



# Alarming and Event Notification Using TeamQuest® Performance Software – Release 9.1

White Paper  
TQ-WP21 Rev. B

## Summary

IT departments today are facing tough times by trying to do more with less. The IT Operations Manager is looking for products that lower personnel requirements, lower skills required or increase the use of existing equipment and existing software capacity. IT Operations Managers are facing pressure today from both their boss and from their customers, the actual users of the data center. If it is an Oracle user complaining of a slow query or an external customer that is trying to purchase one of your products off your web site, having your data center running at optimal efficiencies is paramount. TeamQuest understands this and can help make sure your customers receive real-time information that they demand. Besides actively monitoring the performance and capacity of your systems and business applications, TeamQuest Performance Software can also add additional value by notifying you of irregularities before they occur and before your customers complain.

This document will describe how TeamQuest Performance Software solutions allow you to set service level thresholds and alarms on performance parameters so that you know in advance when an anomaly is about to happen. This will allow you to tune your servers or business applications before they affect your customers. One of TeamQuest's Performance Software solutions, TeamQuest Alert, is described in detail on how this solution will help you solve the problem of being notified of an anomaly before your customers notice any deficiencies or delays in performance.

Please refer to the final page of this document for important legal notices and information regarding how to contact TeamQuest Corporation.

### Why and Who Uses Alarms

Acceptable performance is meeting the business expectations established by your organization. This means that what is acceptable performance to one organization may be completely unacceptable to another organization. You must determine what is and is not acceptable performance for your organization and base that upon business objectives. Setting alarms and thresholds on performance parameters is one way that you can achieve acceptable performance at your company. There are many reasons why setting appropriate alarms is useful. Some of them are:

- Report or log events
- Reduce/eliminate unscheduled service interruptions
- Use proactive management to ensure service level objectives are met
- Automate performance and operations monitoring
- Improve efficiency (do more with less people)

Some typical users of alarms are:

- Operations—alarms help ensure they are meeting short term service level objectives
- Administrators—alarms ensure they avoid service interruptions
- Management—alarms provide a log of crucial events affecting service levels

Why and who uses alarms at your particular company may deviate slightly. However, the concept behind setting alarms is the same, you want your customers to be happy, and you want to continue to meet your service level goals.

### TeamQuest Performance Software Overview

TeamQuest Performance Software is a family of product solutions that address the needs of performance management and performance analysis of your computer systems. This integrated family of products allows you to choose the tools you need to manage the performance at your site. The TeamQuest Performance Software family consists of:

- **TeamQuest Manager**  
TeamQuest Manager is bundled with each of the four products in the TeamQuest Performance Software suite. It is the basis for many of the functions that are available across TeamQuest products. It includes agents for gathering performance statistics and a database for efficiently storing and managing the information gathered. It also provides sophisticated analysis and alerting functions.
- **TeamQuest View**  
This comprehensive, analytical tool reports on system performance and helps you locate bottlenecks. TeamQuest View extends performance analysis from the present into the past, from one to multiple servers, and from high-level information to detailed component and user activity. TeamQuest View offers four different types of built-in analyses: threshold analysis, drill-down analysis, correlation analysis, and trend analysis. This tool also allows you to see all of your alarms for a single system in chart.
- **TeamQuest Alert**  
This performance exception console allows you to monitor the current health of a large number of systems from a high level. It obtains performance data and displays it in either rules of thumb (ROT) mode or alarm events mode. This event console lets you see all of your

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alarms. You can also drill down to see the detail of the alarm and chart it for trending purposes.

- **TeamQuest On the Web**

This product publishes performance reports to a web server that is viewable with a browser. It obtains performance data from TeamQuest Manager and displays it using a set of Java applets within a browser. TeamQuest On the Web also allows you to see your alarms via a browser. It is a great solution for managers who request reports on a daily, weekly, and monthly basis.

- **TeamQuest Model**

This product provides capacity planning and “what-if” analysis. This PC based package automatically retrieves data from your servers and then builds models of your servers and applications. You can use these models to experiment with what-if questions and see the effects of changes before they are made. It provides an easy-to-use interface and a set of powerful modeling algorithms.

