages will be read. Not used for MAPI.

**Incoming User Name**

For POP3, enter the user name used to logon to the mail server and read the ping mail message. For MAPI, enter the mail client profile name that will be used to read the ping mail message.

**Incoming Password**

Enter the password for the user/profile name entered in the previous field.

**Incoming Recipient**

Mail address from which the ping mail message will be read. This is optional.

**Alarm Object**

Identifies the Alarm or Task Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm and Task Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

### Alarm Text

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[DESC]	expands to the monitored object's long description.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.
[SERVER]	expands to the name/IP address of the mail server.
[RECIP]	expands to the recipient of the ping mail message.
[TIMEOUT]	expands to the ping timeout value.
[TIME]	expands to the current time.
[DATE]	expands to the current date.
[AGENT]	expands to the the application name of "PageR".
[SYSTEM]	expands to the name of this system.

### Event Log Record Object Attributes

These are the data attributes exposed by the Event Log Record object .

When an Event Log Monitored Object reads an event log record from It's specified Event Log, that record is stored in an Event Log Record Object. This object is available to scripts executed by the Event Log monitored object for string matching or as an Alarm Task .

To access the Event Log Record Object, a script must execute the following Script Globals method call to obtain an object reference:

**Set evtobj = SG.GetEventRecObj**

The object reference then exposes a set of data attributes that describe the event log record.

The script would access the attributes in the following manner:

```
evtdesc = evtobj.description
```

That would return the event log record's event description text in the string variable evtdesc.

The attributes are:

<b>Attribute</b>	<b>Description</b>
<b>Code</b>	Returns the event code/ID number.
<b>When</b>	Returns the date and time of the event as a string.
<b>EventType</b>	Returns the event type as a string, one of "Success", "Error", "Warning", "Informational", "Success Audit" or "Failure Audit".
<b>Category</b>	Returns event category title or "None".
<b>Source</b>	Returns the name of the module that generated the event record.
<b>Computer</b>	Returns the name of the computer on which the event record was found.
<b>User</b>	Returns the name of the user if the event was generated under a specific user's credentials or "N/A".
<b>Description</b>	Returns the formatted event description text or "description not found" if the event description cannot be located.

## Disk Space Object Add/Change

This screen is used to add or change Disk Space monitored objects.

Disk Space monitored objects check the free space on Windows (Win32) disk volumes and alarm if free space falls below a specified level.

The screenshot shows the 'Disk Space Object Add/Change' dialog box. It has a title bar with a close button. The main area contains several fields and sections:

- Description:** A text box containing 'Free space on local drives' and a checked 'Enabled' checkbox.
- Interval:** A numeric input box set to '0'.
- Severity:** A dropdown menu set to '9'.
- Delay:** A numeric input box set to '0'.
- Schedule:** A button.
- System Name:** A dropdown menu and a 'Scan volumes' button.
- Available Volumes:** A list box showing 'A: Not Ready', 'C: NT4' (selected), 'D: NT351', and 'E: W2K'.
- Volume Information:** A section showing details for the selected volume 'C:':
  - Name: C: Label: NT4
  - File System: FAT Size (MB): 2047
  - Free (MB): 144 7.0%
  - Checked 'Monitor free space' checkbox and 'Minimum Free (%)' input box set to '10%'.
- Alarm Notification:** A section with an 'Alarm Object' dropdown and an 'Alarm Text' text box.
- Buttons:** 'OK' and 'Cancel' buttons.
- Footer:** A text box labeled 'Optional description of monitored object'.

### Description

This is an optional description of the monitored object .

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Schedule**

Click to define an optional schedule for scanning of this monitored object.

**System Name**

Enter or select the name of the Windows (Win32) system on which the query will be executed. Click the scan button to search the network for systems.

**Scan Volumes**

Scans the target system for disk volumes which are displayed in the Available Volumes list. Can be used to update an existing list of volumes when changing an existing Disk Space object.

**Available Volumes**

This is a list of volumes that can be monitored on the target system. Click on a volume to display its attributes and monitoring status in the Volume Information area.

**Volume Information**

This area displays the attributes and monitoring status of the selected disk volume.

**Monitor Free Space**

Check this box to monitor the selected disk volume's free space.

**Minimum Free**

Enter the minimum free space level. Actual free space below this level will generate an Alarm. Enter an actual free space amount in bytes or as a number followed by a percent sign to set minimum percent free space.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[SYSNAME]</b>	expands to the system being monitored.
<b>[VOLNAME]</b>	expands to the disk volume name.

<b>[VOLLABEL]</b>	expands to the disk volume label.
<b>[VOLFS]</b>	expands to the disk volume file system name.
<b>[VOLSIZE]</b>	expands to the disk volume size in bytes.
<b>[VOLFREET]</b>	expands to the current disk volume free space in bytes.
<b>[THRESHTYPE ]</b>	expands to the free space threshold type, blank=actual bytes, "PCT"=percent free.
<b>[THRESHOLD]</b>	expands to the free space threshold value.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

## WMI Query Object Add/Change

This screen is used to add or change a Windows Management Instrumentation (WMI) Query monitored object .

Windows Management Instrumentation (**WMI** ) is Microsoft's Win32 platform implementation of the Web Based Enterprise Management (**WBEM**) standard. WMI defines an object space on a managed system and each WMI object maps to one or more instances of a real physical or software object on that managed system. Each WMI object has one or more data properties. The WMI Query monitored object can retrieve one or more WMI objects and their property values from a target system and test those values against specified test values and raise an alarm if the actual values are out of tolerance. WMI object properties are very similar to Performance Counters or SNMP Mib objects.

See the bottom of this page for additional important information about WMI.

**WMI Query Object Add/Change**

Identifier:

Description:  ☒ Enabled

Interval:  Severity:  Delay:

System Name:

User Name:  Password:

Object Path	Property	Type
Win32_LogicalDisk.DeviceID="C:"	FreeSpace	uint64
Win32_LogicalDisk.DeviceID="D:"	FreeSpace	uint64

Evaluation Script File:

**Alarm Notification**

Alarm Object:

Alarm Text:

Optional short name for monitored object

### Identifier

This is a short label that is used to identify this WMI Query object.

**Description**

This is an optional description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Interval**

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Schedule**

Click to define an optional schedule for scanning of this monitored object.

**System Name**

Enter or select the name or IP address of the Windows system on which the WMI query will be executed. Click the ... button to scan your network and populate the drop down list.

**User Name**

When accessing remote systems, it may be necessary to supply a user name for access to the WMI objects desired. If no user name is entered, the local user credentials under which you are executing will be used.

**Password**

If a user name is specified above, the corresponding password must be entered.

**Add**

Click to invoke the WMI Object Explorer to navigate the WMI object data base on the target system and select WMI objects to add to this query.

**Del**

Select a WMI object on the object list and click this button to delete that object from the list.

**WMI Objects Defined for this Query**

This grid list shows the WMI object properties that have been attached to the Query object. The following attributes are defined for each:

Attribute	Description
<b>Object Path</b>	This is the "path" or full name of the object including a key that selects a specific instance of the object to be retrieved.
<b>Property</b>	This is the name of the data property of the WMI object retrieved whose value is to be tested.



<b>Type</b>	This is the data type of the property.
<b>relop</b>	This is the relational operator used to compare the property value to the test value.
<b>Value</b>	This is the test value. The property value is compared to this value to determine if an alarm is to be generated. If " <b>propertyvalue relop testvalue</b> " is true, an alarm is generated. The test value may be numeric or string.
<b>On Error</b>	Controls what happens if an error occurs while retrieving the property value. Can be one of: <b>Ignore</b> = ignore the error, skip the property <b>Alarm</b> = generate an alarm indicating that the property could not be retrieved.
<b>Alarm Mode</b>	Controls when alarms are generated for a "true" comparison of the property value and test value. Can be one of: <b>Each Time</b> = generate an alarm on each scan that the comparison is "true". <b>Average</b> = generate an alarm when the average of the property value, over some number of consecutive scans, compares "true" to the test value. The number of scans over which to average is set in Mode Value. <b>Persistent</b> = generate an alarm when the property value compares "true" to the test value, for some number of consecutive scans. The number of scans is set in Mode Value.
<b>Mode Value</b>	Sets the number of scans to average counter values on <b>Average</b> Alarm mode or the number of scans of consecutive "true" comparison of values on <b>Persistent</b> Alarm Mode.

You can use the scroll bar to shift the columns left and right. To change a field, left click on it and you will be presented with a drop down menu of choices for the field or a box in which to enter numeric values.

### Evaluation Script File

Normally, this MO retrieves the WMI object property values and then does the threshold checking as defined for each object property. As an alternative, you can specify a file name containing VB script that will be executed to evaluate the object properties. In this mode, the object properties are retrieved but no threshold processing is done. Instead, the named script file is executed. That script can access all of the attributes for the WMI Query MO and the WMI object property attributes and current values. Thus, you can write your own evaluation code for the object properties. There is an example script in **\Scripts\Samples\WMITest.txt**.

### Alarm Object

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

### Alarm Text

When an alarm is generated for an object, a default alarm notification message is issued.

This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be expanded to their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[IDX]</b>	expands to the monitored object's identification string and includes the target system name.
<b>[TARGET]</b>	expands to the target system name.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[PATH]</b>	expands to the full object path that caused the current alarm.
<b>[OBJECT]</b>	expands to the object name without key selection.
<b>[KEY]</b>	expands to the name of the object property being used as an instance key.
<b>[KEYVAL]</b>	expands to the key value being used to select an instance of the WMI object.
<b>[PROPERTY ]</b>	expands to the name of the object property to be tested.
<b>[CIMTYPE]</b>	expands to the data type of the property.
<b>[RELOP]</b>	expands to the relop for the object's current value to the test value.
<b>[TEST]</b>	expands to the test value defined for the object.
<b>[VALUE]</b>	expands to the actual retrieved property value for the object that caused the current alarm.
<b>[FOBJECTP]</b>	expands to a formatted string with full object path, property, relop, test value and current value giving a complete description of the property.
<b>[FOBJECT]</b>	same as [FOBJECTP] but with property name only instead of full path.
<b>[DATE]</b>	expands to the current date.

[AGENT] expands to the the application name of "PageR".

[SYSTEM] expands to the name of this system.

### Notes

Here are some examples to help understand how the WMI Query monitored object operates. Lets say that a query contains an object property test definition:

**Win32\_LogicalDisk.DeviceID="C:":FreeSpace < 1000000**

When the query is executed, the value for the property **FreeSpace** for the **Win32\_LogicalDisk** object instance defined by It's **DeviceID** property being equal to "C:" is retrieved. The property's value is compared to the test value. If the actual value is less than one million bytes, an alarm will be generated.

If a query has one or more properties in alarm state, the query object is in the alarm state. If all properties that had alarms come back into tolerance on a subsequent scan, the alarm state of the query object will be cleared (Persistent alarm type).

Now lets modify the example:

**Win32\_LogicalDisk.DeviceID="C:":FreeSpace < 1000000 averaged 5**  
**Win32\_LogicalDisk.DeviceID="D:":FreeSpace < 1000000 persistant 10**

In this case, for DeviceID "C:" five queries are executed and the values retrieved for the property and accumulated and then the average is compared to the test value. If the average is less than one million bytes, an alarm is generated. Once five values have been accumulated, the average is taken over the last five values on each subsequent scan.

For DeviceID "D:", ten queries are executed and if each time the property's retrieved value was less than one million bytes, an alarm is generated. If any value is equal to or greater than one million, the accumulation starts over. Only if the actual value is less than one million on each of the last 10 scans is an alarm generated.

### More about WMI

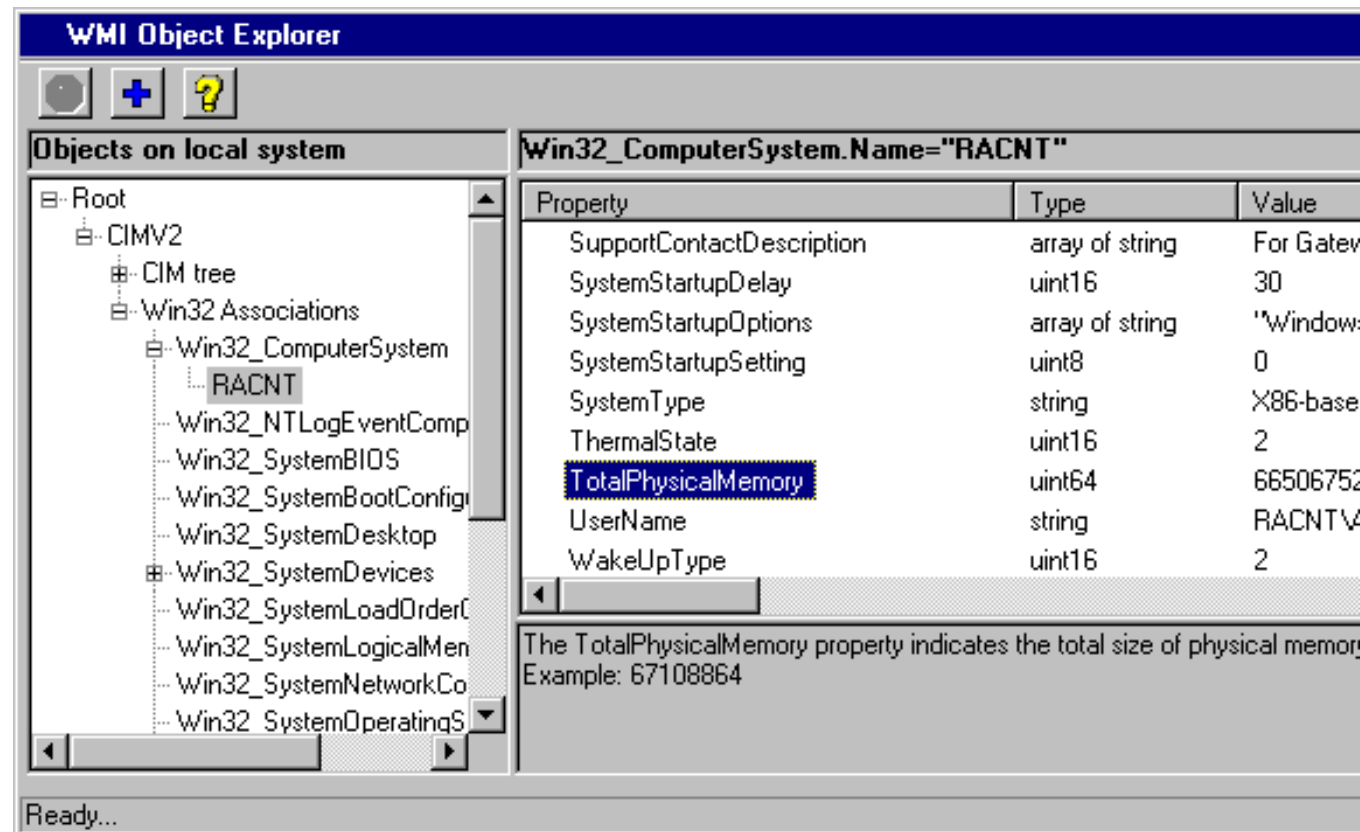
Windows Management Instrumentation is the Microsoft implementation of the WBEM systems monitoring and management standard. The WBEM standard defines an object model for managed systems called the Common Information Model (**CIM**). Systems that implement WBEM expose a standard object model describing system components to WBEM management tools. The CIM schema defines a standard object model that all WBEM implementations are expected to expose populated with object instances and property values appropriate to the target system. Implementations may define extensions to the schema as appropriate. For more information, see the WMI Object Explorer.

### DISCLAIMER

WBEM, CIM and WMI are extensive and complex subjects. This help information is not intended as documentation of these subjects. The user of the WMI support in this product is expected to be familiar with WBEM, CIM and WMI. Extensive documentation on WMI is available as a free download from Microsoft. Target systems must have the appropriate **WMI Core** components version 1.5 or later installed. This is also available as a free download from Microsoft. This product does not install the WMI Core components.

## WMI Object Explorer

This screen is used to explore the Windows Management Instrumentation (WMI) objects on a system and select object properties to be added to a WMI Query monitored object.



This screen allows you to explore the WMI object space defined on a Win32 WMI enabled System. The left pane is a tree in which the WMI object space is displayed and can be navigated. The right pane also follows the left pane during navigation and be used to navigate as well. When an object instance is selected, the right pane will show the object's property list and current property values. You may display the description of a property by left clicking on the property name. Right click on a property to select (or deselect) the object instance and property name to be added to the WMI Query MO you came from. A **+** identifies selected properties. When all desired properties have been selected, click on the **+** (add to query) tool bar button to close the explorer and add the selected properties to the WMI Query.

### The WMI Name Space

WBEM defines several Name Spaces under which CIM classes are defined. Currently, the explorer only supports the **root\CIMV2** name space. Nearly all classes of interest are defined in this name space.

### The WMI Object Tree

Objects exposed by a WBEM implementation (such as WMI) are stored in an object space or

tree called the Common Information Model or CIM. CIM defines object classes for hardware devices or software or settings and then subclass these classes to create more specific classes and eventually an instance of a class (an object) with a list of properties. CIM classes have CIM\_ prefixed to the class name. Where Microsoft has chosen to implement a CIM class, the CIM class is further subclassed by a class that has Win32\_ prefixed to the class name.

When the Explorer opens, it attaches to the target system and loads the CIM object space into the left pane. You can navigate the CIM object tree eventually arriving at Win32\_ classes and then a list of instances (objects) of such classes. If you select an instance, the instance's properties and values will be displayed in the right pane.

Note that when you expand some class names or instance lists, the list may take a significant amount of time to load. Please be patient. During a long operation, the STOP tool bar button will be enabled and you can click it to cancel long running retrievals.

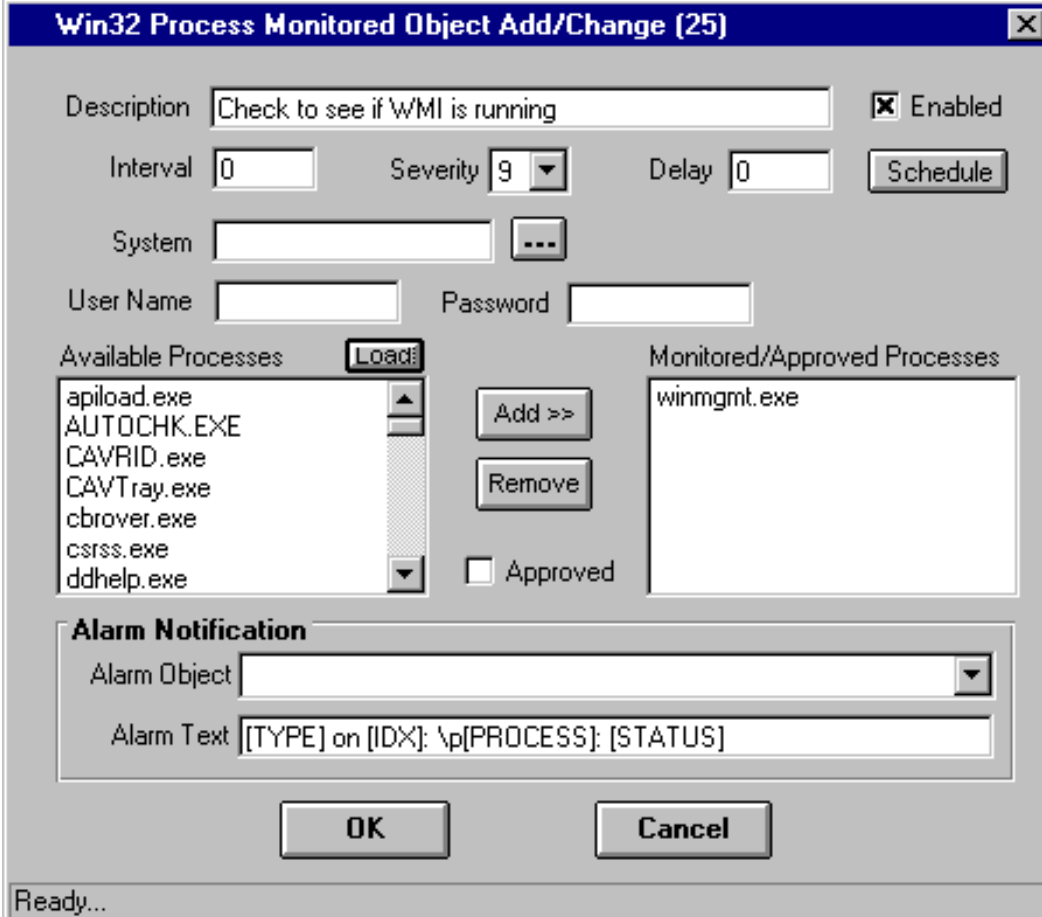
### **Win32 Associations**

In addition to the CIM object space, Microsoft has employed a feature of the CIM schema called Associations. This allows an implementation of WBEM to create alternate object spaces (trees) by relating classes to each other. Microsoft has done this and created a more flat and focused object tree containing only the Win32\_ named classes. Associations are loaded by a serial scan and this can take some time. Accordingly, when the explorer loads, the Win32 Association tree is not loaded. If you click on Win32 Associations in the left pane, the Win32 object tree will be loaded at that time. This typically takes about 30-60 seconds. Once loaded, you can navigate this view of the object space, locating classes and instances of interest. Both the Win32 Associations tree and the CIM tree describe the same classes, just with different organizations.

## Win32 Process Object Add/Change

This screen is used to add or change a Win32 Process Monitored Object . The Win32 Process MO monitors a Windows 32-bit system for a list of process names to make sure the processes are running.

The Win32 Process MO is used to monitor running processes on a Windows 32-bit system. A list of process names are defined for the target system. On each scan of the MO, this list of process names is compared to the currently running processes on the target system and an alarm is generated for any process not found. The target system must have the **Windows Management Instrumentation (WMI) Core 1.5 or later installed.**



The dialog box is titled "Win32 Process Monitored Object Add/Change (25)". It contains the following fields and controls:

- Description:** A text box containing "Check to see if WMI is running".
- Enabled:** A checkbox that is checked.
- Interval:** A text box containing "0".
- Severity:** A dropdown menu showing "9".
- Delay:** A text box containing "0".
- Schedule:** A button.
- System:** A text box with a browse button (...).
- User Name:** A text box.
- Password:** A text box.
- Available Processes:** A list box containing: apiload.exe, AUTOCHK.EXE, CAVRID.exe, CAVTray.exe, cbrover.exe, csrss.exe, ddhelp.exe. Above it is a "Load" button.
- Monitored/Approved Processes:** A list box containing: winmgmt.exe.
- Add >>:** A button between the two process lists.
- Remove:** A button between the two process lists.
- Approved:** An unchecked checkbox.
- Alarm Notification:** A section containing:
  - Alarm Object:** A dropdown menu.
  - Alarm Text:** A text box containing "[TYPE] on [IDX]: \p[PROCESS]: [STATUS]".
- OK:** A button.
- Cancel:** A button.
- Ready...** A status bar at the bottom.

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**System**

Enter/select the host name or IP address of the Win32 system on which the processes will be monitored. Leave blank for the local system.

**User Name**

When accessing remote systems, it may be necessary to supply a user name for access to the WMI objects desired. If no user name is entered, the local user credentials under which you are executing will be used.

**Password**

If a user name is specified above, the corresponding password must be entered.

**Available Processes**

This is a list of the processes currently executing on the system identified above. The list is refreshed whenever the System is changed.

**Approved**

If checked, the list of monitored processes becomes an approved process list. In this case, an alarm is generated if processes are found that are NOT on the list of monitored processes.

**Monitored Processes**

This is the list of the processes selected to be monitored. You may add processes by selecting them in the Available processes box and clicking **Add**. You may remove services by selecting them and clicking **Remove**.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string, the name or IP address of the target system or blank for local system.

<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[SYSNAME]</b>	expands to the name or IP address of the target system or "Local System".
<b>[PROCESS]</b>	expands to the name of the process that has generated the current alarm.
<b>[STATUS]</b>	expands to the description of the problem with the current process.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

## Alarm Message Text

Each Monitored Object generates an Alarm Notification Message when the MO detects an alarm event. The content of this message is controlled by the **Alarm Text** field on each MO's Add/Change screen. The Alarm Text field on each MO contains a default message. You may change the Alarm Text field to modify the default message or create an entirely different message.

Each MO supports a set of **substitution parameters** that can be used in the Alarm Text field. These parameters will be replaced by their actual values when the message is generated at alarm detection time. The parameters available for each MO are listed on the MO's Add/Change screen.

An Alarm Notification Message has four basic components. They are the **Prefix**, the **Alarm Message**, the **Extended Alarm Message** and the **Alarm Clear Message**.

Alarm messages appear in two contexts. In the first context, there is no information beyond the message to identify the MO that generated the message. So, the Prefix portion of the message is displayed to identify the MO. The Prefix can be thought of as a label or title for the alarm message. The Prefix is used on the Main Window Log Screen, in email notifications, in broadcast notifications, paging notifications, Event Log and the disk log file.

