Quest

Quest Spotlight® on SAP® ASE 2.12.0

User Guide

Legend

WARNING: A WARNING icon indicates a potential for property damage, personal injury, or death.

CAUTION: A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.

IMPORTANT, NOTE, TIP, MOBILE, or VIDEO: An information icon indicates supporting information.

Spotlight on SAP ASE User Guide
Updated - Sep, 2020
Version - 2.12.0

Contents

Spotlight on SAP ASE

Background Information

About Spotlight® on SAP ASE

Spotlight® on SAP ASE is a Quest powerful diagnostic and problem resolution tool for SAP ASE. Its unique user interface provides you with an intuitive, visual representation of the activity on your database. Graphical flows illustrate the rate at which data moves between server components. Icons display the value of key statistics and measurements (metrics).

The power of Spotlight® on SAP ASE lies in its ability to provide visual and audible warnings if the performance metrics exceed acceptable thresholds. The components and data flows change color to show you the source of the problem.

A range of visual graphs and tabular grids provide you with detailed information about your ASE instance. This information can be viewed on the screen or printed.

You can set Spotlight® on SAP ASE to warn you when a threshold is reached. You may set a number of thresholds so that warning messages are displayed well before the traffic levels into or out of a database become critical. Spotlight uses a number of different techniques to warn you when your database is exceeding a threshold.

Spotlight® on SAP ASE seamlessly combines data from several different sources into a single user interface. It collects and combines data from ASE system tables and ASE commands and presents them in logically related screens.

When Spotlight® on SAP ASE detects a condition that it considers a potential problem, it not only informs you about it, but advises you what you could look at to diagnose the problem further, then suggests corrective actions.

Features of Spotlight® on SAP ASE

Some of the main features and benefits of Spotlight® on SAP ASE are:

- I18N support
- Host monitoring
- Detailed wait event monitoring
- Improved SQL text and stored procedure monitoring

- SoWin and SoUNIX integration
- History browser
- Provides a visual representation of process flows within ASE, allowing you to observe actual database and server activity in real time.
- Visually identifies bottlenecks, and provides extensive drilldown capabilities.
- Displays the details of problem areas, including active sessions, locks and deadlocks, disk I/O, and Windows server statistics for rapid problem resolution.
- Provides visual and audible warnings to alert you when performance metrics exceed defined thresholds.
- Provides detailed information about specific components through the use of drilldowns, allowing you to pinpoint the source or problems.
- Assesses the normal rate of process flows via a calibration process, and adjusts the display speed of the visual indicators accordingly.
- Has a quick and simple installation process.

Freeware Version of Spotlight® on SAP ASE

When Spotlight® on SAP ASE is unable to locate a valid user license, the application opens in freeware mode. The limitations of this mode are:

- Spotlight® on SAP ASE can only connect to one machine.
- There is no balloon help available for components on the Home Page.
- No drilldowns are available to display detailed information.
- The words "Freeware Mode" display on the status bar at the bottom of the Spotlight console.

Within these limitations, Spotlight retains all the features available in the fully licensed version.

Trial version

When you install the trial version of Spotlight® on SAP ASE, it comes with a 30-day license key. During the 30 days of the trial period, Spotlight retains all the features available in the fully licensed version.

After the trial period, the license expires, and Spotlight® on SAP ASE reverts to freeware mode.

Review of SAP ASE Architecture

For a graphical representation of the SAP ASE architecture, see this graphic.

Adaptive Server Enterprise (ASE) is a full featured, mature relational database management system. It is a highly scalable RDBMS that is widely used in enterprise class installations.

The general structure, or architecture, of Adaptive Server shares many similar concepts used by the family of RDBMS servers from other vendors, but it does have some of its own terms and unique implementations, as described in the following sections.

Named dataserver instance

- Any host machine can have one or more named "**dataserver**" (or "**server**" for short) instances of Adaptive Server installed and running on it. All client code that communicates with Adaptive Server will need the host name, server name, and port address it is listening on, to address it properly (in addition to a valid login/password).
- A server will consist of one or more "**engines**" (separate operating system processes providing identical services but performing independent and parallel DB tasks, while appearing to any connected client as one server entity) with the number of engines depending on the server configuration. The number of engines defined is usually directly related to the SMP capacities of the host machine.

Server login

- Access to Adaptive Server is maintained locally at the server. A **login** is created that a client can then use to access Adaptive Server.
- Exceptions:
    - On Windows NT/2000, Adaptive Server can be configured to use native security.
    - Starting with ASE v12.5, Adaptive Server can be configured to use LDAP.
- A login does not by itself provide access to an underlying database on the server.

Database

- Each named server will have a number of "**databases**." They can be categorized into two types: system and user-defined databases.
- A database is defined as a collection of segregated tables and indexes. For example, the **system** database named "master" contains all the tables and indexes needed to run, configure, and administer the server as a whole.
- Each database has "**users**" defined that can access the database. A DBA will provide access to a database by creating or assigning a **user** that the server **login** can use while in the respective database.
- Once a client connects to a server, it can switch context to any of the databases (security permitting). Any SQL query can reference tables outside the current database using the proper SQL syntax.

Database Device

- A "**device**" is a logical or physical unit of storage on which a database is created.

Segment

- A database device is sub-divided into logical units of storage for the database, called "**segments**." A user-defined segment can also be created so that one or more tables or indices can be placed, or segregated, onto a new segment apart from the default segments (typically done for application performance and tuning).

System Tables

- Adaptive Server populates and maintains tables with server-specific information (i.e., setup, security, configuration). Most system tables reside on the master database, but each database contains a smaller set of system tables as well.
- The system tables are the primary source of all information about Adaptive Server that Spotlight retrieves.

Backup Server

- Open/Server that handles the backup tasks for one or more Adaptive Servers.

Desktop Features

This section describes the features of the Spotlight *on SAP ASE* user interface. The features may be of the following kinds:

- **Features that are specific to Spotlight *on SAP ASE.***

Spotlight applications all operate in the same way. They differ only in the kind of information they collect and display. The features that are specific to Spotlight® on SAP ASE tell you what is happening in the system(s) that you are currently connected to. The supplied information is displayed in:

  - The main Spotlight *on SAP ASE* page, including individual panels, components, and specific menu and toolbar options.
  - The specific drilldowns accessible from that page.
  - The individual alarms that relate to Spotlight *on SAP ASE*.
  - The Spotlight *on SAP ASE***Options** window.

- **Features that are common to all Spotlight applications.**

These are the features that allow you to manage (and customize) the behavior of Spotlight® on SAP ASE and any other Spotlight applications installed on your computer. These features are described in detail in the section Concepts and features in **Spotlight Basics**. They include:

- A standard set of menu, toolbar, connection and help options.
- A set of editors (Console options, Metric and Properties) for customizing the behavior of the current Spotlight connection.
- Features that allow you to configure and use Spotlight.

Related Topics

Features specific to Spotlight *on SAP ASE*	**Features common to all Spotlights**	**Configuring and using Spotlight**
The main window	The Spotlight console	General tasks
The Spotlight® on SAP ASE toolbar	The Spotlight home page	Connecting and disconnecting
Spotlight® on SAP ASE menus	Console options	Calibrating Spotlight connections
The Options window	Components and drilldowns	Navigation within Spotlight
Connecting to Spotlight® on SAP ASE	The Properties editor	Viewing performance details via drilldowns
Spotlight® on SAP ASE drilldowns	The Metric editor	Viewing historical data
Spotlight® on SAP ASE alarms	Spotlight help	Viewing and editing console options
	Spotlight menus	Viewing and editing component properties
	The Spotlight toolbar	Viewing and editing metrics
	The Connections list	Viewing and editing alarms
	Keyboard shortcuts	Pausing and resuming
		Saving configurations
		Help features

Main Spotlight *on SAP ASE* Window

The main Spotlight *on SAP ASE* window provides a quick and intuitive view of the activity of an ASE instance.

The Spotlight *on SAP ASE* window helps you locate system bottlenecks quickly. Related server statistics are grouped together on **panels** that are connected by a series of graphical flow and icons. Spotlight *on SAP ASE* updates these flows in real time so that you can see how quickly data is moving through the system. The icons change color as their values move through the range of thresholds.

The following graphic shows the main features of the Spotlight *on SAP ASE* window. The list at the bottom of this page identifies each element, and provides a link to display more information.

A Users Panel

B Host Panel

C Network Packets Sent/Received

D ASE Panel

E Some data not available

F Disk Writes/Disk Reads

G Data Cache/Procedure Cache Searches

H ASE Error Log Panel

I Backup Server Panel

J Memory Panel

K Data Cache Writes/Reads

L Procedure Cache Reads

M Disk Storage Panel

Users Panel

The **Users** panel displays the following information:

- Connections Used
- Problem Users
- Response Time (in ms)
- Processes

Host Panel

This value displays the percentage of time the Adaptive Server's host CPU was performing tasks.

Clicking this component will drill down to the associated Spotlight on Windows or Spotlight on UNIX plugins. These plugins will provide additional information concerning the host's CPU usage.

Network Packets Sent/Received

This section of the Home Page displays the number of network packets sent by the ASE and received by the ASE.

ASE Panel

The **ASE** panel displays information about the following:

- ASE version number
- Date and time the ASE was started
- Name (or IP address) of the host machine on which the ASE is running
- Name (or IP address) of the server on which the ASE is running
  - **CPU Busy** section
    - Time spent on server-related tasks
    - Engines online and configured
  - **Locks** section
    - Number of times a lock waited longer than the Lock Wait threshold
    - The number of locks in use
    - The number of deadlocks

Disk Writes/Disk Reads

This section of the Home Page displays the number of disk writes and disk reads per second completed by the ASE.

Data Cache/Procedure Cache Searches

This section of the Home Page displays:

- Number of searches per second requested from the data cache
- Number of stored procedures requested per second

ASE Error Log Panel

The ASE Error Log Panel displays the number of errors that match the severity levels established for error log entries.

Backup Server Panel

The Backup Server panel provides status information for the Backup Server.

Memory Panel

The **Memory** panel displays information about the following:

- Memory allocated to the ASE
- Data cache size
- Data cache hit rate
- Procedure cache size
- Procedure cache hit rate
- Metadata cache Open DBs
- Metadata cache Open Objects
- Metadata cache Open Index

Data Cache Writes/Reads

This section of the Home Page displays data for the number of data cache physical writes and data cache physical reads per second.

Procedure Cache Reads

This section of the Home Page displays the rate at which stored procedures are read from disk.

As users execute stored procedures, Adaptive Server looks in the procedure cache for a query plan to use. If a query plan is available, execution begins.

If no plan is in memory, or if all copies are in use, the query tree for the procedure is read from disk.

Disk Storage Panel

The **Disk Storage** panel has two main sections:

- I/O Busy
- Databases

I/O Busy

In addition to showing ASE performance of I/O related tasks (as a percentage), the I/O Busy section also displays the number of I/O disk devices.

Databases

In addition to displaying the number of databases, the Databases section shows:

- Size of the fullest database being monitored
- Percentage of space used by the fullest database, along with a container representing this same data
- Size of the fullest transaction log being monitored
- Percentage of space used by the fullest transaction log, along with a container representing this same data
- Size of the fullest Temp DB being monitored
- Percentage of space used by the fullest temp DB, along with a container representing this same data

Spotlight *on SAP ASE* Toolbar

The **Spotlight *on SAP ASE* toolbar** is located at the top of the main application window, or Home Page. The toolbar provides you with quick access to commonly used commands and functions. Click once on a toolbar button to carry out the command.

For a description of what each button does, rest your mouse pointer over the button in Spotlight® on SAP ASE. Drilldown buttons also display a hot key. If a button appears dimmed, it is unavailable.

There are two kinds of buttons on the Spotlight *on SAP ASE* toolbar:

- Buttons common to all Spotlight applications. See Spotlight toolbar topic in Spotlight Basics.
- Buttons that are specific to Spotlight *on SAP ASE*. The toolbar buttons that are specific to **Spotlight *on SAP ASE*** are those used to access Spotlight *on SAP ASE* drilldowns. The table below describes the drilldown toolbar buttons for **Spotlight *on SAP ASE***.

Button	Description
	Users drilldown
	Network drilldown
	Engines drilldown
	Locks drilldown
	Memory drilldown
	Devices drilldown
	Databases drilldown
	Error Log drilldown
	Spotlight Monitoring Requirements drilldown
	Alarm Log drilldown The Alarm Log drilldown is common to all Spotlight applications, and is described in detail in the Spotlight toolbar topic in Spotlight Basics. However, the alarms displayed in the Alarm Log drilldown are specific to Spotlight® on SAP ASE.
	Alarms by time drilldown. The alarms of the Alarm Log, sorted by time.

Spotlight *on SAP ASE* Menus

Spotlight *on SAP ASE* has two different types of menus:

- Standard menus displayed via the menu bar on the Spotlight console

  The standard menus available in Spotlight® on SAP ASE are also those that are common to all Spotlight applications. For more information about the standard menus, see the Spotlight menus section in Spotlight Basics.

  The View menu has an Options selection that allows you, among other things, to set Alarm Log options and to configure properties of Spotlight *on SAP ASE*.

  For additional information about the selections available on the Options menu, see:

  - Customizing the Spotlight console
  - Setting up History options
  - Setting up Alarm Log options
  - Setting up Spotlight on SAP ASE options

- Shortcut menus displayed when you right-click an object in a Spotlight home page or in a drilldown.

  The Home Page uses a single shortcut menu for every element on the page. This menu consists of:

  - What's This?
  - Show History
  - Show Details
  - Metrics
  - Properties
  - Snooze Alarm (only shown when a component is in an alarm state)

Spotlight on SAP ASE Options Window

You can set several options that affect the behavior and display of Spotlight *on SAP ASE* via the **Spotlight on SAP ASE Options** window. These options include:

- Defining Problem Users
- Setting the maximum number of data rows that will be displayed for a query
- Setting the severity level for errors to be displayed on the Home Page Error Log pane
- Setting menu options

Connect to an Instance of SAP Adaptive Server Enterprise

Use this procedure to establish a connection with Adaptive Server instance. Spotlight® on SAP ASE supports simultaneous connections to multiple servers. This eliminates the need to run concurrent versions of the application. Repeat the following procedure to connect to another server.

Before you connect

Before you begin the connection, the following must be in place:

- Ensure that the Adaptive Server is accessible to client applications.
- To utilize the full functionality of Spotlight® on SAP ASE to monitor your Adaptive Server instance requires using a login (defined in the Spotlight connection) with the following criteria:
    - For ASE versions 11.9.2.x, 12.0.x, and 12.5.0.x (prior to 12.5.0.3), either the "sa" or a login with the "sa_role". In addition, to see the SQL statements the account needs the "sybase_ts_role".
    - For ASE versions 12.5.0.3 and newer, the "sa" or a login with the "sa_role". In addition, the new role "mon_role" is needed for the account.

      Notes:

        - If you are unsure whether you have this access, contact your Database Administrator (DBA).
        - If your account does not meet the above criteria, Spotlight® on SAP ASE will not show several graphs and charts that monitor an ASE. (See Using Spotlight with a limited access login account).

Make the connection

To connect to SAP Adaptive Server Enterprise

1. Start Spotlight® on SAP ASE.
2. Open the Spotlight Connection Manager.
3. Select Spotlight® on SAP ASE icon in the panel to the left.
4. Double-click the **New Connection** icon.

5. Complete the following fields in the **New Connection** window.

Field	Description
Select connection type	Choose Spotlight® on SAP ASE from the drop-down list if it has not already been selected.
New connection name	Choose a short and meaningful name for the new connection.

6. Click **OK** to save the details of the new connection, and create an icon for that connection in the Connection manager.

7. Complete the following fields in the **New Connection Properties** window.

Field	Description
ASE Server	The name of the Adaptive Server that is to be monitored. **Note:** If a client has been installed on the machine that Spotlight has been installed on, Spotlight attempts to find the SQL.INI file. If found, and the ASE Server is in that list, Spotlight will automatically complete the **Host Name** and **Port** fields.
Host Name	The name of the specified host machine that the Adaptive Server is running on. **Note:** This corresponds to the host field in the SQL.INI file.
Port	The port that the specified Adaptive Server is listening on. **Note:** This corresponds to the port field in the SQL.INI file
Login Name	The login used to connect to the Adaptive Server. **Note:** Remember that using a login that is the ASE system administration (”r;sa”) or an account with the ”r;sa_role” and ”r;sso_role” will allow full monitoring of an Adaptive Server and automatically handle all issues for Spotlight to monitor the Adaptive Server. If using a non-sa account, then have a DBA follow the steps in the 'Using a non- ”r;sa” Login" section in the *Getting Started Guide* before attempting to open this connection to the Adaptive Server.
Password	The respective password for the login entered.

Host Connection Details

Monitor OS	Select this check box to monitor the operating system.
Host Username	The username you use when logging on to the machine.
Host Password	The password you use when logging on to the machine.
Host Type	Choose the type of Spotlight connection to make to the machine. The current set of options are **Windows**, **Unix/SSH** or **Unix/Rexec**. **Note:** If you are connecting to a UNIX host first make sure that Rexec or SSH is installed.
Domain	If you are connecting to a Windows host, then the domain field is the name of the domain that the specified user belongs to. If no user name is entered in the **Host username** field, this field should also be left blank.
Host port	If you are connecting to a **Unix/SSH** host then enter the port number that Spotlight will use for its SSH (secure shell) connection to the UNIX host. The default value is

22.

Save password details (for this connection)	Select this check box to save passwords whenever you add a new connection.

8. Click **OK** to create the connection.

Using Spotlight with a limited access login account

For Pre-ASE v12.5.0.3

Any data retrieved from ASE using the sysmon utility will not be available from within Spotlight.

1. Decide on the Login that will be used by Spotlight.
2. Contact your DBA, and have him run **nonsasetup.exe** located in the following path:

<Install Directory>\Spotlight\Plug-ins\SoSyb

Notes:

- This executable needs to be run to create some Spotlight stored procedures, to grant permissions on master sysengines, to add *mon_role* and other required roles to the login account and to set up SAP MDA API by turning on and tuning the respective server parameters.
- The **nonsasetup.exe** dialog box is shown below in "nonsasetup.exe Dialog Box".

For ASE v12.5.0.3 and newer

1. Decide on the Login that will be used by Spotlight.
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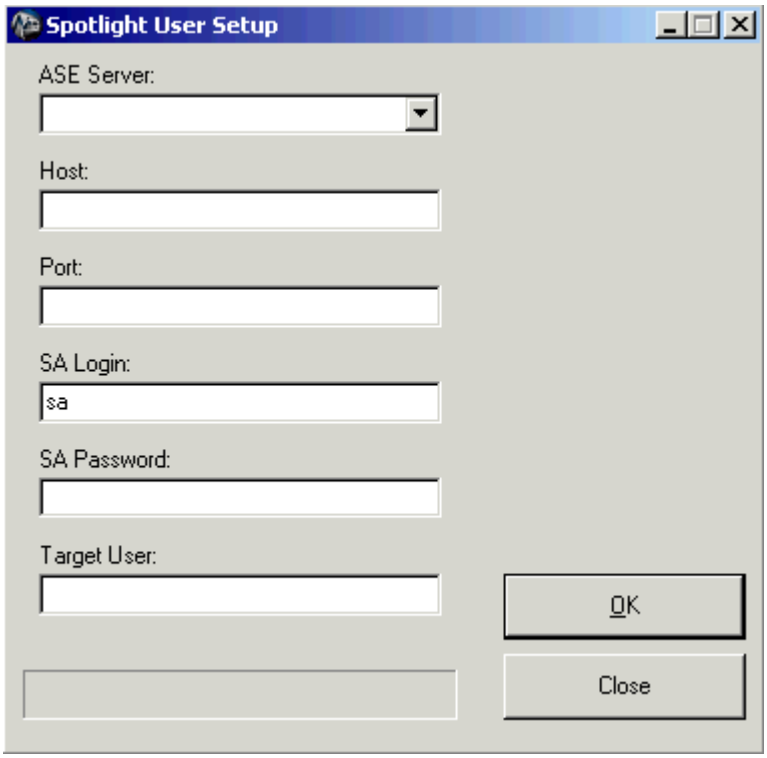
nonsasetup.exe Dialog Box

The **nonsasetup.exe** dialog box is shown below.



The fields on this dialog are defined in the following table:

Field	Description
ASE Server	Name of the specified ASE Server. A list of defined servers is displayed in the drop-down. Choosing an existing server will automatically complete the **Host** and **Port** fields.
Host	The name of the specified host machine that the Adaptive Server is running on. **Note:** This corresponds to the host field in the SQL.INI file.
Port	The port that the specified Adaptive Server is listening on. **Note:** This corresponds to the port field in the SQL.INI file.
SA Login	Defaults to "sa". Keep the "sa" or enter a login that has the "sa_role" and "sso_role" granted to it.
SA Password	Password required to log onto the specified server as SA. **Note:** This application requires an SA connection to correctly install and establish permissions
Target User	Login of the non-SA user for whom privileges will be established. Not specifying a target user will still install procedures and setup the server for Spotlight monitoring.

After you have entered the necessary information in the fields, press **OK** to begin setup.

A progress bar shows setup progress, and a message displays when setup is complete.
Press **Close** to close the application.

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      Notes:

        - If you are unsure whether you have this access, contact your Database Administrator (DBA).
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4. Double-click the **New Connection** icon.

5. Complete the following fields in the **New Connection** window.

Field	Description
Select connection type	Choose Spotlight® on SAP ASE from the drop-down list if it has not already been selected.
New connection name	Choose a short and meaningful name for the new connection.

6. Click **OK** to save the details of the new connection, and create an icon for that connection in the Connection manager.

7. Complete the following fields in the **New Connection Properties** window.

Field	Description
ASE Server	The name of the Adaptive Server that is to be monitored. **Note:** If a client has been installed on the machine that Spotlight has been installed on, Spotlight attempts to find the SQL.INI file. If found, and the ASE Server is in that list, Spotlight will automatically complete the **Host Name** and **Port** fields.
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Domain	If you are connecting to a Windows host, then the domain field is the name of the domain that the specified user belongs to. If no user name is entered in the **Host username** field, this field should also be left blank.
Host port	If you are connecting to a **Unix/SSH** host then enter the port number that Spotlight will use for its SSH (secure shell) connection to the UNIX host. The default value is 22.

Save password details (for this connection)	Select this check box to save passwords whenever you add a new connection.