### TeamQuest Single Server Architecture

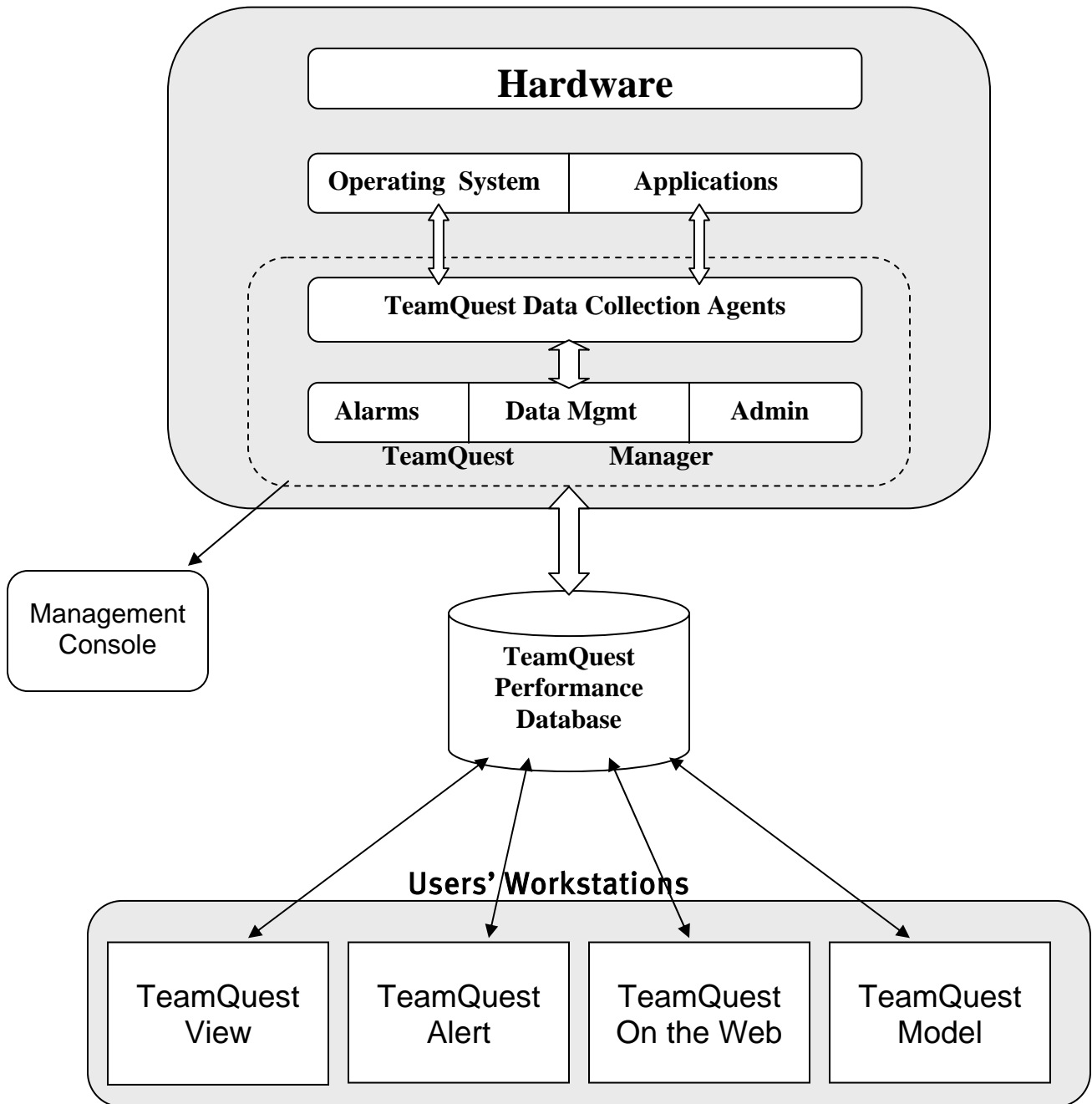


Figure 1. TeamQuest Architecture

### Useful Alarming Suggestions

Here are some useful suggestions to remember about setting alarms:

- Build alarms that enable you to monitor and maintain acceptable service levels
- Be very careful about alarming on queue depth, CPU utilization, or memory related statistics. Time delays may be appropriate for these types of statistics because these spikes may just be temporary.
- Workload data can provide excellent statistics for application related alarms.
- Alarms are not cast in stone. You will need to adapt and modify them to meet your needs.
- Anytime someone is paged, require that they document the action taken
- Do not send email messages or page people unless you expect them to take action
- Include alarm identification, statistic values, statistic name and server name at a minimum in all logged alarm messages
- Develop scripts to automatically correct situations where appropriate

### TeamQuest Alarm Administration

TeamQuest Performance Software can help you in your data center, by giving you early notifications of a drastic event that might be about ready to happen. The alarming capability that TeamQuest provides is very robust yet easy to use.