A second context is where the screen being displayed explicitly identifies the MO and the alarm message is a field of data being displayed for the MO. In this case, including the Prefix with the message would be redundant and so the Prefix is removed. The Status screen and Web Status display are examples of this context.



Finally, MOs have three types of alarm message content available. The **Alarm Message**, the **Extended Alarm Message** and the **Alarm Clear Message**. The Alarm Message combined with the Prefix (where appropriate) is the main communication of alarm information. However, some MO's may present additional alarm information in the Extended Alarm Message. This message appears on the Main Window Log Screen, Status Screen, Web Status display, Event Log and disk log file. The Extended Alarm Message is not shown in pages or broadcasts due to space limitations. The Alarm Clear Message is used for Alarm Notifications generated when Alarms clear (end).

The format of the Alarm Text field is as follows:

```
{Prefix-text\p}Alarm-Message-Text{\xExtended-Message-Text}{\cClear-Message-text}
```

So you can see that the Prefix, Extended Alarm Message and Alarm Clear Message are optional. The Prefix is all text up to the first `\p` in the message text. The Extended Alarm Message is all text after the first `\x` encountered in the message text up to the first `\c` (if present). The Alarm Clear Message is all text after the first `\c` encountered.

Finally, you can insert line breaks into an Alarm Message by using the `\n` formatting sequence. This sequence will be replaced by a carriage return line feed pair when the message is written to the disk log file, email, broadcast or Event Log. In all other locations the message appears this sequence will be replaced by a single space character.

## Network Event Console

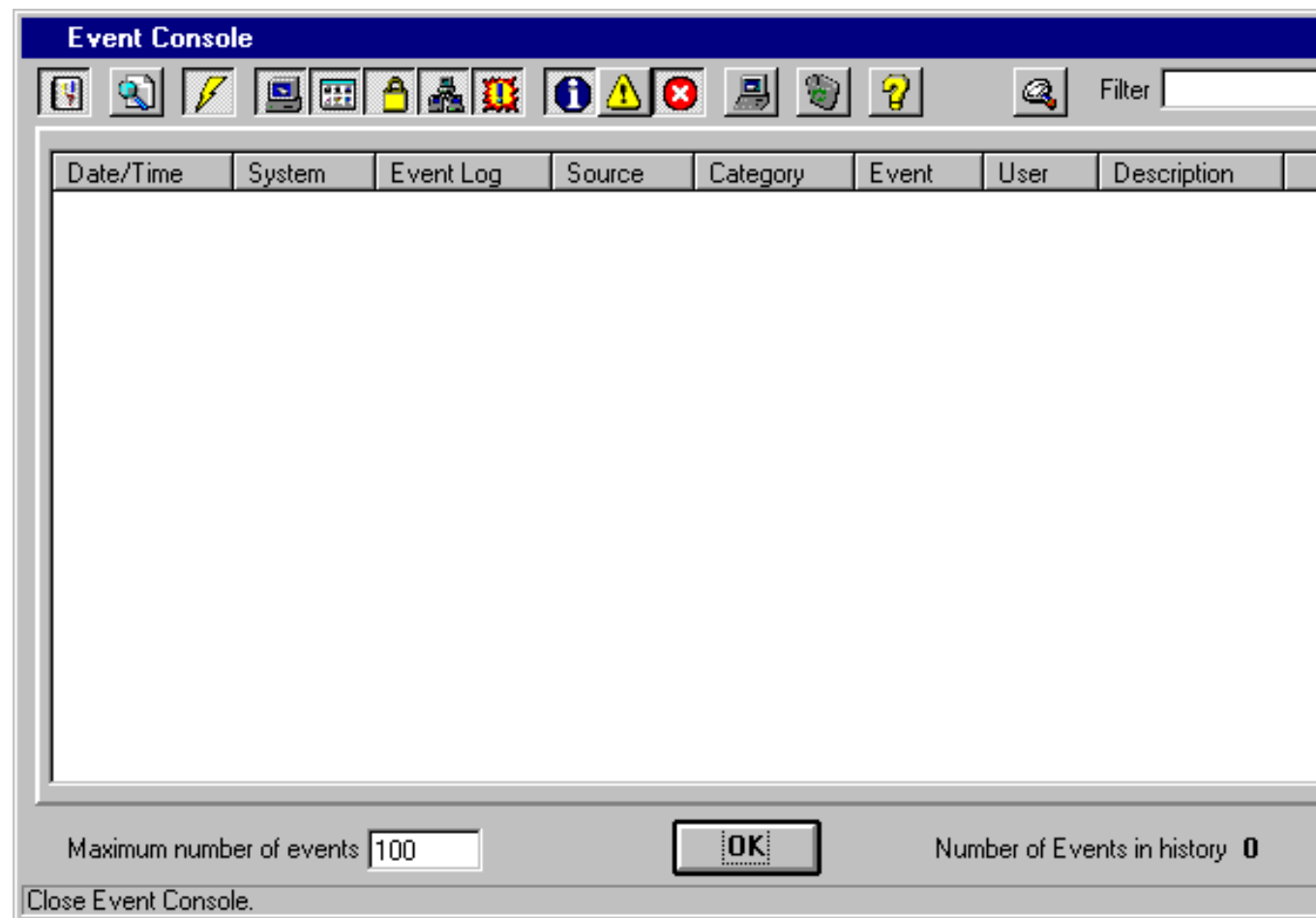
This screen displays a history of events aggregated from multiple sources and systems.

The Network Event Console collects events from Event Log , Syslog and SNMP Trap Monitored Objects.

The Event Log MO sees all events recorded in the monitored Event Log even if events do not generate alarms. In the same fashion, the Syslog and SNMP Trap monitored objects see all Syslog messages and Traps sent, even if alarms are not generated. If event collection is enabled, these raw events are recorded in a history stack that can be viewed with the Event Console screen. Thus, the Event Console presents a centralized, aggregate event log for all monitored event sources.

Note that you can create monitored objects that are enabled but do not have any alerting selected. This type of object will not generate any alarms but will collect event information which is then posted to the Network Event Console if event collection is enabled.

The Network Event Console features multiple sorting and filtering options to facilitate viewing the event history.



The tool bar buttons on the Network Event Console screen control all Event Console and history functions. The tool bar buttons are (left to right):

#### **Enable Event Collection**

Latch this button to enable event collection. You can close the Event Console after enabling event collection and events are collected as they occur and will be presented when the Event Console is next displayed. If you enable event collection and then exit the program, when you restart the program, event collection will remain enabled. In fact, all settings on the Event Console screen are saved when the program shuts down and reused when the program restarts.

#### **Refresh the Event History Display**

Clears the screen and reloads the current event history.

#### **Enable Auto Update of screen**

If this button is selected, events will be added to the screen as they occur. This can cause the screen to be repositioned while you are looking at it. If you are scrolling back through the event history, you may wish to disable auto update. You can turn Auto Update back on or click the Refresh button to update the display.

#### **Include System Event Log**

If this button is selected, events generated by NT/2000 System Event Logs will be included in the display.

**Include Application Event Log**

If this button is selected, events generated by NT/2000 Application Event Logs will be included in the display.

**Include Security Event Log**

If this button is selected, events generated by NT/2000 Security Event Logs will be included in the display.

**Include Syslog Messages**

If this button is selected, Syslog messages will be included in the display.

**Include SNMP Traps**

If this button is selected, SNMP Trap messages will be included in the display.

All events from all sources are classified by Severity as Informational, Warning or Error events. You can include/exclude by severity with the next 3 buttons:

**Include Informational Events**

If this button is selected, Informational events will be included in the display.

**Include Warning Events**

If this button is selected, Warning events included in the display.

**Include Error Events**

If this button is selected, Error events will be included in the display.

**Show Local System Events Only**

Select this button to display only events whose source system is the local system.

**Clear Event History**

Click this button to clear the Event History.

**Help**

Click this button for help.

**Browse for Filter File**

Click this button to browse for Filter script files.

**Filter**

This box can contain the name of a disk file that contains a list of Filter words or a VB Script routine used to filter the Event History for display. Using this feature allows you to customize the Events displayed on the screen in just about any way imaginable. You can type a script file name in the box or use the Browse button to explore for script files. If the file you want to use is in the \Search sub directory of the install directory, a path is not needed. If you use the Browse button to select a script file, the display will be updated automatically. If you type a script file name, you must click the refresh button to update the display. Filter word lists or scripts are the same as Search Strings/scripts. However, you cannot enter a word list or script in the Filter box, it must contain a file name. The Filter script is executed for each Event History record that is to be displayed on the screen and the script decides if the record should be included or not. The script can access the Event History record via the SG.GetEventObj method. See the **FilterEvents.str** sample file in \Search\Samples for more information.

**Max Number of Events**

This box contains the size of the Event History. You can change it at any time.

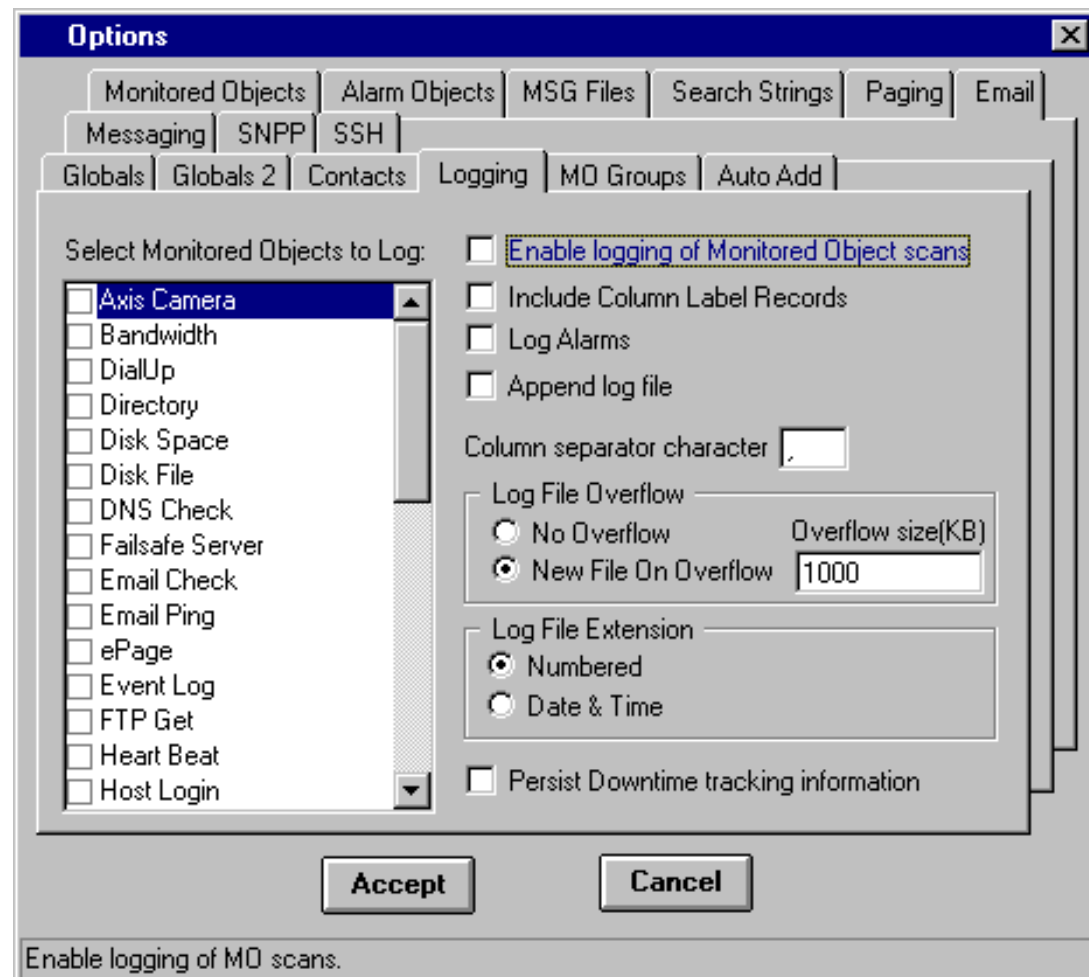
The Network Event Console display is initially sorted by the event Date & Time. You may click on any column header to sort the display on that column in ascending order. The column controlling the sort will be noted with >> in the column label.

You may rearrange the order of the columns by clicking on a column header to select it for sorting. Then click on the border area around the Event list box to move that column to be the first column. After setting the new column, the display will be sorted by that column. You can sort on a different column by clicking on that column label. The new column setting will be retained for the next time the Event Console is displayed.

## Logging Options Tab

This tab sets options for logging of Monitored Object status information during scanning.

During Monitored Object scanning, you can log the status of selected MO types after each MO has been examined. This information is recorded in a disk file and can be used to collect and archive information about MOs for analysis. The log file is in a delimited text format suitable for import into many databases and analysis tools.



### Enable Logging of Monitored Object Scans

Check this box to enable logging.

### Include Column Label Records

Check this box to include records with column labels or headers. This can be useful in learning about the content of the log records.

### Log Alarms

Include log records for each alarm generated.

### Column Separator Character

Select a character to be used to delimit the columns in the log file. You may also use the word TAB to select the tab character as the delimiter.

**Log File Overflow**

Select an option to control log file size. If No Overflow, a new log file is opened each time scanning is started and grows until scanning is stopped. If New File On size is selected, log files will be close when the reach the specified size and a new file opened.

**Log File Extension**

Select the log file extension. The log file is called SCANLOG and can have an extension which is a 3 digit number, one higher than the highest existing log file, or an extension made up of the date and time the file was opened. The log file is created in the install directory.

**Persist Downtime tracking information**

Each Monitored Object tracks the total time that the object is monitored (scanned) and the total time that the object is down (in alarm state). This information is displayed on the Object Details view of the Status screen and Web Status. This information is used to calculate the % Downtime displayed on the Status screen and Web Status. By default, this data is reset to zero on each start up. So the information only represents the period since PageR was last started. You can check this box to have this information persisted at shutdown and reloaded at start up. Then, the downtime tracking data represents the cumulative monitoring and alarm time since this option was enabled.

**Log Alarm Notifications to a file**

Enable to have alarm notification actions logged in the disk file **Notify.log** in the install directory.

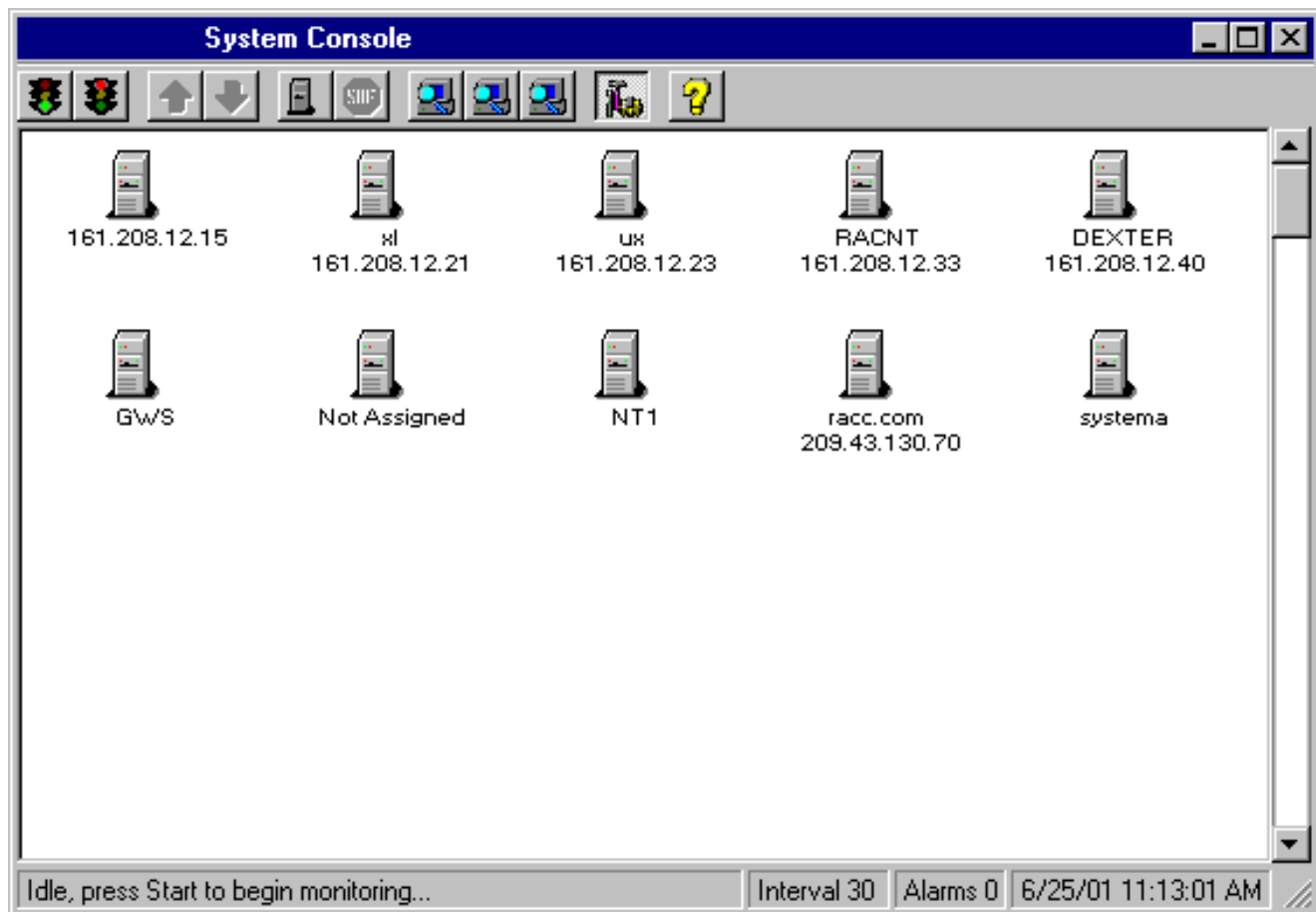
**Monitored Objects to Log**

Select the Monitored Objects to be logged.

## System Console

The System Console provides a system based graphical view of your network and the status of systems that are being monitored.

The System Console shows a map or graphical view of your network. All systems detected by network scans can be shown or only those systems that have Monitored Objects defined for them. You can easily see which systems have alarms or processing errors. You can right click a system to view a menu of actions you can perform on a system. You can double click a system to see a list of monitored objects defined for that system. You can right click an MO to see a menu of actions you can perform on an MO and you can double click an MO to see a detailed MO status display.



When the System Console is displayed, systems are shown if they have monitored objects defined or if the system was detected by any of the network scan functions. On first display, it may take some time to load the systems as IP address to name resolution is performed. You can click the Stop button if you do not want to wait.

Systems with active monitored objects are shown with a white background. If any MO defined for a system is in the alarm state, the system will have a red background. If no MOs are in the alarm state, but one or more MOs have processing errors, the system will have a yellow background.

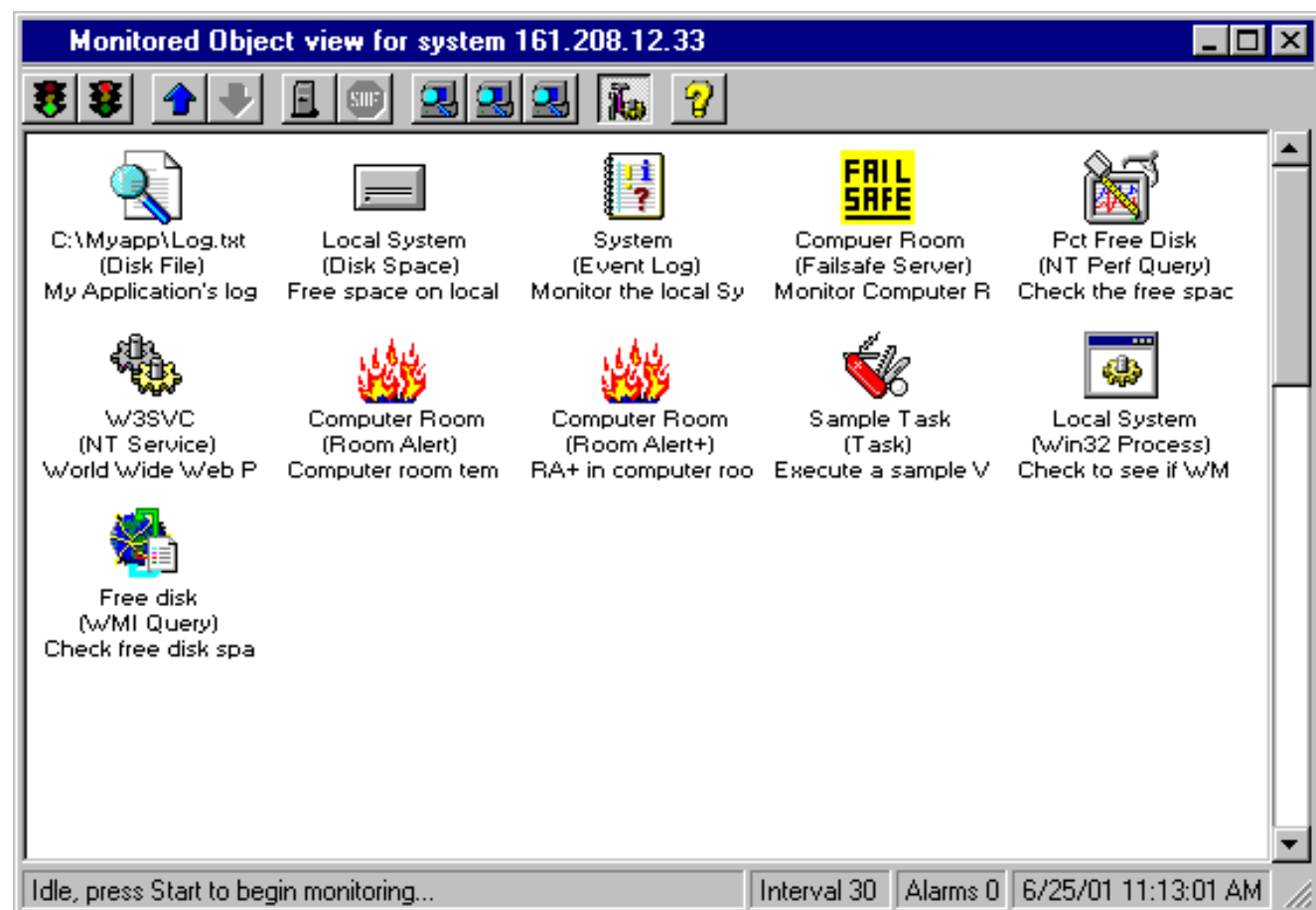
If a system has monitored objects, but all of them are either disabled or suspended, the system will be shown with a diagonal cross hatch. If a system has no monitored objects at

all, the system will be shown with horizontal cross Hatching.

Tool bar buttons are available to start/stop monitoring, refresh the system map, scan the network using one of the three scanning techniques available and to limit the display to only systems that have monitored objects defined.

If you right click on a system, you will see a menu where you can display more detailed information about a system, add a new monitored object, suspend/resume monitoring for all attached MOs, enable/display monitoring for all attached MOs and clear all alarms for attached MOs.

You can single click a system to focus on it and use the down arrow tool bar button as well as a double click on a system to see it's list of monitored objects.



Monitored objects with current alarms will be shown with a red background, MOs with processing errors will be shown with a yellow background. Suspended or disabled MOs will be shown with a diagonal cross hatch. You can right click an MO to see a menu of actions you can perform on the MO, such as suspend/resume, enable/disable and clear alarm. You can add and delete monitored objects as well.

You can single click to focus on an object and use the down arrow or double click to see a detailed status report for the monitored object.

When open, the System Console is updated while scanning is in progress. Systems/MOs will



change background color as alarms are detected or cleared.

## DNS Check Object Add/Change

This screen is used to add or change a Domain Name Server object . DNS servers are monitored by sending a DNS resolution request to the server and checking the reply.

**DNS Check Monitored Object Add/Change**

Description:  ☒ Enabled

Interval:  Severity:  Delay:

Request:  Time Out:

Response:  Retrys:

DNS Type:

DNS Server 1:  DNS Server 2:  DNS Server 3:

**Alarm Notification**

Alarm Object:

Alarm Text:

Optional description of monitored object

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Request**

Enter the request string that will be sent to the DNS server for resolution. For instance, to test IP address to host name resolution, enter the IP address to be resolved in this box.

**Time Out**

This is the number of seconds to wait for a connection response from the server before posting an alarm.

**Response**

This is an optional search string that will be compared to the response from the DNS server. An alarm is generated if the response from the server does not match this string. An example would be for IP address to host name resolution check: the expected host name Would be entered in this box.

**Retrys**

Enter the number of times failed resolution (no response) will be retried.

**DNS Type**

Select the desired type of DNS resolution to be used. Typically, this is Host Name, where an IP address in the Request box should return the host name in the Response box.

**DNS Server Addresses**

Enter at least one IP address for the DNS server(s) that the resolution Request will be sent to.