8. Click **OK** to create the connection.

Using Spotlight with a limited access login account

For Pre-ASE v12.5.0.3

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1. Decide on the Login that will be used by Spotlight.
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Notes:

- This executable needs to be run to create some Spotlight stored procedures, to grant permissions on master sysengines, to add *mon_role* and other required roles to the login account and to set up SAP MDA API by turning on and tuning the respective server parameters.
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nonsasetup.exe Dialog Box

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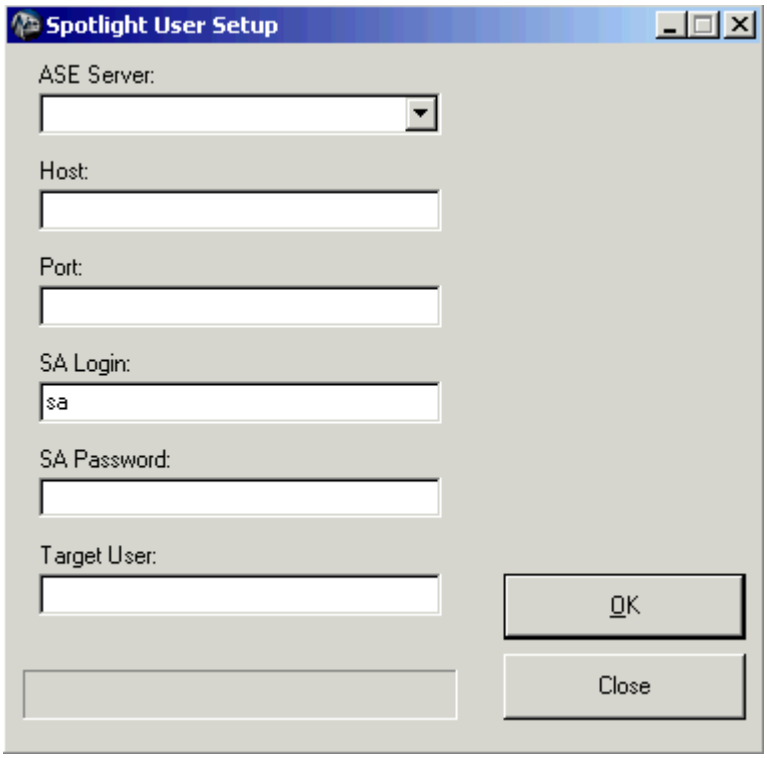

The fields on this dialog are defined in the following table:

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SA Password	Password required to log onto the specified server as SA. **Note:** This application requires an SA connection to correctly install and establish permissions
Target User	Login of the non-SA user for whom privileges will be established. Not specifying a target user will still install procedures and setup the server for Spotlight monitoring.

After you have entered the necessary information in the fields, press **OK** to begin setup.

A progress bar shows setup progress, and a message displays when setup is complete.

Press **Close** to close the application.

Spotlight® on SAP ASEdrilldowns

Drilldowns display detailed information about the system that you are diagnosing. Each drilldown contains a series of reports and graphs that provide you with specific information about the components of your system. The statistics that are available help you identify and anticipate performance problems.

The drilldowns listed below are specific to **Spotlight® on SAP ASE**. Other Spotlight applications will have their own individual drilldowns. For information on drilldowns in general, see Spotlight Basics.

For more information, see:

- Using the Cached SQL drilldown
- Using the Change Event Log drilldown
- Using the CPU Summary drilldown
- Using the Database Summary drilldown
- Using the Device Summary drilldown
- Using the Error Log drilldown
- Using the Memory Summary drilldown
- Using the Network drilldown
- Using the Spotlight Monitoring Requirements drilldown
- Using the Process Activity drilldown
- Using the User Locks drilldown
- Using the Threshold Event Log drilldown

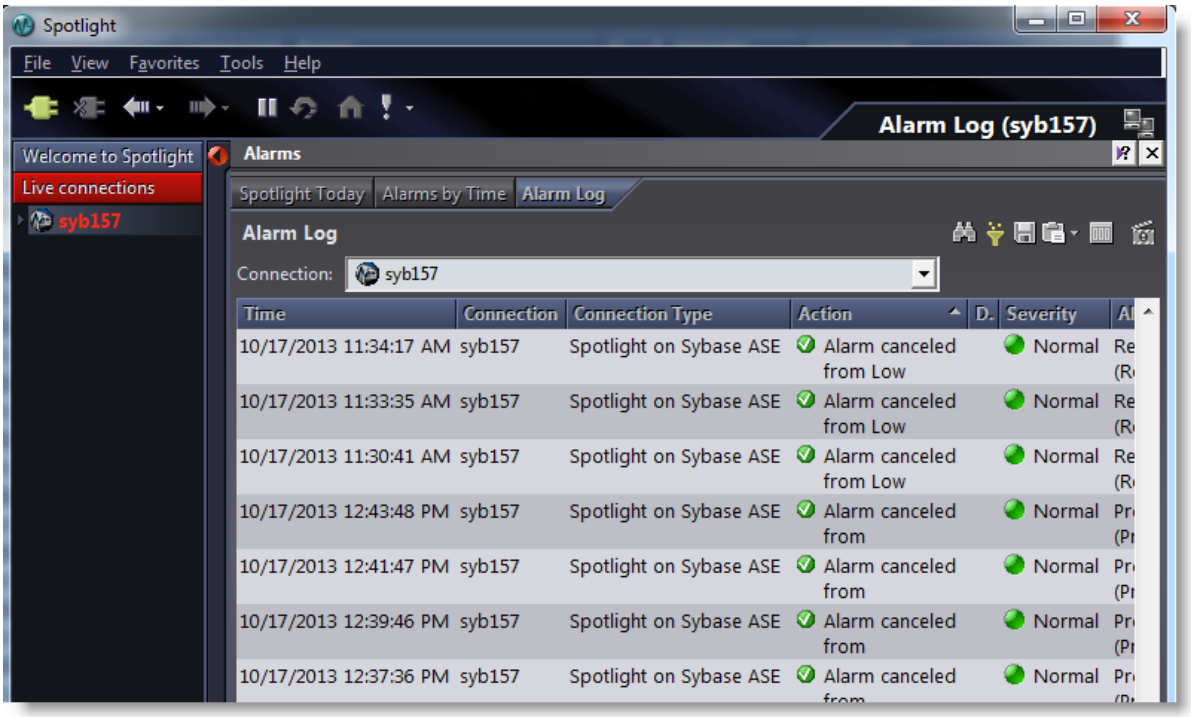
Alarm Log drilldown

The **Alarm Log** drilldown provides access to information about alarms that have been raised for the current Spotlight on SAP ASE connection.

To display the Alarm Log drilldown

Click **Alarm Log**  or press **Ctrl + L**.

The following is an example of the information that is displayed on the Alarm Log.



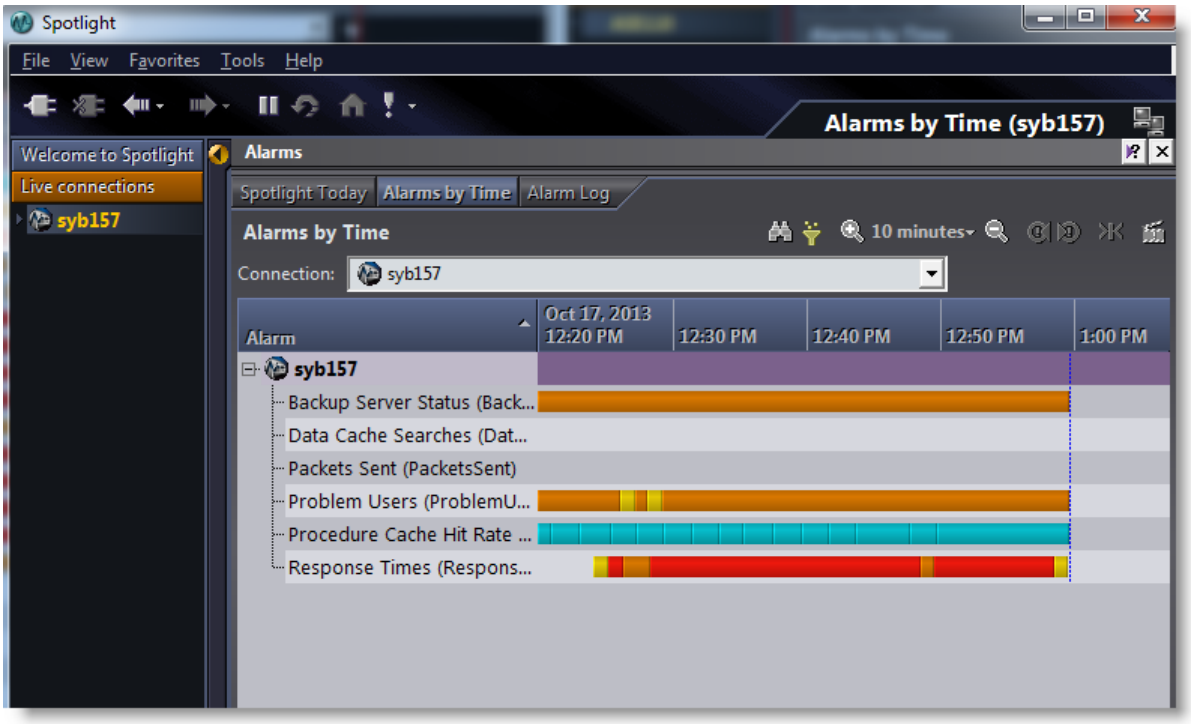
Alarm by time drilldown

The **Alarm by time** drilldown provides access to the Alarm Log alarms, that have been raised for the current Spotlight on SAP ASE connection, sorted by time.

To display the Alarm by time drilldown

Click **Alarm by time**  or press **Ctrl + T**.

The following is an example of the information that is displayed on the Alarms by time log.



Using the Process Activity drilldown

The Process Activity drilldown provides access to details of user connections, problem users, and processes running on an ASE.

To display the Process Activity drilldown

Click **Users**  or press **Ctrl + U**.

Note: You can also select **View | Go To | Users**.

Data in the Process Activity drilldown

The Process Activity General drilldown consists of a Process Activity Detail page with three sub-pages:

- User Activity
- SQL Activity
- Wait Events

Using the CPU Summary drilldown

The **CPU Summary** drilldown provides access to information about the amount of time the ASE spends on server-related tasks and the number of engines configured.

To display the CPU Summary drilldown

Click **Engines**  or press **Ctrl + E**.

Note: You can also select **View | Go To | Engines**.

Data in the CPU Summary drilldown

The CPU Summary drilldown displays a CPU grid and a CPU page with five sub-pages, each of which can be opened by clicking on its associated tab:

- CPU Summary
- Context Summary
- Checks Summary (available for pre-ASE 12.5.03 only)
- Wait Summary
  Note: Available for ASE 12.5.0.3 or later only.
- Detail
- Wait Detail
  Note: Available for ASE 12.5.0.3 or later only.

Using the Database Summary drilldown

The **Database Summary** drilldown provides access to information about:

- Number of databases
- Size of the fullest database, transaction log, and temp DB being monitored
- Percentage of space being used by the fullest database, transaction log, and temp DB being monitored

To display the Database Summary drilldown

Click Databases  or press Ctrl + A.

Note: You can also select **View | Go To | Databases**.

Data in the Database Summary drilldown

The Database Summary drilldown displays a Databases grid and a Database Detail page with seven sub-pages, each of which can be opened by clicking on its associated tab:

- Summary
- Status
- Device Info
- Segment Info
- Transaction Log
- Open Objects Activity
- Open Objects I/O
- Top Objects
- Statistics Date

Using the Device Summary drilldown

The **Device Summary** drilldown provides access to information about:

- Number of physical writes and reads per second completed by the ASE
- Percent of time spent by the ASE on I/O related tasks
- Number of disk devices
- Number of physical reads per second by the data cache
- Number of stored procedures read from the disk per second

To display the Device Summary drilldown

Click **Devices**  or press **Ctrl + D**.

Note: You can also select **View | Go To | Devices**.

Data in the Device Summary drilldown

The Device Summary drilldown displays a Devices grid and a Devices page with three sub-pages, each of which can be opened by clicking on its associated tab:

- Summary
- Performance Detail

- General Detail

Using the Error Log drilldown

The **Error Log** drilldown provides access to details about error messages for the ASE you are diagnosing.

To display the Error Log drilldown

Click **Event Log**  or press **Ctrl + R**.
Click **Error Log** Tab
Note: You can also select **View | Go To | Error Log**.

Data in the Error Log drilldown

The Error Log drilldown displays an Error Log grid.

Using the Memory Summary drilldown

The **Memory Summary** drilldown provides access to details of memory usage for the Adaptive Server you are diagnosing.

To display the Memory Summary drilldown

Click **Memory**  or press **Ctrl + M**.
Note: You can also select **View | Go To | Memory**.

Data in the Memory Summary drilldown

The Memory Summary drilldown displays five pages, each of which can be opened by clicking on its associated tab.

- Summary page
- Configuration page
- Data Cache page
- Procedure Cache page
- Metadata Cache page

Using the Network drilldown

The **Network** drilldown provides access to information about the number of packets sent and received by the ASE.

To display the Network drilldown

Click **Network**  or press **Ctrl + M**.

Note: You can also select **View | Go To | Network**.

Data in the Network drilldown

The Network drilldown displays three charts and the Network Users grid:

- Average Packet Size
- Packets
- Bytes

In addition, this drilldown displays data in six fields below the three charts, including:

- Max Packets
- Min Packets
- Avg Packets
- Max Bytes
- Min Bytes
- Avg Bytes

Using the Server Configuration drilldown

The **Server Configuration** drilldown provides access to:

- General ASE Server, login and machine information
- Settings for Adaptive Server Enterprise configuration elements
- Current Alarm Log, ASE Error Log and Spotlight Error Log messages

To display the Server Configuration drilldown

Click **Server Configuration drilldown**  or press **Ctrl + Q**.

Note: You can also select **View | Go To | Server Configuration drilldown**.

Data in the Server Configuration drilldown

The Server Configuration drilldown displays as a single page with:

- General ASE Server, login, and machine information in five fields at the top of the page
- Last Error field
- Three buttons at the bottom of the page to enable display of the Alert Log, ASE Error Log and Spotlight Error Log
- ASE Server Configuration Parameters grid tab
- ASE Server Configuration Requirements grd tab

General Information

The following table defines the five general information fields at the top of drilldown:

Field	Description
ASE Server Name	Name of this Adaptive Server that is being monitored.
ASE Version	The full version of Adaptive Server that is being monitored.
ASE Login	The login account used to connect to this Adaptive Server. This account information is defined in the Spotlight connection.
Host Machine Name	Name (or IP address) of the host machine that Adaptive Server is running on. This is defined in the Spotlight connection.
Port	Port number the Adaptive Server is listening on. This information is defined in the Spotlight connection.

Last Error field

The **Last Error** field displays the last error message encountered while collecting data from Adaptive Server.

Alert Log, ASE Error Log, and Spotlight Error Log buttons

- Click the **Alert Log** button to view a list of alarms associated with your connection to Spotlight® on SAP ASE.
- Click the **ASE Error Log** button to view a list of errors associated with your connection to the ASE Server.

- Click the **Spotlight Error Log** button to view a list of errors associated with your connection to Spotlight® on SAP ASE.

ASE Server Configuration Parameters Grid Tab

This grid displays the configuration parameters needed by Spotlight to fully monitor an Adaptive Server.
The following table describes the columns on this grid:

Column	Description
Parameter Name	The name of the configuration parameter corresponding to rows in the sysconfigures and syscurconfigs tables.
Config Value	The current configuration value from the sysconfigures table.
Run Value	The current run value from the syscurconfigs table.
Baseline Config Value	The user established baseline config value for comparison.
Baseline Run Value	The user established baseline run value for comparison.

- Click the **Set Baseline Value** button to establish the current config and run values as the new baseline values for the current adaptive server.

ASE Server Configuration Requirements Grid Tab

This grid displays the permissions, roles, and ASE configuration parameters needed by Spotlight to fully monitor an Adaptive Server.
The following table describes the columns on this grid:

Column	Description
Configuration	Permissions and configuration parameters used by Spotlight
Setting	Current state of the permissions and configuration parameters. This will be either "Yes", "No," or a numeric value.
OK	A check mark indicates that a parameter or permission is set to allow Spotlight to fully monitor an ASE. An "x" indicates that Spotlight will have reduced functionality associated with the parameter or permission.

Using the Cached SQL drilldown

Note: This topic focuses on information that may be unfamiliar to you. It does not include all step and field descriptions.

On ASE 16 or later the **Cached SQL** drilldown provides access to details about cached SQL statements and makes it easy to edit or optimize them.

To display the Cached SQL drilldown

Click **Users**  or press **Ctrl + U**.

Click **Cached SQL** tab

The top pane displays a grid that shows the cached SQL statements from `monCachedStatement` monitoring table on ASE 16 or later.

The bottom pane displays the selected cached SQL statement.

Tip: Click the Toad icon to edit the statement in Toad for SAP or click the Optimizer icon to tune the statement in SQL Optimizer for SAP ASE.

Using the User Locks drilldown

The **User Locks** drilldown provides access to information about the number of lock waits that exceed the Lock Wait threshold, the number of locks in use, and the number of deadlocks detected on the ASE.

To display the User Locks drilldown

Click **Locks**  .

Note: You can also select **View | Go To | Locks**

Data in the User Locks/Dead Locks drilldown

The Locks/Deadlocks drilldown displays three pages, each of which can be opened by selecting its associated tab.

- Users
- Objects
- Dead Locks

The **Users** and **Objects** pages display a grid and Summary and Detail sub-pages. The **Dead Locks** page displays a Dead Locks grid and User Holding and User Waiting panels.

Threshold Event Log

Note: This topic focuses on information that may be unfamiliar to you. It does not include all step and field descriptions.

On ASE 16 or later the **Threshold Error Log** drilldown provides access to details about threshold error messages.

To display the Threshold Error Log drilldown

Click **Event Log**  or press **Ctrl + R**.

Click **Threshold Event Log** Tab

Note: In order to use Threshold Event Log the following configuration parameters need to be enabled:

- `allow resource limits`: to enable collection of resource limits
- `enable monitoring, threshold event monitoring, set threshold event max messages`: to enable the monitoring table `monThresholdEvent` collection of data

The top pane displays the limits on the number of server resources set by the user using `sp_add_resource_limit` procedure.

The bottom pane displays historical threshold event data for the resource limit selected in the top pane.

Change Event Log

Note: This topic focuses on information that may be unfamiliar to you. It does not include all step and field descriptions.

On ASE 16 or later the **Change Event Log** drilldown provides access to details about changes in configuration.

To display the Change Event Log drilldown

Click **Event Log**  or press **Ctrl + R**.

Click **Change Event Log** Tab

Prerequisites for Change Event Log

The following error messages may be displayed:

"Database `sybsecurity` not installed. Please install it and enable the audit system"

- `sybsecurity` database must be installed in order to collect `ch_events` data

"Configuration history tracking not enabled"

- execute `sp_audit "config_history", "all", "all", "on"` to enable configuration history tracking

"Auditing not enabled"

- execute `sp_configure 'auditing', 1` to enable auditing

"View ch_events not created"

- execute `sp_confighistory create_view` to create ch_events

Spotlight *on SAP ASE* alarms

The following alarms may be activated from Spotlight *on SAP ASE* for the server you are diagnosing. Click below to display information about each alarm.

Backup Server Status Alarm	Fullest Transaction Log Container Alarm
Blocked User Alarm	Fullest Transaction Log Percent Alarm
Connections Used Alarm	Host CPU Busy Alarm
CPU_Busy Alarm	I/ O_Busy Alarm
Data Cache Hit Rate Alarm	Locks Used Alarm
Data Cache Reads Alarm	Locks Waiting Alarm
Data Cache Searches Alarm	Open Databases Percent Alarm
Data Cache Writes Alarm	Open Indexes Percent Alarm
Deadlocks Alarm	Open Objects Percent Alarm
Disk Reads Alarm	Packets Received Alarm
Disk Writes Alarm	Packets Sent Alarm
Engines Offline Alarm	Problem Users Alarm
Error Log Alarm	Procedure Cache Hit Rate Alarm
Fullest Database Container Alarm	Procedure Cache Reads Alarm
Fullest Database Percent Alarm	Procedure Cache Searches Alarm
Fullest Temp DB Alarm	Response Time Alarm

Related Topics
Alarms and the Alarm Log
Alarm Log options
Both topics are in Spotlight Basics

Backup Server Status Alarm

This alarm is raised if Spotlight detects an error when attempting to connect to the Backup Server. This checking is done by executing a remote server call from the connection to the Adaptive Server that Spotlight has established. Spotlight then dissects the return message from the Backup Server.

The Backup Server will need to be started by going to the host machine where the Backup Server is installed and running the appropriate shell or batch files for your environment. You will not be able to back up your database or dump your transaction logs until the respective Backup Server is up and running.

Note: If the Backup Server is down, the system will attempt to poll it. Then, if no connection can be made to the Backup Server, ASE will write a line to the Adaptive Server Error Log. You can uncheck a related option for Spotlight® on SAP ASE as described below.

If you **do not** want the Backup Server to be polled or checked:

1. Go to the main toolbar and select **View -> Options -> Spotlight® on SAP ASE.**
2. Select **Acquisition**.
3. Click the check mark in the *Poll Backup Server* field to remove it.

Blocked User Alarm

This alarm is raised when the percentage of processes unable to run (waiting) because another process has a lock on a needed resource and has exceeded the defined thresholds.

The alarm thresholds are calculated as a percentage of the total number of processes running on the Adaptive Server.

Any time a process waits for another process to complete its transaction and release its locks, the overall response time and throughput for the application are affected.

Often, just an increase in the number of simultaneous users of a server may be contributing to an increase in lock contention.

A consistent trend increase warrants a detailed investigation of the locking strategy employed on the Adaptive Server.

You can research locking configuration and tuning in SAP **Performance and Tuning Guide** for ways to increase lock contention. Common suggestions include creating indexes (particularly on tables that have may updates and deletes) and looking for ways to keep transactions short.

Go to the **Locks** drilldown for specific information about the locks within an Adaptive Server.

Go to the **User Activity** drilldown to see detailed information about user activity.

Connections Used Alarm

This metric alarms as the number of current user connections approaches the maximum number defined in the configuration variable "*number of user connections*."

This value represents the number of connections found in the *master.sysprocesses* table.

If the number of connections used remains close to the maximum number allowed on the ASE, consider increasing the number of connections allowed.

There is a cost in memory associated with increasing this value (approximately 146K per connection) (ASE version dependent). Take note of the memory constraints both on the hardware and the Adaptive Server.

The "*number of user connections*" parameter is used to set the maximum number of discrete user connections that can be connected to Adaptive Server at the same time.

The "*number of user connections*" **does not** refer to the maximum number of processes that can be running on the ASE (i.e., the number of rows found in the sysprocesses table). That number depends not only on the value of this parameter but also on other system activity.

Go to the **User Activity** drilldown for more connection-related details.

CPU Busy Alarm

This alarm is raised when the percentage of time that the Adaptive Server's CPU was performing Adaptive Server-related tasks has crossed a defined threshold.

By checking Spotlight for problems, and tuning to alleviate contention, response time can remain high even at "CPU Busy" values in the 80 to 90% range.

Note: When engine utilization is extremely high for an extended time, the housekeeper process writes few or no pages out of disk (since it runs only during idle CPU cycles). This means that when a checkpoint does get to run, it may find many pages that need to be written to disk (i.e., after a large batch job or a database dump). The checkpoint process is likely to send CPU usage to 100% for a period of time, causing a perceptible dip in response time.