TeamQuest agents collect data from various data sources at the sample interval defined for the user-specified aggregation set. The agents check the data obtained at each sample interval to determine if the data values exceed user-specified threshold limits. If a data value for a parameter is found to exceed a threshold, the agent generates an alarm to alert you that a threshold condition has been met. That alarm can be sent too many different mediums; such as a pager, cell phone, an email messenger, or fire off a script to automatically correct the problem. TeamQuest alarms are also sent too many third party frameworks such as HP OpenView, CA Unicenter, MicroMuse Netcool, and Tivoli.

TeamQuest Performance Software provides a browser-based administration interface for alarm configuration. To access the TeamQuest main menu page for the browser-based administration, use the following URL <http://system:port>. Where *system* is the name of the system where the TeamQuest Manager is installed and *port* is the port number assigned for TeamQuest http requests. You must enter a user name and password to access the TeamQuest Manager Alarm administration menu.

## Alarming and Event Notification Using TeamQuest Performance Software

Figure 2 shows the TeamQuest Alarm Administration interface. TeamQuest Performance Software supplies you with a set of default alarms out of the box. You can create, modify, or delete alarm definitions from this alarm list page. This page also shows you the severity, condition, and action for each alarm. It would be a good idea to look at this page first to see what alarms are already created for you.

The screenshot displays the TeamQuest Alarm Administration interface. At the top right, it shows the host 'AMC1', a welcome message for the administrator, and the database 'production'. A navigation bar includes 'TeamQuest Manager', 'TeamQuest Model', 'TeamQuest On the Web', 'Help', 'Site Map', and 'Logout'. On the left, a sidebar lists various management tools like 'Agent Manager', 'Collection Agents', 'Service Agents', 'Alarm Policy', 'Aliases', 'Actions', 'Workload Policy', 'Reduction Policy', 'Derived Statistic Policy', 'Database Settings', and 'Analysis Tools'. The main content area is titled 'Alarm List' and features a search box for 'Alarm name containing:' with 'Filter' and 'Clear' buttons. Below the search box, it indicates '8 of 8' alarms and provides links for 'Add Alarm' and 'Change Status'. A table lists the following alarms:

Alarm Name	Status	Severity	Condition	Action
Busy_Disk_Alarm	Enabled	Critical	diskbusy_alias >= 25.0	Busy_Disk_Action
		Warning	diskbusy_alias >= 15.0	Busy_Disk_Action
Busy_Processor_Alarm	Enabled	Critical	totproc_alias >= 25.0	Busy_Processor_Action
CPU_Busy_Trend_Alarm	Enabled	Critical	cpu_busy_trend_alias > cpu_busy_threshold_alias	
High_Paging_Rate_Alarm	Enabled	Critical	pages_alias >= 10.0	High_Paging_Rate_Action
Low_Disk_Space_Alarm	Enabled	Critical	spacefree_alias < 5.0	Low_Disk_Space_Action
		Warning	spacefree_alias < 15.0	Low_Disk_Space_Action
Network_Error_Alarm	Enabled	Critical	neterrors_alias >= .01	Network_Error_Action
Pool_Paged_Failure_Alarm	Enabled	Critical	poolfail_alias >= .01	Pool_Paged_Failure_Action
Processor_Bottleneck_Alarm	Enabled	Critical	queuelength_alias >= 3.0	Processor_Bottleneck_Action

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**Figure 2. TeamQuest Alarm Administration Interface**

**Note:** Once you have logged in you may need to choose in which database to administer the alarms. If you have multiple databases on this machine, you will need to select the appropriate one.

Figure 3 shows some current alarm definitions for a particular system.