**Test**

Click the test button to perform the specified DNS resolution to check your setup.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string, the Request string.

[DESC]	expands to the monitored object's long description.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.
[REQUEST]	expands to the Request string sent to the DNS server.
[REPLYTEST]	expands to expected reply string.
[LASTREPLY]	expands to the last reply received from the DNS server.
[LASTERROR ]	expands to the last error posted by this monitored object.
[TIME]	expands to the current time.
[DATE]	expands to the current date.
[AGENT]	expands to the the application name of "PageR".
[SYSTEM]	expands to the name of this system.

## Windows 2000 System Object Add/Change

This screen is used to add or change a Windows 2000 System monitored object .

**W2K System Monitored Object Add/Change**

Description:  ☒ Enabled

Interval:  Severity:  Delay:

System Name:

**Alarm Notification**

Alarm Object:

Alarm Text:

Optional description of monitored object

**Description**

This is an optional description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Interval**

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Server Name**

Enter or select the name of the Windows 2000 Server or Workstation system to be monitored.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[DESC]	expands to the monitored object's long description.
[ALARMID]	expands to the unique numeric identifier for the monitored object's current alarm event.
[TIME]	expands to the current time.
[DATE]	expands to the current date.
[AGENT]	expands to the the application name of "PageR".

[SYSTEM] expands to the name of this system.

## Windows XP System Object Add/Change

This screen is used to add or change a Windows XP System monitored object .

**XP System Monitored Object Add/Change**

Description:  ☒ Enabled

Interval:  Severity:  Delay:

System Name:

**Alarm Notification**

Alarm Object:

Alarm Text:

Optional description of monitored object

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

### Server Name

Enter or select the name of the Windows XP Server or Workstation system to be monitored.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

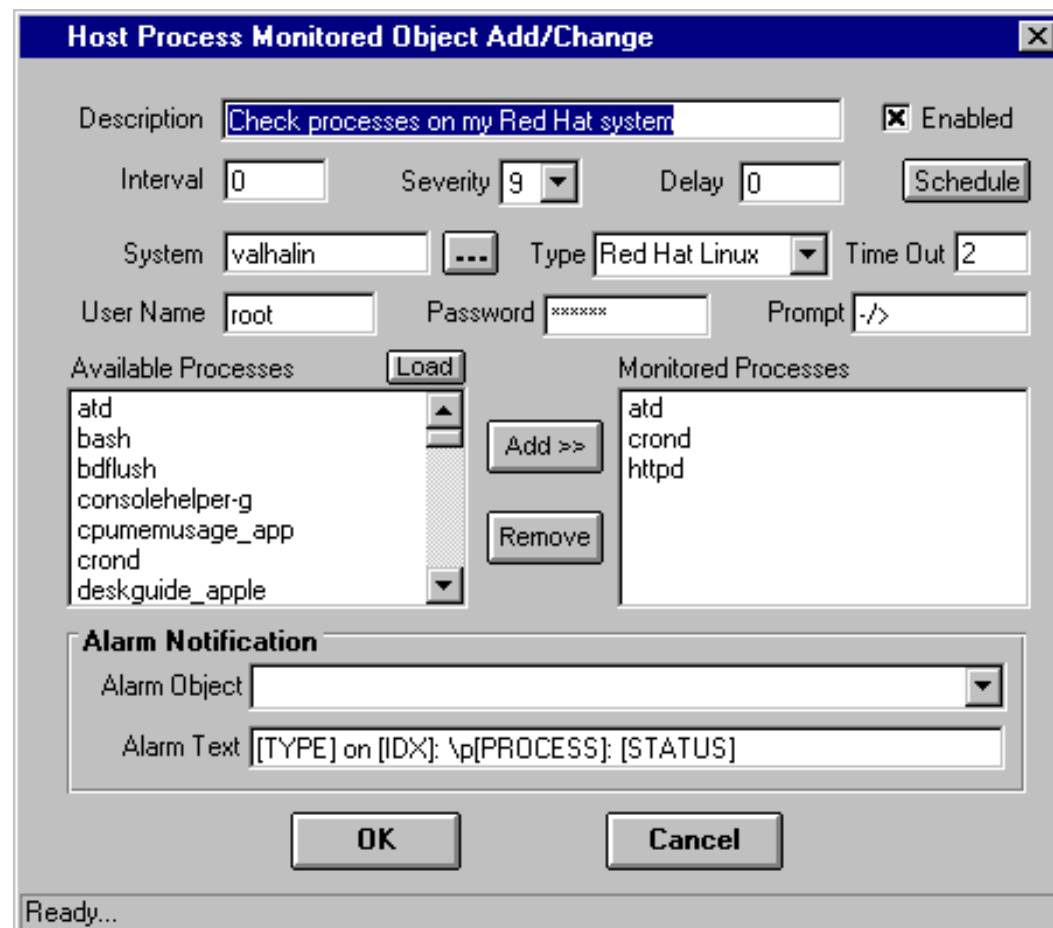
When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

## Host Process Object Add/Change

This screen is used to add or change Host Process monitored objects.

Host Process monitored objects check the process list on Host Systems and alarm if any of the specified processes are missing. A Host System can be Unix, Linux, VMS and more. Practically any system that supports Telnet or SNMP can have its processes monitored with this object.



The dialog box is titled "Host Process Monitored Object Add/Change". It contains the following fields and controls:

- Description:** A text box containing "Check processes on my Red Hat system".
- Enabled:** A checkbox labeled "Enabled" which is checked.
- Interval:** A text box containing "0".
- Severity:** A dropdown menu showing "9".
- Delay:** A text box containing "0".
- Schedule:** A button.
- System:** A text box containing "valhalin" and a button with three dots.
- Type:** A dropdown menu showing "Red Hat Linux".
- Time Out:** A text box containing "2".
- User Name:** A text box containing "root".
- Password:** A text box containing "xxxxxx".
- Prompt:** A text box containing "-/>".
- Available Processes:** A list box containing: atd, bash, bdf flush, consolehelper-g, cpumemusage\_app, crond, deskguide\_apple. It has a "Load" button above it.
- Monitored Processes:** A list box containing: atd, crond, httpd.
- Add >>:** A button between the two process lists.
- Remove:** A button between the two process lists.
- Alarm Notification:** A section with:
  - Alarm Object:** A dropdown menu.
  - Alarm Text:** A text box containing "[TYPE] on [IDX]: \p[PROCESS]: [STATUS]".
- OK:** A button.
- Cancel:** A button.
- Ready...:** A status bar at the bottom.

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Schedule**

Click to define an optional schedule for scanning of this monitored object.

**System**

Enter the name or IP address of the system which will be monitored. Click the scan button to search the network for systems.

**Type**

Select the type of Host system that resides at the name/address specified above. The selected host is accessed by Telnet unless otherwise specified.

**Time Out**

Enter the time out in seconds that will be applied to the Telnet communication with the Host system.

**User Name**

Enter the user name to be used to logon to the Host system. Not needed for SNMP access.

**Password**

Enter the password for the user name specified above. For SNMP access, this is the community name.

**Prompt**

Enter the prompt displayed by the Host system when ready to accept a command. Not needed for SNMP access.

**Load**

Downloads a process list from the Host system, which is displayed in the Available Processes list. System, User name, Password and Prompt must be defined first.

**Available Processes**

This is a list of processes that are running on the Host system.

**Monitored Processes**

This is the list of processes that will be monitored. Select processes in the Available list and click the Add button to add processes to the monitored list. Select processes in the Monitored list and click the Remove button to remove them from the Monitored list.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when



the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[SYSNAME]</b>	expands to the system being monitored.
<b>[PROCESS]</b>	expands to the process name that has generated the alarm.
<b>[STATUS]</b>	expands to the status message for the process that has generated the alarm.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

Note that this monitored object uses Telnet or SNMP to access the target system.

For systems accessed with Telnet, this monitored object requires a Telnet server on the Host system and a login user with appropriate privilege to display a list of all processes.

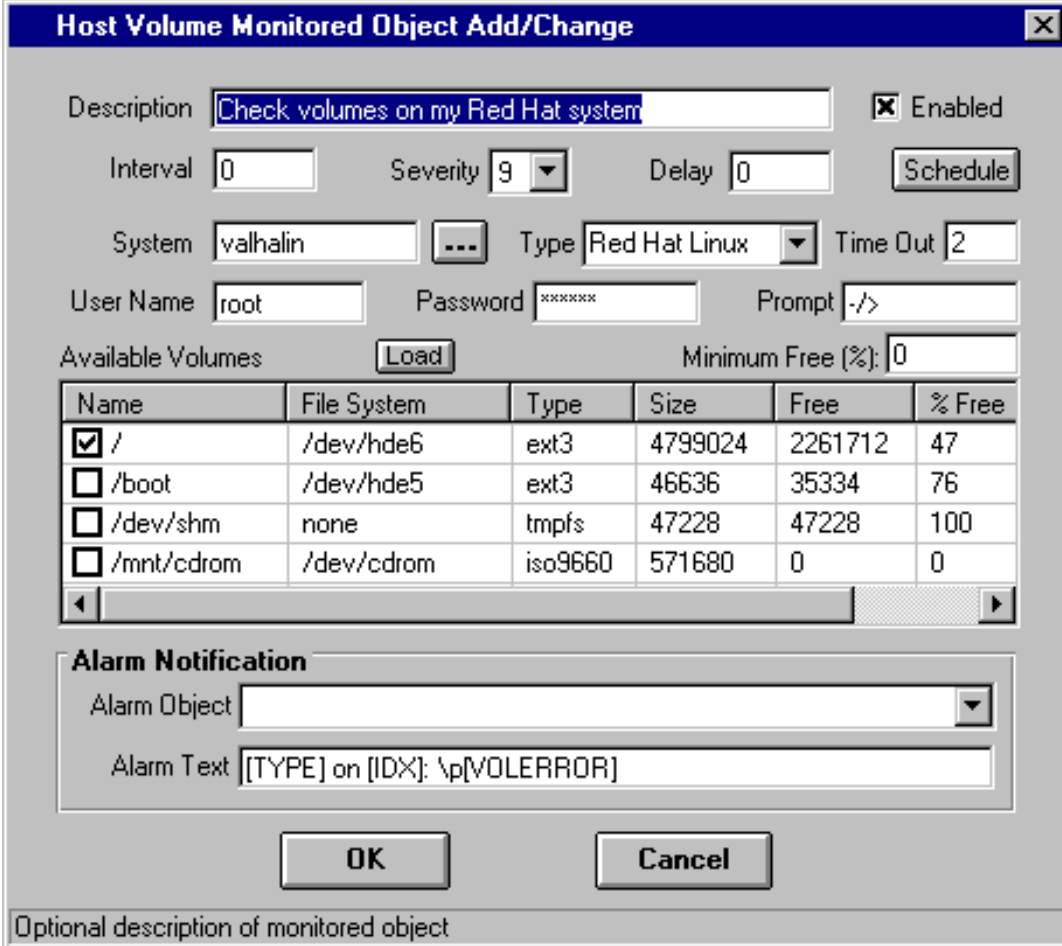
For systems accessed with SNMP, the target system must expose an SNMP agent and you must provide the appropriate community name.

The host systems supported and the information about each that allows this object to connect and obtain the list of processes are defined in the disk file **HostTypes.txt**.

## Host Volume Object Add/Change

This screen is used to add or change Host Volume monitored objects.

Host Volume monitored objects check the free space on Host System disk volumes and alarm if free space falls below a specified threshold. A Host System can be Unix, Linux, VMS and more. Practically any system that supports Telnet or SNMP can have it's volumes monitored with this object .



The dialog box is titled "Host Volume Monitored Object Add/Change". It contains the following fields and controls:

- Description:** A text box containing "Check volumes on my Red Hat system".
- Enabled:** A checkbox labeled "Enabled" which is checked.
- Interval:** A text box containing "0".
- Severity:** A dropdown menu showing "9".
- Delay:** A text box containing "0".
- Schedule:** A button.
- System:** A text box containing "valhalin" and a button with three dots "...".
- Type:** A dropdown menu showing "Red Hat Linux".
- Time Out:** A text box containing "2".
- User Name:** A text box containing "root".
- Password:** A text box containing "\*\*\*\*\*".
- Prompt:** A text box containing "-/>".
- Available Volumes:** A button labeled "Load".
- Minimum Free (%):** A text box containing "0".
- Table:** A table with 6 columns: Name, File System, Type, Size, Free, and % Free.
 

Name	File System	Type	Size	Free	% Free
<input checked="" type="checkbox"/> /	/dev/hde6	ext3	4799024	2261712	47
<input type="checkbox"/> /boot	/dev/hde5	ext3	46636	35334	76
<input type="checkbox"/> /dev/shm	none	tmpfs	47228	47228	100
<input type="checkbox"/> /mnt/cdrom	/dev/cdrom	iso9660	571680	0	0
- Alarm Notification:**
  - Alarm Object:** A dropdown menu.
  - Alarm Text:** A text box containing "[TYPE] on [IDX]: \p[VOLERROR]".
- Buttons:** "OK" and "Cancel".
- Optional description of monitored object:** A text box at the bottom.

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Schedule**

Click to define an optional schedule for scanning of this monitored object.

**System**

Enter the name or IP address of the system which will be monitored. Click the scan button to search the network for systems.

**Type**

Select the type of Host system that resides at the name/address specified above. The selected host is accessed by Telnet unless otherwise specified.

**Time Out**

Enter the time out in seconds that will be applied to the Telnet communication with the Host system.

**User Name**

Enter the user name to be used to logon to the Host system. Not needed for SNMP access.

**Password**

Enter the password for the user name specified above. For SNMP access, this is the community name.

**Prompt**

Enter the prompt displayed by the Host system when ready to accept a command. Not needed for SNMP access.

**Load**

Downloads a volume list from the Host system, which is displayed in the Available Volumes list. System, User name, Password and Prompt must be defined first.

**Available Volumes**

This is a list of disk volumes that can be monitored on the Host system. The list shows information about each volume and it's current free space. To monitor a volume, check the box next to the volume name. If you check or click on a volume, the cursor will move to the Minimum Free(%) box where you enter the free space threshold to be used for monitoring. If you enter a number in this box, that is the minimum free blocks for the volume. If you enter a number followed by a % sign, the number is the minimum percent free for the volume. Press the Return or Enter key to save the value in the box. It will appear in the volume display.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default

alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[SYSNAME]</b>	expands to the system being monitored.
<b>[VOLNAME]</b>	expands to the disk volume name.
<b>[VOLLABEL]</b>	expands to the disk volume label.
<b>[VOLFS]</b>	expands to the disk volume file system name.
<b>[VOLSIZE]</b>	expands to the disk volume size.
<b>[VOLFREE]</b>	expands to the current disk volume free space.
<b>[THRESHTYPE]</b> <b>]</b>	expands to the free space threshold type, blank=actual size, "PCT"=percent free.
<b>[THRESHOLD]</b>	expands to the free space threshold value.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

Note that this monitored object uses Telnet or SNMP to access the target system.

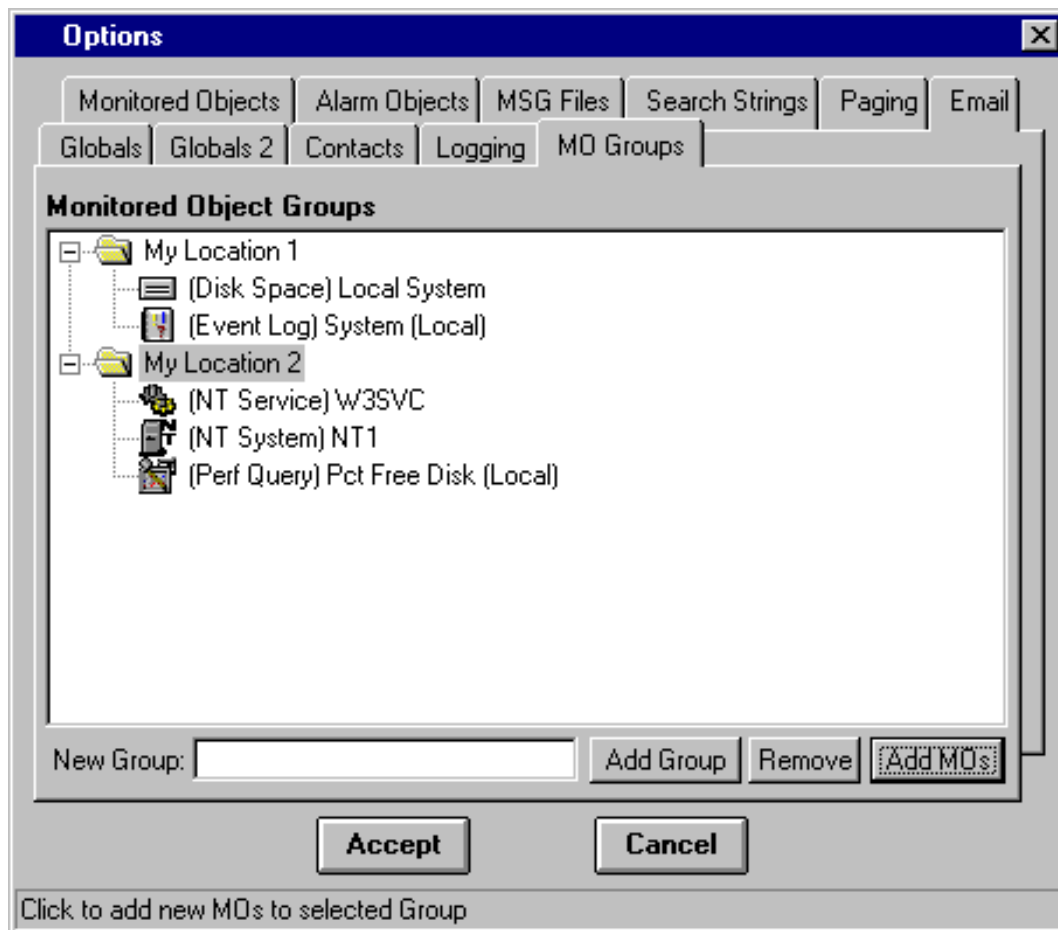
For systems accessed with Telnet, this monitored object requires a Telnet server on the Host system and a login user with appropriate privilege to display a list of all volumes.

For systems accessed with SNMP, the target system must expose an SNMP agent and you must provide the appropriate community name.

The host systems supported and the information about each that allows this object to connect and obtain the list of volumes are defined in the disk file **HostTypes.txt**.

## Monitored Object Groups Tab

This tab allows Monitored Objects to be organized into user defined groups for easier viewing on the Status and Web Status displays.



On this tab you can define your own groupings of Monitored Objects to make it easier to view MO status on the Status screen and Web Status displays by using Groups to subset the objects displayed.

To add a new Group, type the name of the Group in the **New Groups** box and click **Add Group**. Once the Group appears in the tree view, you can select the Group and then click **Add Mos** to select Monitored objects to be added to the Group. Once added, the Mos will appear below the Group in the tree view.

You can select a Monitored Object or a Group and click **Remove** to remove the object or Group. Note that removing an object or Group **does not** delete the Monitored Object(s) from your configuration. They are only removed from the grouping scheme.

Once Groups are created, they appear in the MO Subset drop down lists on the Status and Web Status displays. You can select the Group from the list and only the Monitored Objects in that Group will be displayed.

**Status [Idle, press Start to begin monitoring... ]**

Select Object Type: My Location 2

**Run Statistics**

Started at 8/20/02 4:29:28 PM Elapsed 38 Number of Scans 0 Errors 0

Monitoring Started at Elapsed

Last Scan at Elapsed

Status/Type	Identifier	S	Last Action	Alarms	%
NT Service	W3SVC	9		0	
NT System	NT1	9		0	
Perf Query	Pct Free Disk (Local)	9		0	

3 Objects Shown OK

## UDP Services Object Add/Change

This screen is used to add or change a list of UDP Services which will be monitored on a selected system.

**UDP Services Monitored Object Add/Change**

Description:  ☒ Enabled

Interval:  Severity:  Delay:

System:   Time Out:

Available UDP Services: 3COM-TSMUX (106), AUTH (113), BACKUP-EXPRESS (6123), BFTP (152), BGP (179), BOOTPS (67), BTRIEVE (3351)

Monitored UDP Services: SNMP (161), SNMP-TRAP (162)

**Alarm Notification**

Alarm Object:

Alarm Text:

Optional description of monitored object

### Description

This is an optional description of the monitored object .

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or

global interval.

**System**

Enter/select the host name or IP address of the system on which UDP Services will be monitored.

**Time Out**

This is the number of seconds to wait for a connection response from a UDP Service before posting an alarm.

**Available UDP Services**

This is a list of known UDP Services. For each service, the name by which it is known and the UDP port number it is assigned to are shown. You may add your own services to this list by placing a list of those services into a disk file called **LocalTcpSvcs.txt** in the install directory. The format of this file should follow the format of **TcpSvcs.txt**. Do not change **TcpSvcs.txt**.

**Monitored UDP Services**

This is the list of the UDP Services selected to be monitored. You may add services by selecting them in the Available Services box and clicking **Add**. You may remove services by selecting them and clicking **Remove**.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string, the name or IP address of the target system.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[SVCNAME]</b>	expands to the name and port number of the UDP Service that has failed testing.
<b>[SVCERROR]</b>	expands to a description of the error when a service fails testing.
<b>[TIME]</b>	expands to the current time.



- [DATE] expands to the current date.
- [AGENT] expands to the the application name of "PageR".
- [SYSTEM] expands to the name of this system.

**Notes**

This monitored object verifies UDP Service availability by attempting to send a UDP message to each service selected on the identified system. Active services should discard that message. Inactive services will generate an alarm.

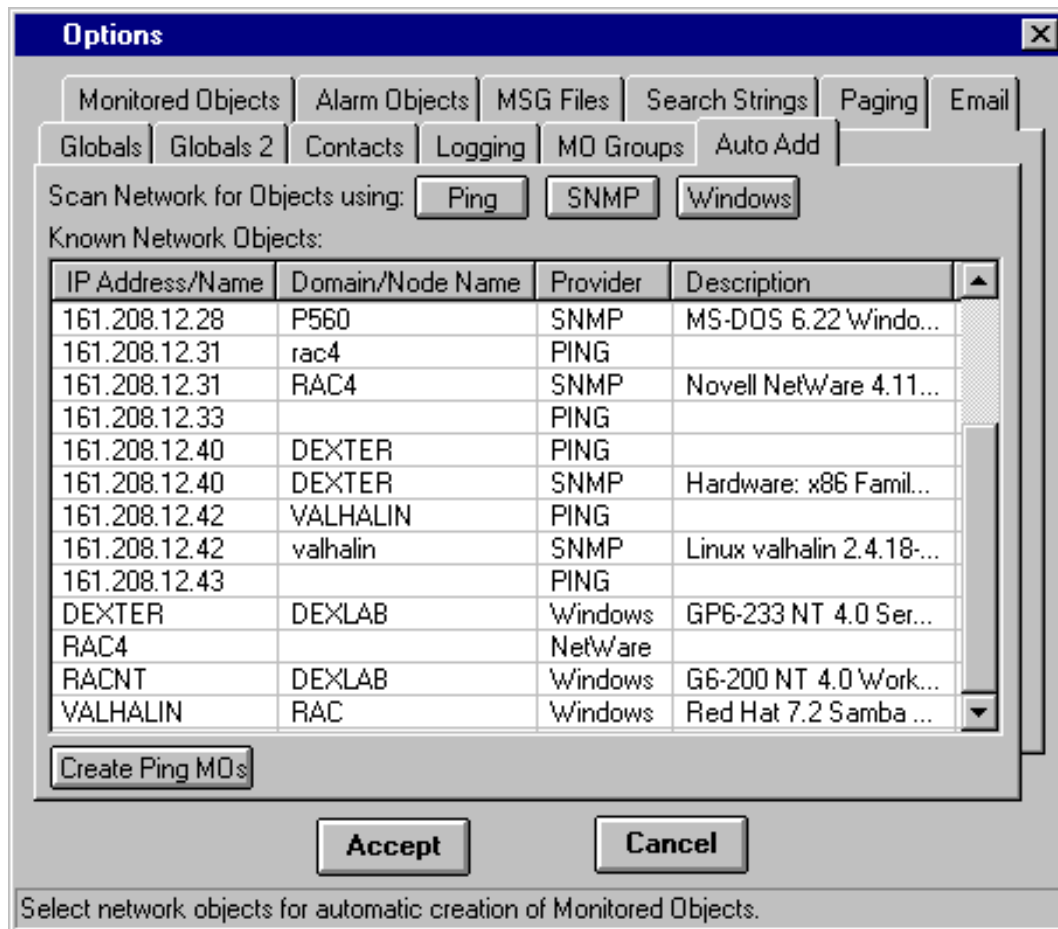
**This Monitored Object is only supported when PageR is running on Windows 2000 and Windows XP.** If PageR is running on Windows NT, UDP services will always be reported as active.

## Auto Add Tab

This tab supports automated creation of Monitored Objects for known network Objects.