If values are consistently very high (more than 90%), it is likely that response time and throughput could benefit from an additional engine. If you have an SMP box and the available CPUs, and if you elect to improve response time and throughput by adding Adaptive Server engines, check for an increased resource contention in other areas after adding each engine.

Data Cache Hit Rate Alarm

This alarm is raised when the data cache hit rate for the server falls below the ranges defined by the thresholds on this component.

This hit rate is calculated as a percentage of searches that resulted in the needed page being found in the data cache (a cache hit) from the total number of searches to the data cache.

Use the **Memory** drilldown **| Data Cache** page to find out individual cache hit rates and to find any specific cache that may be bringing the total server percentage down.

Data Cache Reads Alarm

This alarm is raised when the rate of physical reads requested by the data cache (expressed as reads per second) exceeds normal levels.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds and flow speed, are determined by statistical sampling.

This rate is determined by cache searches that did not find the needed page in the data cache (a cache miss).

Use this data, along with Cache Searches, to determine how effective the overall cache design for this server is.

Use the **Memory** drilldown **| Data Cache** page to find out which cache has the most utilization. After investigation, you may decide that a separate named cache should be created to alleviate any detected contention.

Data Cache Searches Alarm

This alarm is raised when the rate of searches requested from the data cache (expressed as searches per second) exceeds normal levels.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds and flow speed, are determined by statistical sampling.

This rate includes searches that resulted in the needed page being found in the data cache (a cache hit) and those searches that did not find the page in cache and required a disk read (a cache miss).

Cache searches are one indication of server activity.

Use this data together with Physical Reads to determine how effective the overall cache design for this server is.

Use the **Memory** drilldown **| Data Cache** page to find out which cache has the most utilization. After investigation, you may decide that a separate named cache should be created to alleviate any detected contention.

Data Cache Writes Alarm

This alarm is raised when the rate of physical writes requested by the data cache (expressed as writes per second) exceeds normal levels.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds and flow speed, are determined by statistical sampling.

Use this data, along with Cache Searches, to determine how effective the overall cache design for this server is.

Use the **Memory** drilldown **| Data Cache Page** to find out which cache has the most utilization. After investigation you may decide that a separate named cache should be created to alleviate any detected contention.

Deadlocks Alarm

This alarm is raised when the number of server-side deadlocks detected on the ASE goes above normal values.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds, are determined by statistical sampling.

Deadlocks become more common as lock contention increases.

Things to check:

- Deadlock Detail &endash; see what users and objects are involved (**Locks** drilldown **Deadlock** page) (available only on ASE version 12.5.0.3 and newer)
- Investigate whether any long running transactions are running at the same time against the same database (**User Activity** drilldown)
- Increase in user activity (**User Activity** drilldown)
- Unexpected hot objects (**Locks** drilldown and **Databases** drilldown)
- Lock Contention (**Locks Used** and **Locks Waiting**)

Look at ways to improve deadlock occurrences by a variety of options: changing the locking scheme, avoiding table locks, and not holding shared locks.

See the **Locks** drilldown for detailed information about locks that are in place on the Adaptive Server in general.

See the **Locks** drilldown **| Deadlocks** page for detailed information about deadlocks. (Available only on ASE version 12.5.0.3 or later.)

Disk Reads Alarm

This alarm is raised when the rate of disk I/O for reads on an Adaptive Server (displayed as a rate per second) goes above normal levels.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds and flow speed, are determined by statistical sampling.

Disk reads are one indication of activity on an Adaptive Server.

Spike in disk reads can be due to several reasons:

- A simple increase in the number of clients connected to an ASE
- A batch job running against a large amount of data
- An aberrant user connected to the Adaptive Server unintentionally running a poorly structured query

Use the **Devices** drilldown to see if the I/O activity is evenly distributed across the disk devices.

Use the **User Activity** drilldown to isolate processes and users requesting a large number of I/Os.

Disk Writes Alarm

This alarm is raised when the rate if disk I/O for writes on an Adaptive Server (displayed as a rate per second) goes above normal levels.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds and flow speed, are determined by statistical sampling.

Disk writes are one indication of activity on an Adaptive Server.

Spikes in disk writes can be due to several reasons:

- A simple increase in the number of clients connected to the ASE
- A batch job performing a large number of updates or inserts
- An aberrant user connected to the Adaptive Server running an expected transaction.

Use the **Devices** drilldown to see if the I/O activity is evenly distributed across the disk devices.
Use the **User Activity** drilldown to isolate processes performing a large number of I/O's.

Engines Offline Alarm

This alarm is raised when Spotlight determines an engine is off-line.

Note: If you are using logical process management to bind particular logins or applications to engine groups, take note of the engine(s) that are off-line.

If you take all engines for an engine group off-line, the login or application can then run on any engine.

A DBA can dynamically change the number of engines in use by Adaptive Server with the dbcc engine command.

The syntax for **dbcc engine** is:

- dbcc engine(off-line, [enginenum])
- dbcc engine("online")

Error Log Alarm*

The alarm is raised when Spotlight detects one or more lines written to the Error Log that match the configured patterns defined within Spotlight.

To view the configured patterns go to **View | Options | Spotlight® on SAP ASE**. Choose the Error Log button to display these patterns.

Go to the **Error Log drilldown** to see the messages added to the Error Log. You can sort the table in the drilldown on any of the columns to find specific messages or users that may have raised an error.

Use SAP **Troubleshooting and Error Messages Guide** to find information about specific error codes.

To add a string that Spotlight should look for while monitoring the Error Log, go to the main Spotlight® on SAP ASE menu bar and select:

View -> Options -> Spotlight® on SAP ASE

Choose the **Error Log** option, enter a string to match on the bottom of the form, and then click the "**Add**" button.

* Available only with ASE versions 12.5.0.3 or later

Fullest Database Container (and Database Percent) Alarm

Spotlight raises an alarm when any database exceeds the usage limits defined in the thresholds. The container and the percentage figures are for the database listed that has the highest level of used space.

There are several options:

- Run an "*alter database*" command and increase the size of the database. (Go to the **Devices** drilldown to see space available on each device.)
- Run "*sp_extendsegment*" to extend a segment to another device. (Go to the **Devices** drilldown to see space available on each device.)
- Run any application maintenance to reduce the size of the database.
- If any transaction log is on the same device as the data, consider dumping the transaction log (*dump tran <database name> <options>*).

Go to the **Databases** drilldown to see space and capacity metrics for each database.

Fullest Tempdb Alarm

Spotlight raises an alarm when any tempdb exceeds the usage limits defined in the thresholds.

The container and the percentage figure are for the tempdb database listed that has the highest level of used space.

There are several options:

- Run an "*alter database*" command and increase the size of the database. (Go to the **Devices drilldown** to see space available on each device.)
- Run "*sp_extendsegment*" to extend a segment to another device. (Go to the **Devices drilldown** to see space available on each device.)
- Run any application maintenance to reduce the size of the database.
- If the transaction log is on the same device as the data, consider dumping the transaction log (*dump tran <database name> <options>*).

Go to the **Databases** drilldown to see space and capacity metrics for each database.

Fullest Transaction Log (and Transaction Log Percent) Alarm

Spotlight raises an alarm when any database's transaction log exceeds the usage limits defined in the thresholds.

The container and the percentage figure are for the database listed whose transaction log has the highest level of used space.

There are several options:

- If the transaction log and the data are on the same device, run an "*alter database*" command and increase the size of the transaction log. (Go to the **Devices drilldown** to see space available on each device.)
- If the transaction log is on a separate device, run "*sp_extendsegment*" to extend the logsegment to another device. (Go to the **Devices drilldown** to see space available on each device.)
- Reduce the size of the transaction log being used by making a copy of a transaction log and removing the inactive portion. This is done by dumping the transaction log (*dump tran <database name> <options>*).

Go to the **Databases** drilldown to see space and capacity metrics for each database.

Host CPU Busy Alarm

This alarm is raised when the percentage of time that the Adaptive Server's Host CPU has been performing tasks exceeds the defined thresholds.

By drilling down to the associated SoWin or SoUNIX plug ins, you may be able to identify and correct the cause of the high CPU usage.

I/O Busy Alarm

This alarm is raised when the percentage of time that the Adaptive Server's CPU was performing Adaptive Server I/O-related tasks has crossed a defined threshold.

A high value may just be caused by one or more users running an I/O-intensive application or an unscheduled batch job running. Go to the **Users drilldown** and sort on I/O to determine which processes are consuming the most I/O.

If values are consistently very high, it is likely that response time and throughput could benefit from additional devices or better distribution of I/O among multiple devices.

Go to the **Devices** drilldown and note the performance characteristics of the devices defined to this Adaptive Server.

Locks Used Alarm

This alarm is raised when the number of locks waiting to be granted is above normal levels.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds, are determined by statistical sampling.

Often just an increase in the number of simultaneous users of a server may be contributing to an increase in lock utilization.

If a server runs out of locks, a server message will be written to the Error Log, and the application that a user is running can fail.

While there is a slight cost in memory (approximately 150 bytes per lock) to increase the number of locks on a server, this cost is minimal.

To determine exactly how much additional memory will be needed, go to Spotlight's **Memory** drilldown | **Configuration** page and select "number of locks." Then, enter a speculative value. Spotlight will return the cost in memory that the increase will incur.

Use SAP system stored procedure to increase the number of locks.

sp_configure "number of locks," <new value>

Depending on the number of locks newly configured, you may need to increase the "*total memory*" configuration parameter as well.

Refer to SAP **Performance and Tuning Guide** for a comprehensive section on configuring Adaptive Server's lock limit.

Go to the **Locks** drilldown for specific information about the locks within an Adaptive Server.

Go to the **User Activity** drilldown to see detailed information about user activity.

Locks Waiting Alarm

This alarm is raised when the number of locks waiting to be granted is above normal levels. Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds, are determined by statistical sampling.

Any time a lock waits for another process to complete its transaction and release its locks, the overall response time and throughput for an application are affected.

Often just an increase in the number of simultaneous users of a server may be contributing to an increase in lock contention.

A consistent trend increase warrants a detailed investigation of the locking strategy employed on the Adaptive Server. You can research locking configuration and tuning in SAP **Performance and Tuning Guide** for ways to decrease lock contention. Common suggestions include creating indexes (particularly on tables that have many updates and deletes) and looking for ways to keep transactions short.

Go to the **Locks** drilldown for specific information about the locks within an Adaptive Server.

Go to the **User Activity** drilldown to see detailed information about user security.

Open Databases Percent Alarm

This alarm is raised when the percentage of open databases for the server (based on the number available) increases above the ranges defined by the thresholds on this component.

Keeping a server from running out of metadata descriptors is important. Performance on the server is improved by allowing the server to cache needed object information in memory instead of doing expensive disk I/O. In addition, it reduces synchronization and spinlock contention when Adaptive Server has to retrieve database, index, or object information at runtime.

To determine the optimal number of open databases for your environment

1. Find the maximum number of active databases. Monitor this value in Spotlight during a peak period.
2. Reset the number of open databases to that number plus 10 percent.
3. Periodically review this setting during time of high activity.

You configure the number of open databases using:

sp_configure "number of open databases," "<new number to configure>"

For memory impact on the increase, see the **Memory** drilldown **| Configuration** page.

Select the respective configuration variable name and enter a speculative value to which you want to increase the configuration.

Open Indexes Percent Alarm

This alarm is raised when the percentage of open indexes for the server (based on the number available) increases above the ranges defined by the thresholds on this component.

Keeping a server from running out of metadata descriptors is important. Performance on the server is improved by allowing the server to cache needed object information in memory instead of doing expensive disk I/O. In addition, it reduces synchronization and spinlock contention when Adaptive Server has to retrieve database, index, or object information at runtime.

To determine the optimal number of open indexes for your environment

1. Find the maximum number of active indexes. Monitor this value in Spotlight during a peak period (see the respective graph in the **Memory drilldown | Metadata Cache page**).
2. Reset the number of open indexes to that number, plus 10 percent.
3. Periodically review this setting during times of high activity.

You configure the number of open indexes using:

sp_configure "number of open indexes", "<new number to configure>"

For the memory impact of the increase, see the **Memory drilldown | Configuration page**.

Select the respective configuration variable name and enter a speculative value to which you want to increase the configuration.

Open Objects Percent Alarm

This alarm is raised when the percentage of open objects for the server (based on the number available) increases above the ranges defined by the thresholds on this component.

Keeping a server from running out of metadata descriptors is important. Performance on the server is improved by allowing the server to cache needed object information in memory instead of doing expensive disk I/O. In addition, it reduces synchronization and spinlock contention when Adaptive Server has to retrieve database, index, or object information at runtime.

To determine the optimal number of open objects for your environment

1. Find the maximum number of active objects. Monitor this value in Spotlight during a peak period (see the respective graph in the **Memory drilldown | Metadata Cache page**).
2. Reset the number of open objects to that number, plus 10 percent.
3. Periodically review this setting during times of high activity.

You configure the number of open objects using:

sp_configure "number of open objects", "<new number to configure>"

For the memory impact of the increase, see the **Memory drilldown | Configuration page**.

Select the respective configuration variable name and enter a speculative value to which you want to increase the configuration.

Packets Received Alarm

This alarm is raised when the number of network packets received per second by the Adaptive Server from client connections exceeds normal volumes.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds and flow speed, are determined by statistical sampling.

A spike in network activity could indicate:

- A simple increase in the number of clients connected to an ASE
- A change in the ISQL that an application is submitting to the Adaptive Server
- An aberrant user connected to the Adaptive Server running an expected volume of SQL

Problems on a network could be indicated by a decrease in network activity received by an Adaptive Server coupled with a slowdown in user response times. Check with your Network Administrator.

If the current load is considered OK, but the flow and alarm rates are determined to be misleading for the load on the ASE, run calibration again for this Adaptive Server during a time frame representative of a typical workload.

Remember, packets received by an ASE is just one indication of activity on a server. Drill down to the **Network** page to see more detailed information about Network Activity.

Starting with Adaptive Server version 12.5.0.3, the **Network** drilldown can pinpoint network activity to the granularity of a user connection.

Packets Sent Alarm

This alarm is raised when the number of network packets sent per second by the Adaptive Server to client connections exceeds normal volumes.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds and flow speeds, are determined by statistical sampling.

A spike in network activity could indicate:

- A simple increase in the number of clients connected to the ASE
- A change in an application that increases the volume of result sets sent back to a client
- An aberrant user connected to the Adaptive Server running unexpected SQL that is returning large result sets

Problems on a network could be indicated by a decrease in network activity sent by an Adaptive Server coupled with a slowdown in user response times. Check CPU context switching and CPU Wait detail to see if an Adaptive Server is waiting on the OS. If so, check with your Network Administrator.

If the current load is considered OK, but the flow and alarm rates are determined to be misleading for the load on the ASE, run calibration again for this Adaptive Server during a time frame representative of a typical workload.

Remember, packets sent by the ASE is just one indication of activity on a server. Drill down to the **Network** page to see more detailed information about **Network Activity**.

Starting with Adaptive Server version 12.5.0.3, the **Network** drilldown can pinpoint network activity to the granularity of a user connection.

Problem Users Alarm

This alarm is raised when Spotlight detects a user that meets or exceeds the performance criteria defined in Spotlight as being of concern.

Go to the **User Activity** drilldown to investigate user and process level detail concerning performance characteristics of the users connected to this Adaptive Server.

If this alarm is being raised too often, consider lowering the amount of activity level thresholds defined in Spotlight.

To customize performance criteria:

From the Spotlight menu bar, select **View | Options | Spotlight® on SAP ASE | Problem User Definition**.

Procedure Cache Hit Rate Alarm

This alarm is raised when the procedure cache hit rate for the server falls below the ranges defined by the thresholds on this component.

This hit rate is calculated as the percentage of searches that resulted in the needed query plan for a procedure being found in the procedure cache (a cache hit) when a user requests that a stored procedure be executed.

Use this data primarily to determine the effectiveness of the overall cache size for this server.

If the procedure cache is too small, a user trying to execute stored procedures or queries that fire triggers receives an error message and must resubmit the query. Space becomes available when unused plans age out of the cache.

Note: This will have a large (and negative) impact to the overall performance of the Adaptive Server.

To increase the size, see *sp_configure "procedure cache size", "<new size in 2K pages>"*.

Use the **Memory** drilldown **| Procedure Cache Page** to find detailed information on cache utilization and a listing of objects in the stored procedure cache.*

* Available only in Adaptive Servers 12.5.0.3 or later

Procedure Cache Reads Alarm

This alarm is raised when the rate of physical reads requested by the procedure cache (expressed as reads per second) exceeds normal levels.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds and flow speed, are determined by statistical sampling.

This rate is determined by cache searches that did not find the needed stored procedure execution plan in the procedure cache (a cache miss) and had to do a perform physical I/O to read in the stored procedure and place a new plan in memory.

Note: This will have a large (and negative) impact on the overall performance of the Adaptive Server.

When a server first starts, the number of reads may be higher than normal until the most utilized stored procedures have been executed and loaded into cache.

See *sp_configure "procedure cache size", "<new size in 2K pages>"* to increase the size of the cache.

Use the **Memory** drilldown **| Procedure Cache Page** to find out detailed cache utilization information.

Procedure Cache Searches Alarm

This alarm is raised when the rate of searches requested from the procedure cache (expressed as searches per second) exceeds normal levels.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds and flow speed, are determined by statistical sampling.

This rate includes searches that resulted in the needed stored procedure being found in cache (a cache hit) and those searches that required a disk read (a cache miss).

Cache searches are one indication of server activity.

Use this data, along with physical reads, to determine how effective the overall cache size for this server is.

Use the **Memory** drilldown **| Procedure Cache Page** to find more detailed performance metrics for the procedure cache. Use the grid to see what stored procedures (or triggers) are currently loaded in the procedure cache.

Response Time Alarm

This alarm is raised when the amount of time a sample (or benchmark) SQL statement took to run exceeds normal thresholds.

Since this metric is included in calibration, the maximum value, and thereby the alarm thresholds, are determined by statistical sampling.

If a query has been changed, or the performance expectations change, run calibration again for this Adaptive Server during a time frame representative of a typical workload.

The SQL statement packaged by Spotlight can be customized to reflect a more representative transaction.

To customize the SQL statement

1. Select **View | Options | Spotlight on SAP ASE | Acquisition**.
2. Edit the SQL statement as needed.

Caution: In this release of Spotlight, all SQL is executed through the same connection to the ASE. If a long running SQL statement is inputted for the Benchmark Query, all queries from Spotlight will be impacted.

Glossary

Glossary for Spotlight® on SAP ASE

A B C D E F H I K L M O P R S T

Term	Definition
A	
Adaptive Server	The server in the ASE client/server architecture, Adaptive Server manges multiple databases and multiple users, keeps track of the actual location of data on disks, maintains mapping of logical data description to physical data storage, and maintains data caches and procedure caches in memory. Â
Alarm	The mechanism by which Spotlight® on SAP ASE alerts you to a condition that might be a problem in your ASE instance. While an alarm is active, the color of icons on the main screen will change.
Application	A client program that interacts with Adaptive Server. Specifically, an application name refers to the "program_name" column in a sysprocesses table entry. The client libraries provide a mechanism to specify the "program_name" of an application.
ASE	Adaptive Server Enterprise. See Adaptive Server.
Authentication	The process of identifying and verifying a user who is attempting to establish an ASE session. Can be either a Windows Authentication or ASE Authentication. With Windows Authentication (trusted logins), ASE uses Windows security mechanisms to determine who the user is and what they have access to. With ASE Authentication, users must pass an ASE login and password that is validated against an ASE system table. ASE can be configured to allow just Windows Authentication, or both Windows and ASE Authentication (Mixed mode).
B	
Backup Server	Performs local or remote backups (dumps) and restored (loads) on selected databases and transaction logs on behalf of Adaptive Server. A Backup Server must be running on the same system as Adaptive Server.

C

Cache hit ratio	For many processes, Adaptive Server uses an in-memory cache. The cache hit ratio is the percentage of times a needed page or result was found in the cache. For data pages, the cache hit ratio is the percentage of page requests that are serviced by the data cache compared to requests that require disk I/O.
Calibration	The process by which Spotlight® on SAP ASE determines the maximum and minimum values for every dataflow on the main screen, by observing data moving through your database system. This information helps Spotlight® on SAP ASE display the dataflows correctly.
Chart	A graphical representation of a statistic over a period of time. One or more statistics may be shown on the same chart.
Client	The user's side of a client/server arrangement; can refer to the software making calls to the server or to the machine running the client software.
Client/Server architecture	A computer system architecture in which clients request a service and a server provides that service. Each machine can then specialize in the tasks it is best suited for.
Container	Determines how an event processor interprets the sequence of bytes that makes up the event body.

D

Data cache	An area of memory within Adaptive Server that contains the in-memory images of database pages, as well as the data structures required to manage the pages. Each cache is given a unique name that is issued for configuration purposes. By default, Adaptive Server has a single cache named "default data cache." Caches configured by users are called "user-defined caches." Data caches are also referred to as buffer caches.
Data file	A file that is one part of the "data" portion of ASE database. Stores all data such as tables, rows, stored procedures, and indexes. Each database will have one or more data files. Each file belongs to only one database.
Database	A collection of tables and other objects. Each database contains a data portion and a log portion. The data portion contains all tables, rows, indexes, etc., and resides on at least one data file. The log portion tracks updates to the data, and aids recovery. Logs reside on one or more log files.
DataFlow	A Dataflow shows you the current level of activity. As the rate of data transfer increases, so too does the speed of the flow. If the statistic represented by the flow moves to another threshold, the flow may change color. The combination of movement and color makes it easy to spot congested areas. A graph sits on top of the flow and shows you how the load has varied over time.
DBA	Database Administrator. The person who maintains the database or server in your organization.
Deadlock	A deadlock occurs when each of two user processes has a lock on a separate data page, index page, or table, and each wants to acquire a lock on the same page or table locked by the other process. When this happens, the first process is waiting for the second process to release the lock, but the second process will not release it until the lock on the first process's object is released.