Host: SIEBEL1  
 Welcome, marketing!  
[Database: production](#)

TeamQuest Manager    TeamQuest Model    TeamQuest On the Web    Help    Site Map    Logout

Agent Manager  
 Collection Agents  
 Service Agents  
**Alarm Policy**  
 Aliases  
 Actions  
 Workload Policy  
 Reduction Policy  
 Derived Statistic Policy  
 Database Settings  
 Analysis Tools

## Alarm List

Alarm name containing:

12 of 12

[Add Alarm](#) | [Change Status](#)

Alarm Name	Status	Severity	Condition	Action
<a href="#">Avg_Wait_Time</a>	Enabled	Critical	parm12 >= 10.00	Avg_Wait_Time_Action
<a href="#">Busy_Disk</a>	Enabled	Critical	parm4 >= 65.00	Busy_Disk_Action
		Warning	parm4 >= 35.00 AND parm4 < 65.00	Busy_Disk_Action
<a href="#">Busy_Processor</a>	Enabled	Critical	PercentProcessorTime >= 85.00	Busy_Processor_Action
<a href="#">High_Paging_Rate</a>	Enabled	Critical	parm3 >= 10.00	High_Paging_Rate_Action
<a href="#">Low_Disk_Space</a>	Enabled	Critical	parm5 < 5.00	Low_Disk_Space_Action
		Warning	parm5 < 15.00 AND parm5 >= 5.00	Low_Disk_Space_Action
<a href="#">Master_Cache_Hit_Ratio</a>	Enabled	Critical	parm13 >= 10.00	Master_Cache_Hit_Ratio_Action
<a href="#">Network_Error</a>	Enabled	Critical	parm6 >= 0.01	Network_Error_Action
<a href="#">Page_Requests</a>	Enabled	Critical	parm11 <= 0.30	Page_Requests_Action
<a href="#">Pool_Paged_Failure</a>	Enabled	Critical	parm7 >= 0.01	Pool_Paged_Failure_Action
<a href="#">Processor_Bottleneck</a>	Enabled	Critical	parm2 >= 2.00	Processor_Bottleneck_Action
<a href="#">SQLServer</a>	Enabled	Critical	sqlservr == sqlservr	

**Figure 3. Alarm Examples**

The first thing you need to do in order to set an alarm is to click on the Aliases link. This is under the Alarm Policy link on the TeamQuest navigation bar. The Alias List page is displayed allowing you to perform your administrative tasks. You must define aliases before they can be used in alarm definitions. You then need to decide which performance parameters you want to define an alarm on.

Next, you need to set up an action. Click on the Actions link. This link is under the Alarm Policy link on the TeamQuest navigation bar. The Actions List page is displayed. You must define actions before they can be used in alarm definitions. You must specify an action name to create a new action definition. If you are sending an SNMP trap, you also define that SNMP trap message on this page. After you have entered the action name and the desired action, click the Add button. Your new action is added and you are returned to the Actions List.

If you want to send an SNMP trap, you need to define the destination for SNMP traps. Select SNMP Trap Options from the link menu at the top or bottom of the Actions List page. The SNMP Trap Options page is displayed. Enter the SNMP trap information for each of the fields. Use the Save button to save your updated information to the database.

You now need to create an alarm that uses your defined Alias and Action definitions. To create a new alarm definition, click on Add Alarm from the Alarm List page. The Add Alarm page is displayed and you must choose whether to create a Warning, Minor, Major, or Critical condition for the new alarm.

Figure 4 shows you what the add alarm definition screen looks like.

Host: AMC1  
Welcome, administrator!  
[Database](#): production

TeamQuest Manager   TeamQuest Model   TeamQuest On the Web   Help   Site Map   Logout

Agent Manager  
Collection Agents  
Service Agents  
**Alarm Policy**  
Aliases  
Actions  
Workload Policy  
Reduction Policy  
Derived Statistic Policy  
Database Settings  
Analysis Tools

## Add Alarm Definition

Alarm Name

Critical Conditions	Alias	Operator	Value
	- add expression -	<	<input type="text"/>

Critical Action  (optional)

Major Conditions  
Major Action

Minor Conditions  
Minor Action

Warning Conditions  
Warning Action

Normal Action

Systems

Resources

Workloads

Delay Factors

Schedule

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**Figure 4. TeamQuest Add Alarm Definition Page**

Once you specify an alarm name and define at least one alarm severity click, Add. Your new alarm is added and the Edit Alarm Definition page is displayed allowing you to add another condition expression for the severity level or to modify the original conditions expression for this alarm. When complete click the Save button. The Edit Alarm Definition page is displayed containing a summary of the new alarm. It will allow you to enter additional information for this alarm. When your changes are complete, click Finished to save your changes.