PageR can do auto discovery of objects on your network using three different discovery techniques. A database of discovered (known) objects is maintained and is used to fill system name/IP address selection lists on the various Monitored Object Add/Change screens.

Using the Auto Add Tab, you can select network objects from the list of known objects and automatically create Ping Monitored Objects for the selected network objects.



When the Auto Add Tab is displayed, the list of known network objects is displayed. You can select objects by clicking and using the shift or ctrl keys to select multiple objects. Then click the Create Ping MO button to automatically create a new Ping Monitored Object for each selected network object.

You will be prompted to confirm the Auto Add before it proceeds. Next, the Ping Monitored Object Add/Change screen will appear. You can modify the attributes of the Ping Monitored Object on this screen and your settings will be applied to all of the automatically created Ping Monitored Objects.

**NOTE:** After creating new Monitored Objects with this screen, you must click Accept on the Options screen and save the configuration for the new objects to be permanently saved.

You can perform initial or refresh network scans by clicking the appropriate button:

**Ping**

Performs simple ICMP ping on a range of IP addresses.

**SNMP**

Performs an SNMP agent detection on a range of IP addresses. If an agent is detected, additional information is retrieved.

**Windows**

Uses Windows Networking to detect systems.

Fields on the Network Object List:

**IP Address/Name**

This is the IP address of objects detected by Ping or SNMP or the name of objects detected via Windows Networking.

**Doman/Node Name**

For objects detected via Windows Networking, this is the domain or workgroup name (if it is known to Windows). For objects detected via SNMP, this is the node name returned by the object.

**Provider**

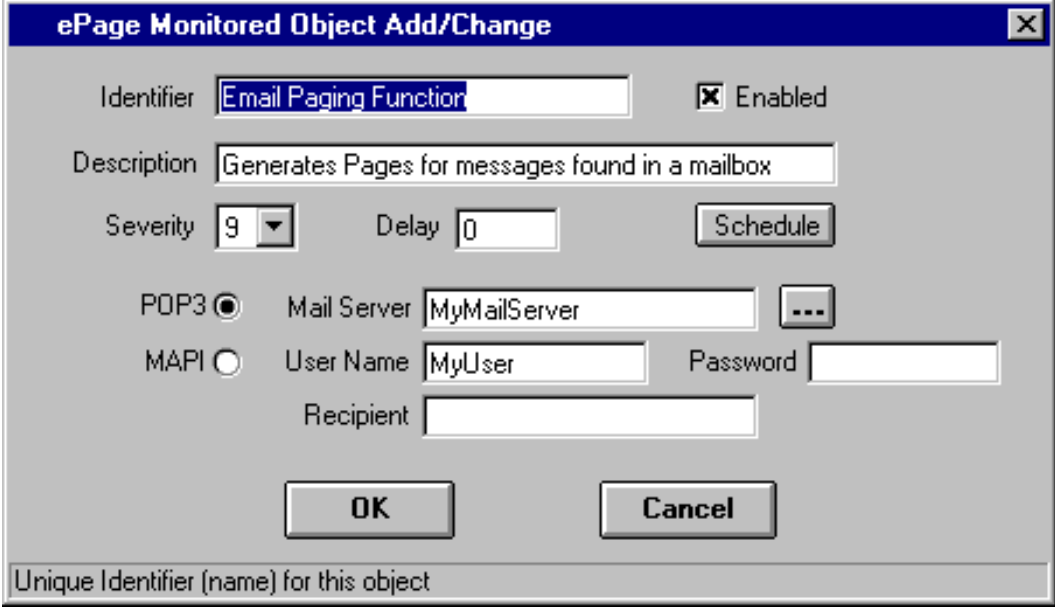
This is the discovery means that provided the information.

**Description**

For objects detected by Windows or SNMP, this is the description string returned by the object.

## ePage Object Add/Change

This screen is used to add or change an ePage Monitored Object . The ePage Object reads email messages from a specified mailbox and generates Pager/SMS requests for Contacts.



The screenshot shows a Windows-style dialog box titled "ePage Monitored Object Add/Change". It contains the following fields and controls:

- Identifier:** A text box containing "Email Paging Function". To its right is a checked checkbox labeled "Enabled".
- Description:** A text box containing "Generates Pages for messages found in a mailbox".
- Severity:** A dropdown menu showing "9".
- Delay:** A text box containing "0".
- Schedule:** A button.
- POP3:** A radio button that is selected.
- Mail Server:** A text box containing "MyMailServer" with a browse button (three dots) to its right.
- MAPI:** An unselected radio button.
- User Name:** A text box containing "MyUser".
- Password:** A text box.
- Recipient:** A text box.
- Buttons:** "OK" and "Cancel" buttons at the bottom.
- Status Bar:** A message at the bottom reads "Unique Identifier (name) for this object".

**Identifier**

This is a unique identifying name or title for the monitored object.

**Description**

This is an optional extended description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval .

**POP3/MAPI**

Select the mail protocol to use to attach to the mail server where the messages to be examined reside.

**Mail Server**

Enter the name or IP address of the mail server where the messages to be examined reside.

**User Name**

Enter the user name used to logon to the mail server and retrieve mail.

**Password**

Enter the password for the user name entered in the previous field.

**Recipient**

Only messages addressed to this email address will be processed (optional).

**Notes**

When a mail message is processed, the subject line is expected to contain a list of Contact names separated by semicolons. A page request will be generated for each Contact found using the Contact's paging information. The first 80 characters of the message body will be used as the page message.

## Heart Beat Object Add/Change

This screen is used to add or change Heart Beat Monitored Objects.

The Heart Beat Monitored object is used to generate a regular "alarm" notification by PageR whose purpose is to verify that PageR is running. This monitored object executes It's Alarm object on every scan, subject to the Interval value and Schedule constraints set up for it. That Alarm object determines how the heart beat notification will be made.

The screenshot shows a dialog box titled "Heart Beat Monitored Object Add/Change". It contains the following fields and controls:

- Description:** A text box containing "Regular notification that this product is up and running."
- Interval:** A numeric input box with the value "0".
- Severity:** A dropdown menu showing the value "9".
- Enabled:** A checkbox that is checked, labeled "Enabled".
- Schedule:** A button labeled "Schedule".
- Alarm Notification:** A section containing:
  - Alarm Object:** A dropdown menu.
  - Alarm Text:** A text box containing "[TYPE]: \p[AGENT] is up and running."
- Buttons:** "OK" and "Cancel" buttons at the bottom.
- Footer:** A text box labeled "Optional description of monitored object".

**Description**

This is an optional description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Interval**

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition. Severity has no meaning for this Monitored object, but can be set to control the display sorting of this object on the various status displays.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

## Messaging Options Tab

This tab configures logging and alarm notification by Instant Messaging.

Activity logging and alarm notifications can be sent to interested clients via Microsoft's .Net Messaging Service Messaging Service using MSN Instant Messenger. A user ID for PageR is required and can be set up on HotMail or .Net Passport. This user ID allows PageR to attach to the messaging service and communicate with other messaging service users.

Use MSN Messenger directly to select the desired messaging service and create a user ID on that service for PageR to use. Once the user ID is created, you can configure PageR to log activity and alarm notifications on the Messaging Options Tab of the Options screen:

The screenshot shows the 'Options' dialog box with the 'Messaging' tab selected. The 'Enable logging and alarm notification by Messenger Service' checkbox is unchecked. Below it are text boxes for 'Service Logon' and 'Password', and a 'Detail Level' dropdown menu set to '0'. There are also checkboxes for 'Auto Create Sessions' (checked) and 'Include Date/Time in messages' (unchecked). At the bottom are 'Accept' and 'Cancel' buttons.

### Enable logging and alarm notification by Messenger Service

Check this box to turn on logging and alarm notification by Instant Messaging.

### Service Logon

User ID that PageR will use to logon to the Messaging Service. This is typically an email address.

### Password

The password for the service logon.

**Detail Level**

Ranges from 0-3 and sets the level of detail logged to messaging clients. 0 is least detail and 3 is most detailed. Normally, this should be set to 0. All alarms and errors are logged regardless of the level of detail.

**Auto Create Sessions**

Check this box to create a new session for every online user that is on the PageR user Ids contact or buddy list.

**Include Date/Time in messages**

Check this box to have the date and time of messages (on the local system) included in the messages sent to IM clients.

**Notes**

In order to receive messages from PageR, messaging clients must add the PageR user ID to thier contact/buddy lists. Doing this connects the clients to PageR and makes them visible to PageR. If you Auto Create sessions, PageR will open a session for any online client and begin sending messages as appropriate. If you do not Auto Create Sessions, clients must explicitly open a session window to the PageR user ID in order to receive messages.



## Bandwidth Object Add/Change

This screen is used to add/change Bandwidth Monitored objects.

Bandwidth monitoring is done by measuring the network traffic on a systems network interfaces and comparing that traffic (measured in bits per second) to the interface's maximum speed. Information for the systems network interfaces is retrieved with SNMP.

The screenshot shows a dialog box titled "Bandwidth Monitored Object Add/Change". It contains several input fields and checkboxes for configuring a bandwidth monitoring object.

**Identifier:** Server

**Description:** Watch server interface for too much traffic ☒ Enabled

**Interval:** 0 **Severity:** 9 **Delay:** 0 **Schedule:** [button]

**System Name:** 161.208.12.40 **Time Out:** 5

**Community:** public

Index	Description
1	MS TCP Loopback interface
2	DEC DC21041 PCI Ethernet Adapter
3	NdisWan Adapter

**Type:** (6) ETHERNET-CSMACD ☒ Monitor this Interface

**MTU:** 1500 ☒ Alarm on errors/discards

**Speed:** 100000000 bps **Input threshold:** 80%

**Phy Addr:** 00-00-C0-C3-74-01 **Output threshold:** 80%

**Status:** (1) UP **Aggregate threshold:** 90%

**Alarm Notification**

**Alarm Object:** [dropdown]

**Alarm Text:** [TYPE] [IDX]: \pAlarm in interface [IFINDEX]\x[IFLASTSTATUS]

**Buttons:** OK, Cancel

**Done:** [button]

### Identifier

This is a short label that is used to identify this Bandwidth object.

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**System Name**

Enter or select the name or IP address of the system on which bandwidth monitoring will be executed. Click the ... button to select from a list of known SNMP systems on your network.

**Community**

Enter the community name to use on the SNMP queries.

**Scan Button**

Once the system name and community have been entered, click the Scan Button to read the target system's network interfaces. These interfaces will be listed in the Interface list box. Click on an Interface to display its detailed information and monitoring status.

**Type**

This is an interface type description as retrieved from the interface.

**MTU**

This is the media size or maximum packet size set for the interface.

**Speed**

This is the speed of the interface in bits per second.

**Phy Addr**

This is the physical hardware address of the interface. Only interfaces with a physical address can be monitored.

**Status**

This is the current operational status of the interface and will be UP or DOWN.

**Monitor this Interface**

Select this box to enable monitoring of the selected interface.

**Alarm on Errors/Discards**

Generate an alarm if the number of errors or discards on an interface changes from one scan to the next.

**Input Threshold**

This is the input bandwidth alarm threshold for the interface. It can be a specific bits per second value or it can be a percent of the interface speed. Enter a number for specific bits per second or enter a number followed by a % sign for a percent of interface speed.

**Output Threshold**

This is the output bandwidth alarm threshold for the interface. It can be a specific bits per second value or it can be a percent of the interface speed. Enter a number for specific bits per second or enter a number followed by a % sign for a percent of interface speed.

**Aggregate Threshold**

This is the combined (input+output) bandwidth alarm threshold for the interface. It can be a specific bits per second value or it can be a percent of the interface speed. Enter a number for specific bits per second or enter a number followed by a % sign for a percent of interface speed.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be expanded to their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[IDX]</b>	expands to the monitored object's unique identification string plus the target system.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TARGET]</b>	expands to the target system name or IP address.
<b>[COMMUNITY]</b>	expands to the community name.
<b>[ELAPSEDSEC]</b>	expands to the number of seconds elapsed since the last scan.
<b>[IFINDEX]</b>	expands to the index of the interface in the system's MIB.
<b>[IFDESC]</b>	expands to the interface description.
<b>[IFPHYADDR]</b>	expands to the actual retrieved object value for the object that caused the current alarm.
<b>[IFSPEED]</b>	expands to the max speed of the interface in bits per second.

<b>[IFOPSTATUS]</b>	expands to the operational status of the interface, either UP or DOWN.
<b>[IFxTHRESHOLD]</b>	expands to the threshold value. x is one of IN, OUT, AGG.
<b>[IFxBPS]</b>	expands to the measured bandwidth for the scan period in BPS.
<b>[IFxBPSPCT]</b>	expands to the percent of interface speed represented by the value of IFxBPS.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

**Notes**

This monitored object retrieves the bytes sent and received by a network interface and based on the time between scans, converts the number of bytes to bits per second representing bandwidth used. This value is compared to the literal or percent of interface speed threshold value and an alarm is generated if the threshold is exceeded.

An alarm is generated if the interface is not UP.

If requested, an alarm is generated if the number of errors or discards for either input or output increases from scan to scan.

## Directory Object Add/Change

This screen is used to add or change Directory Monitored Objects.

The Directory Monitored Object monitors the size and/or file count of a directory and generates an alarm if the directory size or file count exceeds preset thresholds. The MO can also generate an alarm if the directory size or file count changes.

The screenshot shows a Windows-style dialog box titled "Directory Monitored Object Add/Change". It contains several input fields and checkboxes. The "Description" field is labeled "Monitor TEMP Dir". The "Interval" is set to 0, and "Severity" is set to 9. There are "Schedule", "Browse", and "Validate" buttons. The "Directory" field contains "C:\TEMP". The "Alarm Options" section has checkboxes for "Alarm if directory size" (checked), "Alarm if file count" (checked), "Include sub directories in file count" (unchecked), and "Recurse sub directories" (checked). It also has dropdown menus for size and file count thresholds, with values 500000 and 200 respectively. The "Alarm Notification" section has a dropdown for "Alarm Object" and a text field for "Alarm Text" containing "[TYPE] [IDX]: \p[ALARMMSG]\x[ALARMMSG2]". At the bottom are "OK" and "Cancel" buttons, and a footer label "Optional description of monitored object".

Description	Monitor TEMP Dir	<input checked="" type="checkbox"/> Enabled
Interval	0	Severity 9
Directory	C:\TEMP	<input type="button" value="Schedule"/>
		<input type="button" value="Browse"/>
		<input type="button" value="Validate"/>
<b>Alarm Options</b>		
<input checked="" type="checkbox"/> Alarm if directory size	> 500000	<input type="checkbox"/> Alarm on size change
<input checked="" type="checkbox"/> Alarm if file count	> 200	<input type="checkbox"/> Alarm on file count change
<input type="checkbox"/> Include sub directories in file count		
<input checked="" type="checkbox"/> Recurse sub directories		
<b>Alarm Notification</b>		
Alarm Object		
Alarm Text	[TYPE] [IDX]: \p[ALARMMSG]\x[ALARMMSG2]	
<input type="button" value="OK"/> <input type="button" value="Cancel"/>		
Optional description of monitored object		

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Schedule**

Click to define an optional schedule for scanning of this monitored object.

**Directory**

This is the path to the directory to be monitored. You can type a path or click the **Browse** button to browse file system for directory paths. Click the **Validate** button to verify access to the selected directory.

**Alarm if directory size**

Check this box to monitor the total disk space occupied by the files in the target directory. Select the test operator and size threshold (in bytes).

**Alarm on size change**

Check this box to alarm if the directory size changes from one scan to the next.

**Alarm if file count**

Check this box to monitor the number of files in the target directory. Select the test operator and file count threshold.

**Alarm on file count change**

Check this box to alarm if the directory file count changes from one scan to the next.

**Include sub directories in file count**

Check this box to include sub directories as well as files in the file count for the target directory.

**Recurse sub directories**

Normally, only the files in the target directory are examined. Check this box to include the files in any sub directory of the target directory, thereby applying the size and file count thresholds to the entire directory tree at and below the target directory.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.

<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[ALARMMSG]</b>	expands to the message generated when an alarm occurs.
<b>[ALARMMSG2]</b>	expands to the extended message generate when an alarm occurs.
<b>[SIZEOP]</b>	expands to the size relative operator.
<b>[SIZEVAL]</b>	expands to the size threshold value.
<b>[LASTSIZE]</b>	expands to the last size of the directory.
<b>[FILEOP]</b>	expands to the file count relative operator.
<b>[FILEVAL]</b>	expands to the file count threshold value.
<b>[LASTCOUNT]</b>	expands to the last file count for the directory.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

**Note**

If the directory path ends in an actual file name, only that specific file will be monitored and only the size threshold and size change tests will apply.

## DialUp Object Add/Change

This screen is used to add or change DialUp Monitored Objects.

The DialUp Monitored Object tests a dial up modem by dialing the modem's phone number and determining if the modem connects successfully in the time allowed.

**DialUp Monitored Object Add/Change**

Description: Test ISP dial up ☒ Enabled

Interval: 0 Severity: 9 Delay: 0

Phone Number: 555-1212 Timeout: 20

**Alarm Notification**

Alarm Object:

Alarm Text: [TYPE] [IDX] \pddid not connect

Optional description of monitored object

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

### Schedule

Click to define an optional schedule for scanning of this monitored object.

### Phone Number

This is the phone number that will be dialed. Enter a phone number to dial directly via modem. Select a Windows Phone Book entry from the drop down list to connect via



Windows Dial UpNetworking (RAS).

### Timeout

This is the number of seconds allowed for a successful connection.

### Alarm Object

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

### Alarm Text

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[LASTSTATUS]</b> <b>]</b>	expands to a message describing the result of the last dialup attempt.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

### Note

The modem dialup is made through the COM port and settings specified on the Paging Options Tab. The modem dialup test is made by executing the AN script file **DialUpTest.msg**. This script is normally located in the **Alarms\Samples** directory. If you need to customize the script, copy it to the **Alarms** directory and modify it there. The MO looks in Alarms and then Alarms\Samples for the script file.

## SNPP Paging Notification Options Tab

This tab configures alarm notification by paging using the SNPP protocol to a paging service provider.

The screenshot shows a dialog box titled "Options" with a close button (X) in the top right corner. The dialog has a tabbed interface with the following tabs: Globals, Globals 2, Contacts, Logging, MD Groups, Auto Add, Monitored Objects, Alarm Objects, MSG Files, Search Strings, Paging, and Email. The "Paging" tab is selected, and within it, the "SNPP" sub-tab is active. The main content area contains a checkbox labeled "Enable Paging using a Simple Network Paging Protocol Service provider:". Below this checkbox are five text input fields: "Server Name", "Port Number" (containing the value "444"), "Logon", "Password", and "Pager/SMS Id". A "Test" button is positioned below these fields. At the bottom of the dialog are "Accept" and "Cancel" buttons. A status bar at the very bottom of the dialog reads "Enable SNPP paging."

SNPP or Simple Network Paging Protocol allows connection to a paging provider over the internet. SNPP can be used as an alternative or in conjunction with modem paging via the TAP protocol. TAP is being replaced with SNPP by some service providers and SNPP can be quicker and more reliable (subject to network connection reliability) than TAP.

### Enable Paging using a Simple Network Paging Protocol Service Provider

Check this box to enable or disable send pages with SNPP. On Alarm or Contact objects that you wish to page via SNPP, the paging script file name must be replaced with the word **SNPP**.

#### Server Name

Enter the name or IP address of your service provider's SNPP server.

#### Port

Enter the port number of your service provider's SNPP server.

#### Logon

Enter the logon name used to access your service provider.

**Password**

Enter any password needed to access your service provider.

**Pager/SMS ID**

Enter the default identification for your pager or cell phone.

You can click the Test button to send a page and test your settings. The Main window will be displayed so you may observe the results of the paging test logged in the log window. When the test is completed, the Options tab will be redisplayed.

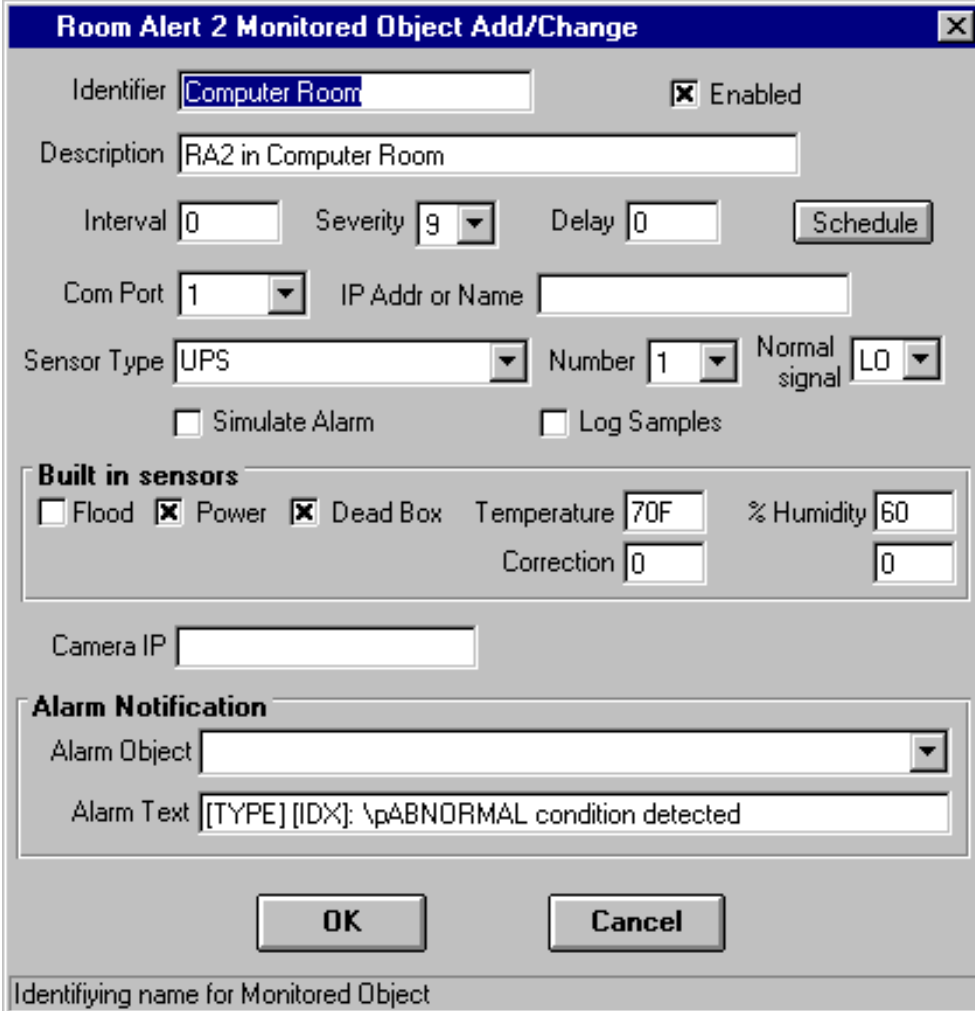
Note: SNPP pages are queued and processed after a scan is completed in the same way TAP pages are processed. Page repeat and retry options as set on the Paging Options Tab apply.

## Room Alert 2 Object Add/Change

This screen is used to add or change a Room Alert 2 object . The Room Alert 2 object monitors a Room Alert 2™ environment monitoring device attached to the local system or the network.

Room Alert 2™ is a hardware device that interfaces a variety of environmental sensors (such as temperature, water, smoke, power, etc) to a COM port on the local system or over the network. PageR can monitor the Room Alert 2 hardware device via the COM port or network and generate alarms when abnormal environmental conditions are detected. Room Alert 2 device and environmental sensors are available from CPL Systems. Room Alert 2 features onboard temperature and humidity sensors and reports the actual values of these sensors back for display in the Status window or Web Status page for the Room Alert 2 object.

This Monitored Object also supports the Room Alert LITE™ hardware device. This device attaches to your network and has built-in sensors for temperature and humidity. When using a Room Alert LITE device, the fields COM Port, Sensor Type, Sensor Number, Normal Signal, Flood and Power are NOT used. The IP address of the device is required.



The dialog box is titled "Room Alert 2 Monitored Object Add/Change". It contains the following fields and controls:

- Identifier:** Text box containing "Computer Room".
- Enabled:** Check box with a checked 'X'.
- Description:** Text box containing "RA2 in Computer Room".
- Interval:** Spin box set to 0.
- Severity:** Spin box set to 9.
- Delay:** Spin box set to 0.
- Schedule:** Button.
- Com Port:** Spin box set to 1.
- IP Addr or Name:** Text box.
- Sensor Type:** Spin box set to UPS.
- Number:** Spin box set to 1.
- Normal signal:** Spin box set to LO.
- Simulate Alarm:** Check box (unchecked).
- Log Samples:** Check box (unchecked).
- Built in sensors:** Section with:
  - Flood:** Check box (unchecked).
  - Power:** Check box with a checked 'X'.
  - Dead Box:** Check box with a checked 'X'.
  - Temperature:** Spin box set to 70F.
  - % Humidity:** Spin box set to 60.
  - Correction:** Spin box set to 0.
- Camera IP:** Text box.
- Alarm Notification:** Section with:
  - Alarm Object:** Spin box.
  - Alarm Text:** Text box containing "[TYPE] [IDX]: \pABNORMAL condition detected".
- OK** and **Cancel** buttons.
- Identifying name for Monitored Object:** Label at the bottom.