Disk device	Once initialized within Adaptive Server, a disk device (sometimes referred to as a database device) stores the objects (tables, indexes, etc.) that make up databases. A disk device does not necessarily have to refer to a physical device. It can be defined as any piece of a disk or a file in the file system that is used to store databases and their objects.
Device	Any piece of disk (such as a partition) or a file in the file system used to store databases and their objects.
Device I/O	The action of reading to or writing from a database device.
Drilldown	A Spotlight® on SAP ASE screen that provides more detailed information than what is available on the main window. Often contains graphs or tables that show ASE or Windows statistics or objects.
E	
Engine	OS process running an Adaptive Server executable that communicates with one or more other Adaptive Server processes via shared memory. An engine can be considered as one logical CPU's worth of processing power. It does not represent a particular or physical CPU. It is sometimes also referred to as a server engine in ASE documentation.
Error log	A file that stores severe error messages and the results of the start-up and recovery of databases.
Error message	A message issued by Adaptive Server, usually to the user's terminal, when Adaptive Server detects an error condition.
F	
FID	Family ID
H	
Hit ratio	A ratio between logical accesses and physical accesses. Indicates how much work (I/O, compilation, etc.) is being saved by caching information in memory. Spotlight calculates all of its hit ratios using a differential sampling method.
I	
I/O	Input or output to a peripheral device. In a database context, I/O refers to input or output to disk devices.
K	
KPID	Kernel process ID
L	
Lock	A concurrency control mechanism that protects the integrity of data and transaction results in a multiuser environment. Adaptive Server applies page or table locks to prevent two users from attempting to change the same data at the same time, and to prevent processes that are selecting data from reading data that is in the process of being changed.
Locking	The process of restricting access to resources in a multiuser environment to maintain transactional isolation to prevent concurrent access problems. Adaptive Server automatically applies locks to tables, pages, or rows.

Log	An on-disk structure containing a record of a database's transactions. A log consists of one or more files.
Logical read	The process of accessing a data or index page already in memory to satisfy a query. See also physical read. Also known as **Logical I/O**.
M	
MDAC	Microsoft Data Access Components. A layer of software that provides high-level software with the ability to communicate with ASE. Can be downloaded for free from Microsoft's Web site.
Metadata	Reserved area of memory used for tracking information on databases, indexes, or objects.
Metadata cache	A reserved area of memory used for tracking information on indexes, objects, or databases. The size of the metadata caches can be configured based on the number of metadata descriptions used by indexes, objects, or databases.
Metadata description	A memory data structure that represents the state of an index, object, or database while it is in use or cached between uses.
Metric	A unit of measurement that can be applied to a database. Metrics can help you gauge the performance of a system.
O	
Object	A passive entity that contains or receives information, but which cannot change that information. In Adaptive Server, objects include rows, tables, databases, stored procedures, triggers, defaults, and views.
P	
Paging	Disk I/O activity done by the operating system to manage its virtual memory. High paging rates can adversely affect performance.
Panel	A group of related components on the main Spotlight® on SAP ASE window.
Physical read	A disk I/O to access a data, index, or log page.
PID	Process ID. A unique number that identifies a Windows process at any given point in time.
Procedure	A collection of SQL statements and optional control-of-flow statements stored under a name. Adaptive Server-supplied procedures are called system procedures.
Procedure cache	An area of memory that ASE uses to store execution plans so that they can be reused, thereby avoiding recompiles.
R	
RAID	Redundant Array of Inexpensive Disks. RAID is used to describe the configuration of multiple physical disks into one logical disk. Windows supports both hardware RAID and software RAID. The main types of RAID are: RAID 0â€"Referred to as disk striping. Each part of the logical disk is spread out over multiple physical disks. Provides very good read and write performance, but no failure recovery. RAID 1â€"Referred to as disk mirroring. Provides good recovery, but average performance.

	RAID 5â€”Striping with parity. Good recovery, good read performance, but write performance is sub-optimal. RAID 10â€”(RAID 0 + 1)â€”Striping and mirroring. Good recovery and read/write performance.
Recompile	The process of compiling a stored procedure part way through the procedure's execution.
Roles	Titles recognized by Adaptive Server that provide individual accountability for users performing system administration and security-related tasks in Adaptive Server. The System Administrator, System Security Officer, and Operator roles can be granted to individual server login accounts. Other roles can be created by the System Security Officer.

S

sa	System Administrator. An ASE login that is created by ASE installation. sa is part of the SYSADMIN system role, and as such has full access within ASE.
Session	A single connection from a client application to ASE. Many applications will have multiple sessions open at any point in time.
Severity	Describes the level of importance of a threshold. A severity is user defined and determines how Spotlight behaves when the values for a metric fall within a range of values. For example, unusually high values might force a metric into a threshold with a high severity. This, in turn, could change the color of a component on the main screen, or play a sound.
Severity level number	A number between 10 and 24 that indicates the severity of an error condition.
SPID	Server process ID.
Spike	An abnormally high value in a dataflow or graph. Â
Spinner	A Spinner shows you the current level of activity for a statistic that is not directional. As the load increases, so too does the speed of the spin. If the statistic represented by the flow moves to another threshold, the spinner may change color. The combination of movement and color makes it easy to spot congested areas.
SQL	Structured Query Language. The language used to communicate with a relational database and that is the subject of standards set by several standards bodies.
sql.ini file	The interfaces file that contains definitions for each Adaptive Server to which your workstation can connect. The file must be on each machine from which clients connect to Adaptive Server. The file contains the name of the Adaptive Server, a list of services provided by Adaptive Server, and the port to use for connecting to Adaptive Server.
Synchronous read	A disk read I/O where the requester must wait for the disk read operation to complete. In ASE, the requesting session waits while the page is read from disk. This is normally the most common type of read operation in ASE.
Synchronous write	A disk write I/O where the requester must wait for the disk write operation to complete. Normally, ASE sessions do not wait for data and index write operations to complete. Most modifications to data and index pages are made in the Data Cache, and once the change has been recorded in the Log, the user can continue without having to wait for

	the data and index pages to be written to disk. However, there are some operations that can require the user to wait for the data and index writes to complete. This can be caused by operations such as create index, bulk insert, restore, etc.
SYSADMIN role	The server role that has full access to all ASE facilities. By default, this role contains the sa login and the Windows "Administrators" group. To use Spotlight, you need to be a member of the SYSADMIN role.
System administration	A variety of tasks that includes, among other things, managing Adaptive Server's physical storage, creating and backing up databases, creating user accounts, granting permissions, and running diagnostic and repair functions.
System Administrator	A user in charge of Adaptive Server system administration, including managing disk storage, granting and revoking the System Administrator role, and creating new databases. The "sa" account, a single login, is created when Adaptive Server is installed. This login is configured with both the System Administrator and System Security Officer roles.
T	
Temporary database	An ASE database used for temporary storage and work areas. All temporary tables and stored procedures reside here. More frequently referred to as *tempdb*.
Threshold	A range of values that may be returned by a metric. If the metric falls within this range, Spotlight checks the threshold's severity to determine how to behave. For example, the component representing this metric might change color.
Tool Tip	A message that appears whenever the mouse cursor moves over certain areas of the Spotlight window.
Transact_SQL	The SQL dialect used in SAP Adaptive Server.

Spotlight Basics

Spotlight Basics describes how Spotlight applications work. It contains these sections:

Section	Description
Spotlight Connections	Create / Modify / Delete connections to systems, and monitor those systems.
Monitor Spotlight Connections	Monitor connections, detect alarms, investigate the cause of alarms.
Alarms	Alarms are the warnings that Spotlight raises when a metric falls outside its "normal" range of values.
Charts, Grids and Home Page Components	Spotlight displays provide detailed statistics of the monitored system, relevant to diagnosing the cause of alarms. Make the best use of them.
View | Options	Customize Spotlight.
Troubleshooting	Solve problems using Spotlight.

Spotlight Connections

Spotlight Connection Manager

Use the Spotlight Connection manager to create connections to the systems you intend to monitor, to monitor those connections and to modify the properties of those connections.

To open the Spotlight Connection Manager

Click **File | Connect**

Use the Spotlight Connection Manager to:

Option	Description
Add a connection	Click  Connection Properties - Details Page **Tip**: You may want to select the type of connection in the **Connections** pane first.
Start monitoring a connection	Select the connection in the Spotlight Connection Manager and click **Connect**. **Note**: To stop monitoring a connection, close the Spotlight Connection Manager and click

Option	Description
	File | Disconnect. 
Rename a connection	Right click the connection in the Spotlight Connection Manager and select **Rename**.
Edit properties for a connection	Right click the connection in the Spotlight Connection Manager and select **Properties**. Connection Properties - Details Page
Delete a connection	Right click the connection in the Spotlight Connection Manager and select **Delete**. This removes the connection from the Spotlight Connection Manager.

Tips:

- You can use the Spotlight Browser to manage connections once they have been added. Spotlight Browser
- To simplify the list of connections select the connection type to view. For example, if Spotlight on Windows is installed then click Spotlight on Windows to view only Windows connections. If the connection list is still long you may like to click **Tools | View | List**.
- You may have access to shared connections. Migrate (Move And Share) Connections

Related Topics

Spotlight Browser

Connection Properties - Details Page

Connection Properties

Connection Properties - General Page

View general information about the spotlight connection.

To open the Connection Properties dialog, General page

1. Locate the connection in the Spotlight Connection Manager or the Spotlight Browser.
2. Right click the connection and select **Properties | General**.

About the General page

Note: You cannot edit the fields in this page directly while the connection is open.

Field	Description
Connection name	The display name for the connection.

Field	Description
Type	The type of connection. (DB2, Windows etc.)
Location	The location of the connection profile. Connection profiles store information that Spotlight uses to connect to the system.
Calibrated	Has the connection been calibrated? When? Calibrate Spotlight Connections
Template	The name of the template applied to the connection. Connection Templates **Note**: Click **Change template** to change the template.
Created	The date the connection was created.
Modified	The date the connection was last modified.
Accessed	The date the connection was last accessed.

Notes:

- User defined connection profiles are stored by default in C:\Documents and Settings*user*\Application Data\Quest Software\Shared\Profiles
- User defined templates are stored by default in C:\Documents and Settings*user*\Application Data\Quest Software\Shared\Templates
- Locations for connection profiles and templates may differ from the default in your case. Migrate (Move And Share) Connections

Related Topics

Connection Properties - Details Page

Connection Properties - Overhead Page

Connection Properties - Details Page

View / Enter / Modify the settings for the Spotlight connection.

To open the Connection Properties dialog, Details page

1. Locate the connection in the Spotlight Connection Manager or Spotlight Browser.
2. Right click the connection and select **Properties | Details**.

About the Details page

The fields in the Details page are dependent on the type of Spotlight connection.

- For help on a specific field, click in the field and press **F1**.
- For help on all fields, click **Help | Contents | *Connection type* | Connect to A … System**.

Note: You cannot edit the fields directly while the connection is open.

Related Topics

Connection Properties - General Page

Connection Properties - Overhead Page

Connection Properties - Overhead Page

The queries that Spotlight uses to collect data from a Spotlight connection can place an additional load on the monitored system.

- Simple queries that retrieve small amounts of data have little impact on the performance of the monitored system.
- Most Spotlight queries consume a measurable but not significant amount of system resources.
- Queries that are complex or collect large amounts of data may put a significant load on the system.

The controls on the Overhead Management page allow you to adjust collection rates for different categories of Spotlight data, and so limit the load that Spotlight places on the monitored system.

Notes: Use this page to change the overall settings for the connection. To change the settings for a Spotlight component use the Component Properties editor. Component Properties - Overhead Page

To open the Connection Properties dialog, Overhead page

1. Locate the connection in the Spotlight Connection Manager or the Spotlight Browser.
2. Right click the connection and select **Properties | Overhead**.

Alternatively

1. Select the connection in the Spotlight Browser Live connections.
2. Select **Tools | Performance Settings**

   or click  .

About the Spotlight overheads dialog

Control	Description
Overhead Impact slider	Drag the slider to one of the standard overhead settings: • Higher impact - Spotlight collects more data but may put a higher load on the system. • Medium impact - Spotlight collects less data or collects it less often. • Lower impact - Spotlight puts a minimal load on the system while still collecting essential data. Accompanying text further defines the data collected under each overhead setting. The definitions are dependent on the connection type. The criteria may include: • The kind of data being collected • The load that collecting the data will put on the system • Where the data in the category is to be displayed • The importance of the data

Control	Description
	• How often the data is needed **Note**: The slider is not displayed if a component in the connection already has a custom setting. Click Restore default to remove all custom settings.
Custom...	Click to select a collection rate for each available category of Spotlight data. Custom Connection Performance
Restore default	Click to remove all user-specified collection rates. Revert to Spotlight default settings. Set the rate at which data is collected
Make this the default setting for all new connections	When selected, all new Spotlight connections collect data at the rates defined in this dialog.

Related Topics

Connection Properties - General Page

Connection Properties - Details Page

Custom Connection Performance

Use the Custom Connection Performance page to choose specific collection rates for every available category of Spotlight data.

To open the Custom Connection Performance dialog

1. Open the Connection Properties - Overhead Page.
2. Click **Custom**.

About the Custom Connection Performance dialog

The **Category / Impact** table lists each category of Spotlight data and defines the effect of collecting that data on the monitored system.

1. Select a category. This enables the Refresh setting list.
2. Select from the Refresh setting list how often Spotlight will collect data in the specified category.

Refresh setting	Description
Refresh at the default rate	Spotlight data is refreshed as per the definition in Spotlight Options. Set the rate at which data is collected **Note**: In most cases (but not all) this will be at the foreground rate when the component is visible and the background rate when the component is not visible.
Always refresh at the foreground rate	Always refresh at the foreground rate, whether the data is displayed or not.
Refresh only while data is displayed on the screen	Refresh data at the foreground rate when it is visible in the Spotlight window.
Do not refresh data in this category	The data is never collected. Spotlight displays one of the following icons on components that display this category of data:  Data for this control is not available. (There are no alarms associated with this

Refresh setting	Description
	control.)
	 Data for this control is not available. (Alarms associated with the control are disabled.)

Related Topics

Connection Properties - Overhead Page

Set the rate at which data is collected

Migrate (Move And Share) Connections

Spotlight templates and connection profiles control the appearance and behavior in Spotlight of monitored Spotlight connections.

New Spotlight connections base their settings on templates.

Spotlight uses connection profiles to store property data for individual Spotlight applications and connections.

To migrate connections

Migrate your Spotlight connection files to a network where other Spotlight users can share them. By migrating profiles to a shared location, you can share connection information between multiple users. User-specific information (including user names and passwords) is still stored on a per-user basis. Users are identified by the Windows accounts under which they log in.

1. Click **File | Disconnect All** to disconnect ALL open Spotlight connections.
2. Select **Tools | Migrate Connections**.
3. Click **Next | Migrate connections | Next**.
4. Browse to select the location to migrate connections to.

Note:

- Do not migrate connections to locations that may be offline frequently or for extended periods.
- You cannot migrate connections that are currently in use or inaccessible.
- You cannot move connections to another location if you have no Spotlight connections to move.
- Templates shipped with Spotlight are stored by default in Console\Templates.
- User defined connection profiles are stored by default in C:\Documents and Settings*user*\Application Data\Quest Software\Shared\Profiles
- User defined templates are stored by default in C:\Documents and Settings*user*\Application Data\Quest Software\Shared\Templates
- The locations for updated user templates and profiles for EXISTING Spotlight installations remain as they were before.

To use shared (migrated) connections

First ensure the other user has migrated Spotlight connection files for you to use.

1. Select **File | Disconnect All** to disconnect ALL open Spotlight connections.
2. Select **Tools | Migrate Connections**.
3. Click **Next | Use shared connections | Next**
4. Browse to select the shared location.

Related Topics

Connection Templates

Connection Properties - General Page

Connection Templates

The template file for a Spotlight application contains the information that controls the standard appearance and behavior of Spotlight connections for that connection type. Spotlight is shipped with a set of templates that are suitable for most connections.

Once a Spotlight connection has been configured and calibrated, you can save its configuration as a template for use with Spotlight connections to similar systems. Changes that are made to a template propagate to all connections that use that template, unless individual changes have already been made to those connections.

The information contained in the template includes:

- The configuration of controls in the home page and drilldowns, including the metrics displayed and the data sources from which they are derived.
- Calibration values for those controls.
- The threshold values for alarms on those controls.

To save the configuration for the current Spotlight connection as a template

1. Select the Spotlight connection in the Spotlight Browser in Live connections
2. Select **File | Save as Template**.
3. Select **Save calibration** to save calibration data in the template.

Notes:

- You can change the template assigned to an existing Spotlight connection. Connection Properties - General Page
- Templates shipped with Spotlight are stored by default in Console\Templates.
- User defined templates are stored by default in C:\Documents and Settings*user*\Application Data\Quest Software\Shared\Templates
- Template files are given extension **.stx**
- Locations for template files may differ from the default in your case. Migrate (Move And Share) Connections

Related Topics

Calibrate Spotlight Connections

Metrics Dialog

Thresholds Dialog
Spotlight Home Page Components

Monitor Spotlight Connections

Spotlight Browser

Spotlight Browser

Use the Spotlight browser to view the details of your Spotlight connections. The browser contains a number of connection groups, each of which can be opened by clicking on its bar within the browser:

Option	Description
Welcome to Spotlight	View Spotlight's introductory page and web pages of interest to Spotlight users.
Live connections	View the Spotlight connections currently being monitored by Spotlight.
All connections	View all Spotlight connections (open or closed). The connections are displayed in tree form with connection types as the topmost branches, and individual connections as the child branches of each type.
History Browser	View historical snapshots for the current Spotlight connection. **Note**: The History Browser may be hidden until you select **View | History browser**.

Notes:

- To hide the Spotlight browser click  or **View | Navigation Tree**.
- You can customize the appearance of the Spotlight Browser. Navigation tree

Related Topics
Navigation tree
Spotlight Connection Manager

Welcome to Spotlight

Welcome to Spotlight is the first page you see when you start Spotlight. New Spotlight users can use this page to discover and experiment with various Spotlight features.

Action	Description
Open the Welcome to Spotlight page	From the Spotlight Browser, select **Welcome to Spotlight | Welcome to Spotlight**.
Open web pages of interest to Spotlight users	From the Spotlight Browser, select **Welcome to Spotlight | Spotlight on the Web** | *Web Site*. ***Toolbar buttons on Spotlight on the Web***

Action	Description

Click	Description
	Navigate to the previous page in the web browsing sequence.
	Navigate to the next page in the web browsing sequence.
	Stop downloading the web page.
	Refresh (Reload) the web page.
	Return to the page selected from the **Spotlight Browser**.

Related Topics

Spotlight Browser

Live connections

All connections

History Browser

Live connections

View the Spotlight connections that are currently monitored by Spotlight.

Action	Description
Select / Click the connection	The Spotlight menus and toolbar adjust to the selected connection. The last viewed page for this connection opens. **Note**: The name of the connection takes on the color of the most urgent severity now active for the connection. Spotlight Alarms
Right click | **view**	Sort the list of connections: • Sort by Name - Sort alphabetically. • Sort by Severity - Sort according to the severity of alarms currently raised for each connection.
Right click | **Disconnect**	Stop monitoring this connection.
Right click | **Browse History**	Open the History browser for the connection. View snapshots of the system as it operated in the past. History Browser
Right click | **View Alarm Log**	View the Alarm log for the connection. Alarm log
Right click | **View Alarms by Time**	View Alarms by Time for the connection. Alarms by Time
Right click | **Properties**	View properties for the connection. • Connection Properties - General Page • Connection Properties - Details Page • Connection Properties - Overhead Page **Note**: Most fields cannot be modified while the connection is open.

Notes:

- The color of the Spotlight browser Show / Hide button  reflects the highest current severity raised by connections in Live connections.

- To stop monitoring a connection, select the connection and click **File | Disconnect**.
  
- You can start monitoring a connection in the Spotlight Browser. All connections

Related Topics
Spotlight Browser
Welcome to Spotlight
All connections
History Browser

All connections

View all Spotlight connections (open or closed) defined in the Spotlight Connection Manager.

Action	Description
Click on the connection type	List all connections defined for this connection type.
Click on the connection	Start monitoring the connection. This opens the connection in Live connections.
Right click | **Connection Manager**	Open the Spotlight Connection Manager. Spotlight Connection Manager
Right click | **Browse History**	Open the History browser for the connection. View snapshots of the system as it operated in the past. History Browser
Right click | **View Alarm Log**	View the Alarm log for the connection. Alarm log
Right click | **View Alarms by Time**	View Alarms by Time for the connection. Alarms by Time
Right click | **Properties**	View properties for the connection. • Connection Properties - General Page • Connection Properties - Details Page • Connection Properties - Overhead Page **Note**: Most fields cannot be modified while the connection is open.

Related Topics
Spotlight Browser
Welcome to Spotlight
Live connections
All connections

History Browser

An important feature within Spotlight is the ability to display, collect and replay the behavior of a Spotlight connection at a specified point in time such as when an important alarm was raised.

The details shown via the History browser are identical in format to those displayed by Spotlight in its "live" state, so you can view historical data in the same way as you would view a live connection.

To view Spotlight history

1. Right click the connection in the Spotlight Browser Live connections or All connections.
2. Select **Browse History**.

Select an event in the snapshot list.

The Spotlight browser displays a tree of alarms and snapshots in chronological order, together with some basic navigation controls.

Action	Description
Click Last week, Today etc.	Spotlight maintains a list of snapshots that have been raised for each day in the specified historical period. Click a day to have Spotlight display a list of all snapshots that were recorded for that day.
Click a snapshot or alarm	View the status of the connection at the time of the snapshot or alarm.
Right click | **Live view**	Return the view of this connection to the present time. Live connections
Right click | **History Interval**	Define the interval between snapshots displayed in the History browser. From the drop-down list, choose the frequency with which you want to display a snapshot.

History browser toolbar

Control	Description
	Previous alarm. Show the snapshot corresponding to the alarm before the one currently displayed.
	Previous snapshot. Show the snapshot immediately before the one currently displayed.
	Play (plus Playback speed). Activate playback mode. This automatically steps through the snapshots in sequence. **Note**: Click the down arrow to select a playback speed. Select **Custom** to define a playback speed.
	Next snapshot. Show the snapshot immediately after the one currently displayed.
	Next alarm. Show the snapshot corresponding to the next alarm after the one currently displayed.
	Select date/time. Click to nominate the date and time to display. Spotlight will find the snapshot closest to this time to display.

Notes:

- While you are viewing historical data the connection identifier at the top right of the window indicates the date and time of the snapshot. On the Spotlight home page the console status bar indicates "History Browser".
- An easy way to view the history for a particular alarm is through the Alarm Log. Right-click the alarm and select **Show Selected Entry In | History Browser**. Alarm log
- To view the recent history of a Spotlight home page component, right click the component and select **Show History**. Spotlight Home Page Components
- Spotlight History is installed if you click **Help | About Spotlight | Spotlight Modules** and under the heading **Spotlight Console** see **Light-weight XML repository**. You can customize the storage of history data. Configure Spotlight - View | Options

Related Topics

Spotlight Browser
Welcome to Spotlight
Live connections
History Browser

Spotlight Home Pages

The Spotlight Home Page is the main page for the monitored system. It highlights obvious bottlenecks and problem areas. Statistics and flows are updated in real time.

To see the Spotlight Home Page

1. Select a connection from the Spotlight Browser.
2. Click Home.

About the Spotlight home page

- The connection identifier in the upper right corner of the Spotlight console identifies the system being monitored. Alongside the connection identifier there may be additional icons. The following activity icon indicates whether Spotlight is collecting data from the connected system.