The final step - your alarm definition is now in the database that is displayed in the upper right corner of the screen. As you create, delete, rename, and duplicate alarms, aliases, and actions with this interface, the database is constantly being updated with the new information. Although the database is being updated, your changes are not actually put into use until you notify the agents that the new alias, action, or alarm is available. To have your alarm, alias, and action definitions checked by the alarm agents, click the Activate Changes button. Your alarm and alias definitions and actions are now activated.

### Reporting of Alarms

Once you have decided on what alarms you want set, you can see the alarms that are triggered via a third party event console or in one of these TeamQuest solutions: TeamQuest Alert, TeamQuest View,



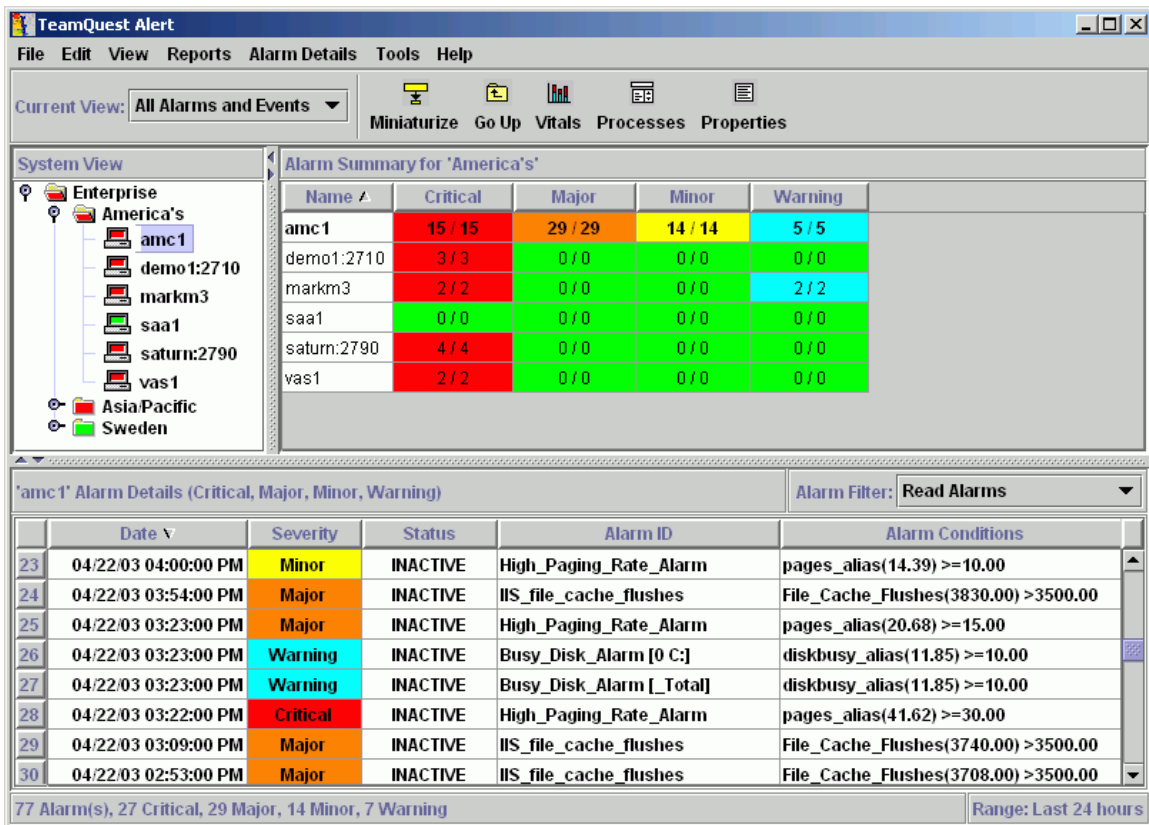
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or TeamQuest On the Web. In this section, we will show you how you can view your alarms via TeamQuest Alert.

TeamQuest Alert (Alert) is a system performance console that quickly highlights the health status of a large number of systems through performance monitoring and alarm event management. It automatically evaluates the performance of each of the monitored servers based on best practices, and then displays text and color indicators to show good and poor performance. Once a problem is detected, users can drill down to related performance information and user activity reports for rapid top-down analysis.

TeamQuest Alert is ideal for those wanting to use alarms to monitor their enterprise servers. You can see the alarms generated for a server or groups of servers by criticality, then drill down to the processes active on the server at the time of the alarm to determine the root cause.