### Identifier

This is a short user defined label used to identify this Room Alert 2 object.

**Description**

This is an optional description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Interval**

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**Com Port**

Select the COM port that the Room Alert 2 device is attached to, if using serial connection.

**IP Addr or Name**

Optional support for Room Alert 2 with network interface. Enter the IP address or name assigned to the Room Alert 2 device you wish to use followed by a colon and then the port number assigned. This defaults to 10001. If an address is entered in this box, the COM port selection is ignored.

**Sensor Type**

Select or type a descriptive label that identifies the attached sensor.

**Sensor Number**

Each Room Alert 2 device supports 3 user sensors. Select the sensor (number) that is to be monitored.

**Normal Signal**

Set the signal level (LO or HI) that is returned by the attached sensor for NORMAL conditions. LO=contact open, HI=contact closed.

**Simulate Alarm**

Check this box to test the MO without a Room Alert 2 device attached to the system. Alarms are simulated and cleared on alternating scans of this MO.

**Log Samples**

Check this box to log each data sample read from the Room Alert 2 device to a disk file. This file will be in the install directory and named **RA2nn.log** where nn is the internal object number of the Monitored Object. This number is always the same for each MO instance.

**Flood**

Check this box to enable monitoring of the built-in flood sensor. Flood sensor pick up must be wired to the Flood sensor contacts on the Room Alert 2 device.

**Power**

Check this box to enable monitoring of the alternate power supply. Typically, the Power sensor monitors the power input to a UPS and the RA2 box 's power cord is plugged into the UPS output. This way if there is loss of power to the UPS, you can be alerted that the UPS is active and you have x minutes of power left.

**Dead Box**

Check this box to monitor for loss of communication with the RA2 box.

**Temperature**

Set the temperature alert value for the onboard temperature sensor. Enter a numeric value followed by F or C select the desired temperature scale. Defaults to F. Zero to disable.

Alarm generated if actual temperature is above the alert value. To alarm if actual temperature is below the alert value, append the > character to the alert value.

**%Humidity**

Set the percent humidity alert value for the onboard humidity sensor. Zero to disable. Alarm generated if actual humidity is above the alert value. To alarm if actual humidity is below the alert value, append the > character to the alert value.

**Correction**

You may set a correction value + or - to be applied to the temperature or humidity values read from the RA 2 box to correct for errors in the RA2 sensors.

**Camera IP**

Optional IP address or DNS name of Axis video camera to associate with this RA2 box. If present, live video from the camera will be displayed on the Web Status page for this monitored object.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[DESC]	expands to the monitored object's long description.
[SENSORTYPE]	expands to the sensor type label.

<b>[SENSORNUMBER]</b>	expands to the sensor number.
<b>[NORMALSIGNAL]</b>	expands to LO or HI, the normal signal value.
<b>[COMPORT]</b>	expands to the com port for the Room Alert device.
<b>[TEMPTHRESHOLD]</b>	expands to the temperature alarm threshold value.
<b>[TEMPERATURE]</b>	expands to the last reported actual temperature value.
<b>[HUMIDITYTHRESHOLD]</b>	expands to the % Humidity alarm threshold value.
<b>[HUMIDITY]</b>	expands to the last reported actual % humidity value.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

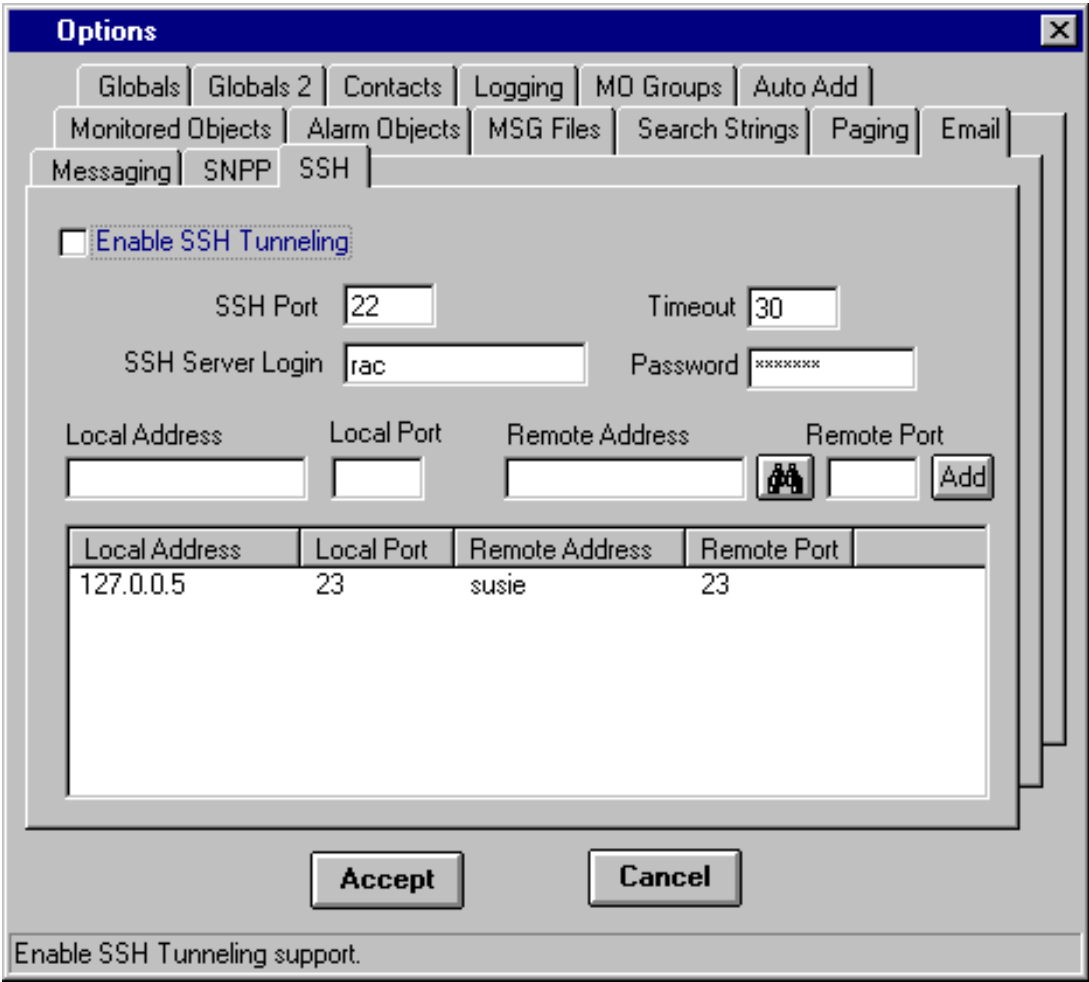
## SSH Options Tab

This tab configures support for secure tunneling of network protocols.

By default, network protocols are not secure, meaning the data transmitted via these protocols is sent "in the clear" and can be read by an agent monitoring the network. The SSH security protocol allows other network protocols to be routed through a secure connection or "tunnel" from one system to another. The use of a tunnel means that the applications communicating via a network protocol do not have to be changed and don't really know that their communications are being secured for them.

In order to secure these non-secure protocols, a request to connect to a remote system is directed to a local IP address that is the local entrance to an SSH tunnel to the target system. The tunnel sends the connection request to the SSH server on the target system, which directs the connection request to the target system server application just as if we had connected directly to the target system. Data traveling through the tunnel is encrypted and therefore secure from interception.

Support for SSH tunneling is provided primarily to support securing the Telnet connections used by the Host Login, Host Volume and Host Process Monitored Objects.



**Options**

Globals | Globals 2 | Contacts | Logging | MD Groups | Auto Add |  
Monitored Objects | Alarm Objects | MSG Files | Search Strings | Paging | Email |  
Messaging | SNPP | **SSH**

☐ **Enable SSH Tunneling**

SSH Port: 22      Timeout: 30  
SSH Server Login: rac      Password: xxxxxxx

Local Address:      Local Port:      Remote Address:      Remote Port:      Add

Local Address	Local Port	Remote Address	Remote Port
127.0.0.5	23	susie	23

Accept      Cancel

Enable SSH Tunneling support.

### Enable SSH Tunneling

Check this box to enable SSH Tunneling.



**Server Port**

Port number of the SSH protocol. Normally 22. All tunnels configured will use this port.

**Timeout**

Communications timeout value in seconds.

**SSH Server Login**

User name for login to the SSH server. This login name will be used for all tunnels configured.

**Password**

Password for login to the SSH server. This password will be used for all tunnels configured.

**Tunnel List.**

This is a list of tunnels that are currently defined. To delete a tunnel, you can single click the local address to highlight the tunnel and then press the Delete Key. You can also double click the local address to remove the tunnel.

**Local Address**

To add a new tunnel, enter the local IP address that will be the start of the tunnel. This must be a local address or the form 127.0.n.n. A tunnel is defined by the local address and local port pair. Typically, a single local address is mapped to a single remote address.

**Local Port**

This is the local port that combined with the local address defines the start of a tunnel. Use port 23 to tunnel Telnet.

**Remote Address**

This is the remote name/address of the target system where the tunnel will end. Any Monitored Object that is to use this tunnel must have it's target system name/IP address exactly match the remote address of the tunnel. So if the tunnel remote address is the system name "susie", then any MO that will be redirected to the tunnel must also use the name "susie".

**Remote Port**

This is the remote port which combined with the remote address defines the end of a tunnel. This is normally the same as the Local Port value.

To create a new tunnel, enter the local address and port and the remote address and port and click the **Add** button.

To further understand tunnels and thier configuration, lets look at an example. I wish to use Telnet from my system to two other systems, A and B. To do this, I would create a tunnel to system A as follows:

**Local Address = 127.0.0.5 Local Port = 23 Remote Address = A Remote Port = 23**

Port 23 is the Telnet standard port. To create a tunnel to system B, I would create it as follows:

**Local Address = 127.0.0.6 Local Port = 23 Remote Address = B Remote Port = 23**

To create a tunnel to system B for the SMTP (port 25) protocol, I would create it as follows:

**Local Address = 127.0.0.6 Local Port = 25 Remote Address = B Remote Port = 25**

Finally, any Monitored Object that uses Telnet to system A must have A as it's host name. The MO's host/server/system name is matched to the remote name in the tunnels to determine if a tunnel should be used and which one. So if my Telnet MO has A for it's host name, at Telnet connect time, the address used by Telnet will be changed to 127.0.0.5 and so Telnet will connect via the tunnel to system A's Telnet service .

## SQL Query Object Add/Change

This screen is used to add or change an SQL Query monitored object .

This monitored object uses ODBC to connect to an SQL database and execute a query. If the connection to the database fails or the query returns no records, an alarm is generated. This monitored object requires Microsoft Data Access Components 2.5 or later to be installed.

**SQL Query Monitored Object Add/Change**

Identifier:  ☒ Enabled

Description:

Severity:  Delay:

Data Source Name:

User Name:  Password:  Timeout:

SQL Query:

**Alarm Notification**

Alarm Object:

Alarm Text:

Unique Identifier (name) for this object.

### Identifier

This is a unique name for the monitored object.

### Description

This is an optional description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval .

**Data Source Name**

Enter or select the Data Source Name of the SQL Server to be monitored. Data Source Names are configured in the ODBC Data Sources control panel applet. The DSN points to the database type, ODBC driver and server location.

**User Name**

This is the user name used to login to the SQL server.

**Password**

This is the password used to login to the SQL server.

**Timeout**

This is the timeout in seconds to apply to all communications with the SQL server.

**Query**

This is the SQL Select statement to be executed if the MO successfully logs onto the SQL server. If no records are returned by this Select statement, an alarm is generated. You can click the **Test** button to execute the SQL Query operation and validate the setup.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.

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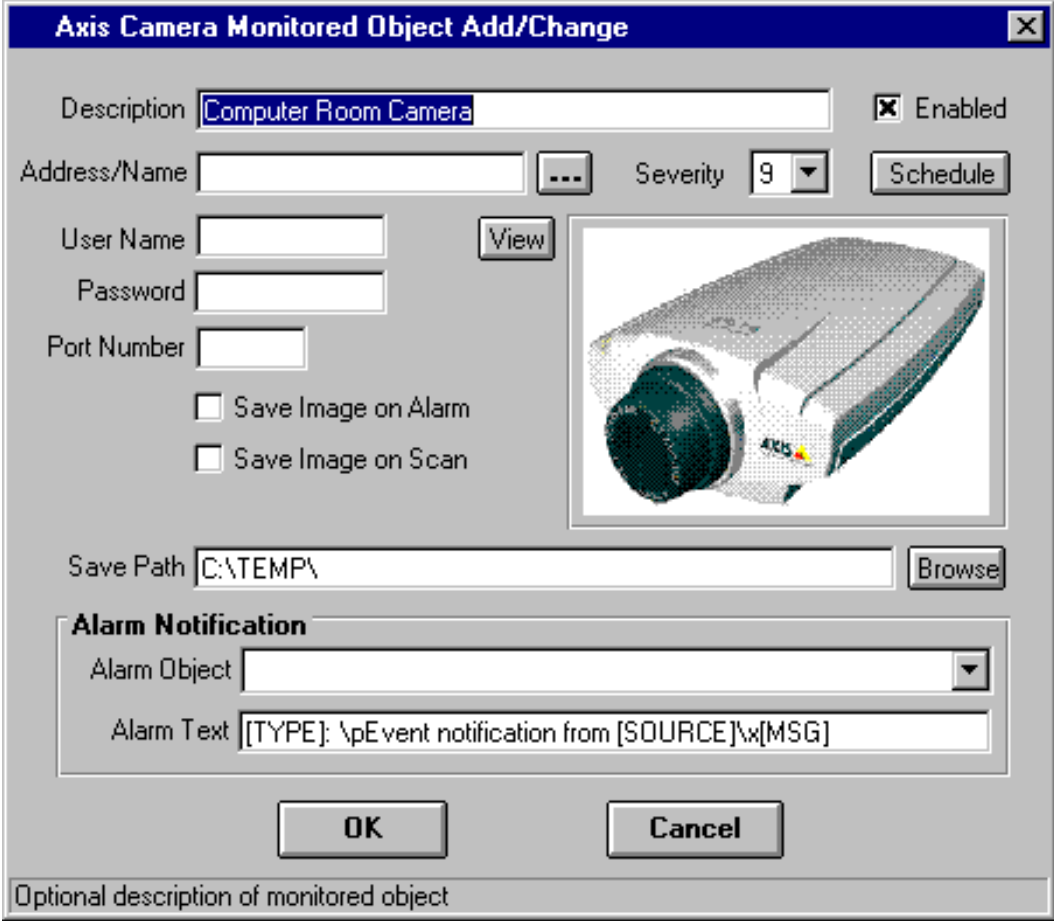
<b>[IDX]</b>	expands to the monitored object's unique identification string with the Data Source Name appended.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[DSN]</b>	expands to the Data Source Name.
<b>[RECORDSFOUND ]</b>	expands to "True" if records are returned by the query otherwise returns "False".
<b>[LASTERROR]</b>	expands to the last error returned by the ODBC driver.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

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## Axis Video Camera Object Add/Change

This screen is used to add or change an Axis Video Camera monitored object .

This monitored object listens on the network for Motion Detection messages from Axis Video Cameras. Alarms are generated for motion detection. This object can also capture video images from the camera on a regular basis. This object has been tested with the Axis 210 network video camera but should work with any Axis network camera.



**Axis Camera Monitored Object Add/Change**

Description:  ☒ Enabled

Address/Name:  ... Severity:

User Name:

Password:

Port Number:

☐ Save Image on Alarm

☐ Save Image on Scan

Save Path:

**Alarm Notification**

Alarm Object:

Alarm Text:

Optional description of monitored object

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Address/Name

This is the IP address or DNS name of the Axis Video Camera. See below for information about how to use this field.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**User Name**

This is the user name used to login to the camera if required.

**Password**

This is the password used to login to the camera if required.

**Port Number**

Normally this MO listens on the network for messages from the camera. The camera must be configured with the IP address of the system where PageR is located and a port number must be selected for communication between the camera and PageR. This port number MUST BE THE SAME for all Axis Camera MOs.

**View Button**

Click this button to view live video from the camera. Only works if the IP address/Name of the camera is supplied. If there is any problem accessing the camera, the picture of the Axis 210 will be displayed instead of the live image.

**Save Image on Alarm**

When checked, if a Motion Detection message is received from the camera, the current image on the camera is retrieved and stored in the directory entered below. If the camera requires login, the user name and password must be supplied above.

**Save Image on scan**

When checked, on each scan (subject to the schedule, if any) the current image on the camera is retrieved and stored in the directory entered below. If the camera requires login, the user name and password must be supplied above.

**Save Path**

This is the directory path where camera images will be saved. The directory must exist.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.
[ID]	expands to the monitored object's unique identification string.
[IDX]	expands to the monitored object's unique identification string with the Data Source Name appended.

<b>[DESC]</b>	expands to the monitored object's long description.
<b>[SOURCEIP]</b>	expands to the IP address of the camera that sent the last motion detection message.
<b>[SOURCENAME]</b>	expands to the DNS name (if available) of the camera that sent the last motion detection message.
<b>[SOURCE]</b>	expands to the DNS name if available and if not, the IP address of camera that sent the last motion detection message.
<b>[MSG]</b>	expands to the actual content of the last motion detection message.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

#### Notes

This monitored object listens for **Motion Detection** messages sent by Axis Video Cameras on the network. The Video camera must be configured to send such messages to the system hosting PageR on the port number set on this MO. If an IP address or DNS name is entered, then the MO will only process messages from the camera with that address or name. If the IP address box is left blank, then the MO becomes the default camera MO and will process messages from any camera that is not handled by an MO with a specific address or name.

For motion detection to be monitored, you must configure the camera to have a **TCP Event Server** record that points to the system where PageR is hosted using the same Port number entered on this MO. Use the same port number for all cameras and all MOs. Then configure the Motion Detection feature in the camera and select the TCP Event Server you created for PageR. The **motion detection message text** configured in the camera is the alarm message text reported by PageR in the **[MSG]** substitution variable.

When motion detection messages are received, you may capture the current image on the camera to the directory entered. If you capture an image, and the Alarm Object you have selected sends SMTP email notification, that image will be attached to the email notification.

Images are stored in the specified directory and have the file name format:

**AxisImage\_Source\_yyyymmddhhmmss.jpg**

Source will be the camera DNS name (if available) or the camera IP address.

If you wish to have the MO capture an image from the camera on a regular basis, you must

enter the IP address or DNS name of the camera and check the appropriate box. Then, on each scan, subject to any defined Schedule , the current image will be captured from the camera and stored in the specified directory.

If cameras require a login, then you must specify the user name and password to be used in order for any images to be captured. If you want to use logins on cameras, it is suggested that you create a standard login user name and password for use by PageR and put that in all cameras.

In order for the camera DNS name to appear in alarm reporting or in the captured image file name, you must have a **reverse** DNS lookup record that maps the camera IP address to it's name configured in your DNS server. This is in addition to the normal DNS record that maps the name to the IP address.

## Managing Configurations

A **Configuration** is all of the settings and objects configured within PageR Enterprise. A Configuration has a name by which it is known. Configurations are stored by this name in the Windows Registry under the **LOCAL MACHINE\Software** key. The Configuration created when PageR Enterprise executes for the first time is called PageR. The name of the currently loaded Configuration is displayed on the Globals tab of the Options Screen.

When PageR is executed, it loads the Configuration identified as the **Start Up Configuration**. The loaded Configuration is stored in memory and can be modified using the Options Screen. Modified configurations remain only in memory until explicitly saved to the Registry.

If you **change** the Configuration Name on the Globals tab of the Options Screen, and then save the configuration to the Registry, the complete current configuration is **copied** to the this new name and it becomes the next configuration to be loaded. The original configuration remains in the Registry.

On the Main screen, under the Settings pull down menu, is an option to set the next Start-Up Configuration. This displays a screen which allows you to select from a list of known configurations or type a configuration name. The configuration you select will be loaded on the next start up of PageR, so you must shutdown and restart to load the selected configuration. You may type in the name of a non-existent configuration to create a **new, blank configuration**.

You may also load the configuration from a file (see below).

You may also select the configuration to be loaded on the PageR.exe run line. On the Start Menu shortcut that executes PageR, use the **CONFIG=name** parameter to select a start-up configuration.

Under the Settings pull down menu is an option to save the currently loaded configuration to a file. This will save the configuration in a disk file which is named as the configuration name with a **.cfg** extension. This file is in XML format. You can load a configuration file by specifying the file name (no extension) on the CONFIG=name run parameter and adding the **IMPORT** parameter. The loaded configuration will have the name specified on the CONFIG parameter. The file is saved to and loaded from the install directory.



## Windows System Object Add/Change

This screen is used to add or change a Windows System monitored object .

The Windows System Monitored Object is a generic MO that can be used to monitor any system with a Windows Operating system. It functions the same as the NT System, Windows 2000/XP system monitored objects. This MO allows for easier expansion to additional Windows OS types and includes support for Windows 2003 and Windows Vista.

**Windows System Monitored Object Add/Change (53)**

Description: Gateway Server ☒ Enabled

Interval: 0 Severity: 9 Delay: 0

System Name: YODA

Windows Type: Windows 2000

**Alarm Notification**

Alarm Object:

Alarm Text: [TYPE] [IDX] \pnot responding and may be DOWN

Optional description of monitored object

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

### Delay

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**System Name**

Enter or select the name of the Windows system to be monitored.

**Windows Type**

Select the Windows Operating System on the target system.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued by PageR. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the application name of "PageR".
<b>[SYSTEM]</b>	expands to the name of this system.

## Quick Start Guide

### PageR Quick Start Instructions

To input a new licence key, run 'PageR Set Licence' from the PageR Start Menu.

At the main screen click **OPTIONS** to set up monitoring.

In a nutshell, we are going to do this:

- (1) SET UP A NUMBER OF "MONITORED OBJECTS" (MOs), ie THINGS WE WATCH .
- (2) EACH MO IS LINKED TO AN ALARM OBJECT (AO).

The Alarm Object can contain a grid of contacts which can provide alert escalation. It escalates a ROW at a time on each scan .

- (3) EACH AO USES ONE OR MORE SMS/PAGER/EMAIL 'CONTACTS' .

Therefore - we have to set up 'IN REVERSE ORDER', as follows:

#### 1) CONTACTS

To add a Contact, go to the OPTIONS screen, click the 'Contacts' tab then 'Add Contact'.

Enter contact Name. To alert via pager or SMS phone, click Browse to the right of the Pager Script box. Browse into the SAMPLES directory and select the CELLNET.MSG (UK) file or the .MSG file appropriate for your paging/SMS provider.

**Note:** For SNPP (Internet) SMS (instead of modem dialup) put snpp or SNPP in the Pager Script box. Later, set up the SNPP tab in OPTIONS as follows:

Server name: 195.157.52.212  
Port: 444  
Logon: tr/073

other fields can be blank. Try modem dialup first though.

Return to the Contacts Setup. Enter the mobile phone number (or pager id) in the "Pager/Phone ID" box.

Set up separate contacts for email and mobiles eg 'Greg Mobile' and 'Greg Email'. Each can then be used in different situations.

**Email Alerts :** Go to the Email tab in the OPTIONS screen to configure SMTP email by entering the mail host (mail server) ip address and any valid email 'Return Address', usually just your own email address.

#### 2) ALARMS

To add an Alarm, go to the OPTIONS screen, click the 'Alarm Objects' tab, click **Add Alarm**.

Give the AO a name such as 'SUPPORT'. The grid is an escalation schedule, everyone on

each ROW gets alerted together. If the problem persists it escalates down through the other rows. You can leave boxes and whole rows blank and it will only alert on the boxes/cells filled in.

### 3) MO's

To add an MO, go to Monitored Objects TAB on the OPTIONS screen and click Add Object.

The Monitored Object Types you see all have a different purpose and some are very powerful (eg SNMP QUERY). Double click one then hit the F1 key. This will display the help information for that MO. It's important you understand what all these MO types do. They are your **monitoring toolkit**. Scroll down to see them all. The license cost is based on how many of these MOs you wish to use.

### 4) Set up a HEARTBEAT MO.

This is a daily reminder that PageR is still monitoring and the alerting is working. Double-click the MO to set it up. Click **Schedule** and then click **Once Per Day**, then **OK**. Insert the Alarm Object you just set up. Then click **Accept**. Now click **Settings/Save**, then **START** on the top left of the main screen. This will test the alerting you have set up.