- The home page can show real (live) data or a historical snapshot. When the home page is showing a historical snapshot the words **History Browser** are written in the bottom left corner of the console and the recorded date and time are shown in the top right corner. History Browser

- A panel is a visual feature that groups related components on the Spotlight home page. Panels may be connected by data flows that illustrate the rate at which the system is performing. The groupings reflect how your system works. Components change color as alarms are raised for the metrics they contain.
  Spotlight Home Page Components

Related Topics

Spotlight Home Page Components

Calibrate Spotlight Connections

Spotlight Drilldown Pages

A drilldown contains one or more pages that display a detailed breakdown of the monitored system's performance.

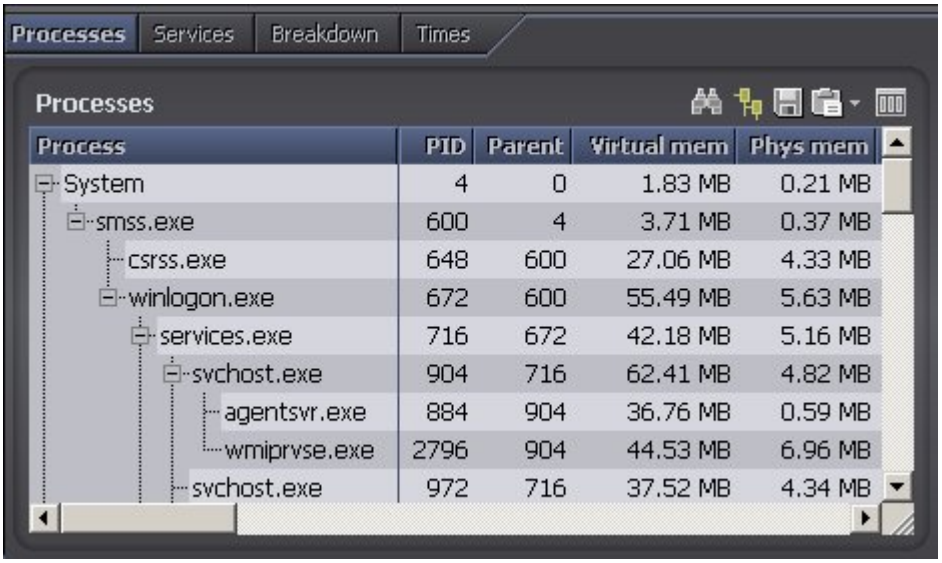
To open a drilldown

1. Select a connection from the Spotlight Browser Live connections or History Browser.
2. Click the relevant drilldown button on the Spotlight toolbar. Drilldown buttons are dependent on the Spotlight application. For help, click **Help | Contents | *Connection type* | Drilldown**.

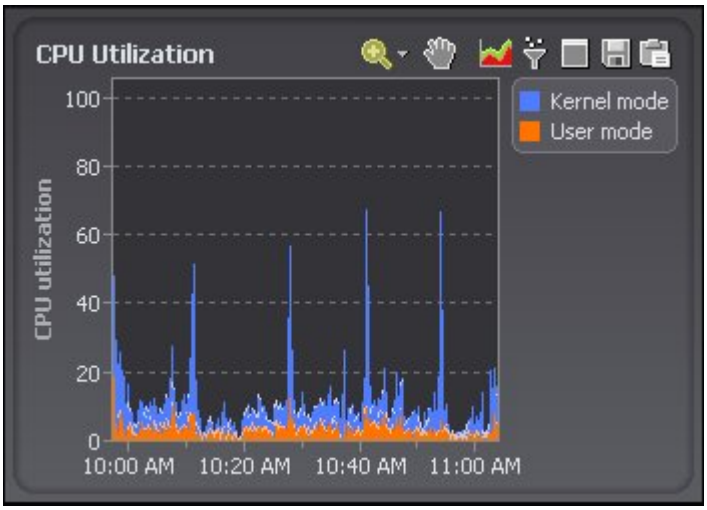
About Spotlight drilldowns

Drilldowns mainly use two different types of displays - tables and charts.

About Spotlight Grids



About Spotlight Charts



Drilldowns have the following features:

- They can be configured to show all or some of the metrics associated with components.
- You can access further information about displays in drilldowns by moving the mouse over the displays, or by clicking or right-clicking on them.
- You can copy the data shown in drilldowns to other applications or save it to a file.

Related Topics

About Spotlight Grids

About Spotlight Charts

Spotlight Navigation

Return to the previous page or drilldown in the browse sequence

Click the down arrow to select the page to return to.

Note: Back is disabled at the start of the browse sequence.

Toolbar	Menu	Shortcut
Click 	Click **View | Back**.	Press ALT+LEFT

View the next page or drilldown in the browse sequence

Click the down arrow to select the page to go to.

Note: Forward is disabled at the end of the browse sequence.

Toolbar	Menu	Shortcut
Click 	Click **View | Forward**.	Press Alt+Right

Return to the Spotlight home page

Toolbar	Menu	Shortcut
Click 	Click **View | Close Drilldown**.	N/A

Pause / Resume / Refresh

Pause monitoring the current Spotlight connection. Spotlight stops retrieving data from the connection. The Spotlight home page and drilldowns for the connection are not updated. Use the Resume command to resume monitoring the Spotlight connection. While the connection is paused, use Refresh to update the current window display.

Notes:

- Any actions that are in progress when you pause Spotlight are allowed to complete. No further actions are performed until you resume Spotlight's collection of data.
- Pausing may affect Calibration. If calibration is in progress when the pause is started, it continues to run. The calibration finishes at the time it was originally set to finish. (It is not delayed by the Pause command.)
- Pausing may affect drilldowns. Any drilldown that gathers information when it is started is affected by the Pause command.

To Pause Spotlight

Toolbar	Menu	Shortcut
Click 	Click **View | Pause**.	N/A

To Resume Spotlight

Toolbar	Menu	Shortcut
Click 	Click **View | Resume**.	N/A

To Refresh (update) the current Spotlight window

Use while Spotlight is paused to refresh the current window manually.

Toolbar	Menu	Shortcut
Click 	Click **View | Refresh**.	Press **F5**.

Note: Alarms raised during refresh may be included in historical snapshots, depending on snapshot preferences.

Related Topics

Set the rate at which data is collected

Calibrate Spotlight Connections

Spotlight Favorites

Add frequently viewed pages and connections to the favorites menu.

To view a favorite

View a page you have added to the favorites menu.

1. Select **Favorites**.
2. Select the favorite.

Note: The favorite may be in a folder as per how you have organized your favorites. The display name of the favorite is a name of your choosing.

To add a favorite

1. Navigate to the page you want to add to favorites.
2. Select **Favorites | Add to Favorites**.
3. How do you want the page to appear in the Favorites list?

Option	Description
Name	Give a display name to the favorite.
Save the current connection as part of the favorite	Select when the same display name is used for favorite pages for different connections.
Create in	Select the folder to put the new favorite into. **Tip**: Click **New folder…** to create a new folder to save the favorite in.

To organize favorites

1. Select **Favorites | Organize Favorites**.
2. Click and drag entries in the **Favorites** list to rearrange them.

Notes:

- Select an item then click **Delete**, **Rename** or **Move to…** another location in the favorites list.
- Click **New folder…** to create a new folder to organize the favorites in.

Spotlight Slideshow

Spotlight, Slideshow cycles through the current page of Spotlight's live connections.

Select **View | Slideshow**.

Note: You can configure Spotlight to start slideshow mode when you are not actively using the application. Slideshow

Connection Status bar

The Connection status bar is a floating bar that contains a Spotlight icon for each active (live) connection.

To show / hide the Connection Status bar

Click **View | Connection Status Bar**

About the Connection Status bar

- The color of the connection icon represents the status of the connection.
- Click the connection icon to display the connection's Spotlight home page.

- Click and drag the checkered handle on the left to resize the bar.
- Right-click the bar to display its shortcut menu. The following options are available:

Option	Description
Transparent	"Fades" the bar when the mouse pointer is not placed over it.
Text labels 	Displays the names of the connections in the status bar.
Automatic resize	Resizes the status bar automatically and activates a scroll arrow.
Sort by	Sorts the connection icons by Name or Severity.

Related Topics

Spotlight Connection Manager

Calibrate Spotlight Connections

Calibrate the Spotlight home page components to display data in the way best suited to the monitored system.

Note: Spotlight automatically calibrates new connections the first time that they are opened. Use this dialog to re-calibrate a connection at any other time.

Scenario: Calibration of data flows

Data flows on the Spotlight home page indicate the rate at which data is being transferred through a system. The faster the rate of traffic, the faster the data flow moves. However, the data flow is an accurate representation of system activity ONLY if Spotlight knows the normal range of values for your system.

If the normal range of values for a data flow is from 0 to 100, a value of 8 is low, and the data flow moves slowly.

If the range of values for your system is from 0 to 10, a value of 8 is high and the data flow moves much faster.

The Spotlight calibration tool calculates the normal range of metric values for your system. Over a set period of time, Spotlight measures the changes in value of important metrics within the system. It uses this data to set the upper and lower display limits for the corresponding components. You can accept the results or adjust them if necessary.

To re-calibrate a connection

1. Select / Open the connection from the Spotlight Browser Live connections.
2. Select **File | Calibration**.
3. Set the Calibration period of time.
4. Click **Start**.

Notes:

- To stop calibration select **File | Calibration | Stop**.
- You can set Spotlight to save calibration data when saving configuration data in a Spotlight template. Connection Templates

Related Topics

Spotlight Home Page Components

Alarms

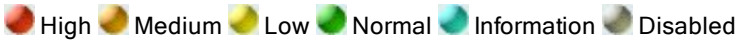
Spotlight Alarms

Alarms are the warnings that Spotlight raises when a metric falls outside its "normal" range of values. A new alarm is raised whenever the severity for a metric changes. When the severity returns to normal, the alarm is canceled.

Alarms are recorded in the Spotlight alarm log pages:

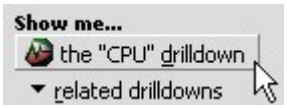
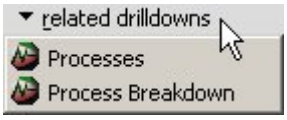
- Spotlight Today - Alarms according to priority.
- Alarms by Time - Alarms according to duration and severity.
- Alarm log - Alarms in a sorted table.

Many Spotlight elements use color to indicate severity.



You can configure Spotlight to notify you of changes to severity through color or intensity, audible warnings, sending email or network notifications or running a program.

Spotlight elements whose color represents severity	Color indicates	What to do
The open/close button on the Spotlight browser  The system tray icon 	The highest severity currently raised - across all Live (monitored) connections.	Locate the connection in the Spotlight Browser (Live connections). Open the connection's Home Page, Alarm Log or Alarms by Time.
The connection name in the Spotlight browser (Live connections) and connection status bar 	The highest severity currently raised against the connection.	Locate the connection in the Spotlight Browser (Live connections). Open the connection's Home Page, Alarm Log or Alarms by Time.
The component on the Spotlight home page	The highest severity currently raised against the component.	Click on the component to open help regarding the alarm. The text in the help window gives some details about the alarm, why it was raised, and ways in which the problem indicated can be resolved. 

Spotlight elements whose color represents severity	Color indicates	What to do
		Use the help to open the drilldown page that is directly related to the alarm. Drilldown pages contain charts and tables that you can use to diagnose the cause of the alarm.  You may like to view one or more related drilldown pages that may be of some value in diagnosing the problem.  Use the information shown in the help window, together with the details shown in the associated drilldown page(s), to discover why Spotlight has raised the alarm. If the alarm is transient, you at least will see where in the system it occurred. If the alarm persists, Spotlight indicates what measures need to be taken to resolve the problem. **Note**: These actions are customizable. Balloon help Alarms are recorded in the Spotlight alarm log pages: • Spotlight Today - Alarms according to priority. • Alarms by Time - Alarms according to duration and severity. • Alarm log - Alarms in a sorted table.
The entry in the alarm log page	The severity of the alarm.	

Historical alarms

For an alarm raised in the past, view a snapshot of the system as a whole at the time the alarm was raised.

1. Open the Alarm Log, Alarms by Time or Spotlight Today.
2. Right-click the alarm and select **Show Selected Entry In | History Browser**.
3. History Browser

Customize the way that Spotlight handles alarms:

Option	Description
Set new thresholds	You can edit the metric and measures by which an alarm is raised in the Metrics Editor. About Alarms, Metrics, Thresholds And Severities
Set action rules	Govern Spotlight behavior when an alarm is raised. Alarm actions
Set filters	Govern which alarms are displayed. Alarm Filters
Ignore specific alarms	Ignore (Snooze) Alarms

Spotlight Today

Spotlight Today shows recent alarms for all Spotlight connections. Spotlight Today can be grouped or filtered to show alarms by connection or severity. Spotlight Today displays: the number of current Spotlight connections, the number of connections for which an alarm has been raised, a Spotlight Today entry for each alarm raised.

To see Spotlight Today

Toolbar	Menu	Shortcut
Click 	Click **View | Spotlight Today**.	N/A

About the Spotlight Today grid

Column	Description
Severity	The degree of urgency of the alarm.
Alarm	The name of the alarm. **Note:** This column is unavailable on **Group By | Alarm**.
Connection	The name of the Spotlight connection that raised the alarm. **Note:** This column is unavailable on **Group By | Connection**.
Raised	The time the alarm was raised.
Message	More information on the alarm.
Connection type	The type of Spotlight connection that raised the alarm (for example, Spotlight on Oracle).
Last updated	The last time the alarm was updated.
Occurrences	How often the alarm has occurred in the monitoring period.

Actions on Spotlight Today

Click	Description
	Find Text
	Alarm Filters - Filter by severity and connection. Show snoozed alarms.
	Save To File
	Copy To Clipboard
	Show, Hide & Order Columns - Some of the columns in the grid may be hidden by default. Use the Column Organizer to select the columns you want to see.
	Alarm actions - Define actions to perform when an alarm meets pre-defined conditions.
Right click the header row and select **Arrange by | *Column name***	Sort the Grid - Sort the grid according to the contents of a column
Right click the header row and select **Freeze First column**	Grid Properties - Options Page - Keep the first column visible while you scroll through the columns of the table.
Right click the content and select **Group By**	Group By | Connection - Arrange the grid in a tree like structure by connection. Group By | Alarm - Arrange the grid in a tree like structure by alarm. Group By | Do Not Group - List the alarms.
Right click the grid content and select **Collapse** or **Expand**.	Collapse / Expand the tree structure. Applicable on **Group By | Connection** and **Group By | Alarm**.
Right click an alarm and select **Open Connection**	Open the Spotlight Home Page for the selected connection.

Click	Description
Right click an alarm and select **Properties**	Open the Connection Properties dialog for the selected connection. Connection Properties - Details Page

Related Topics

Alarms by Time

Alarm log

Alarms by Time

Alarms by Time displays the alarms that have been logged for your Spotlight connections. It shows (in connection order) the start time, duration, and severity of the logged alarms.

To see alarms by time

Toolbar	Menu	Shortcut
Click 	Click **View | Alarms by Time**.	N/A

About alarms by time

Feature	Description
Time scale	This spans the top of the chart from left to right, and indicates when alarms (represented as colored horizontal bars) were raised, changed, or canceled.
List of connections and alarms	The vertical axis of the chart contains a tree structure. The roots of the tree represent your Spotlight connections; the branches represent the alarms that have been raised for each connection. The order of the alarm branches in each connection changes to reflect the alarms that have occurred most recently.
Severity of alarms	The color of the horizontal alarm bars change to reflect the severity of the relevant alarm. In the illustration the Threads alarm was raised with High severity, and thereafter downgraded in a series of steps to Information status, and then canceled. 

Actions on alarms by time

Click	Description
	Show alarms by time for the selected connection(s). Select a connection, all connections of a given type, a customized selection of connections or all connections.
	Find Text
	Alarm Filters - Filter by severity and age. Show snoozed alarms.
	Zoom in and out of the displayed time. Click the down arrow to choose a suitable time scale.
	Move to the Previous / Next time the alarm was raised, upgraded, downgraded, or canceled. **Note**: Select an alarm to enable Previous / Next.
	Click to return to the bookmarked time. **Note**: To bookmark a moment in time, click in the body of the grid. The vertical line indicates the bookmarked time.

Click	Description
	Alarm actions - Define actions to perform when an alarm meets pre-defined conditions.
Right click the grid content and select **Collapse** or **Expand**.	Collapse / Expand the tree structure. The name of the connection is at the top of the tree. Logged alarms are listed for each connection.
Right click the Alarm header and select **Sort Ascending** or **Sort Descending**.	Sort connections alphabetically. For any expanded roots of the tree, the alarms are similarly sorted. **Tip**: To re-sort alarms by time, collapse then expand that connection in the tree.

Related Topics

Spotlight Today

Alarm log

Alarm log

The Alarm Log page displays a table of logged alarms for your Spotlight connections.

To see the alarm log

Toolbar	Menu	Shortcut
Click	Click **View | Alarm Log**.	CTRL+L

About the alarm log grid

Column	Description
Time	The time at which the alarm was raised or canceled.
Connection	The name of the Spotlight connection that raised the alarm.
Connection Type	The type of Spotlight connection that raised the alarm (for example, Spotlight on Oracle).
Action	The alarm action that was performed. **Note**: Snoozed alarms are indicated by . Ignore (Snooze) Alarms
Details	A brief description of the cause of the alarm.
Severity	The degree of urgency of the alarm.
Alarm	The name of the alarm.
Help	Click (if available) to view more information about the alarm and help to resolve it. Spotlight Alarms

Actions on the alarm log

Click	Description
	Show the alarm log for the selected connection(s). Select a connection, all connections of a given type, a customized selection of connections or all connections.
	Find Text
	Alarm Filters - Filter by severity and age. Show snoozed alarms.
	Save To File

Click	Description
	Copy To Clipboard
	Show, Hide & Order Columns - Some of the columns in the grid may be hidden by default. Use the Column Organizer to select the columns you want to see.
	Alarm actions - Define actions to perform when an alarm meets pre-defined conditions.
Right click the header row and select **Arrange by | *Column name***	Sort the Grid - Sort the grid according to the contents of a column
Right click the header row and select **Freeze First column**	Grid Properties - Options Page - Keep the first column visible while you scroll through the columns of the table.
Right click an alarm and select **Show Selected Entry In | History Browser**	View a historical snapshot of the selected alarm. Spotlight opens the relevant snapshot / the home page for the connection / in History mode. History Browser
Right click an alarm and select **Show Selected Entry In | Alarms by Time**	Alarms by Time - Open the selected alarm in Alarms by Time.

Related Topics

Spotlight Today

Alarms by Time

Alarm Filters And Actions

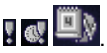
Alarm Filters

Filter the contents of the Alarm Log pages (Spotlight Today, Alarms by Time and the Alarm Log).

The performance of Spotlight generally improves when you choose a smaller period of time to view.

To filter alarms

1. Open one of the Alarm Log pages.

   Click one of:  .

2. Click  .
3. Select from the following:

Option	Description
Show All	Do not filter.
Filter by severity	Filter by the value of the alarm severity.
Filter by age	Filter by the age of the alarm. **Notes**: • Not applicable to Spotlight Today. • Select a predefined time period or the **Custom age filter** to set a customized time period.
Filter by Connection	Filter by the connection that raised the alarm. **Note**: Applicable to Spotlight Today.
Show / Hide Snoozed Alarms	Ignore (Snooze) Alarms
Modify Custom Filters	Specify filter rules that govern when alarms are displayed. Custom Filter Rules Dialog
Restore default filters	Reset modified filters to their default values.

Related Topics
Spotlight Today
Alarms by Time
Alarm log

Ignore (Snooze) Alarms

You may choose to snooze an alarm when:

- A temporary situation causes an expected alarm whose existence is unimportant.
- There is a known problem (a network problem, for example) that is beyond your control; and a continuing reminder of the problem is neither necessary nor desirable.

About Snoozed Alarms

- Alarms that are snoozed still contribute to the Alarm Log.
- Alarms that are snoozed still trigger historical snapshots, and are shown in the History Browser.
- Alarms that are snoozed do not fire Alarm Log rules or take any associated actions.
- An entry is written to the Alarm Log when a snoozed alarm is "unsnoozed".

Snooze

Alarms are snoozed from the Spotlight home page.

Requirement	Procedure
To snooze an alarm	1. Right click the home page component with the raised alarm and select **Snooze alarm**.

Requirement	Procedure
	2. Select the period of time: from five minutes to the duration of the Spotlight session. The snooze icon is added to the home page component and alarm log entry. **Note**: During the snoozed period, alarms on ALL metrics for this home page component are ignored.
To restore snoozed alarms	Right-click the snoozed home page component and select **Snooze alarm**. The snooze icon is removed from the home page component and alarm log entry.
To show only snoozed alarms	Use the Alarm Log Filter dialog. Custom Filter Rules - Alarm Log Filter Dialog This filter will recognize only components whose alarm status has changed during the snooze period. Other snoozed alarms will not be recognized. For example, if an alarm on the snoozed component was raised before the snooze period, and if that alarm status does not change during the snooze period, the alarm will not appear in the filtered Alarm Log.

Related Topics

Spotlight Home Page Components

Alarm log

Custom Filter Rules Dialog

Specify filter rules that govern when alarms are displayed in the Alarm Log pages.

To open the Custom Filter Rules dialog

1. Open one of the Alarm Log pages.

   Click one of: .

2. Click | **Modify Custom Filters**.

About the dialog

Option	Description
Show alarm entries when the following conditions are met	Rules are listed in the order they are applied. De-select a rule to retain it but not apply it. Highlight a rule to view, modify, delete, rename or move it.
Rule description	View the highlighted rule.
New	Click to create a rule. Custom Filter Rules - Alarm Log Filter Dialog
Modify	Highlight a rule. Click to modify the highlighted rule. Custom Filter Rules - Alarm Log Filter Dialog
Delete	Highlight a rule. Click to delete the highlighted rule.
Rename	Highlight a rule. Click to rename the highlighted rule.
Move Down	Highlight a rule Click to move it lower down the list. It is applied later. Rules are applied in the order they are listed.
Move Up	Highlight a rule. Click to move it higher up the list. It is applied sooner. Rules are applied in the order they are listed.

Related Topics
Alarm Filters
Spotlight Today
Alarms by Time
Alarm log

Custom Filter Rules - Alarm Log Filter Dialog

Create and Modify the filter rules that govern when alarms are displayed in the Alarm Log pages.

To open the dialog

1. Open the **Custom Filter Rules** dialog. Custom Filter Rules Dialog
2. Click **New** or **Modify**.

To fill in the dialog

1. Select one or more conditions. Selected conditions are transcribed to the **Rule description** window.
2. Refine the rule description by clicking the underlined links as appropriate. Underlined links in red must be configured to acceptable values for the rule to be accepted.

Additional information to the Rule description

- Select the conditions for the alarm log rule
- Where the alarm has (not) been snoozed
- Where the alarm severity is...
- Where the connection is...
- Where the connection type is...
- Where the control is...
- Where the details contain...
- Where the highest alarm for the connection is...
- Where the value is...