Also with TeamQuest Alert, you can view alarm counts by severity for groups of servers and specific alarms for individual servers. You can chart each alarm to see how its data points correlate with other parameters at the time the alarm occurred. Figure 5 is an example of TeamQuest Alert All Alarms and Events mode.



**Figure 5. TeamQuest Alert All Alarms and Events Mode**

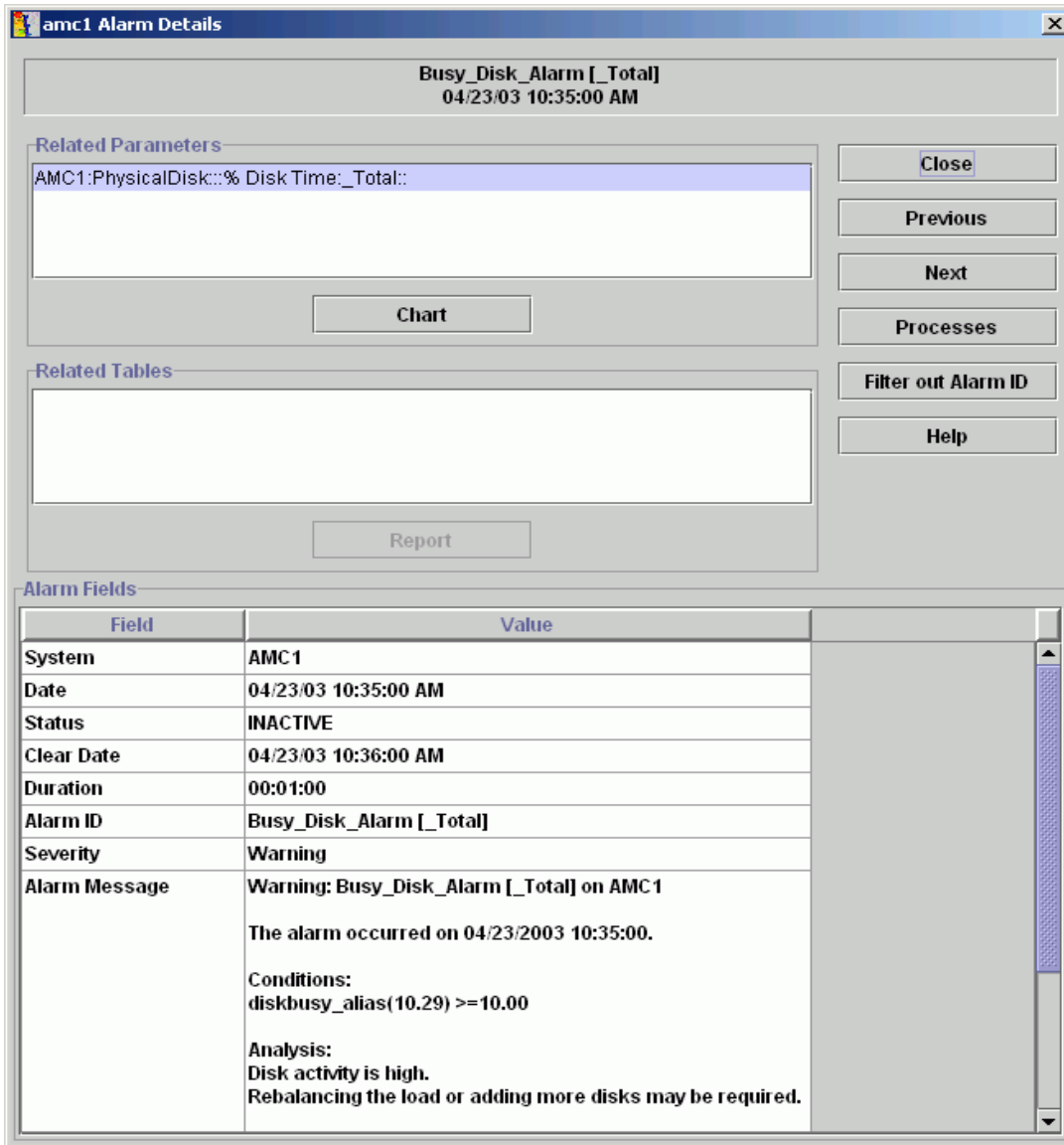


Figure 6. TeamQuest Alert Alarm Details

Figure 6 is an example of a TeamQuest Alert Alarm Details screen. This is useful when looking for the details of an alarm that has occurred. If you would like to chart this alarm to see the history of it, you would click on the Chart button. You can even see the processes that were running at this time by clicking on the Processes button.