### 5) Run Internet Explorer 5 (or greater) on the same PC as PageR.

Enter 'http://localhost:1088' for the URL address. This should bring up the PAGER WEB PAGE MANAGEMENT INTERFACE. To view this page from any other PC use the PageR system's ip address or 'server name' as the http:// URL address.

Note: check the port number in OPTIONS/More Globals. We default to 1088 as it is registered as ours, which means you would use the URL address followed by :1088 to browse PageR Enterprise.

## SYSTEM VIEW

System View (on main screen) is a visual console screen showing the servers being monitored, when an MO fails the server shows up RED.

At the main screen click the **Systems** button. In the tool bar at the top you will see three System Explorer icons. Hold the cursor on each to see what it does. Click the RH one to explore the network for Windows servers. It may take some time. It will create a grey box outline for every server it finds.

To set up MO's from here right-click the box and choose to set up a new MO. This will take you to the ADD MO screen where you can choose an MO type. The server name is filled in automatically for you.

## EIGHT MORE IMPORTANT FEATURES

**1) STATUS** button on main screen - shows outstanding alarms and the 'pager queue', ie alarms waiting to be sent.

**2) EVENTS** button on main screen - is a 'Console Window' for Event logs, Syslog and SNMP alerts which can be viewed 'live'.

**3) AUTO ADD** tab on OPTIONS screen - allows you to easily set up a Ping test for all networked ip devices. It also allows you to scan the network and make a list of PING, SNMP and Windows NT/2K/XP/2003 objects which can be used internally by PageR.

**4) DOWNTIME REPORTING** - using PageR data LOGGING and the sample Access database SNT.MDB (See Downtime.zip).

**5) INSTANT MESSAGING** - each user can have their own personal Instant Messenger console on their desktop to will receive alerts. See online help or HELP.DOC.

**6) WEB CAMS** - can be set up using the Axis 210 webcam. We can alert on movement detection.

**7) ROOM ALERT** - is an add-on option to allow environmental monitoring, temperature, humidity, power, smoke etc.

**8) DATACENTER EDITION** - adds support for non-Windows servers eg UNIX, AS/400, VMS, HP3000 etc.

## FOR MORE HELP

See Online Help in PageR and GetStarted.doc in the START menu. Remember **F1** gives context-sensitive help.

Also from the PageR START menu, **PageR.pps** is a useful Powerpoint presentation/overview for senior managers and for 'selling' PageR Enterprise to your IT team.

## Disk Drives Object Add/Change

This screen is used to add or change a Disk Drives Monitored Object .

The Disk Drives MO is used to monitor physical disk drives on a Windows system. On each scan of the MO, attributes on each disk drive are checked and an alarm is generated for any problems detected. The target system must have the **Windows Management Instrumentation (WMI) Core 1.5 or later installed**.

**Disk Drives Monitored Object Add/Change (111)**

Description:  ☐ Enabled

Interval:  Severity:  Delay:

System:  ... Time Out:

User Name:  Password:

Available Drives:

- ☒ PHYSICALDRIVE0 (ST32041
- ☒ PHYSICALDRIVE1 (ST33063
- ☒ DEVICECDROM0 (CD-ROM F
- ☒ **DEVICECDROM1 (DVD-ROM**

☒ Check for USB drives

Max Drives:

**Alarm Notification**

Alarm Object:

Alarm Text:

Optional description of monitored object

### Description

This is an optional description of the monitored object.

### Enabled

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

### Interval

This is the scan interval for this object. This is the minimum time that must pass between scans of this object.

### Severity

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**Delay**

This is the number of seconds that an alarm on this object must persist before alarm notification is performed. This should be equal to or greater than a multiple of the object or global interval.

**System**

Enter/select the host name or IP address of the Windows system on which the disk drives will be monitored. Leave blank for the local system.

**User Name**

When accessing remote systems, it may be necessary to supply a user name for access to the WMI objects desired. If no user name is entered, the local user credentials under which you are executing will be used.

**Password**

If a user name is specified above, the corresponding password must be entered.

**Available Drives**

This is a list of the Disk Drives on the system identified above. The list is refreshed whenever the System is changed or the **Load** button is clicked. Check a drive to enable monitoring. Click on a drive to display the monitoring details of the drive in the panel on the right.

The key monitored attribute is the **Status** of the drive. This value is determined by the drive itself using S.M.A.R.T. self-monitoring technology. S.M.A.R.T. is an on-board technology of disk drives. S.M.A.R.T. monitors an array of attributes such as temperature and read/write/seek errors. The drive has thresholds for each monitored item built in by the manufacturer. If any of the S.M.A.R.T. monitored attributes gets out of tolerance, the status will change and report the error. You can also monitor the following additional drive attributes:

**Loaded**

Generates an alarm if the drive has media loaded.

**Not Loaded**

Generates an alarm if the drive does not have media loaded.

**Volume**

When you click **OK** on this screen, the volume names of all drives with media loaded are recorded. If you enable volume checking, an alarm will be generated if at any future point the volume name does not match the recorded name.

**Check for USB Drives**

Generates an alarm if any USB drives are present on the target system.

**Max Drives**

Generates an alarm if the number of disk drives found on the target system exceeds this value. Set to zero to disable.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be replaced by their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

<b>Keyword</b>	<b>Description</b>
<b>[TYPE]</b>	expands to the monitored object's type.
<b>[ID]</b>	expands to the monitored object's unique identification string, the name or IP address of the target system or blank for local system.
<b>[DESC]</b>	expands to the monitored object's long description.
<b>[ALARMID]</b>	expands to the unique numeric identifier for the monitored object's current alarm event.
<b>[SYSNAME]</b>	expands to the name or IP address of the target system or "Local System".
<b>[DRIVENAME]</b>	expands to the name of the disk drive that has generated the current alarm.
<b>[DRIVEID]</b>	expands to the identifier of the disk drive that has generated the current alarm.
<b>[DRIVESTATUS]</b>	expands to the description of the current alarm.
<b>[TIME]</b>	expands to the current time.
<b>[DATE]</b>	expands to the current date.
<b>[AGENT]</b>	expands to the the name of this application.
<b>[SYSTEM]</b>	expands to the name of this system.



## WMI Events Object Add/Change

This screen is used to Add or change WMI Events Monitored Objects.

Windows Management Instrumentation (**WMI**) is Microsoft's Windows platform implementation of the Web Based Enterprise Management (**WBEM**) standard.

The WMI Events Monitored Object executes WMI Event monitoring scripts. These scripts describe the WMI Events to be monitored and event handler procedures to process the events when detected. The WMI Events MO reads the event script at the start of scanning and posts the WMI Events described in the script to the WMI processor on the target system. After that, WMI on the target system will monitor for the events and if an event occurs, WMI will call back to this MO to execute the event handler procedure associated with the event. This procedure is used to examine the event and raise alarms or perform other processing. Once the events have been posted to WMI, this MO consumes no overhead and is only active if an event is detected by WMI.

See the bottom of this page for additional important information about WMI and the content of event scripts.

The screenshot shows a dialog box titled "WMI Events Monitored Object Add/Change (116)". It contains the following fields and controls:

- Identifier:** A text box containing "New Process".
- Description:** A text box containing "WMI Event monitor for new windows process. If a new".
- Severity:** A dropdown menu showing "9".
- System Name:** A dropdown menu with a small icon to its right.
- User Name:** A text box.
- Password:** A text box.
- Event Script File:** A text box containing "...\\Scripts\\Samples\\WMIEventsNewProcess.txt". To its right are "Browse", "Edit", and "Validate" buttons.
- Parameters:** A text box containing "\"regedit.exe regedit32.exe notepad.exe\"".
- Alarm Notification:** A section containing:
  - Alarm Object:** A dropdown menu.
  - Alarm Text:** A text box containing "[TYPE] [IDX]: \\p[EVENTMSG1]\\x[EVENTMSG2]".
- Buttons:** "OK" and "Cancel" buttons at the bottom.
- Footer:** A text box containing "Optional short name for monitored object".

### Identifier

This is a short label that is used to identify this WMI Events object.

### Description

This is an optional description of the monitored object.

**Enabled**

Enables/disables the object for monitoring. Used to temporarily exclude an object from monitoring.

**Severity**

This is the Severity indicator for this object. It allows you to rank the importance of alarms on this object. The range is 0-9, with 0 as the most severe alarm condition.

**System Name**

Enter or select the name or IP address of the Windows system on which the WMI query will be executed. Click the ... button to scan your network and populate the drop down list.

**User Name**

When accessing remote systems, it may be necessary to supply a user name for access to the WMI objects desired. If no user name is entered, the local user credentials under which you are executing will be used.

**Password**

If a user name is specified above, the corresponding password must be entered.

**Event Script File**

The Event Script is a VB script file containing script code that follows the convention defined by this MO. The script file is read and executed at the start of scanning. The script describes the WMI Events to be monitored and the event handler procedure for each event. See the discussion of WMI Event Scripts below for more information.

There is an example event script in **\Scripts\Samples\WMIEvents.txt**. There are also a number of pre-defined WMI Event MOs available on the Add new Monitored Object selection screen.

**Parameters**

This is an optional list of comma or space separated parameters that are passed to the event script at initialization. If a parameter has embedded spaces, enclose in quotes. See the event script discussion below for more information.

**Alarm Object**

Identifies the Alarm Object to be used for alarm notification when this monitored object generates an alarm. The drop down list shows all available Alarm Objects. An Alarm Object must be selected to perform paging, broadcasting or email of alarm events for this object.

**Alarm Text**

When an alarm is generated for an object, a default alarm notification message is issued. This message identifies the object and describes the alarm. You can override the default alarm message by entering custom alarm notification message text in this box. You can use substitution keywords in the message which will be expanded to their run time values when the message is generated. Keywords appear as **[keyword]** in the message text. The keywords you can use for this object are:

Keyword	Description
[TYPE]	expands to the monitored object's type.

[ID]	expands to the monitored object's unique identification string.
[IDX]	expands to the monitored object's identification string and includes the target system name.
[SYSTEM]	expands to the target system name.
[SYSTEMX]	expands to " on target-system-name" or "(local)".
[DESC]	expands to the monitored object's long description.
[USER]	expands to the user name used to login to WMI.
[EVENTNAME]	expands to the name of the event that generated the current alarm.
[EVENTCOUNT]	expands to the number of times this event has been detected.
[EVENTTIME]	expands to the time of the event that generated the current alarm.
[EVENTMSG1]	expands to the alarm message #1 set by the event script for the current alarm.
[EVENTMSG2]	expands to the alarm message #2 set by the event script for the current alarm.
[DATE]	expands to the current date.
[AGENT]	expands to the name of this application.
[SYSTEM]	expands to the name of this system.

### WMI Event Scripts

WMI Event monitoring is described in an event script. It is hosted by the WMI Events monitored Object. It provides one or more WMI Event Notification queries to the MO and the event handler routines to process events returned by those queries.

WMI Notification queries are created in the **Init()** method by adding a **WMI WQL event notification query** to the MO via the **AddEvent** method, exposed to this script by the hosting WMI Events MO. Events have a name, a type (intrinsic/extrinsic), the WMI namespace that applies to the event class, a WQL notification query string, and the name of the method in this script that will be called when events arrive.

**WQL** is a query language defined by WMI, similar to SQL. WMI queries can retrieve WMI objects or define events (which are objects) that WMI will report. See WMI documentation for more information on WQL. Intrinsic or extrinsic is an attribute of a WMI Event Object and is obtained from the WMI documentation for the event in question.

The WMI Events MO will call the **Init()** method on the first scan of the MO to obtain the event queries. The MO will then post those queries to WMI on the target system. When events are

detected and the MO is notified, it will call the event handler method. Note that when a scan is stopped and then restarted, this script will be reloaded from the file and the events will be recreated.

Note that the **Init(parms)** method accepts a parameter array passed from the MO's Parameters entry field. Each parameter will be in a separate array position of the parms array.

When the MO calls the event handler method, a parameter array is passed to the method. The first parameter (array item 0) is a **WMIEvent object** as defined by the MO. These WMIEvent objects are created by the call to AddEvent in the Init method. The WMIEvent object exposes the following properties:

<b>Name</b>	= name of the event (1st item of addevent call)
<b>EventType</b>	= type of the event (2nd item of addevent call)
<b>NameSpace</b>	= name space of the event (3rd item of addevent call)
<b>Query</b>	= the WQL query string (4th item of addevent call)
<b>Handler</b>	= name of event handler method (5th item of addevent call)
<b>AlarmMsg1</b>	= Primary alarm message for event. This is set by the event handler method as
	appropriate for the event.
<b>AlarmMsg2</b>	= Extended alarm message for event. This is set by the event handler method as
	appropriate for the event.
<b>LastEventTime</b>	= date & time of last determination by the event handler method that the
	event represents an alarm and notification should occur. Set in
	conjunction
	with the AlarmMsg fields.
<b>EventInstance</b>	= an object reference that contains the WMI event object returned with the WMI
	event notification sent to the MO. The object will vary depending on
	the query
	and event type , but will be a WMI schema object defined in the WMI
	doc. The
	event handler can examine properties exposed by this object to
	process the event.

The event handler method is responsible for examining the WMI EventInstance object passed in the WMIEvent object to determine if the event represents an alarmable event. If so, the handler will set the alarm messages, the event time and call **SG.MOALARM2** ,,,**WMIEvent** to cause alarm processing to occur. The handler may perform other actions as appropriate. Long processing delays should be avoided in handlers as other events cannot be processed while in a handler.

Note that several event queries can use the same event handler method if appropriate.

### More about WMI

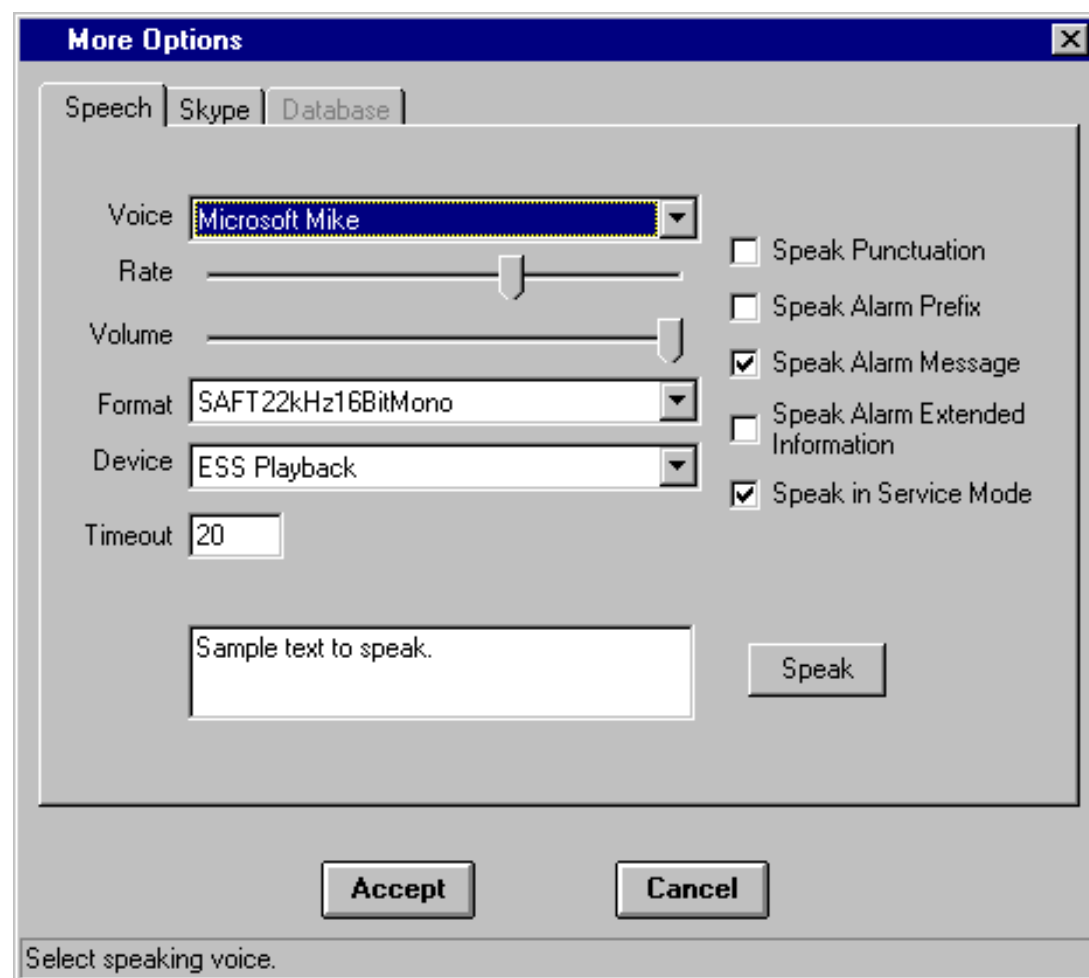
Windows Management Instrumentation is the Microsoft implementation of the WBEM systems monitoring and management standard. The WBEM standard defines an object model for managed systems called the Common Information Model (**CIM**). Systems that implement WBEM expose a standard object model describing system components to WBEM management tools. The CIM schema defines a standard object model that all WBEM implementations are expected to expose populated with object instances and property values appropriate to the target system. Implementations may define extensions to the schema as appropriate. For more information, see the WMI Object Explorer.

**DISCLAIMER**

WBEM, CIM and WMI are extensive and complex subjects. This help information is not intended as documentation of these subjects. The user of the WMI support in this product is expected to be familiar with WBEM, CIM and WMI. Extensive documentation on WMI is available as a free download from Microsoft. Target systems must have the appropriate **WMI Core** components version 1.5 or later installed. This is also available as a free download from Microsoft. This product does not install the WMI Core components.

## More Options Window

The More Options Window contains a series of tabs that give access to additional PageR configuration options.



The More Options window allows access to additional PageR configuration settings. The settings are organized onto tabs. Switch between setting tabs by clicking on the appropriate tab.

The settings tabs are:

Speech

Skype

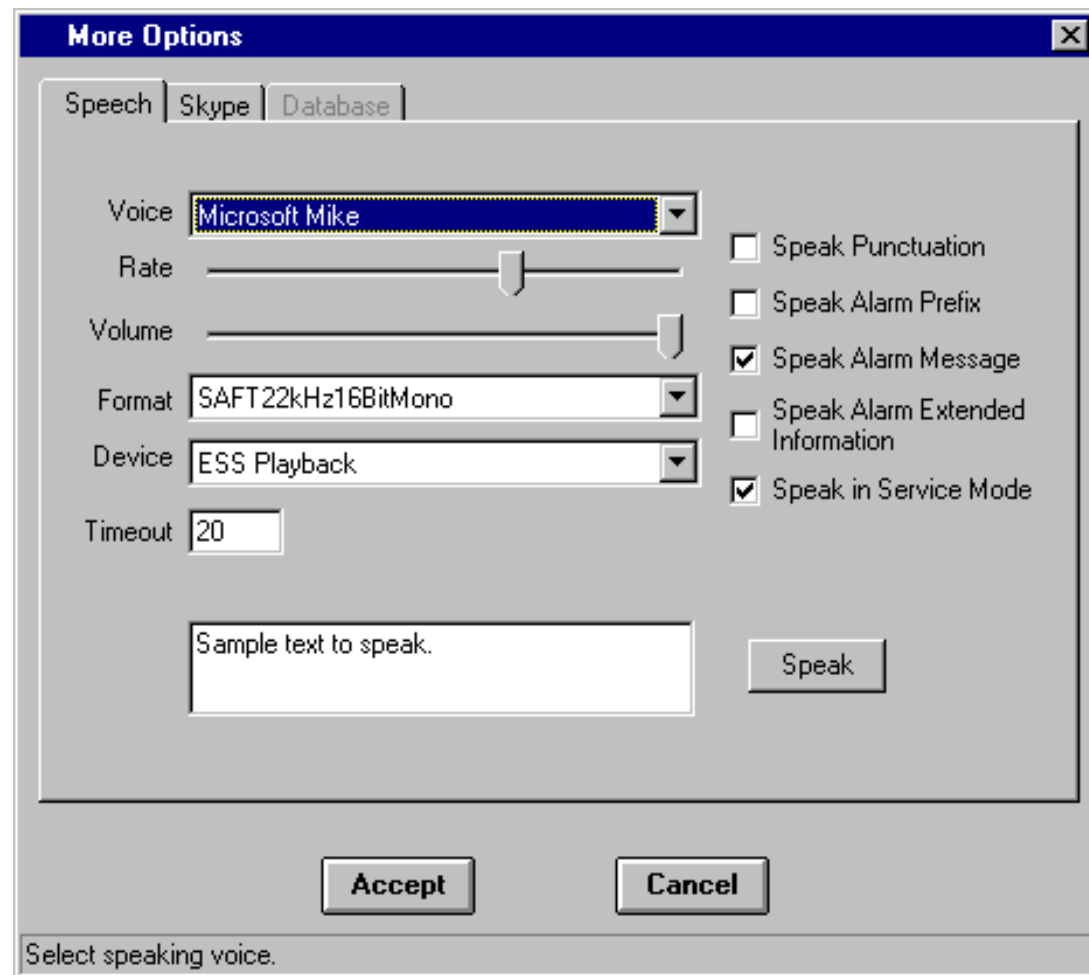
Database

After making changes to one or more tabs, you can click **CANCEL** to discard the changes and return to the Main window or **OK** to accept all changes and return to the Main window. Accepted changes are retained temporarily until saved to the Registry or until you exit PageR. If there are unsaved changes at exit, you will be prompted to either keep the changes to the Registry or discard them.

## Speech Options Tab

This tab configures spoken messages and alarms.

On the Options 2 tab of the primary Options screen, you can select **audible alarms**. In addition to selecting sound files or built-in sounds, you can enter the word **speak** in that field to have alarms and warning/error messages spoken aloud using Microsoft Speech. This tab provides options to configure the speech.



### Voice

Select the voice to use from the available voices on your system.

### Rate

Set the speed of speaking.

### Volume

Set the volume of speech.

### Format

Select the format of the .wav that is generated and spoken for text to speech. Generally, you should use SAFT22kHz16BitMono.

**Device**

Select the output device from those available on your system.

**Timeout**

Set a timeout in seconds to limit how much time is allowed to speak messages or zero to not limit the length of messages.

**Speak Punctuation**

Enable to have punctuation characters spoken. Normally they are ingored.

**Speak Alarm Prefix**

Enable to speak the prefix text (Monitored Object identifier) with alarm messages. Normally only the alarm is spoken.

**Speak Alarm Message**

Enable to speak alarm messages.

**Speak Alarm Extended Information**

Enable to speak the extended information that may be available with alarm messages.

**Speak in Service Mode**

Enable to have speech occur when this application is run in service mode. Normally, service mode operation would be silent.

**Test Speech Settings**

Enter sample text and click **Speak** to test the speech settings.



## Skype Options Tab

This tab configures delivery of logging and alarms via the Skype VOIP service .

**Skype** is a popular VOIP PC client and service. The Skype PC client is used to make voice calls to other Skype clients or from the client to regular telephone line. Skype also supports chat between clients. You may deliver alarms as voice calls to Skype users on their PCs or to regular telephones. Such alarms arrive as phone calls and when the recipient answers, the alarm message is spoken. You may also send the activity log to the chat window of a Skype client.

Use of Skype requires the Skype PC client be installed on the same system as PageR. You just also have an account on the Skype Service. If you wish to call regular telephones, you must have this feature enabled on your Skype account (may require payment of a fee).

The screenshot shows a dialog box titled "More Options" with three tabs: "Speech", "Skype", and "Database". The "Skype" tab is selected. Inside the dialog, there is a checkbox labeled "Enable Alarm Notification via Skype" which is checked. Below this are several text input fields: "Greeting" with the value "alarm from [AGENT]", "Sign Off" with the value "goodbye", "Skype Path" with the value "C:\Program Files\Skype\Phone\Skype.exe" and a "Browse" button next to it, "Default Target" with the value "echo123", "Message Repeat" with the value "1", "Voice KB/Sec" with the value "30", "Message Timeout" with the value "0", and "Connect Timeout" with the value "60". At the bottom of the dialog are "Accept" and "Cancel" buttons. A status bar at the very bottom of the dialog reads "Enables alarm notifications with Skype."

### Enable Alarm Notification via Skype

Check to enable use of Skype for Alarm Notifications.

### Greeting

Enter text to be spoken at the start of a voice alarm notification. This introduces the alarm message.

### Sign Off

Enter text to be spoken at the end of the alarm notification. This signifies the end of the message.

**Skype Path**

Enter the full disk path to the Skype.exe executable program.

**Default Target**

This is the default target or recipient of alarm notifications. This can be a Skype user name (target), a name in the local Skype client's contact list or a telephone number (starting with a + sign).

**Message Repeat**

Enter number of times to send the notification.

**Voice KB/sec**

Adjust the number of Kbytes of wav file size representing one second of speech. This value is used to compute how long to wait for Skype to deliver the message once it is converted to a wav file and given to Skype for delivery. Skype does not tell us when it has completed speaking the message, so we have to wait an appropriate amount of time.