Related Topics
Custom Filter Rules Dialog
Alarm Filters
Spotlight Today
Alarms by Time
Alarm log

Alarm Actions - Alarm Log Filter Dialog

Create and Modify rules that govern action taken on an alarm severity.

To open the dialog

1. Open the **Alarm Actions** dialog. Alarm actions
2. Click **New** or **Modify**.

To fill in the dialog

1. Select one or more conditions which when met will trigger one or more actions. The conditions are transcribed to the **Rule description** window.
2. Select the actions to be performed when the conditions are met. The actions are transcribed to the **Rule description** window.
3. Refine the rule description by clicking the underlined links as appropriate. Underlined links in red must be configured to acceptable values for the rule to be accepted.

Additional information to the Rule description - Conditions

- Select the conditions for the alarm log rule
- Where the alarm has (not) been active in the last n minutes
- Where the alarm has (not) been snoozed
- Where the alarm severity is...
- Where the connection is...
- Where the connection type is...
- Where the control is...
- Where the details contain...
- Where the highest alarm for the connection is...
- Where the value is...

Additional information to the Rule description - Actions

- Select the actions to perform
- Run a program
- Send e-mail to...
- Send network message to...
- Stop processing further rules - Exit the filter rule when this condition is reached. Ignore subsequent commands.

Related Topics

Alarm actions

Configure Spotlight - View | Options

Select the conditions for the alarm log rule

Where the action is...

Define appropriate actions.

How to open this dialog

From the Custom Filter Rules - Alarm Log Filter Dialog or the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the action is...**
3. Click to define the action in the **Rule description** pane.

Where the action is any of the following:

Select all appropriate actions.

Value	Description
Alarm raised	When the severity of a metric rises above normal.
Alarm upgraded	When the severity of a metric increases.
Alarm downgraded	When the severity of a metric decreases.
Alarm canceled	When the severity of a metric returns to normal.
Alarm snoozed / unsnoozed	If you choose to ignore (snooze) a triggered alarm for a specified period of time, the Spotlight Alarm Log records both when the alarm is snoozed, and when it is unsnoozed. Ignore (Snooze) Alarms
Information message logged	When Spotlight logs an information message.
Warning message logged	When Spotlight logs a warning message. Warning messages are more urgent than information messages.
Error message logged	When Spotlight logs an error message. Error messages are more urgent than information messages or warning messages.
Log opened	When Spotlight opens the Alarm Log.
Log closed	When Spotlight closes the Alarm Log.

Related Topics

Custom Filter Rules - Alarm Log Filter Dialog

Alarm Actions - Alarm Log Filter Dialog

Where the alarm has (not) been active in the last n minutes

Use to ignore transient alarms.

Some Spotlight alarms may last only a few seconds or minutes, and are not significant for the system under investigation. When these transient alarms occur frequently, they can even be counter-productive: they fill the Alarm Log with useless data; and they can obscure other alarms that are more important.

How to open this dialog

From the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the alarm has (not) been active in the last n minutes...**
3. Click to define the action in the **Rule description** pane.

Where the alarm has (not) been active in the last n minutes:

In the **minutes** box, enter or select the amount of time that Spotlight will use as a threshold value.

Related Topics

Alarm Actions - Alarm Log Filter Dialog

Where the alarm has (not) been snoozed

Request Spotlight display only ignored alarms or those that are not being ignored.

How to open this dialog

From the Custom Filter Rules - Alarm Log Filter Dialog or the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the alarm has (not) been snoozed**
3. Click to define the action in the **Rule description** pane.

Where the alarm has (not) been snoozed:

Select **Has been snoozed** or **Has not been snoozed**.

Ignore (Snooze) Alarms

Related Topics

Custom Filter Rules - Alarm Log Filter Dialog

Alarm Actions - Alarm Log Filter Dialog

Ignore (Snooze) Alarms

Where the alarm severity is...

Define the appropriate severity to use in an Alarm Log rule. Severity is the degree of urgency of an alarm.

How to open this dialog

From the Custom Filter Rules - Alarm Log Filter Dialog or the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the alarm severity is...**

3. Click to define the action in the **Rule description** pane.

Where the alarm severity is any of the following:

1. From the list of operators, select the operator that you want to use.
2. From the drop-down list, choose the severity you want to use.

Note: If you want the Spotlight connection's alarm with the highest severity to trigger the Alarm Log rule then use Where the highest alarm for the connection is...

Related Topics
Custom Filter Rules - Alarm Log Filter Dialog
Alarm Actions - Alarm Log Filter Dialog

Where the connection is...

Select the connections to (not) apply the rule to.

How to open this dialog

From the Custom Filter Rules - Alarm Log Filter Dialog or the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the action is...**
3. Click to define the action in the **Rule description** pane.

Where the connection is any of the following:

Select **Is one of the following** or **Is not one of the following**.
From the tree list, select all appropriate Spotlight connections. (The top level in the tree is the connection type.)

Related Topics
Custom Filter Rules - Alarm Log Filter Dialog
Alarm Actions - Alarm Log Filter Dialog

Where the connection type is...

Select the connection types to (not) apply the rule to.

How to open this dialog

From the Custom Filter Rules - Alarm Log Filter Dialog or the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the connection type is...**
3. Click to define the action in the **Rule description** pane.

Where the connection type is any of the following:

Select **Is one of the following** or **Is not one of the following**.
Select all appropriate Spotlight connection types.

Related Topics
Custom Filter Rules - Alarm Log Filter Dialog
Alarm Actions - Alarm Log Filter Dialog

Where the control is…

Select the Spotlight control (component) to (not) apply the rule to.

How to open this dialog

From the Custom Filter Rules - Alarm Log Filter Dialog or the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the control is…**
3. Click to define the action in the **Rule description** pane.

Where the control is any of the following:

1. Select **Is one of the following** or **Is not one of the following**.
2. From the Plug-in list, select the Spotlight plug-in application (Spotlight on Windows, for example) that contains the control.
3. From the Drilldown list, select the Spotlight page that contains the control.
4. From the Control list, select the specified control.

Related Topics
Custom Filter Rules - Alarm Log Filter Dialog
Alarm Actions - Alarm Log Filter Dialog

Where the details contain…

Require specific values to (not) apply the rule to.

How to open this dialog

From the Custom Filter Rules - Alarm Log Filter Dialog or the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the details contain…**
3. Click to define the action in the **Rule description** pane.

Where the details contain any of the following:

1. Select from
    - contain any of the following phrases
    - contain all of the following phrases
    - do not contain any of the following phrases

2. As appropriate:
    - Click **Add** to create a phrase.
    - Highlight a phrase and click **Modify** to change it.
    - Highlight a phrase and click **Delete** to delete it.

Related Topics
Custom Filter Rules - Alarm Log Filter Dialog
Alarm Actions - Alarm Log Filter Dialog

Where the highest alarm for the connection is...

An active Spotlight connection may raise more than one alarm during a session, and each alarm raised may have a different level of severity. Use this condition when you want ONLY the alarm with the highest severity to apply to the Alarm Log rule.

How to open this dialog

From the Custom Filter Rules - Alarm Log Filter Dialog or the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the highest alarm for the connection is...**
3. Click to define the action in the **Rule description** pane.

Where the highest alarm for the connection is:

1. From the Where the severity is options, select the operator that you want to use.
2. From the drop-down list, choose the severity you want to use.

Note: When you want the severity of a specified alarm (not necessarily the highest alarm) to trigger an Alarm Log rule, use Where the alarm severity is...

Related Topics
Custom Filter Rules - Alarm Log Filter Dialog
Alarm Actions - Alarm Log Filter Dialog

Where the value is...

Define as appropriate to the rule.

Note: This condition is used in combination with other conditions. An example of this may be a rule with two conditions, as in: "Where the control is... and Where the value is..."

How to open this dialog

From the Custom Filter Rules - Alarm Log Filter Dialog or the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Where the value is...**
3. Click to define the action in the **Rule description** pane.

Where the value is any of the following:

1. Select the appropriate operator.
2. Select the appropriate value

Related Topics
Custom Filter Rules - Alarm Log Filter Dialog
Alarm Actions - Alarm Log Filter Dialog

Select the actions to perform

Play a sound

Define the sound to play when the alarm condition is met.

How to open this dialog

From the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Play a sound**
3. Click to define the action in the **Rule description** pane.

Play the sound:

1. Click to browse to the sound file on the computer.
   Tip: Click **Preview** to play the sound to ensure you have selected the right one. The success (or otherwise) of the action depends on your system setup. Spotlight does not monitor the success of the action. We recommend that you preview it.
2. Select the desired Play sound option.

Option	Description
Once	Play once.
Until the severity of the control ... returns to normal	Play until the effected Spotlight control no longer registers an alarm.
Until the connection severity returns to normal	Play until the Spotlight connection no longer registers an alarm.
Until the following condition is met.	Play until the condition is met.

Tip: When an alarm has been triggered and the relevant sound plays continuously, you can mute the sound by clicking  . This button is not shown on the toolbar unless a **Play sound** action is enabled.

Related Topics
Alarm Actions - Alarm Log Filter Dialog

Run a program

Define the program (executable file) to run when the alarm condition is met.

Usually that program is one that you have written to perform a particular task. The task may be a simple action, or may be one that depends on a supplied Spotlight parameter - a value or range of values, or the name of a component or connection.

How to open this dialog

From the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Run a program**
3. Click to define the action in the **Rule description** pane.

Run program:

1. Click to browse to the sound file on the computer.

   Tip: Click **Preview** to play the sound to ensure you have selected the right one.

2. Select the desired Play sound option.

Option	Description
Program	Click to browse to the program file on the computer.
Parameters	Enter any parameters the program may need to run successfully, or click **{}** to choose a parameter from the supplied list.
Test	Click to test the performance of the selected program. **Note**: The success (or otherwise) of the action depends on your system setup. Spotlight does not monitor the success of the action. We recommend that you test it.

Caution: If the program that runs in response to an alarm is still executing when the alarm fires again, subsequent commands to run the program are ignored until that execution finishes.

Related Topics

Alarm Actions - Alarm Log Filter Dialog

Send e-mail to...

Send an email when the alarm condition is met.

How to open this dialog

From the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Send e-mail to...**
3. Click to define the action in the **Rule description** pane.

Send e-mail to:

Option	Description
To	Enter the recipient email address.
Subject	Supply a subject for the email. **Tip**: Click **{}** to select a parameter from the supplied list. The selected parameter is displayed within a set of braces {}. You can choose multiple parameters if required.
Message	Enter the message to send. **Tip**: Click **{}** to select a parameter from the supplied list. The selected parameter is displayed within a set of braces {}. You can choose multiple parameters if required.
Test	Click to test the performance of your email system. **Note**: The success (or otherwise) of the action depends on your system setup. Spotlight does not monitor the success of the action. We recommend that you test it.

Note: For the email message to reach its intended recipient, an appropriate email client must be installed correctly on both source and target machines.

Related Topics

Alarm Actions - Alarm Log Filter Dialog

Send network message to...

Send a message to a machine on the network using the Windows messaging service.

How to open this dialog

From the Alarm Actions - Alarm Log Filter Dialog

1. Click **New** or **Modify.**
2. Select **Send network message to...**
3. Click to define the action in the **Rule description** pane.

Send network message to to:

Option	Description
Address	Enter the name of the machine where you want to send the message.
Message	Enter the message to send. **Tip**: Click **{}** to select a parameter from the supplied list. The selected parameter is displayed within a set of braces {}. You can choose multiple parameters if required.
Test	Click to test the performance of the network messaging system. **Note**: The success (or otherwise) of the action depends on your system setup. Spotlight does not monitor the success of the action. We recommend that you test it.

Note: For the message to reach its intended recipient, the Windows Messaging service must be active on both the source and target machines on the network.

Related Topics

Alarm Actions - Alarm Log Filter Dialog

Alarm Metrics And Thresholds

About Alarms, Metrics, Thresholds And Severities

Terms	Definitions	Customizations and Actions
alarm	Alarms are the warnings that Spotlight raises when a metric falls outside its "normal" range of values.	A new alarm is raised whenever the severity for a metric changes. When the severity returns to normal, the alarm is canceled. You can see this behavior clearly in the Alarm log. Alarm log
metric	A metric is a piece of information that Spotlight collects about the performance of a system. The information may be a numeric value (a number or percentage), a string of text, or some other piece of data. Every time the Spotlight window is refreshed, Spotlight retrieves the latest value of the metric, which can then be displayed on the home page.	Use the Metrics Dialog to: • Select the metrics to collect for the connection / component. • Configure Alarm smoothing, to smooth out the anomalies and spikes that may appear momentarily in metric values. The purpose is to prevent Spotlight from reporting alarms for spikes that do not persist.
threshold	For each numeric metric, you can set thresholds – ranges of values – that indicate levels of severity for that metric.	Use the Thresholds Dialog to: • Select the metrics to collect for the connection / component. • Define the severities to apply to the metric. • Define the start and end values for each severity.
severity	A severity can be used to specify whether the information returned in the metric represents normal or abnormal behavior for the system. Within Spotlight, there can be at most the following types of severity: • Disabled • Normal • Information • Low • Medium • High "Normal" indicates that the system is performing within acceptable limits. If a metric returns a value with any other severity, Spotlight raises an alarm that indicates the system is behaving outside	When an alarm is raised Spotlight performs one or more of the following actions: • Changes the color or intensity of relevant components. • Gives audible warnings. • Runs a program. • Sends email or network notifications. You can control how that notification is issued. Alarm actions

Terms	Definitions	Customizations and Actions
	acceptable limits. A "Disabled" status means the system is not responding, and no information is being returned.	

Related Topics

Spotlight Alarms

Metrics Dialog

Thresholds Dialog

Metrics Dialog

View the alarms defined for a Spotlight connection or component of the Spotlight home page.

Note: These are not the alarms raised for a connection / component. To see the alarms raised for a connection open the Alarm log.

To open the Metrics dialog

View all metrics for the connection	View all metrics for the Spotlight home page component
Open the Spotlight home page for the connection. Select **View |Show All Alarms...**	Right click the component on the Spotlight home page and select **Metrics...**

About the Metrics dialog

Option	Description
List of metrics	All metrics associated with the component / connection are listed. Data is collected for selected metrics. Clear the selection to stop collecting data for the metric. Highlight the metric to display its details in the **Metric** page. You can sort the list. • Click the header to sort the metrics in ascending or descending name order. • Click the severity icon in the header to sort the metrics according to severity  .
Metric Name	This is the metric highlighted in the list of metrics.
Averaging	Set Averaging for the highlighted metric. • Use default - Every value used to calculate a metric's alarm status is obtained by averaging the metric over a period of time specified in Spotlights Options. • Don't average this metric - Use the raw metric data retrieved from the current system – anomalies and spikes included. • Use custom averaging - Use a moving average, as in the Use default... case, but not the default setting. Set the time period by using the Average over... slider.

Option	Description
	• Average over... - Use the mouse or arrow keys to move the slider and so choose the time period used to generate the moving average. The longer the time period, the fewer the peaks and troughs. Spikes and other anomalies are smoothed. **Tip**: Do not to use too long a time to calculate the moving average. This may prevent the reporting of valid alarms. The maximum time period that Spotlight uses for averaging is five minutes. Averaging - is a technique that Spotlight uses to smooth out the anomalies and spikes that may appear momentarily in the metric values for a component. The purpose of averaging is to prevent Spotlight from reporting alarms for such spikes if they do not persist. **Notes**: • Averaging is used ONLY to prevent the generation of spurious alarms. It does NOT affect the charts or tables that display metric values; these continue to display metrics as they are reported. • This is not the place to set averaging for all metrics for the connection. Alarm smoothing

Related Topics

Spotlight Home Page Components

Thresholds Dialog

Alarm smoothing

Set the rate at which data is collected

Thresholds Dialog

Define the acceptable range of values for a Spotlight metric. Metrics that exceed the Normal threshold raise an alarm.

To open the Thresholds Dialog

View all metrics for the connection	View all metrics for the Spotlight home page component
Open the Spotlight home page for the connection. Select **View |Show All Alarms... | Thresholds**	Right click the component on the Spotlight home page and select **Metrics... | Thresholds**

About the Thresholds Dialog

Option	Description
List of metrics	All metrics associated with the component / connection are listed. Data is collected for selected metrics. Clear the selection to stop collecting data for the metric. Highlight the metric to display its details in the **Thresholds** page. You can sort the list. • Click the header to sort the metrics in ascending or descending name order. • Click the severity icon in the header to sort the metrics according to severity 
Name	This is the name of the metric highlighted in the list of metrics.

Option	Description
Severity table	Define severities for the highlighted metric. • Select the severities you wish to define. Define Start values for each selected severity either in the Severity Table or on the Threshold Bar. In the Severity Table: Click in the Start cell. Enter the lower value for the threshold. **Note**: Ensure the start values for each range are consistent. A failure to do so may cause problems when alarms are raised. • Deselect the severities you do not wish to define.
Threshold bar	Severity Start and End values can be defined in the Severity table or the Threshold bar. On the Threshold bar: 1. Move the mouse pointer over the threshold between two severities until it appears as a split-bar pointer. 2. Drag the mouse to move the threshold to a new position. Release. 3. Changes are updated automatically in the Severity table.

Related Topics

Spotlight Home Page Components

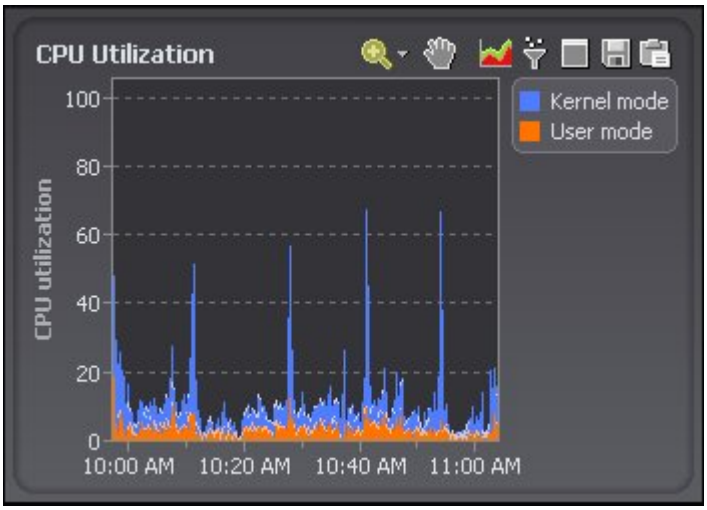
Metrics Dialog

Charts, Grids And Home Page Components

Charts

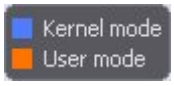
About Spotlight Charts

A chart is a component on a Spotlight page that shows data as a graphical image.



Notes:

- If there is a down arrow alongside the chart title then the chart supports more than one category of data. Click the title or arrow to open a drop-down list of all available categories. Click an item in this list to display information related to that category.
- Hover the mouse pointer over a data point in the chart to display information about that point.
- Hover the mouse pointer over an item (line or area) in the chart to display the name of the item.
- When the chart is zoomed so that not all of a chart can be seen at the one time, the chart also displays scrollbars that allow you to choose the visible portion of the chart.
- Individual toolbar buttons may not be available in all chart views.

Click	Description
	Zoom in on Charts
	Pan Over Zoomed Charts
	Set the Chart View
	Filter on the Data Series
	Maximize and Restore Charts
	Save To File
	Copy To Clipboard
	The *legend* lists all the data series associated with the chart. Click an item in the legend to highlight its series in the chart. (Click a second time to return the series to its normal appearance.) Move the mouse pointer over an item in the legend to view the current value for that series within the chart. **Note:** Arrows at the top and bottom of a legend (if displayed) indicate that there are more items in the legend list. Click an arrow to scroll through the list.
Right click the table body and select **What's This?**	View help specific to the chart.
Right click the table body and select **Print**	Print
Right click the table body and select	Restore Default Settings

Click	Description
Restore Default Settings	
Right click the table body and select **View as Grid**.	View the data in a Spotlight grid. About Spotlight Grids
Right click the table body and select **Properties**.	Adjust the chart properties: • Chart Properties - Chart Page • Chart Properties - Filtering Page • Component Properties - Overhead Page
	If the diagnostic server is unable to collect the data required, Spotlight displays a small icon on the affected component. Click the icon to see more information about the problem.
	Pause / Resume / Refresh

Related Topics

Colors and flashing of alarms / Colors used in charts

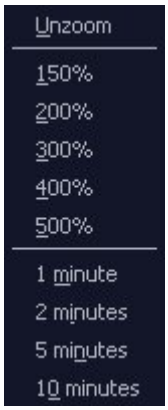
About Spotlight Grids

Zoom in on Charts

The Zoom (applied to the horizontal and vertical axes of the chart) determines the scale.

You can zoom in on a section of a chart using one of the following methods:

Action	Description
Use the magnifying glass 	1. Click the magnifying glass. 2. Move the mouse pointer over the chart. (The pointer changes to a magnifying glass.) 3. One of the following: • Click on the chart. This centers the view on the chosen point and doubles the current zoom factor. • Click-and-drag the mouse to enclose the area that you want to magnify. The chart zooms to the size of the enclosed rectangle when the mouse button is released.
	Notes: • To return the chart to its default size, right-click on the chart and select **Unzoom**. • To switch temporarily from **Zoom** mode to **Pan** mode, hold down the **Ctrl** key. • To zoom out, hold down the **Shift** key while clicking on the chart. This centers the view on the chosen point and halves the current zoom factor.
Use the drop-down menu	1. Click the down arrow next to the magnifying glass to open the drop-down menu. 2. Click a **percentage** option to zoom the chart horizontally AND vertically by that percentage -or- Click a **time** option (where applicable) to zoom the horizontal axis of the chart to the specified time period, while resetting the vertical axis to the default value.

Action	Description
	**Note:** Time options are not available in chart views without a time axis (bar charts, for example).

Notes:

- You cannot zoom a Pie chart.
- When the chart is zoomed so that not all of a chart can be seen at the one time, the chart also displays scrollbars that allow you to choose the visible portion of the chart. Pan Over Zoomed Charts

Related Topics

Maximize and Restore Charts

About Spotlight Charts

Pan Over Zoomed Charts

When you zoom in on a chart you can use the Pan tool in the chart toolbar to view other sections of the expanded chart.

To pan over a zoomed chart

1. Click  .
2. Move the mouse cursor over the chart. It will appear as a 'hand' icon.
3. Click-and-drag the mouse cursor across the chart to view other sections of the chart.

Tip: To switch temporarily from **Pan** mode to **Zoom** mode, hold down the **Ctrl** key.

Related Topics

Zoom in on Charts

Maximize and Restore Charts

About Spotlight Charts

Set the Chart View

To change the style of chart

1. Click  .
2. Select the style of chart that is appropriate to your needs.

Related Topics

About Spotlight Charts

Chart Properties - Chart Page

Colors and flashing of alarms / Colors used in charts

Filter on the Data Series

A Spotlight chart may contain multiple graphs representing data series from multiple data sources. You can filter the chart so that it shows only the data series that you want to see.