## Alarm Examples

### SQL Server Down

The following example is an alarm that was created to notify the administrator if the SQL Server goes down. This alarm checks the Windows process table for the command "sqlservr". If it does not exist an alarm is generated. You can use this alarm as an example for other commands in the process table.

*Note:* This alarm example assumes that you have "blat" or "postie" installed on your system. These are command line mailer utilities. If you do not have either of these installed, please contact TeamQuest support for a workaround.

You must first define aliases and actions before referencing them in an alarm definition. Figure 7 shows the alarm alias page for this particular alarm.

Host: SIEBEL1  
Welcome, marketing!  
[Database](#): production

TeamQuest Manager    TeamQuest Model    TeamQuest On the Web    Help    Site Map    Logout

Agent Manager  
Collection Agents  
Service Agents  
Alarm Policy  
**Aliases**  
Actions  
Workload Policy  
Reduction Policy  
Derived Statistic Policy  
Database Settings  
Analysis Tools

### Edit Alias Definition

Alias Name    sqlservr

Class    NT

Subclass    Process

Table Field    command

Data Type    STRING

Finished    Delete    Rename    Duplicate

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**Figure 7. TeamQuest Alarm Edit Alias Page**

Action Name	Normal Action
SQL Server Up	<p><b>Commands</b></p> <pre>postie -host:lake1.teamquest.com - to:7777777.pageme@pager.pagerservice.com,7775557777@usa.textmsg.com -from:pheasants1@teamquest.com -s:"\$(ALARM_ID) has gone down" - msg:"\$(ALARM_ID) DOWN AT \$(TIMESTAMP)"</pre>

**Figure 8. TeamQuest Alarm Action**

Figure 8 shows the action that was defined to the SQL Server alarm. Remember, this alarm will be activated when you press the Activate Change button and start the TeamQuest services. It is merely checking for the command in the Windows Process table called "sqlservr." If the command sqlservr does not exist, the Normal Action is performed which will page the administrators letting them know that SQL Server has gone down. For this example, the process must be up and running before the alarm service is started other wise you will not know that the process is down. This example is opposite of a most alarm definitions because this will give you an action only when the critical condition isn't true. Most of the time the normal action simply clears the alarm from a higher severity.

Figure 9 shows how the alarm definition page looks for this alarm.

Host: SIEBEL1  
 Welcome, marketing!  
 Database: production

TeamQuest Manager    TeamQuest Model    TeamQuest On the Web    Help    Site Map    Logout

Agent Manager  
 Collection Agents  
 Service Agents  
**Alarm Policy**  
 Aliases  
 Actions  
 Workload Policy  
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 Derived Statistic Policy  
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 Analysis Tools

## Edit Alarm Definition

Alarm Name      SQLServer

**Critical Conditions**      sqlservr == sqlservr      [Edit](#)

**Critical Action**

**Major Conditions**      [Edit](#)

**Major Action**

**Minor Conditions**      [Edit](#)

**Minor Action**

**Warning Conditions**      [Edit](#)

**Warning Action**

**Normal Action**      SQLServerDown      [Edit](#)

**Systems**      [Edit](#)

**Resources**      [Edit](#)

**Workloads**      [Edit](#)

**Delay Factors**      [Edit](#)

**Schedule**      [Edit](#)

[Finished](#)    [Delete](#)    [Rename](#)    [Duplicate](#)

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**Figure 9. TeamQuest Alarm Administration Edit Alarm Definition Page**

### Low Disk Space

This is an example of a compound alarm where both conditions defined must be true before the alarm action will occur. In this specific example, the compound alarm is located in the warning severity area. If both conditions are met for this alarm, an email is sent to three different people to notify them of the low disk space on the C: drive of this system.

Note: This alarm example assumes that you have “blat” or “postie” installed on your system. If you do not, please contact TeamQuest support for a workaround.

You must first define aliases and actions before referencing them in an alarm definition. The user-defined alias that was chosen for this example is spacefree\_alias. Figure 10 shows the alias page.