**Message Timeout**

Maximum time in seconds to allowed for a complete alarm notification message.

**Connect Timeout**

Maximum time to wait for a connection to the target client or phone line to be established.

**Notes on using Skype**

In order to send alarm notifications via Skype, you must configure Alarm or Contact objects to make use of Skype. On a Contact, enter the word **skype** in the **Pager Script** field. Enter the **Skype target** (name or +number) in the **Pager Service #** field. On an Alarm object, you enter the word **skype** in the Pager Script field to send alarms to the default Skype target.

If running PageR on the desktop, the Skype client may also be running, but it cannot be used to make calls as that will prevent PageR from making calls. If the Skype client is not running when PageR wishes to make a call, PageR will launch the client.

If running PageR as a service, you must NOT run the Skype client on the desktop. PageR will manage the Skype client itself in a manner compatible with service mode operation.

Please note that the login of the Skype client to the Skype service can take a long time.

If Skype is enabled, you can log activity to the default Skype target via Skype chat. On the Messaging Tab of the Options Window, you can select logging and alarm notifications to be sent via Skype chat.

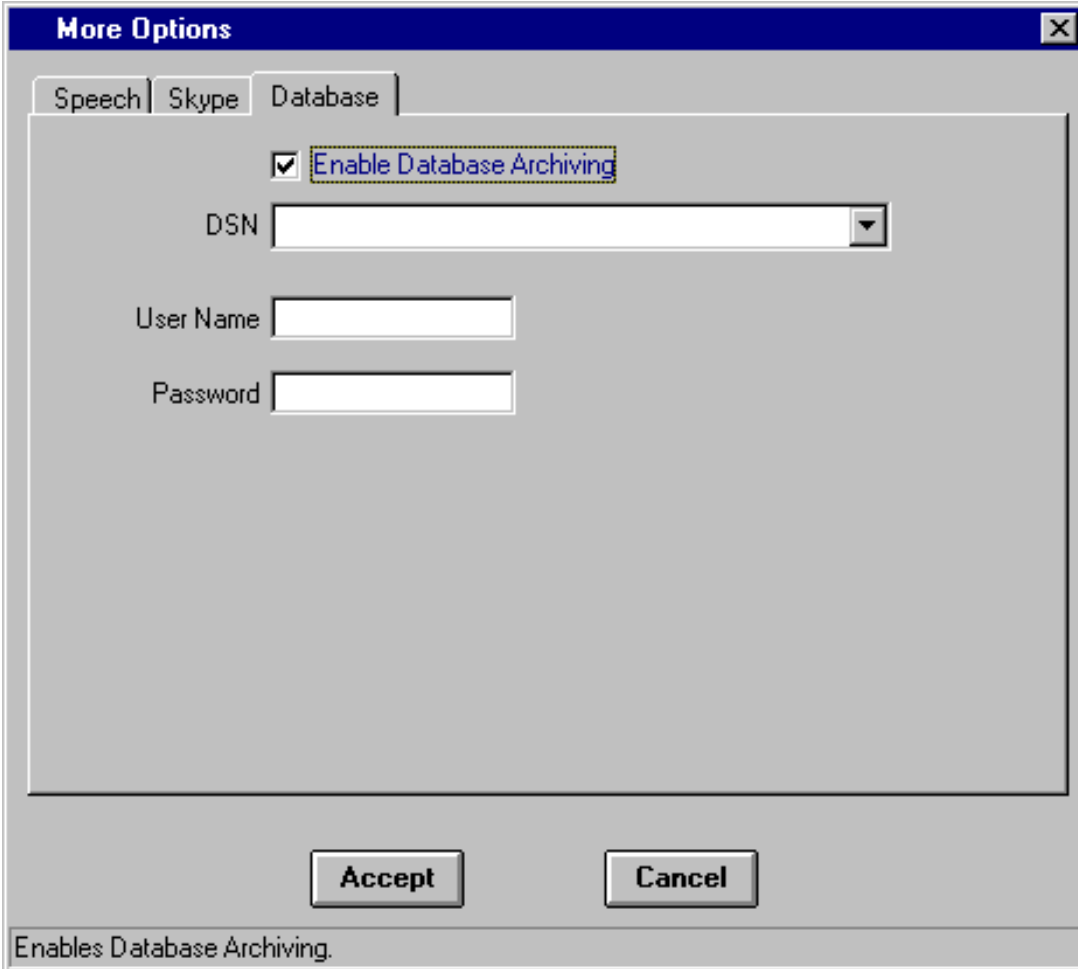
## Database Options Tab

This tab configures Database Archiving and Reporting.

The **Database Archiving and Reporting** function is an additional charge feature that can be added to PageR. This function allows PageR to record information about Monitored Objects, scans, alarms, notifications and network events to an **MSSQL** (2000 or later) database. This information becomes a persistent archive of data about the events detected by PageR. The database can aggregate information collected by multiple instances of PageR. It also aggregates events collected by PageR from multiple systems. This data can be analyzed and reported by any MSSQL compatible tool.

The Database Archiving and Reporting function comes with a set of reports and a report viewer based on the popular Crystal Reports database reporting tool. You do not have to purchase Crystal to use the included reports. You can modify the included reports, create new reports based on them or use any MSSQL compatible reporting tool to create reports from the data recorded by PageR.

Please see the installation notes below before trying to use the Database function.



The screenshot shows a Windows-style dialog box titled "More Options" with a close button (X) in the top right corner. It has three tabs: "Speech", "Skype", and "Database", with "Database" being the active tab. Inside the dialog, there is a checkbox labeled "Enable Database Archiving" which is checked. Below this checkbox are three input fields: "DSN" (a dropdown menu), "User Name" (a text box), and "Password" (a text box). At the bottom of the dialog are two buttons: "Accept" and "Cancel". A status bar at the very bottom of the dialog contains the text "Enables Database Archiving."

### Enable Database Archiving

Check to enable Database Archiving. Do not enable archiving until you have installed the database per the instructions below.

**DSN**

Select the Data Source Name from the list of DSNs available on your system. This DSN will be used to connect to the MSSQL Instance that contains the PageR database. See below for more information.

**User Name**

Enter the database user name associated with the PageR database. This defaults to PageR.

**Password**

Enter the password associated with the database user name entered above. This defaults to PageR5.

**Notes on the Database function.**

PageR uses a DSN (Data Source Name) to locate its database on some MSSQL Instance. You can use an existing DSN or create a new DSN with the **Data Sources** control panel applet. A DSN describes a database connection as a system name and Instance name. The DSN selected must point to the system and Instance of MSSQL where the PageR database is installed.

**In order for a Monitored Object to be included in database archiving, you just select that MO type on the Logging Tab of the Options Window.** You do not have to enable disk file logging, just select the MOs you wish recorded in the database.

**To install the PageR database**, you must run the MSSQL Query Analyzer (logged on as the DBA) and attach to the MSSQL instance where you wish the PageR database to reside. In the Query Analyzer, execute the file **CreateDB.sql** found in the PageR install directory. This script will create the database. The script will also add a login, PageR (password=PageR), to the database and set that login to be the **db\_owner** of the database. This user will be set to use **SQL Authentication**. Integrated Authentication cannot be used with the archive database.

Note that the first time you save the PageR configuration after enabling database archiving, PageR will record all monitored objects in the configuration to the database. **This may take some time to complete.** After the first time, PageR only updates the database for changed MOs when the configuration is saved.

During scanning, PageR is updating the database in the background for events, alarms and notifications. When scanning is stopped or when PageR is shutdown, summary information for MOs is recorded in the database. This may take some time and delay the scan stop or completion of shutdown.

For more information, see the topic Database Archiving and Reporting.

## Database Archiving and Reporting

PageR supports archiving of monitoring information to a Microsoft SQL database (2000 or later). This provides for long term retention, aggregation, analysis and reporting of that information. Monitored object attributes, scans, alarms, notifications and network events are recorded.

Information in the database can be processed by any MSSQL compatible reporting tool. Included with PageR is a set of history and analysis reports written in the **Crystal Reports** query/reporting tool. A custom Report Viewer application is included to facilitate the use of these reports. These reports can be modified by the user or new Crystal reports can be written and used with the Report Viewer. You can also create Crystal reports that run outside the Report Viewer. Use of the included Crystal based reports require the **Crystal Reports 10 runtime** to be installed on the computer that runs the Report Viewer. The Report Viewer also requires the **.Net Framework 2.0** to be installed. You can run the Report Viewer on any system you wish, not just the PageR host system.

The .Net Framework 2.0 is available for download from the Microsoft web site at (watch the wrap):

<http://www.microsoft.com/downloads/details.aspx?familyid=0856EACB-4362-4B0D-8EDD-AAB15C5E04F5&displaylang=en>

The Crystal Reports 10 runtime is available for download at your PageR distributor's web site.

The included reports and the Report Viewer application are located in the Reports directory below the install directory.

The Database Archiving and Reporting feature is **licensed separately** from PageR. The feature is available for evaluation when PageR is in demonstration mode.

More information on archiving and reporting is available in the following topics:

Installing and Configuring the Database

Logging to the Database

Using the Reports

## Installing and Configuring the Database

Before you can use the Archiving and Reporting feature, the Archive database must be installed. This database is called PageR and is located in a new or existing **MSSQL Instance**. If you already have MSSQL at your site you can install the PageR database into an existing or new Instance. If you do not have MSSQL installed, you can download and install the free **SQL 2005 Express Edition** from Microsoft. If you install SQL 2005 Express Edition, it is recommended that you also download and install the **SQL Server Management Studio Express** administration tool.

Once you have an MSSQL Instance available, you can use the **CreateDB.sql** script located in the Reports directory to create the database. Click on the CreateDB.sql file. This should launch the SQL administration tool installed on your system with the script in a query window. Logon to the **DB Admin** user. If clicking the script does not start an SQL administration tool, you will need to manually start the SQL administration tool that you normally use and logon as the DB Admin user. Open a **Query** window. Load the script file into the query window. After loading the script with either method, execute it.

This script will create the database. The script will also add a login, PageR, with password PageR5, with access to the database and set that login to be the **db\_owner** of the database. This user will use **SQL Authentication**. Integrated Authentication cannot be used with the archive database. While the user name and password default to PageR and PageR5 for simplicity, you can change either to your own values.

Once the script has completed, use your SQL Administration tool to verify that the database exists and the login exists and that the login has been assigned access to the database and has the db\_owner role enabled.

Note that the MSSQL Instance does not have to be located on the same system as PageR is installed.

If you are installing SQL 2005 Express Edition for the first time, you must enable the **TCP/IP** protocol for communication with SQL Express. On the SQL 2005 Express Edition Start Menu, there is an item called **SQL Server Configuration Manager**. Execute it and Open the SQL Server 2005 Network Configuration item, then Protocols for <yourinstancename>. You should see the various protocols listed. Enable TCP/IP. Then open the SQL Server 2005 Services item and restart the SQL Server service .

Once the database is installed, on the system where PageR is installed, you must create a **Data Source Name** (DSN). In the Control Panel, open the ODBC Data Sources applet. Create a new System DSN that points to the system and SQL Instance where you installed the database. The name of the DSN can be anything, but PageR is a good choice. If you already have a DSN that points to that Instance, you do not need to create new one. Make sure you can connect to the database with the connection tester using SQL authentication and the user name and password as described above.

Now execute PageR and go to the More Options window. Select the Database tab. Enable the use of the database and select the DSN from the drop down list. Enter user name and password.

Finally, go to the Options Window and select the Logging tab. Check the Monitored Object types you wish to have recorded in the database. You do not have to enable disk file logging, just select the MOs to be included in database logging.

Now, save the PageR configuration. Note that the first time you save the configuration after enabling the database, there will be a significant delay while PageR writes all your Monitored Objects to the database. After this initial update, only changed MOs will be updated on future configuration saves.

## Logging to the Database

When database archiving is enabled, PageR will record basic information about new or changed Monitored Objects in the **MonitoredObjects** table. It will record the start and stop time of every scanning session and the time of any configuration change in the **ScanLog** table. Every alarm generated by a Monitored Object is recorded in the **AlarmLog** table as well as any notifications (paging,email, etc) that are performed in response to alarms or processing errors (**NotificationLog** table). Finally, network events processed by PageR MOs (Eventlog, Snmp trap, Syslog , WMI events) are recorded in the **EventLog** table.

Records in each table are associated with the host system on which PageR is installed. In this way, one database can record information from multiple installations of PageR.

Database logging can add time to scanning start up. While scanning is proceeding, information is being logged to the database in the background, but will add overhead and may slow PageR somewhat. When PageR is shutdown, summary downtime statistics collected by PageR are flushed to the database and so slows down the shutdown process.

## Using the Reports

Sample reports are included that were created with the Crystal Reports 10 database reporting tool. These sample reports can be run directly, but the parameter prompting to customize the reports is inflexible and difficult to use. For this reason, a custom **Report Viewer** was created. When you select a report using this viewer, it handles the parameter prompting in concert with the standard structure of the reports and facilitates the use of the reports. Reports are viewed on-line but can be printed.

ReportViewer can be run on the PageR host system or from any other system you wish. For other systems, you must be able to map a drive to the **Reports** sub directory of the PageR install directory or you can just copy the reports directory to the system that will be running the ReportViewer. The system which will execute the ReportViewer must have the .Net Framework 2.0 and the Crystal Reports 10 runtime installed.

If you wish to modify the reports, copy them and then modify the copies. You must have a Crystal Reports design environment or Visual Studio 2005 to modify the reports.

You can create your own reports in any reporting tool you wish, but the ReportViewer

application can only be used with Crystal Reports and then only reports that have been designed with the conventions of the included standard reports.

If you have ideas for modifications to the included reports or for new reports, but are not able to create them yourself, contact your distributor for assistance.

When you run the ReportViewer application you will need to select a report by using the recent reports list under the File menu or by clicking the Select Report button. If you have not previously connected to the database, you will be prompted for the SQL Instance and login information need to access the database. This will be retained but can be changed under the File menu.

You will then be prompted for any parameters needed by the report. If you have PageR installed on more than one host system and reporting to the database, you will be prompted for the name of the Monitoring System. If wish to report all systems you have, click Skip. If you wish to select a specific system, enter it's name in the field and click Accept.

ReportViewer will remember your answers to each parameter prompt from the last time you ran a report and pre-fill the fields with those values. You must still click Accept to keep the value. Clicking Skip says you do not wish to supply a value.

On log type reports, you will be prompted for a date range. You can select from the pre-defined time periods in the drop-down list or click Skip to enter a custom date range.

Each report has a default sort defined, but you may be allowed to select different sort fields from a drop-down list.

Some reports allow for selection of records to focus the report on items of interest. If asked, you can choose a select field from the drop-down list and a comparison operator from the second list. Then enter the value to be used in the record comparison to select records included on the report.

If you select the **LIKE** comparison operator, the selection value is a pattern matching expression as described below.

Pattern matching for string comparisons. The pattern-matching features allow you to match each character in a string against a specific character, a wildcard character, a character list, or a character range. The following table shows the characters allowed in pattern and what they match.

Characters in pattern	Matches in string
?	Any single character
*	Zero or more characters
#	Any single digit (0–9)



[charlist]	Any single character in charlist
[!charlist]	Any single character not in charlist

### Character Lists

A group of one or more characters (charlist) enclosed in brackets (**[ ]**) can be used to match any single character in string and can include almost any character code, including digits.

An exclamation point (!) at the beginning of charlist means that a match is made if any character except the characters in charlist is found in string. When used outside brackets, the exclamation point matches itself.

To match the special characters left bracket (**[**), question mark (**?**), number sign (**#**), and asterisk (**\***), enclose them in brackets. The right bracket (**]**) cannot be used within a group to match itself, but it can be used outside a group as an individual character.

The character sequence **[]** is considered a zero-length string ("""). However, it cannot be part of a character list enclosed in brackets. If you want to check whether a position in string contains one of a group of characters or no character at all, you can use **Like** twice.

By using a hyphen (**-**) to separate the lower and upper bounds of the range, charlist can specify a range of characters. For example, **[A-Z]** results in a match if the corresponding character position in string contains any character within the range A–Z, and **[!H-L]** results in a match if the corresponding character position contains any character outside the range H–L.

When you specify a range of characters, they must appear in ascending sort order, that is, from lowest to highest. Thus, **[A-Z]** is a valid pattern, but **[Z-A]** is not.

### Multiple Character Ranges

To specify multiple ranges for the same character position, put them within the same brackets without delimiters. For example, **[A-CX-Z]** results in a match if the corresponding character position in string contains any character within either the range A–C or the range X–Z.

### Usage of the Hyphen

A hyphen (**-**) can appear either at the beginning (after an exclamation point, if any) or at the end of charlist to match itself. In any other location, the hyphen identifies a range of characters delimited by the characters on either side of the hyphen.

# Glossary

## **.MSG**

File extension for Paging Files. See Paging File .

## **.str**

A Search String file. The .str extension is only used as a convention. Any text file can be used as a Search String file. Search String files contain words or phrases, one to a line, that can be applied to event log or disk log file records to determine if an alarm condition is present.

---

## **activity log**

A long term recording of the activity log messages that appear in the Main window log box. This log is written to the .LOG disk file.

## **alarm**

An alarm is the occurrence of a condition or event on an object on the network that is monitored for and if detected, notification (s) are generated.

## **Alarm ID**

A unique number assigned to every alarm event. Typically used for numeric paging.

## **Alarm Object**

An Alarm Object contains information about alarm notification . Each Monitored Object is linked to an Alarm Object. Alarm Objects contain the information needed to page, broadcast or e-mail an alarm notification generated by an Alarm on a Monitored Object.

## **Alarm Text**

Alarm Text is the message text that is issued when an alarm event occurs on a Monitored Object . This text is written to the log screen and log file to record the alarm and the text is what is mailed for e-mail notification and what is sent to another system for broadcast notification. The alarm text can also be sent to an alphanumeric pager. An example of alarm text is the message "161.208.12.5 not responding" being issued when a ping object fails to reply to a ping. The Alarm Text for each Monitored Object can be customized.

## Alert Script

Alert Script is the scripting language used to control a Message Server or modem. The language allows you to program the behavior of the Message Server or modem to perform paging with any type of paging service .

## Contact Object

A Contact Object defines a person to be notified of an alarm . It contains the notification methods to be used when notifying a person of an alarm. Contacts are associated with Alarm Objects. Contacts can be grouped, with a single Contact belonging to up to two groups.

## Delay

This a a period of time that is waited after an alarm condition is detected before the alarm is generated and notification performed. It allows objects with transient alarm conditions to be monitored without generating false or superfluous alarms.

## Disk Log

This is a simple disk file used by an application to log events of interest to the user of the application. You monitor such files for new records and examine the records to determine if alarm conditions exist.

---

## event log

This is a special file used on Windows systems to record system events. The event log is kept in three main parts, System events, Application events and Security events. Other logs may exist for specific applications.

## event type

Windows Event logs categorize events into three types: Informational, Warning and Error. An event may be further categorized by the application that creates it.

## hosts

A disk file that contains name to IP address mappings. Allows more easily remembered names to be assigned to TCP/IP hosts and clients and used in place of the IP address. The IP address for a name is resolved by searching the hosts file.

## Impersonate

When a program needs access to resources not available to the user who ran the program, the program can impersonate a known user and employ that user's credentials

to access the resource. The issue is mainly with Service mode programs. These programs may not run as a logged on user and have limited access. Impersonating a known user allows the service wider access. In order to impersonate, the program must know a valid user name and password that provides the desired level of access.

### **Interval**

Amount of sleep time between scans of the monitored objects. At the monitored object level, it is the amount of time between scans of that object.

### **MAPI**

MAPI is a mail protocol used by Microsoft Messaging.

### **Message Server**

A hardware product that attaches to the NT system and supports intelligent Alphanumeric paging, system down detection and environmental monitoring.

### **notification**

An action taken when an alarm condition is detected. May be simple logging, an e-mail message or a page via Message Server or modem.

### **object**

In general, an 'object' is something on the network that can be probed to determine its status. Objects include NT Event Logs, TCP/IP clients (ping), NT systems (server or workstation), disk log files and more. Alarm notification definitions and Contact definitions are also referred to as objects. Some objects, like the Ftp File get or Syslog objects, perform an action or act as a server instead of representing an object that is probed.

---

### **Paging File**

A Paging file is a simple text file containing Alert Script for the Message Server or Modem. Alert Script controls the Message Server or Alphanumeric Paging in software to perform pages. A paging file can also contain modem commands for simple modem paging. Pages are executed by copying paging files to the attached Message Server or Modem. Paging files have the extension .MSG by convention.

### **Performance Counter**

A Windows operating system measurement value associated with an "object" in the OS,

such as logical disk, physical disk or memory. Windows records performance and operational statistics in these counters that describe the operation of Windows. These counters can be retrieved and tested to determine the status of a Windows system.

**ping**

A low-level TCP/IP echo function used to determine if a TCP/IP host is available.

**Quiet time**

A period of time when paging is suppressed. Quiet time can be defined by the half hour for each of the seven weekdays.

**Registry**

The NT Registry is a system database where NT and application configuration information is stored.

**Scan**

The action of checking each monitored object to determine if an alarm condition exists.

**Schedule**

A schedule is attached to a Monitored Object and controls when the object is scanned. On each scan of Monitored Objects, MOs with schedules will check their schedule and determine if the MO should be scanned at that time. Schedules allow MOs to be scanned at various times instead of on each scan of the Monitored Objects.

**Service**

A Windows Service is a process that runs "in the background", separate from the user's desktop environment. Services can run when no user is logged on. Services are ideal for activities that do not require user interaction and can perform their tasks unattended. Services are controlled by the Service Manager, an applet on the Control Panel.

**Severity**

Severity is a value from 0-9 that indicates the importance or severity of an alarm condition on a monitored object. 0 is most severe, 9 is least severe. This attribute allows you to rank your monitored objects in terms of the impact an alarm has.

---

**SMTP**

SMTP or Simple Mail Transport Protocol is a TCP/IP based mail protocol.

**SNMP**

Simple Network Management Protocol. A specification of a management information database (MIB) that is implemented by a managed system and a protocol for management applications to use to examine the database on target systems for management purposes. Also includes facility for managed systems to send unsolicited alerts (Traps) to management applications.

**SPIN directory**

This is a directory, typically SPIN below the install directory, that is monitored for .MSG files. If files are found in the directory, they will be sent to the Message Server or Modem. Any application can copy or write .MSG files to the SPIN directory to have them processed.

**substitution keywords**

Substitution Keywords are tags that can appear in a text string or .MSG files and are replaced with appropriate actual string values when the text string or .MSG file is processed. For instance, the keyword [DATE] is replaced by the current date when expanded.

**Syslog**

Syslog is a logging facility used on Unix systems and other systems supporting Unix compatibility. Syslog is used by applications and operating systems to log messages. Syslog can forward messages to other systems for processing, including processing by the Syslog Monitored Object .

**Task**

A Task Object is a monitored object that executes a script (VbScript or JScript), NT command file or program when scanned. The task object can perform some task on a recurring basis or can be used to create user defined monitored objects. Many attributes and functions are exposed to scripts via the Script Global (SG) object visible in a script. A task can also be executed by an Alarm object allowing the user to extend alarm notification processing. Tasks have Schedules that further constrain when the task is run, giving fine control over when and how often a task is executed.

**tray icon**

This is an icon in the Task Bar tray. When Main window is hidden or minimized, you can place the cursor over this icon to view a simple status report. Right click the icon for more detailed status information and options. Left click the icon to display the Main window.

**WMI**

Windows Management Instrumentation. A specification of a management information database (CIM) that is implemented by a managed system and a protocol for management applications to use to examine the database on target systems for management purposes. WMI is the Windows implementation of the Web Based Enterprise Management (WBEM) standard.

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# Appendix – Quick Start Help Notes

## 1) PageR QUICK SETUP

At the main screen click OPTIONS to set up monitoring.

IN A NUTSHELL, WE ARE GOING TO DO THIS:

----- (1) SET UP AN NUMBER OF "MONITORED OBJECTS" (MOs, or MONITORS)  
ie THINGS WE WATCH

----- (2) EACH MO IS LINKED TO AN ALARM OBJECT ('AO' or 'ALARM')  
Each Alarm Object is a grid of contacts which can provide alert escalation.  
It escalates a ROW at a time on each scan.

----- (3) EACH AO USES ONE OR MORE 'CONTACTS' (email, pager etc)

THEREFORE - WE HAVE TO SET UP "IN REVERSE ORDER", AS FOLLOWS:

1) CONTACTS - In OPTIONS, Click 'Contacts' tab and 'Add Contact'.

(a) EMAIL ALERTS

Go to the "Email" tab in OPTIONS to configure SMTP email (recommended) by entering the mail host (mail server) ip address and any valid email 'Return Address', usually just your own email address.

(b) SMS TEXT (DIALUP) ALERTS via modem

Enter contact Name. To alert via pager or SMS phone, click Browse to the right of the 'Pager Script' box. Browse into \SAMPLES and select the service you want.