To filter on the data series

1. Click  .
2. Select as appropriate.

Option	Description
Show all items	Do not filter the contents of the chart.
Show top 5 items	Filter out all but the top 5 data series that appear in the chart.
Show top 10 items	Filter out all but the top 10 data series that appear in the chart.
Custom...	Create a custom filter from the available parameters. Chart Properties - Filtering Page

Related Topics

About Spotlight Charts

Chart Properties - Filtering Page

Maximize and Restore Charts

Where a drilldown displays several charts you can choose to **maximize** one chart so it occupies the whole drilldown. Once maximized, you can **restore** the chart to its normal size.

Note: All charts are automatically restored to their normal size when you view a different drilldown.

Toolbar	Menu	Shortcut
Click 	Right click the chart and select **Maximize**.	N/A
Click 	Right click the chart and select **Restore**.	N/A

Related Topics

Zoom in on Charts
About Spotlight Charts

Chart Properties - Chart Page

You can edit the visual properties of the charts displayed in Spotlight.

To set chart properties

1. Right-click the chart and select **Properties | Chart**.
2. Configure as appropriate:

Option	Description
Name	Select the chart to configure. Applicable when the chart name is selectable.
Chart style	Select a style for the chart. **Notes**: • You can use a **Summary** chart to view the statistics on how the charted data varies over time, including details on average, maximum, and minimum values. The percentile range (10% to 90%) shows the spread that contains 80% of all values in the chart. • You can use a **Histogram** to sort data into ranges of values. The horizontal axis shows the distribution of data across those ranges. The vertical axis shows the number of items in each range. (A **current data** histogram displays the most recent data collected; a **trend** histogram displays an average of the data collected over the available history of the chart.) • Any charts under the **Other views** heading (as in the Sample item here) are specific to individual Spotlight applications. • Some charts that show task or status data may be drawn as **Gantt charts**. These are custom-coded charts and cannot be displayed in other styles.
Arrange by	Applicable when the Chart style is set to **Bar** or **Pie**. • Select to arrange the data in **Name** or **Value** order.
Include legend in chart	Select to show the legend associated with the chart. Not all charts have a legend.
Series are stacked	Applicable when the Chart style is set to **Area**. • Select to plot the cumulative values of the different series. • Clear to superimpose the different series on the same set of axes.
Manual scaling Minimum value Maximum value	Select **Manual Scaling** to set the scaling factor for the chart in the **Minimum value** and **Maximum value** fields. Clear **Manual Scaling** to accept Spotlight's default scaling of the chart.

Related Topics

About Spotlight Charts
Set the Chart View
Colors and flashing of alarms / Colors used in charts

Chart Properties - Filtering Page

A Spotlight chart may contain multiple graphs representing separate data series from multiple data sources. You can filter the chart so that it shows only the data series that you want to see.

Spotlight supplies a set of filters that you can use, but if none of the standard filters are suitable for your chart, you can design a custom filter.

To set a custom filter on a chart

1. Right-click the chart and select **Properties | Filtering**.
2. Configure as appropriate:

Option	Description
Name	Select the chart to configure. Applicable when the chart name is selectable.
Show all items	Select to display all current data series. For example, if a system has the multiple disks **C:**, **D:**, **E:**, and **F:**, the relevant disk usage chart displays the disk usage statistic for all four disks.
Show only the top items	Select to display the most significant data series. Select the number of data series to show from the associated drop down list.
Show the following items	Select to choose the data series to show. Select the data series to show from the associated list. Note also the associated **Select all** and **Clear all** buttons.

Related Topics

Filter on the Data Series

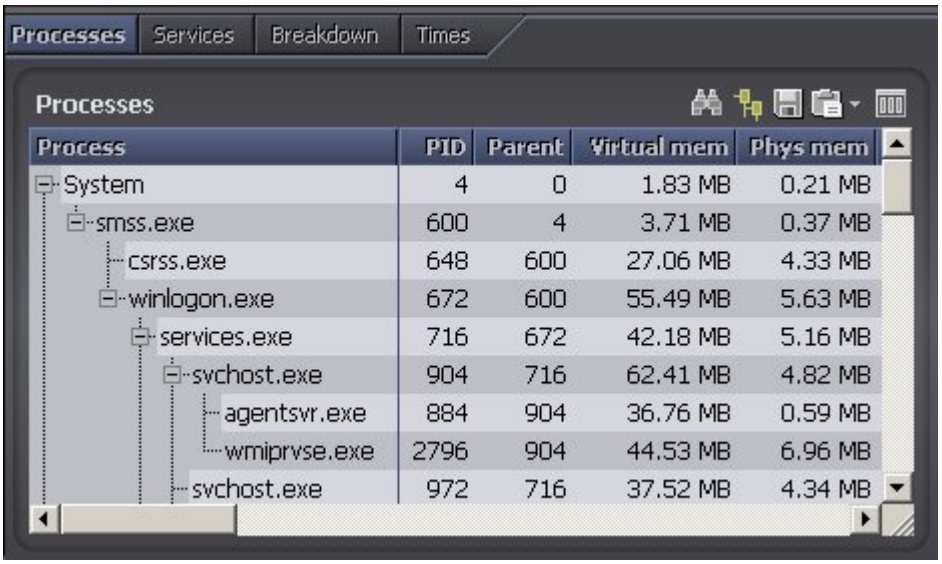
About Spotlight Charts

Component Properties - Overhead Page

Grids

About Spotlight Grids

A table or grid shows values in tabular form. The grid component is used in Spotlight alarms and drilldowns.



Actions common to Spotlight grids

Notes:

- Not all items are available with all grids.
- If not all the grid can be seen all at the one time then scroll bars allow you to choose the visible portion.

Click	Description
	Find Text
	Alarms: Alarm Filters.
	Tree View
	Select Multiple Rows
	Select Multiple Rows
	Save To File
	Copy To Clipboard
	Show, Hide & Order Columns
	Sort the Grid
Right click the table body and select **What's This?**	View help specific to the gird.
Right click the table body and select **Print**	Print
Right click the table body and select **Restore Default Settings**	Restore Default Settings
Right click the table body and select **View as Chart**.	View the data in a Spotlight chart. About Spotlight Charts
Right click the table body and select **Properties**.	Freeze the first column or word-wrap text. Grid Properties - Options Page

Click	Description
	If the diagnostic server is unable to collect the data required, Spotlight displays a small icon on the affected component. Click the icon to see more information about the problem.
	Pause / Resume / Refresh

Related Topics

About Spotlight Charts

Find Text

To find a specified string of text in a Spotlight grid

1. Open the **Find** dialog.

Toolbar	Menu	Shortcut
Click 	Right click the grid data and select **Find**.	N/A

2. Use the controls:

Control	Description
Text to find	Enter or paste in the text you want to find.
Match case	Select to match the case of the text exactly. When selected a search for the string AbC will not find the string abc.
Match entire cell contents	Select to match the contents of the table cell exactly. When selected a search for the string Spot will not find the string Spotlight.
Up	Search upwards from the current location then stop.
Down	Search downwards from the current location then stop.
Search all columns	Search all columns of the table.
Search selected column only	Search only the highlighted column.
Find next	Find the next occurrence of the text in the grid.

Note: The Find function may be of limited use in dynamic columns (***Elapsed time*** is one example) whose values are continually updated.

Related Topics

About Spotlight Grids

Sort the Grid

Show, Hide & Order Columns

Sort the Grid

To sort the grid according to the contents of a column

Click the column header. An arrow appears to the right of the header .

Notes:

- The arrow points down when the column is sorted in descending order, up when the column is sorted in ascending order.
- Click the arrow to alternate ascending / descending order.
- Click a different header to select a different column to sort by.
- To sort by a column that is hidden, right-click the header row and select **Arrange by | *column name*** .

To sort the grid according to the contents of multiple columns

Keep the SHIFT key depressed when sorting by the second or later column.

For example, to sort the grid in the Alarm Log page by severity and then, within that sort, by action:

1. Click the **Severity** header.
2. While keeping the SHIFT key depressed, click the **Action** header.

Related Topics

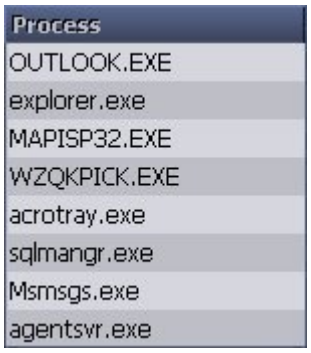
Tree View

About Spotlight Grids

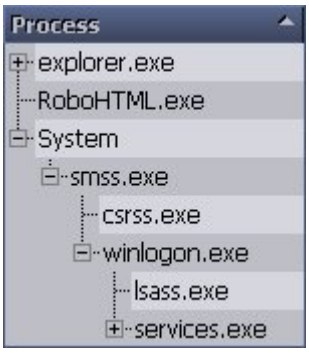
Tree View

The first column in a Spotlight grid may show data as a simple text string or (if available) a hierarchical tree structure.

Simple Text String



Hierarchical Tree Structure (Tree view)



Note: When you sort a table in tree view, the table is sorted first according to the highest level in the tree. The individual branches and sub-branches of the tree are sorted separately in the same order. Sort the Grid

Tree View in Drilldowns

Click  to toggle Tree View on or off.

Drilldown grids with this button on their toolbar can be viewed as a simple text string or a hierarchical tree structure.

Tree View in Alarm Pages

Alarm pages Spotlight Today and Alarms by Time are displayed in a tree structure when **Group By Connection** or **Group By Alarm** is applied .

To manage the Tree View display, right click on the grid content and select **Collapse** or **Expand**.

Related Topics

About Spotlight Grids

Show, Hide & Order Columns

Alarms by Time

Show, Hide & Order Columns

To hide a column

Right-click the column header and select **Hide Column**.

To reorder a column

Click-and-drag the column header to its new location.

To open the Column Organizer

Use the column organizer to show or hide columns and choose the order in which to display columns.

Right - click the grid header row and select **Organize columns**

Control	Description
Available columns	Hidden columns.
Selected columns	Visible columns in the order they appear in the grid.
Add	Adds the columns selected in **Available columns** to the **Selected columns** list.
Add All	Adds all columns in the **Available columns** list to the **Selected columns** list.
Remove	Moves the columns selected in the **Selected columns** list to the **Available columns** list.
Remove All	Moves all columns in the **Selected columns** list to the **Available columns** list.
Move Up	Moves the selected columns in the **Available columns** list further up the list.
Move Down	Moves the selected columns in the **Available columns** list further down the list.

Tip: To choose multiple columns in the **Available columns** and **Selected columns** lists, use the shortcut key combinations **CTRL+click** or **SHIFT+click**.

Related Topics

About Spotlight Grids

Select Multiple Rows

On grids with the **Select All** and **Clear All** buttons you can select multiple rows in the grid.

Click	To do this...
	Select all rows
	Clear all rows
CTRL + click	Select several individual rows (or clear rows already selected)
SHIFT + click	Select a range of rows

Related Topics

About Spotlight Grids

Grid Properties - Options Page

To freeze the first column

When selected the first column will remain visible while you scroll through the columns of the table:

Right-click the grid header and select **Freeze First column**.

To word-wrap text

By default, Spotlight truncates text that is too long to fit in the space allocated to the column. To allow text to wrap onto multiple lines:

1. Right-click the data content of the grid and select **Properties | Options**.
2. Select **Allow text to word-wrap onto multiple lines if it is wider than the column**

Related Topics

About Spotlight Grids

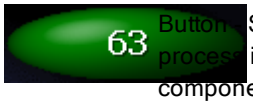
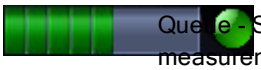
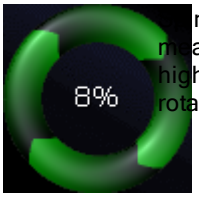
Component Properties - Overhead Page

Home Page Components

Spotlight Home Page Components

The components in the Spotlight home page are visual objects that correspond to important features of the system Spotlight is monitoring. Components can be of many different types, including buttons, gauges, data flows, queues, spinners, and containers.

Note: They change color to alert you to performance bottlenecks. Spotlight Alarms

Component	Description	Component	Description
	Button - Sometimes called a process icon. A Spotlight component that contains a single value that represents the state or existence of a process.		Data flow - Panels in the Spotlight home page may be connected to other panels by data flows that show the rate at which data is moving through a system. As the rate increases, so does the speed of the flow.
	Gage - A Spotlight component that shows a measurement as a continuous range of possible values.		Queue - Spotlight component that shows a measurement as a range of discrete values. The globe at the end of the queue is an alarm indicator.
	Container - A cylindrical component that fills up as the value it measures increases. Normally used to indicate file size or disk usage.		Spinner - Spotlight component that shows a measurement as a rotating wheel. The higher the value, the faster the speed of rotation.

Action	Description
Hover the mouse over the component	Opens information on the status of the component. 
Click on the component.	Shows **What's this** help or performs other customized action. Balloon help
Right click on the component | **What's this**	Opens information about the component in balloon help. If an alarm is raised on the component, then opens help for resolving the alarm. Spotlight Alarms
Right click on the component | **Show History**	View the recent history of the component. **Tips**: • Change the size of the popup chart by clicking and dragging a corner of the popup. • Maximize and restore the size of the chart via the Maximize chart buttons at the top right of the popup chart. • Zoom in on a section of the chart by clicking in the chart, and zoom out by clicking the Unzoom chart button at the top right of the popup chart. • Right click and drag over the chart and time axis to zoom in on a time frame. • Right click the chart to copy to clipboard. • You can customize how history data is stored. see Spotlight History for more information. • You can customize the behavior and display of the history charts. Chart configuration
Right click on the component | **Show Details**	View a drilldown page for the component. Spotlight drilldown pages contain a detailed breakdown of the statistics used to diagnose the component.
Right click on the component | **Snooze alarm**	Ignore (Snooze) Alarms Components with snoozed alarms are represented by  .
Right click on the component | **Copy to Clipboard**	Copy To Clipboard
Right click on the component | **Restore Default Settings**	You can change the appearance and behavior of Spotlight components. Restore Default Settings
Right click on the component | **Metrics**	Metrics Dialog Thresholds Dialog
Right click on the component | **Properties**	Home Page Properties - Options Page Component Properties - Overhead Page

Action	Description
Click  .	This icon indicates the diagnostic server is unable to collect the data required for the affected component. Click the icon for more information.
	Data for this control is not available. (There are no alarms associated with this control.) Component Properties - Overhead Page
	Data for this control is not available. (Alarms associated with the control are disabled.) Component Properties - Overhead Page

Related Topics

Spotlight Home Pages

Calibrate Spotlight Connections

Home Page Properties - Options Page

To set the maximum display value for a Spotlight home page component

1. Right-click the component and select **Properties | Options**.
2. Configure as appropriate:

Option	Description
Name	The display name of the component.
Maximum value	Some components on the Spotlight home page display metric data as positions on a bar or graph. You can say how much of this bar or graph to display by entering a value in the Maximum Value property. Click **...** and enter a new maximum value. **Note**: For components that do not display metrics as a position in a range, the **Maximum value** is set to zero by default.

Related Topics

Spotlight Home Page Components

Component Properties - Overhead Page

Spotlight Home Pages

Restore Default Settings

For the Spotlight connection

This deletes all customized properties for the Spotlight connection, including any Spotlight overhead settings.

1. Select the Spotlight connection in the Spotlight browser Live connections
2. Select **File | Restore Connection Defaults**.
3. Click **Restore**.

For a Spotlight component

This deletes all customized properties applied to a chart or grid or Spotlight home page component. For a grid, this removes all changes to column headings and word-wrapping. For a chart, this removes changes made to chart style, scaling, legends and series.

1. Right-click on the data in the chart or grid or on the Spotlight home page component.
2. Select **Restore Default Settings**.
3. Click **Restore**.

Related Topics

Connection Properties - Overhead Page

Spotlight Home Page Components

About Spotlight Grids

About Spotlight Charts

Copy To Clipboard

To copy the chart or grid to the clipboard

1. Copy:

Toolbar	Menu	Shortcut
Click 	Right click the chart or grid data and select **Copy to Clipboard**.	N/A

2. Paste from the clipboard to the desired destination - as an image within an image editor, or as text within a text editor.

Tips:

- In Spotlight grids you can choose to copy the whole table, the selected row, column or cell.
- Some applications allow you to use **Paste Special** to choose the format to use to paste the chart into a document.
- When you copy and paste the details of a **zoomed** chart to an **image** file, the image contains only the visible portion of the chart. When you paste the details to a **text** file, the pasted text includes the details of the entire chart, not only of the visible section.

Related Topics

Save To File

About Spotlight Charts

About Spotlight Grids

Save To File

To save the chart or grid

1. Open the **Save As** dialog.

Toolbar	Menu	Shortcut
Click 	Right click the chart or grid data and select **Save As...**.	N/A

2. Use the controls in the Save As... window to specify where (and in which format) to save the chart or grid.

Control	Description
File name	Type the name of the file that to save the chart or grid to.
Save as type	Select the file type. • For charts, the choices include **bitmap** image, Windows **metafile** image, and **comma-delimited** text file. • For grids, the choices include **formatted** text file and **comma-delimited** text file.
Text encoding	Choose the text encoding to use when saving the file. • ANSI, the default choice, supports only the character set used by Western European languages. Unsupported characters are converted to question marks. • UNICODE (UTF-16) is the 16-bit version of the Universal Character Set Transformation Format. This format is maintained by the Unicode Consortium (http://www.unicode.org/), and provides the basis for processing, storage and interchange of text data in any language. • UNICODE (UTF-8) is the 8-bit version of the Universal Character Set Transformation Format.

Related Topics

Copy To Clipboard

About Spotlight Charts

About Spotlight Grids

Print

To print a Spotlight home page or the current drilldown

Select **File | Print**.

To set print options

1. Select **File | Page Setup**.
2. Set how Spotlight windows are to be printed. The results of the choices you make are shown in the Preview pane of the window.
3. If required, click **Printer...** to select the printer to use when printing Spotlight pages.

To view a print preview

1. Select **File | Print Preview**.
2. Use the toolbar at the top of the Print Preview window to adjust display settings.

Button…	Description…
Print	Send this page to the printer.
Page setup	Choose how you want to print the contents of the page.
Show one page	Choose how to view the preview.
Show multiple pages	
Zoom	Choose how much you want to magnify the print preview to get a clear look at page details. Alternatively, move the mouse pointer over the print image, and click to magnify the image.
Close	Close the Print Preview window.

Related Topics

Spotlight Home Pages

About Spotlight Charts

About Spotlight Grids

Component Properties - Overhead Page

Spotlight components are visual objects on the Spotlight home page and in Spotlight drilldowns that correspond to important features of the system to which Spotlight is connected. You can set the options that affect the behavior and display of Spotlight components.

Note: You can set overhead properties for the Spotlight connection as a whole. Connection Properties - Overhead Page

To set the overheads for a Spotlight component

1. Right click the component and select **Properties | Overhead**
2. Select from the Refresh setting list how often Spotlight will collect data for the category of which this Spotlight component is a member.

Refresh setting	Description
Refresh at the default rate	Spotlight data is refreshed as per the definition in Spotlight Options. Set the rate at which data is collected **Note**: In most cases (but not all) this will be at the foreground rate when the component is visible and the background rate when the component is not visible.
Always refresh at the foreground rate	Always refresh at the foreground rate, whether the data is displayed or not.

Refresh setting	Description
Refresh only while data is displayed on the screen	Refresh data at the foreground rate when it is visible in the Spotlight window.
Do not refresh data in this category	The data is never collected. Spotlight displays one of the following icons on components that display this category of data:  Data for this control is not available. (There are no alarms associated with this control.)  Data for this control is not available. (Alarms associated with the control are disabled.)

Related Topics

Connection Properties - Overhead Page

Set the rate at which data is collected

Spotlight Home Page Components

About Spotlight Grids

About Spotlight Charts

View | Options

Configure Spotlight - View | Options

Customize the appearance and behavior of Spotlight.

To open Spotlight options

Click **View | Options**

The categories you see in Spotlight depend on which Spotlight applications you have installed. This help page covers the standard categories. Individual Spotlight applications may contribute additional categories and options.

Category	Description
Alarms and notifications	How Spotlight reports unexpected events for your connections. • Alarm actions • Alarm smoothing • Balloon help • E-mail server • Taskbar
Appearance	The look and feel of Spotlight, and details of what is shown. • Chart configuration • Color scheme • Colors and flashing of alarms / Colors used in charts

Category	Description
	• Slideshow
Data collection	When to collect data from a target system, and the best way to display it. • Set the rate at which data is collected
Security	Password protection and user access. • Password storage
Startup	How Spotlight behaves when it starts. • Navigation tree • Initial view
Storage	The locations for, and space assigned to, Spotlight history. • See Spotlight History for more information. **Note**: Spotlight History is installed if you click **Help | About Spotlight | Spotlight Modules** and under the heading **Spotlight Console** see **Light-weight XML repository**. If your Spotlight application does NOT include the lightweight XML repository, it may employ a different method to store historical data and you should View the online help for your Spotlight application for more information.
Troubleshooting	Settings that may be needed to address Spotlight performance issues. • Display performance

Notes:

- To locate an option in the Options dialog, type a keyword into the Search field.
- Additional customization options are available in the Spotlight Connection Manager, Metrics Dialog, Chart Properties - Chart Page, Grid Properties - Options Page and Home Page Properties - Options Page.

Alarms and notifications

Alarm actions

Define rules that determine the action Spotlight takes when alarms are triggered.

Note: An action rule does not take effect until an associated alarm is triggered.

To set action rules for alarms

1. Click **View | Options**.
2. Click **Alarms and notifications | Alarm actions**.

3. Configure as appropriate

Option	Description
Perform the following actions when the conditions are met.	Rules are listed in the order they are applied. Highlight a rule to view, modify, delete, rename or move it. Only selected rules are applied. De-select a rule to retain it but not apply it.
Rule description	A description of the rule selected: condition(s) triggering action(s) in the order listed.
New...	Click to create a rule. Alarm Actions - Alarm Log Filter Dialog
Modify...	Highlight a rule. Click to modify the highlighted rule. Alarm Actions - Alarm Log Filter Dialog
Delete	Highlight a rule. Click to delete the highlighted rule.
Rename...	Highlight a rule. Click to rename the highlighted rule.
Move Down	Highlight a rule Click to move the highlighted rule lower down the list. It is applied later. Rules are applied in the order they are listed.
Move Up	Highlight a rule. Click to move the highlighted rule higher up the list. It is applied sooner. Rules are applied in the order they are listed.

Related Topics

Spotlight Alarms

About Alarms, Metrics, Thresholds And Severities

Configure Spotlight - View | Options

Alarm smoothing

Smoothing (also known as metric averaging) is used to prevent Spotlight from generating spurious alarms. It smooths out the peaks and troughs in Spotlight components by averaging the information that Spotlight collects over a specified period of time. It does not affect the charts or tables that display metric values; these continue to display metrics as they are reported.