- Agent Manager
- Collection Agents
- Service Agents
- Alarm Policy
- Aliases**
- Actions
- Workload Policy
- Reduction Policy
- Derived Statistic Policy
- Database Settings
- Analysis Tools
- Activate Changes

## Edit Alias Definition

Alias Name	spacefree_alias
Class	LogicalDisk
Subclass	No Subclass
Statistic	% Free Space
System	\$DEFAULT <a href="#">Edit</a>
Resource	\$ALL_RES <a href="#">Edit</a>
Data Type	DOUBLE

- 

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Figure 10. TeamQuest Alarm Edit Alias Page

Next, you must define the actions to be taken once an alarm has occurred. Figure 11 and 12 show the actions that are defined for when the normal, warning, and critical conditions are met for the low disk space alarm. Remember, this alarm will be activated when you press the Activate Change button. When the user-defined value has gone from the normal severity to the warning severity, the action is to email three administrators telling them it has reached the warning level. It gives them the system name, statistic value, statistic name and the alarm id so that they can take action on it. When the performance parameter has reached a critical severity, which hopefully does not happen much, the same action is performed except it tells them it is at the critical level.

Action Name	Normal Action
Alarm email Clear	<p><b>System:Alarms Message</b>                      \$(SEVERITY): \$(ALARM_ID) on \$(SYSTEM)</p> <p>The alarm cleared on \$(TIMESTAMP).</p> <p><b>Commands</b>                      postie -host:lake1.teamquest.com -                      to: lake@teamquest.com,hawks1@teamquest.com,snow2@teamquest.com -                      from:pheasants1@teamquest.com -s:"\$(ALARM_ID) is now at the \$(SEVERITY)                      level" -msg:"\$(CONDITION) at \$(TIMESTAMP)"</p>

Figure 11. TeamQuest Alarm Administration Action

Action Name	Warning and Critical Action
Low Disk Space Action	<p><b>System:Alarms Message</b>                      \$(SEVERITY): \$(ALARM_ID) on \$(SYSTEM)</p> <p>The alarm occurred on \$(TIMESTAMP).                      Conditions:                      \$(CONDITION)                      Parameters:                      \$(PARMINFO)</p> <p>Additional Information:                      Free disk space is low.                      Some files may need to be removed</p> <p><b>Commands</b>                      postie -host:lake1.teamquest.com -                      to: lake@teamquest.com,hawks1@teamquest.com,snow2@teamquest.com -                      from:pheasants1@teamquest.com -s:"\$(ALARM_ID) is now at the \$(SEVERITY)                      level" -msg:"\$(CONDITION) at \$(TIMESTAMP)"</p>

Figure 12. TeamQuest Alarm Administration Action

Figure 13 shows the alarm definition page for this alarm. Before this alarm will even trigger it must stay at a consistent value for 300 seconds. This is referred to as the delay factor. Whatever your delay factor is for your alarms, it should reflect the alarm strategy that you decided upon.



- Agent Manager
- Collection Agents
- Service Agents
- Alarm Policy**
- Aliases
- Actions
- Workload Policy
- Reduction Policy
- Derived Statistic Policy
- Database Settings
- Analysis Tools

## Edit Alarm Definition

Alarm Name	Low_Disk_Space_Alarm	
Critical Conditions	spacefree_alias < 5.0	<a href="#">Edit</a>
Critical Action	Low_Disk_Space_Action	
Major Conditions		<a href="#">Edit</a>
Major Action		
Minor Conditions		<a href="#">Edit</a>
Minor Action		
Warning Conditions	spacefree_alias < 15.0 AND spacefree_alias >= 5.0	<a href="#">Edit</a>
Warning Action	Low_Disk_Space_Action	
Normal Action	Alarm_email_action	<a href="#">Edit</a>
Systems		<a href="#">Edit</a>
Resources		<a href="#">Edit</a>
Workloads		<a href="#">Edit</a>
Delay Factors	Delay Before: 300 <i>units in seconds</i>	<a href="#">Edit</a>
Schedule		<a href="#">Edit</a>

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Figure 13. TeamQuest Alarm Edit Alarm Definition Page

### Conclusion

This document has described how TeamQuest’s alarming capability works and gave some examples of useful alarms that you may want to use. The biggest and most important message is that you have an alarm strategy set up so that everyone understands it. Sitting down with each department head and agreeing on service levels for that department is key in keeping your company running efficiently. What is important at your company may not be an issue at another company. Finally, TeamQuest Performance Software solutions can help you meet your service level objectives and keep your data center running at optimal efficiencies

### Bibliography

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