Enter the mobile cell phone number (or pager id) in the "Pager/Phone ID" box.

2) ALARMS - In OPTIONS, Click the 'Alarm Objects' tab

Click Add Alarm. Give the AO a name such as "SUPPORT". The grid is an escalation schedule, everyone on each ROW gets alerted together. If the problem persists it escalates down through the other rows. You can leave boxes and whole rows blank and it will only alert on the boxes/cells filled in. 'Repeat Escalation Schedule' keeps it repeating until fixed.

3) MO's - Go to Monitored Objects TAB and click Add Object.

THE MONITORED OBJECT TYPES YOU SEE ALL HAVE A DIFFERENT PURPOSE AND SOME ARE VERY POWERFUL (eg SNMP QUERY). DOUBLE-CLICK ONE THEN HIT THE F1 KEY. THIS WILL DISPLAY THE HELP INFO FOR THAT MO. ITS IMPORTANT YOU UNDERSTAND (AT LEAST SUPERFICIALLY) WHAT ALL THESE MO TYPES DO. THEY ARE YOUR "MONITORING TOOLKIT". SCROLL DOWN TO SEE THEM ALL. THE LICENCE COST IS BASED ON HOW MANY OF THESE YOU WISH TO BE ABLE TO SET UP AND USE. HINT - SETUP A PING MO ON 1.1.1.1 TO TEST ALERTING.

Monitoring Room Alert and TemPageR devices

To setup monitoring on a ROOM ALERT or TemPageR device go to OPTIONS/ADD OBJECT then choose SNMP QUERY. Hit F1 for help. To the right of the System Name is a search button with 3 dots. Click that to find the devices you want to monitor.



#### 4) How To Set up a HEARTBEAT MO.

This is a useful daily reminder that we are still monitoring and the alerting is working. Double-click the MO to set it up. Click SCHEDULE and then click "Once Per Day", then "OK". Insert the Alarm Object you just set up. Then "Accept", then click Settings/Save, then START on the top left of the main screen. This will test the alerting you have set up.

#### 5) USING THE WEB BROWSER INTERFACE

To test web browser interface Run Internet Explorer 6 (or greater) on the same box as the PageR install.

Enter 'http://localhost:1088' for the URL address. This should bring up the PageR WEB PAGE MANAGEMENT INTERFACE. To view this page from any other PC use the install system's ip address or 'server name' as the http:// URL address, eg http://monitoring\_server:1088

NOTE: check the port number in OPTIONS/More Globals. We default to 1088 as it is registered as ours, which means you would use the URL address followed by :1088 to browse events.

The STATUS button on main screen shows outstanding alarms and the 'pager queue', ie alerts waiting to be sent.

## 2) SMS TEXT Alerts Setup

SMS TEXT is controlled by a dialup script (\*.msg). The script used depends on which service provider you are using, eg VERIZON. Its all set up in OPTIONS/CONTACTS/ADD CONTACT. Hit F1 to see online help at that point.

If you BROWSE in samples you should see dedicated scripts for various services. If you don't see what you want there you can choose the generic script TAP.msg and then select a phone number from PAGING SERVICE PHONE NUMBER (the dedicated scripts have the right phone number embedded).

See how far you get and then come back to me again.

From CONTACT Online Help  
=====

#### **Pager Script**

To text the Contact with SMS alphanumeric paging, enter/select the appropriate paging script file (.MSG) name from \SAMPLES. The correct phone number is embedded in these scripts.

#### **Pager ID**

This is the PAGER ID or CELL PHONE NUMBER. It is substituted for the [PAGERID] substitution parameter in the paging script.

#### **Paging Service Phone Number**

This is the phone number of the PAGING SERVICE to use for alphanumeric paging. It is substituted for the [PHONE] substitution parameter in the paging script. You may type a number in the box or select a number from the drop down list of common paging services (SEE BELOW). For example, if the device you are texting uses VERIZON network then use the VERIZON.MSG script.

### US Paging Service Phone Numbers available in PageR

USA AIRTOUCH,1-800-5594898,1200 EVEN 7 1  
AMERITECH USA,1-800-7343503,9600 EVEN 7 1  
USA ARCH,1-800-8448089,9600 NONE 8 1  
FIRSTPAGE\_NJ USA,1-800-9267272,9600 EVEN 7 1  
GTE USA,1-866-823-0501,1200,EVEN 7 1  
MAPCOMM USA,1-800-456-2190,9600 EVEN 7 1  
MCI USA,1-970-221-2825,2400 EVEN 7 1  
METRO USA,1-800-6225742,2400 EVEN 7 1  
METROCALL USA,1-800-795-3689,9600 EVEN 7 1  
METROMEDIA USA,1-800-655-6555,9600 EVEN 7 1  
MOBILECOMM USA,1-800-844-8089,1200 EVEN 7 1  
NEXTEL USA,1-510-385-6683,1200 EVEN 7 1  
PACTEL USA,1-800-5647079,9600 EVEN 7 1  
PAGENET USA,1-800-720-8398,1200 EVEN 7 1  
PAGE\_NEW\_ENGLAND USA,1-800-543-6532,9600 EVEN 7 1  
PAGEMART USA,1-800-864-9499,2400 EVEN 7 1  
SKYTEL USA,1-800-759-6366,2400 EVEN 7 1  
SUREPAGE USA,1-888-589-8600,1200 EVEN 7 1  
USA MOBILE USA,1-800-666-6315,9600 EVEN 7 1  
VOICESTREAM USA,1-800-937-8941,2400 NONE 8 1  
WESTLINK USA,1-801-483-1081,9600 EVEN 7 1  
VERIZON CELL,1-866-823-0501,1200,EVEN 7 1  
VERIZON PAGER,1-510-293-0150,1200,EVEN 7 1

### NOTES:

1) the above are MODEM numbers which use TAP protocol. If you dial it with a normal phone you should hear the characteristic whistle of the modem. If the line is dead the service has probably been discontinued.

2) the recommended baud rates will probably all work on 9600

3) many of the service numbers will work with other providers devices so if your phone is not listed its worth trying any of the other service providers above.

See [http://www.pager-enterprise.com/TAP\\_dialup\\_numbers.pdf](http://www.pager-enterprise.com/TAP_dialup_numbers.pdf) for a more comprehensive list, but we cannot guarantee that service providers continue the service. Dial the number with a normal phone initially to check if its still live.

### TESTING

To test a new service, go to OPTIONS/PAGING TAB

Select a service in PageR Service #

Enter the cell phone or pager device number in Pager/Phone ID

Click ACCEPT

Click PAGING TAB again.

Click PAGING DEVICE TEST

Click SEND.

### Testing your modem and phone line

Use HyperTerminal to dial out to the remote TAP number. When you hit return the remote end should reply **ID=**

## 3) Trace Files

A trace file is an internal debug file which logs everything the software does. Email the zipped trace file with a description of the problem in the email (one email per problem please).

To create a PageR Enterprise trace file, please do the following:

(A) IF RUNNING ON DESKTOP (for running as a SERVICE, see (B) below)

(1) Run 'PageR With Trace' from the Start Menu

(2) Reproduce the problem

NOTE: IF POSSIBLE ALLOW PageR TIME TO COMPLETE 2 FULL SCANS (MINIMUM) OF ALL THE MONITORED OBJECTS.

ALSO NOTE: DO NOT GO INTO 'OPTIONS' WHILE SCANNING.

(3) STOP and Shut down PageR

(4) ZIP and Email the file PageR.tra

to cplsystems@btconnect.com

HINT - if PageR is not in your START menu it may have been installed under a different user. You can create a shortcut to PageR.exe and add the word 'trace' in the Target line of Properties, like this: "C:\Program Files\PageR Enterprise\PageR.exe" trace but don't run with trace all the time as it may create a massive file.

## (B) IF RUNNING PageR AS A SERVICE

- 1) Shut down the PageR service
- 2) add the word "trace" to the "Startup Parameters" box in the PageR Service applet under Control Panel/Administrative Tools/Services
- 3) Re-start the PageR service and reproduce the problem. Give PageR time to finish its current scan and alerting before stopping.
- 4) Stop the PageR service and ZIP/email me the PageR.tra file (in the install folder).

## TO BREAK UP LARGE TRACE FILES

We cannot analyse huge trace files, therefore to solve intermittent problems which require big traces create the following new STRING Values in the registry under

HKEY\_LOCAL\_MACHINE/SOFTWARE/PageR/Globals

String Values:

TraceOverflow = 2

TraceAutoExtension = 1

This will create overflow files with date and time extensions rather than one huge file. Normally we only need the 1st file of the series and the one which contains the problem.

The files will be of this form,

PageR.tra.20021120153012

## OTHER DEBUGGING INFORMATION

=====

If Dr Watson was involved, please put a .BMP screen dump of the message and the Dr Watson log file in the Trace zip.

If an NT Event log was causing the problem, it can be saved from the Event Log Viewer and included in the Trace zip.

If its an install problem send INSTALL.LOG from the install folder which should be Program Files/PageR Enterprise

## 4) Backup and Restore Config

Go to Settings/Export to save settings to a disc file (default=PageR.cfg).

To restore, create a shortcut to pager.exe on your desktop.

Then go to the shortcut Properties and edit the shortcut Target (the run command). Add the following text after the last quotes:

```
config=PageR import
```

NOTE: the file name MUST be identical to the Registry Key name and is case sensitive (default is "PageR") WITHOUT the .cfg extension.

This will restore everything including the Monitored Objects.

FINALLY, Click SETTINGS/Save Configuration to Registry.

We always save the settings to

```
backup.cfg
```

whenever we save settings to the registry, for emergency restore purposes.

To restore this file just rename it to PageR.cfg and do the above.

If nec use 52637 or 10205 as a temporary key while you request a new license key.

## 5) Setting up PageR Enterprise for VOICE alerts

With PageR Enterprise 5.3.0 alarm notifications can be sent to a regular telephone using a voice capable modem and the TAPI protocol. The modem is controlled directly from PageR Enterprise (no script) and is used to make a voice connection to the target telephone (cell phone or landline).

Once connected, the alarm notification is spoken to the person who answered the telephone. After that they can issue various commands via their telephone keypad (see bottom of this application note, appendix 1).

In order to send alarm notifications via TAPI, you must configure Alarm or Contact objects to make use of TAPI. On a Contact, enter the word tapi in the Pager Script field. Enter the telephone number in the Pager Service # field. On an Alarm object, you enter the word tapi in the Pager Script field to send alarms to the default TAPI target.

### REQUIREMENTS

- 1) You must have the Microsoft .Net Framework 2.0 or later installed to use TAPI.
- 2) You must have a modem that supports TAPI and voice (wave/in and wave/out) calling. These are normally low cost USB modems but they must specifically state the term VOICE MODEM.

The TAPI calling Speech Format defaults internally to SAFT8kHz16BitMono. However, the Voice, Rate, Volume and Speak Punctuation settings on the Speech Options Tab do apply when generating the .wav file transmitted over the TAPI call.

The scheme by which PageR executes telephone calls is dependant on detection and proper processing of tones on the phone line. Here is the sequence of events that occur during a TAPI call session. This information is presented to aid you in diagnosing and working with technical support to resolve call problems.

PageR commands Windows TAPI to dial the target phone number.

When TAPI (working with the modem) determines the line is connected, PageR starts recording the sounds on the line.

PageR is trying to detect breaks in silence. When silence is broken by a sound on the line PageR analyses the sound amplitude, frequency and duration to determine if the sound (tone) is a busy signal, ring back signal, a keypad button push or a voice. A busy signal ends the call.

Ring back tones come at a standard time interval. If no tone is detected for the length of time set by the Answer Timeout field, PageR assumes the call is answered and begins the message speaking process. For example, 7-8 seconds works for phone systems in the USA because the US uses a 6 second ring back period.

If a sound is detected (silence ends) and the time since the last tone detection is shorter than the ring back tone standard time, PageR assumes the call has been answered and a person or a voice mail system is speaking on the line. The message speaking process begins. PageR is also monitoring the line for any key press tone from the telephone key pad. So if a person answers the call but does not speak or speaking does not trigger message delivery, pressing any key on the pad will cause PageR to treat the call as answered and start the message speaking process.

In the case where a voice or timeout causes PageR to treat the call as answered, PageR cannot determine if the call was answered by a person or a voice mail system. So the Voice Mail Delay field determines how speaking starts. You can either enter a time delay in seconds to allow for a Voice Mail greeting to finish before PageR speaks (which is frustrating for a person) or you can enter the # or \* character. PageR will transmit these characters on the line which will cause some voice mail systems to end their greeting and start recording immediately. This eliminates the need for a delay. If a person answers they will hear this tone and then speaking begins. Using # or \* is the best way to handle voice mail if your system supports these characters. Otherwise you must determine the length of time to wait for voice mail greeting if you wish PageR messages to go to voice mail.

Once the # or \* is transmitted or the Voice Mail Delay has elapsed, PageR will play the Alarm Greeting text, then the alarm message text and then the Sign Off text on the line and disconnect.

### **TAPI Setup in PageR Enterprise**

Click OPTIONS/MORE OPTIONS/TAPI setup tab. The following describes each of the setup

choices.

### **Enable Alarm via TAPI**

Check to enable use of TAPI for Alarm Notifications.

### **Greeting**

Enter text to be spoken at the start of a voice alarm notification. This introduces the alarm message.

### **Sign Off**

Enter text to be spoken at the end of the alarm notification. This signifies the end of the message.

### **Default number**

This is the default telephone number to call.

### **Message Repeat**

Enter number of times to speak the notification.

### **Maximum Rings**

The number of rings of the target telephone to wait for before abandoning the connection attempt.

### **Answer Timeout**

Maximum time to wait for between ring tones before connection to the target phone line is assumed.

### **Enable Voice Detection**

Detection of a call being answered is either by detecting sounds on the line that are not ring tones and have a duration that is different than ring tones. In some cases, this detection is not reliable and must be turned off. If voice detection is disabled, the Answer Timeout is used to determine when ring tones have stopped, which is assumed to mean the call was answered.

### **Tone Threshold**

This value is used by the ring/busy detection software to separate those tones from background noise on the connection. If you can't connect to your phone, this value may need to be changed. Contact technical support for assistance with this setting.

### **Silence Threshold**

This value is used by the call answer detection by voice to separate silent periods (no Tone) from background noise on the connection to detect tones or voice (end of silence). If you can't connect to your phone, this value may need to be changed. Contact technical support for

assistance with this setting.

### **Voice Mail Delay**

After the call is answered, this is time to wait in seconds before speaking starts. Used to wait for voice mail greeting in case the call is answered by voice mail. You may also enter the # or \* characters, which if present, will be sent to the listener on the call to trigger voice mail systems to end the greeting and start recording.

### **Detection Error %**

This is the allowable error when matching tones on the telephone line to determine if the tone is a ring back, busy or someone speaking. The default is 10, for 10% error is allowed. When tone detection is failing, increasing the error margin may correct the problem.

### **Modem Device**

Select the modem to use to dial the call. Must support TAPI and voice.

### **Country**

This is the country in which you are calling. Controls ring/busy detection.

### **TAPI Test Button**

Click to request an immediate test of the TAPI configuration. The test message you enter will be sent by voice to the Default Number. Note that you can change the Default Number and click Test to test the number but if you change any other parameter, you must click Ok on the More Options screen to save your changes and then redisplay More Options to perform the test.

### **Telephone commands**

After the call is answered and speaking begins, you can press keys on the numeric keypad of your phone to send PageR commands:

1 = Add 1 to the message repeat count (must be pressed before the alarm message ends).

2 = Clear the alarm on the Monitored object that generated the call.

3 = Clear the alarm on the Monitored object that generated the call and suspend monitoring of the MO.

4 = Disable the Alarm object that generated the call.

5 = Disable all TAPI alarm notifications.

9 = Stop Scanning.

## **6) PAGER ENTERPRISE SQL DATABASE AND REPORTING MODULE**

The Database Archiving and Reporting feature is licensed separately from



Pager Enterprise. The feature is available for evaluation when Pager Enterprise is in demonstration mode. We recommend testing it on a separate PC to your production copy of Pager Enterprise.

Pager Enterprise 5.0.0 supports archiving of monitoring information to a Microsoft SQL database (2000 or later). This provides for long term retention, aggregation, analysis and reporting of that information. Monitored object attributes, scans, alarms, notifications and network events are recorded. You can now have a powerful set of tools for a wide variety of reporting, graphing and data analysis in relation to the system monitoring and alerting carried out by Pager Enterprise.

## SOFTWARE REQUIREMENTS

1. Pager Enterprise release 5.0.0 or later
2. Microsoft SQL Server or SQL Express 2005
3. Crystal Reports or Crystal 10 Runtime or any SQL compatible report writer
4. Microsoft .Net Framework 2.0 (required by SQL Express 2005)

If you do not have SQL or Crystal already the following free software can be downloaded off the internet:

SQL Express 2005 – FREE LICENCE from Microsoft  
SQL Server Management Studio Express db admin tool - FREE LICENCE  
Crystal 10 Runtime – FREE LICENCE from CPL Systems  
Microsoft .Net Framework 2.0 – FREE LICENCE

Information in the database can be processed by any MSSQL compatible reporting tool. Included with Pager Enterprise is a set of history and analysis reports written in the Crystal Reports query/reporting tool. A custom Report Viewer application is included to facilitate the use of these reports. These reports can be modified by the user or new Crystal reports can be written and used with the Report Viewer.

You can also create Crystal reports that run outside the Report Viewer. Use of the included Crystal based reports require the Crystal Reports 10 runtime to be installed on the computer that runs the Report Viewer. The Report Viewer also requires the .Net Framework 2.0 to be installed. You can run the Report Viewer on any system you wish, not just the Pager Enterprise host system.

## SUMMARY

To create reports you can use one or more of the methodologies below:

Pager Enterprise 5.0.0 or later PLUS at least one of the following combinations of tools,

1. Microsoft SQL Server + Crystal Reports
2. Microsoft SQL Server + Any 'Crystal-like' SQL compatible report writer
3. Microsoft SQL Server + Pager Enterprise SQL Report Writer + Crystal 10 Runtime
4. Microsoft SQL Express 2005 + Pager Enterprise SQL Report Writer + Crystal 10 Runtime

The Pager Enterprise Report Writer (ReportViewer.exe) and some pre-configured reports are to be found in the \Reports folder of the Pager Enterprise install.

Pre-configured reports include the following:

- Alarm Log
- Event Log
- Monitored Object List by ID
- Monitored Object List by TYPE
- Monitored Object List by SEVERITY
- Notification Log
- Processing Errors

If you install SQL 2005 Express Edition, it is recommended that you also download and install the SQL Server Management Studio Express administration tool from Microsoft (just Google it to find the download site).

#### Installing the SQL Database

=====

Before you can use the Archiving and Reporting feature, the Archive database must be installed. This database is called Pager Enterprise and is located in a new or existing MSSQL Instance. If you already have MSSQL at your site you can install the Pager Enterprise database into an existing or new Instance.

If you do not have MSSQL installed, you can download and install the free SQL 2005 Express Edition from Microsoft. Once you have an MSSQL Instance available, you can use the CreateDB.sql script located in the Pager Enterprise Reports directory to create the database. Note that the MSSQL Instance does not have to be located on the same system as Pager Enterprise is installed.

#### Creating the Database

=====

In the \Reports folder of the Pager Enterprise install there is a script file called

### CreateDB.sql

Double-click it to create the database.

If that does not work, try using the SQL administration tool that you employ (eg SQL Server Management Studio Express) and open a Query Analyzer window. Load the script into the query window and execute it while logged into the MSSQL Instance as the DB Admin.

Failure is likely to be a security problem, eg you are not logged on as Administrator or you are not the owner of the db etc.

The script will also add a login=Pager Enterprise, with password=Pager Enterprise to the database and set that login to be the db\_owner of the database. This user will be set to use SQL Authentication. (Note: Integrated Authentication cannot be used with the archive database). While the user name and password default to Pager Enterprise for simplicity, you can change either to your own values.

### Creating the DSN (Data Source Name)

=====

Once the database is installed, on the system where Pager Enterprise is installed, you must create a Data Source Name (DSN).

Go to START/Control Panel/Administrative Tools, open the Data Sources (ODBC) applet. Click the System DSN tab and click ADD. Scroll down and highlight SQL Server. Click Finish.

Then complete the boxes for Name (Pager Enterprise), Description (Pager Enterprise Database) and Server which is your PC/server's computername followed by \SQLEXPRESS such as Gregs\_PC\SQLEXPRESS for example.

In the subsequent screens, make sure the SQL Authentication is chosen and not Windows NT authentication. In the login boxes User is Pager Enterprise and Password is also Pager Enterprise.

If you already have a DSN that points to that Instance, you do not need to create new one. At the end make sure you can succesfully connect to the database with the connection tester.

### Setting up Pager Enterprise

=====

Now execute Pager Enterprise and go to the More Options window. Select the

Database tab. Enable the use of the database and select the DSN from the drop down list. Enter user name and password.

Finally, go to the Options Window and select the Logging tab. Check the Monitored Object types you wish to have recorded in the database. You do not have to enable disk file logging, just select the MOs to be included in database logging.

Now, save the Pager Enterprise configuration by going to Settings/Save Configuration to Registry. Note that the first time you save the configuration after enabling the database, there will be a significant delay while Pager Enterprise writes all your Monitored Objects to the database. After this initial update, only changed MOs will be updated on future configuration saves.

#### Logging data to the Database

=====

When database archiving is enabled, Pager Enterprise will record basic information about new or changed Monitored Objects in the MonitoredObjects table. It will record the start and stop time of every scanning session and the time of any configuration change in the ScanLog table. Every alarm generated by a Monitored Object is recorded in the AlarmLog table as well as any notifications (paging, email, etc) that are performed in response to alarms or processing errors (NotificationLog table). Finally, network events processed by Pager Enterprise MOs (Eventlog, Snmp trap, Syslog, WMI events) are recorded in the EventLog table.

Records in each table are associated with the host system on which Pager Enterprise is installed. In this way, one database can record information from multiple installations of Pager Enterprise.

Database logging can add time to scanning start up. While scanning is proceeding, information is being logged to the database in the background, but will add overhead and may slow Pager Enterprise somewhat. When Pager Enterprise is shutdown, summary downtime statistics collected by Pager Enterprise are flushed to the database and so slows down the shutdown process.

#### Using the Reports

=====

Sample reports are included that were created with the Crystal Reports 10 database reporting tool. These sample reports can be run directly, but the parameter prompting to customize the reports is inflexible and difficult to use. For this reason, a custom Report Viewer was created. When you select a report using this viewer, it handles the parameter prompting in concert with

the standard structure of the reports and facilitates the use of the reports. Reports are viewed on-line but can be printed.

ReportViewer can be run on the Pager Enterprise host system or from any other system you wish. For other systems, you must be able to map a drive to the Reports directory of the hosting system or you can just copy the reports directory to the system that will be running the ReportViewer. Note again the the system which will execute the ReportViewer must have the .Net Framework 2.0 and the Crystal Reports 10 runtime installed.

If you wish to modify the reports, copy them and then modify the copies. You must have a Crystal Reports design environment or Visual Studio 2005 to modify the reports.

You can create your own reports in any reporting tool you wish, but the ReportViewer application can only be used with Crystal Reports and then only reports that have been designed with the conventions of the included standard reports.

When you run the ReportViewer application you will need to select a report by using the recent reports list under the File menu or by clicking the Select Report button. If you have not previously connected to the database, you will be prompted for the SQL Instance and login information. This will be retained but can be changed under the File menu.

You will then be prompted for any parameters needed by the report. All of the included reports will ask for the name of the Monitoring System. If have only one monitoring system or want to report all systems you have, click on Skip. If you wish to select a specific system, enter it's name in the field and click Accept.

ReportViewer will remember your answers to each parameter prompt from the last time you ran a report and pre-fill the fields with those values. You must still click Accept to keep the value. Clicking Skip says you do not wish to supply a value.

On log type reports, you will be prompted for a date range. You can select from the pre-defined time periods in the drop-down list or click Skip to enter a custom date range.

Each report has a default sort defined, but you may be allowed to select different sort fields from a drop-down list.

Some reports allow for selection of records to focus the report on items of interest. If asked, you can choose a select field from the drop-down list and a comparision operator from the second list. Then enter the value to be used in

the record comparison to select records included on the report.

## **7) PageR LICENSE KEYS**

Run START/Programs/PageR Enterprise/PageR Set License

to display the System Number at the top of the screen. We need this to generate a new license key. Please email the System Number with your license details (in Help/About) to support at [pager-enterprise.com](mailto:support@pager-enterprise.com).

The new Product License Key which we will return to you is entered at the bottom of the Set License screen. License Key Request.

PLEASE MAKE SURE THAT PageR IS NOT RUNNING AS A SERVICE  
IN THE BACKGROUND WHEN YOU ENTER THE LICENSE KEY.

In an emergency a temporary license key may be used.

Temporary (30 day) license key = 52637

This allows unlimited Monitored Objects and all features enabled.