Use this dialog to set default smoothing for all Spotlight metrics for the connection. To set smoothing for a specific Spotlight metric use the Metric editor. This overrides the default smoothing value for the metric. Metrics Dialog

To set default smoothing for Spotlight metrics for the connection

1. Select the Spotlight connection in the Spotlight Browser Live connections.
2. Select **View | Options**.
3. Select **Alarms and Notifications | Alarm smoothing**.
4. Use the **Average over…** slider to choose the time period over which you want to average metric values.

Note: The change is effective from the next refresh. Pause / Resume / Refresh

Related Topics

Metrics Dialog

Set the rate at which data is collected
Pause / Resume / Refresh
Configure Spotlight - View | Options

Balloon help

By default Spotlight opens a context-sensitive balloon help window when you click a Spotlight home page component. Context-sensitive help may be component help or alarm help.

To configure balloon help

1. Click **View | Options**.
2. Click **Alarms and Notifications | Balloon help**.
3. Select from the following:

Option	Description
Always show balloon help	View component help or alarm help when you click on a component. Component help is shown when no alarm is raised for the component; alarm help is shown when an alarm is raised.
Only show help if an alarm is being raised	If NO alarm is raised for the component, view the related drilldown. If an alarm is raised, view the alarm help for the component.
Always jump directly to the related drilldown	Always view the related drilldown whether an alarm is raised or not.

Related Topics
Spotlight Home Page Components
Configure Spotlight - View | Options

E-mail server

You can set the message service that Spotlight uses when sending e-mail.

To set the Spotlight mail server

1. Select **View | Options**.
2. Select **Alarms and Notifications | E-mail server**.
3. Select the method that you want Spotlight to use when sending email

Service	Description
Messaging Application Program Interface (MAPI)	A standard Windows interface that you can use to send e-mail.
Simple Mail Transfer Protocol (SMTP)	An independent TCP/IP protocol used to send e-mail. Click **Change SMTP settings** to set the required SMTP mail options.

Related Topics

Spotlight Alarms

Configure Spotlight - View | Options

Taskbar

You will not always have the Spotlight console open in front of you while Spotlight is diagnosing the performance of your connections. In this situation, you can set up Spotlight to continuously oversee the status of all your connections, and to alert you whenever important alarms require your attention.

To set notification options

1. Select **View | Options**.
2. Select **Alarms and Notifications | Taskbar**.
3. Change the available options to specify Spotlight's notification behavior.

Option	Description
Show the Spotlight icon in the task bar notification area.	Select this option to display a Spotlight icon in the System Tray area of your Windows task bar. The icon has the following properties: • Its color reflects the highest-severity alarm raised by a current connection. • Double-clicking the icon restores the Spotlight console (if minimized). **Note**: You can also employ a floating **Connection status bar** to display the status of all current Spotlight connections. Connection Status bar
Pop up an alert where the severity is...	Select this option to enable the Spotlight icon to display an appropriate text message when the status of the current Spotlight connection reaches or exceeds the severity chosen in the associated drop-down list. Use the drop-down list to choose the threshold that will trigger the message. **Note**: The Spotlight icon in the Windows system tray displays the highest-severity alarm currently triggered for the corresponding connection.
Do not show alerts if Spotlight is the active window.	Select this option if you are currently using Spotlight, and do not want to be notified of new alarms that may already be visible.

Related Topics

Spotlight Alarms

Configure Spotlight - View | Options

Appearance

Chart configuration

Spotlight makes extensive use of charts (historical and otherwise) in its drilldown windows. You can set a number of display options for these charts.

To set the appearance of charts

1. Select **View | Options**.
2. Select **Appearance | Chart configuration**.
3. Configure as appropriate.

Option	Description
Chart line style	Click the box, and from the list choose a line style that can be used to display charts. The sample chart above the control demonstrates how charts will appear under the chosen line style.
Show data tool tips when hovering over charts	Select this option to display tool tips when you hover the mouse pointer over an item in a Spotlight chart.
Show data from previous sessions	Select this option to display data from previous connections to this system (if available). This affects only the display of data from previous sessions. It does not affect the collection of data.
Amount of history to display in charts	This affects the time scale in all Spotlight charts, including those displayed when you select **Show History** from the shortcut menu invoked when you right click a Spotlight home page component. Spotlight Home Page Components

Related Topics

About Spotlight Charts

Configure Spotlight - View | Options

Color scheme

Change Spotlight's appearance by selecting a saved color scheme.

To select a saved Spotlight color scheme

1. Click **View | Options**
2. Click **Appearance | Color scheme**
3. Select the color scheme to use.

Note: You can create your own color scheme. Colors and flashing of alarms / Colors used in charts

Related Topics

Configure Spotlight - View | Options

Colors and flashing of alarms / Colors used in charts

You can change the appearance of the Spotlight console via Spotlight Options by using a simple point-and-click method. You can also create and save your own color scheme for Spotlight.

To set the appearance of Spotlight

1. Click **View | Options**
2. Select **Appearance | Colors and flashing of alarms** or **Colors used in charts**.
3. Select a Spotlight GUI component:

Component	Description
Main Screen	Change the appearance of the Spotlight home page.
Drilldowns	Change the appearance of Spotlight drilldowns.
Windows	Change the appearance of Spotlight editors and message windows.
Severities	Change the appearance of Spotlight alarms.
Chart colors	Change the colors used in Spotlight charts.

4. Click an item in the sample image or select it from the **Item** list.
5. Edit the item's appearance from the available (enabled) controls in the Appearance group.
   Review the following for more information.

Appearance	Description
Item	Display the type of features whose appearance you can change.
Foreground	Click to display a color chart, and then click a color on the chart to use it as the foreground color for the current feature (or click **More colors** to display a wider range of colors to choose from).
Background	Click to display a color chart, and then click a color on the chart to use it as the *background* color of the feature (or click **More colors** to display a wider range of colors to choose from).
Gradient fill	Select to use a gradient fill color on the feature; clear to remove an existing color fill.
Text shadow	Select to use a text shadow on the feature; clear to remove an existing shadow.
Image	When you choose a feature that has a bitmap image associated with it, choose an alternative image from the list. Select *Custom image* to use a different bitmap in place of the default image.
Flash speed	A display option for severities. Select an option from the list.
Flash intensity	A display option for severities. Select an option from the list.

6. Optional: Click **Save as** to save the settings as a new color scheme.
   Tip: Saved schemes can be selected from **View | Options | Appearance| Color scheme**.

Related Topics
Color scheme
About Alarms, Metrics, Thresholds And Severities
Configure Spotlight - View | Options

Slideshow

Configure Spotlight to start slideshow mode when you are not actively using the application.

1. Select **View | Options**.
2. Select **Appearance | Slideshow**.
3. Configure as appropriate.

Option	Description
Start Slideshow mode if Spotlight remains idle	Select this option to put Spotlight into Slideshow mode for unattended activation. Specify the delay period before an unattended Spotlight begins its slideshow.
Only start if Spotlight is the active window	Start Slideshow mode only if the Spotlight window is the one you are currently working in.
Connection switching interval	Use this option to specify how long Spotlight displays an individual connection before moving on to the next.
Show the following connections during slideshows	Specify how Spotlight will cycle through the available connections If you choose **Show connections with the following severity**, select an option from the list. 

Related Topics

Spotlight Slideshow

Configure Spotlight - View | Options

Data collection

Set the rate at which data is collected

Data is collected from monitored connections at foreground rate or background rate. Use this page to quantify foreground rate and background rate.

To set the rate at which data is collected

1. Select **View | Options**.
2. Select **Data Collection | Data refresh rates**.
3. Set values as appropriate.

Option	Description
Collect data at the following rate when it is being displayed	Enter a value. This value quantifies the foreground rate. While you are viewing a page in a Spotlight window, Spotlight collects the data that is displayed at the foreground rate.
Collect data at the following rate when it is being collected in the background	Enter a value. This value quantifies the background rate. Data that is reported in a hidden window is collected at the background rate.

Note: To improve the performance overhead for individual Spotlight connections, you can vary the data collection rates for a connection as a whole, or for individual components within that connection.

- Connection Properties - Overhead Page
- Component Properties - Overhead Page

Related Topics
Configure Spotlight - View | Options
Alarm smoothing
Metrics Dialog

Security

Password storage

You can save passwords to Spotlight connections to allow other Spotlight users to diagnose target systems without needing direct access to the systems themselves.

To save passwords

1. Select **View | Options**.
2. Select **Security | Password storage**.
3. Select **Store passwords for new Spotlight connections**.

Note: To delete any passwords that have been saved previously, click **Clear all passwords**.

Related Topics
Configure Spotlight - View | Options

Start-up

Navigation tree

To customize the display of the Spotlight browser

1. Select **View | Options**.
2. Select **Start-up | Navigation tree**.
3. Configure as appropriate.

Option	Description
Display the following pages in the navigation tree	Select the pages to be available in the Spotlight browser.
Open the following page in the navigation tree when	Select the page to be open when Spotlight

Option	Description
Spotlight starts	starts.

Related Topics

Spotlight Browser

Configure Spotlight - View | Options

Initial view

The startup page is the page displayed when you first start a Spotlight application.

To set the start up page

1. Select **View | Options**.
2. Select **Start-up | Initial**.
3. Select as appropriate.
4. At the dialog that opens, click **Change the start-up view**.

Related Topics

Configure Spotlight - View | Options

Troubleshooting

Display performance

Caution: This category contains Spotlight options that are rarely needed and that are designed for use when addressing Spotlight performance issues.

You can choose to balance display quality within the Spotlight home page and drilldowns against the speed at which the application deliver information.

To set display quality and performance

1. Select **View | Options**.
2. Click **Troubleshooting | Display performance**.
3. Drag the Display Performance slider to a position that marks an acceptable balance between display quality and display speed.

Related Topics

Configure Spotlight - View | Options

Troubleshooting

Troubleshooting

This section identifies general problems that you may encounter when using Spotlight applications, and details how to address those problems. For problems caused in specific Spotlight applications, see the help for that application.

Product Authorization Errors

When first installed, Spotlight can be used with full functionality for a specified trial period. When the trial period expires, contact your Questrepresentative to obtain an authorization key to continue.

Notes:

- Make sure that you enter the authorization key exactly as stated on your Product Authorization sheet or as provided by your Questdistributor. If you enter the authorization key incorrectly, the following message is displayed:

  Invalid authorization key

- Once the trial period has expired, if an authorization key is not supplied, only the Spotlight home page will be visible. If you click any of the drilldown buttons, the following message is displayed:

  You do not have a license for “Spotlight...” that enables access to this functionality. Please contact Questfor information about obtaining the correct license.

- If the trial date has not passed, check that the date on your system is set correctly.

How to enter an authorization key

1. Click **Help | About Spotlight**.
2. Click **Installed products**. The Installed Products page lists all the Spotlight products that are currently installed on your system.

3. Locate your Spotlight product in the list of installed products.
4. Click the associated **View/change product license** link.
5. Click **Change this license**.
6. Enter the new **Authorization key** and **Site message**.

Tip: Individual Spotlight applications may handle invalid license numbers in different ways (for example, if the license has expired on a trial copy of the software). For more information, refer to the corresponding help in that application.

I Cannot Open a Migrated Connection

Problem

Spotlight is unable to open a migrated connection.

Solution

When you open a Spotlight connection, you use connection details that are stored in files somewhere on your local computer or (in the case of migrated connections) somewhere on your network.

When Spotlight cannot access those connection details (for example, when the relevant network machine is unavailable), it displays a Spotlight message box that you can use to change the location where connection details are stored. The choices you have are:

Option	Description
Yes	Click to open the Spotlight Migration wizard to change the location where connection details are stored.
No	Click to abandon the attempt to open the desired Spotlight connection.
Retry	Sometimes the network location that you have been using is only temporarily unavailable. Click to reuse the existing connection details to open a Spotlight connection.

Note: You should not migrate connections to locations that may be offline frequently or for extended periods. You cannot migrate connections that are currently in use or inaccessible.

Related Topics

Troubleshooting

Migrate (Move And Share) Connections

High Spotlight Load On Database Server

The queries Spotlight uses to collect data can place an additional load on the system under diagnosis.

Most Spotlight queries consume a measurable but not significant amount of system resources. However, queries that are complex or collect large amounts of data may put a significant load on the system.

If you find that the load that Spotlight places on your server is too high, you can adjust collection rates for different categories of Spotlight data, and so limit the load that Spotlight places on the system under analysis.

To choose a standard Spotlight setting or create your own Custom settings

1. Close and re-open Spotlight.
2. Select **File | Connect | Spotlight**.
3. Right click the Spotlight connection experiencing the high load and select **Properties**.
4. Select **Overhead**.
5. Adjust the Spotlight load for the connection:
    - Use the Overhead Management slider to adjust the overall Spotlight load.
    - Alternatively, click **Custom**... to adjust specific load categories.
6. Open the Spotlight connection.

Note: The procedure for adjusting the Spotlight load is covered in more detail in the online help.

Main Window Hard To Read

The screen resolution is too low.

Increase the number of colors your computer is using. Spotlight requires a monitor that supports 65536 colors or higher (or Hi Color/16-bit) so that it can properly shade its graphs.

1. Open the Windows Control panel and double-click **Display**.
2. Click the **Settings** tab.
3. Increase the number of colors in the palette. If this option is not available you should upgrade your hardware.

No Change to Data Flows

Either the refresh rate is too slow or Spotlight is paused. Do the following:

- Update the screen. Click **View | Refresh**.
- Check the foreground refresh rate setting (try a rate of approximately 30 seconds).
  To view / change the rate click **View | Options** and select **Data collection | Data refresh rates**
- Resume Spotlight diagnostics. Click **View | Resume**. (If **Resume** is not available, Spotlight is not paused.)

Disabled Controls

Problem

I have a number of disabled controls on a Spotlight page. Every disabled control has one of these icons associated with it:

Solution

To solve the problem, view the Overhead Management page in the Component Properties editor for one of the disabled controls. You should find that the refresh setting for that component has been set to Do not refresh this control. Component Properties - Overhead Page

Background to The Problem

When Spotlight collects data from a system under investigation, it places a load on that system's resources.

Usually, the Spotlight load does not have a significant effect on the performance of the system, but when it does you can use Spotlight's overhead management tools to reduce or eliminate the load. Two factors influence overhead management:

- The categories of data collected.
- The refresh rate assigned to each category.

The categories of data collected are defined by the current Spotlight application, and are set by criteria that may include:

- The kind of data being collected.
- The load that collecting the data will put on the system.
- Where the data in the category is to be displayed.
- The importance of the data.
- How often the data is needed.

By default, every category is assigned one of the following refresh rates:

- Always refresh at the foreground rate.
- Refresh at the default rate.
- Refresh only while data is displayed on the screen.
- Do not refresh data in this category.

When you change the refresh rate for the data in a Spotlight control (a component, table or chart), you also change the refresh rate for ALL data in the same category. When you disable the refresh rate for the data in a control, you disable the refresh rate for ALL data in the same category.

A control whose data collection is disabled displays one of the indicated icons:

Icon	Description
	Data for this control is not available. (Alarms associated with the control are disabled.)
	Data for this control is not available. (There are no alarms associated with this control.)

Related Topics

Troubleshooting

Component Properties - Overhead Page

Delay in Reporting Alarms

Problem

The current displayed value of a Spotlight metric should be raising an alarm, but that alarm has not yet been reported.

Solution

There are two parts to this problem:

- **Refresh rates**
  Spotlight refreshes the metric data it collects at a rate specified in Spotlight Options. In most cases (but not all) this is the foreground rate when the control is visible, or the background rate when the control is not visible. These refresh rates (which you can set) are usually set to different values, with foreground data being collected more often. Set the rate at which data is collected
- **Metric smoothing**
  Spotlight uses metric smoothing (averaging) to prevent the generation of spurious alarms. It does this by averaging the data that it collects over a specified period of time. Alarm smoothing Metrics Dialog

The combination of these two features means that an alarm is raised faster for metrics in the page you are viewing than it is for those in a page that is hidden.

Related Topics
Troubleshooting

Alarm Help Is Displayed Instead of The Drilldown

Spotlight can be configured to show the help or jump directly to the related drilldown on clicking a home-page control.

To show the drilldown

1. Click **View | Options**.
2. Select **Alarms and notifications | Balloon help**.
3. Select **Always jump directly to the related drilldown**.

Build the Support Bundle

In emailing a request for assistance to Quest (support@quest.com) be sure to include a support bundle.

To create the support bundle

1. Click **Help | Support Bundle**.
2. Select the Spotlight application(s) whose information you want to collect.
3. Click **Collect**.

   A file is created containing a snapshot of your Spotlight installation. The file is called **SpotlightSupport.zip** The location of this file is C:\Users\<user>\AppData\Roaming\Quest Software\Spotlight\Default\Support

About Spotlight History

An important feature within Spotlight is the ability to display, collect and replay the behavior of a Spotlight connection at a specified point in time such as when an important alarm was raised.

Action	Description
Select a connection in Spotlight Browser Live connections and click **View | History Browser**.	View historical snapshots for the Spotlight connection. **Note**: While you are viewing historical data the connection identifier at the top right of the window indicates the date and time of the snapshot. On the Spotlight home page the console status bar indicates "History Browser".
Right click on a Spotlight home page component and select **Show History**	View the recent history of the Spotlight home page component. **Tips**: • Change the size of the popup chart by clicking and dragging a corner of the popup. • Maximize and restore the size of the chart via the Maximize chart buttons at the top right of the popup chart. • Zoom in on a section of the chart by clicking in the chart, and zoom out by clicking the Unzoom chart button at the top right of the popup chart. • Right click and drag over the chart and time axis to zoom in on a time frame. • Right click the chart to copy to clipboard.
From the Alarm log, right click an alarm and select **Show Selected Entry In | History Browser**	The Alarm Log provides an easy way to view the history for a particular alarm.
Click **View | Options | Storage**	Configure the locations for, and space assigned to, Spotlight history. • Clear history • History limits • History location

Related Topics

History Browser

Spotlight Home Page Components

View | Options | Storage

Clear history

To clear information from Spotlight history

1. Select **File | Disconnect All** to close all open Spotlight connections.
2. Select **View | Options**.
3. Select **Storage | Clear history**.
4. Select the repositories to delete.
5. Click **Delete**.

Related Topics

About Spotlight History

History limits

To set disk space for Spotlight history

1. Select **File | Disconnect All** to close all open Spotlight connections.
2. Select **View | Options**.
3. Select **Storage | History limits**.
4. Configure as appropriate.

Option	Description
Limit disk space usage	Select to limit the amount of space allocated for files in the history repository. Select how much space to allocate.
Limit repository period	Select to limit the length of time files are stored in the history repository. Select the period of time. **Note**: When clear, Spotlight stores the snapshot files indefinitely.

Related Topics

About Spotlight History

History location

To set where to save Spotlight history

1. Select **File | Disconnect All** to close all open Spotlight connections.
2. Select **View | Options**.
3. Select **Storage | History location**.
4. Configure as appropriate.

Option	Description
Select the path where history will be stored	Enter where you want to store historical information, or click on the folder icon to browse for its location.
Compress history files	The Spotlight history files stored in the repository may contain very large amounts of information. Select this option to compress history files when storing them.
Space available on	Shows how much space is available to store your snapshot files in the specified location.

Related Topics

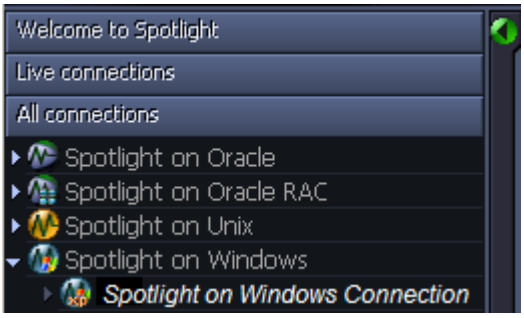
About Spotlight History

Welcome on Windows

Spotlight is a powerful diagnostic and problem-resolution tool for Windows operating systems. Its unique user interface provides you with an intuitive, visual representation of the activity on the host machine.

Connect to Windows Systems

1. From the Spotlight Browser select **All Connections | Spotlight on Windows**
2. Select the Windows system. If the Windows system is not listed then follow the instructions to add a new connection.



Add A New Connection

You will need	Description
Administrator access	Ensure your login to the Windows machine has Administrator access privileges. To add a new connection to the Windows machine you are currently using, ensure you are logged in to the machine with Administrator access privileges. If necessary, logout and login again.
Privileges	Spotlight retrieves its data from Windows performance counters and the windows registry of the monitored system. An administrator login to the Windows machine has such access.
Remote connectivity	To add a new connection to a Windows machine other than the one you are currently using, ensure the machine is accessible to the Spotlight client. Spotlight uses NetBIOS traffic to retrieve **perfmon** and registry information, so any firewalls between the Spotlight on Windows

You will need	Description
	client and the machine being monitored must allow this traffic to pass through. Troubleshooting Spotlight on Windows

1. Click **File | Connect**

2. Select **Spotlight on Windows** on the Connections menu.

3. Double-click **Add new connection**.

4. Fill in the **Details** page of the Properties window as follows:

Field	Description
Connection name	Enter the preferred display name for the Windows machine. **Note**: If left blank, the **Connection name** field resets to the value of the **Address** field.
Local Machine	Select to diagnose the machine you are now using.
Address	Enter the hostname, IP address or URL to the Windows machine. **Note:** The value changes to "." and cannot be edited when **Local Machine** is selected.

Logon Details

Note: Not applicable when **Local Machine** is selected.

Field	Description
Domain	The name of the domain the user belongs to (to login to the Windows machine). **Note**: If you intend to leave **User** blank then **Domain** should also be left blank.
User	Enter the user name to login to the Windows machine. **Note:** Ensure this user has administrator rights.
Password	Enter the password to login to the Windows machine. **Note**: Applicable when **Save password details (for this connection)** is selected.

Select **Save password details (for this connection)** to save the password.

Note: Not applicable when **Local Machine** is selected.

5. Close the dialog.

Click	Description
Connect	Save changes and open the connection in Spotlight.
OK	Save changes. Do not open the connection in Spotlight.
Cancel	Do not save changes.

Background Information

What Is Spotlight?

Spotlight is a powerful diagnostic and monitoring tool for Unix operating systems. Its unique user interface provides you with an intuitive, visual representation of the activity on your host machine. Graphical flows

illustrate the rate at which data is moving between system components. Icons display the value of key statistics and measurements (metrics).

The power of Spotlight lies in its ability to provide visual and audible warnings if the performance metrics exceed acceptable thresholds. The components and dataflows change color to show you the source of the problem.

A range of visual graphs and tabular grids provide you with detailed information about your Unix hosts. This information can be viewed on the screen or printed.

You can set Spotlight to warn you when a threshold is reached. You may set a number of thresholds so that warning messages are displayed well before the traffic levels into or out of a host become critical. Spotlight uses a number of different techniques to warn you when a Unix host is exceeding a threshold.

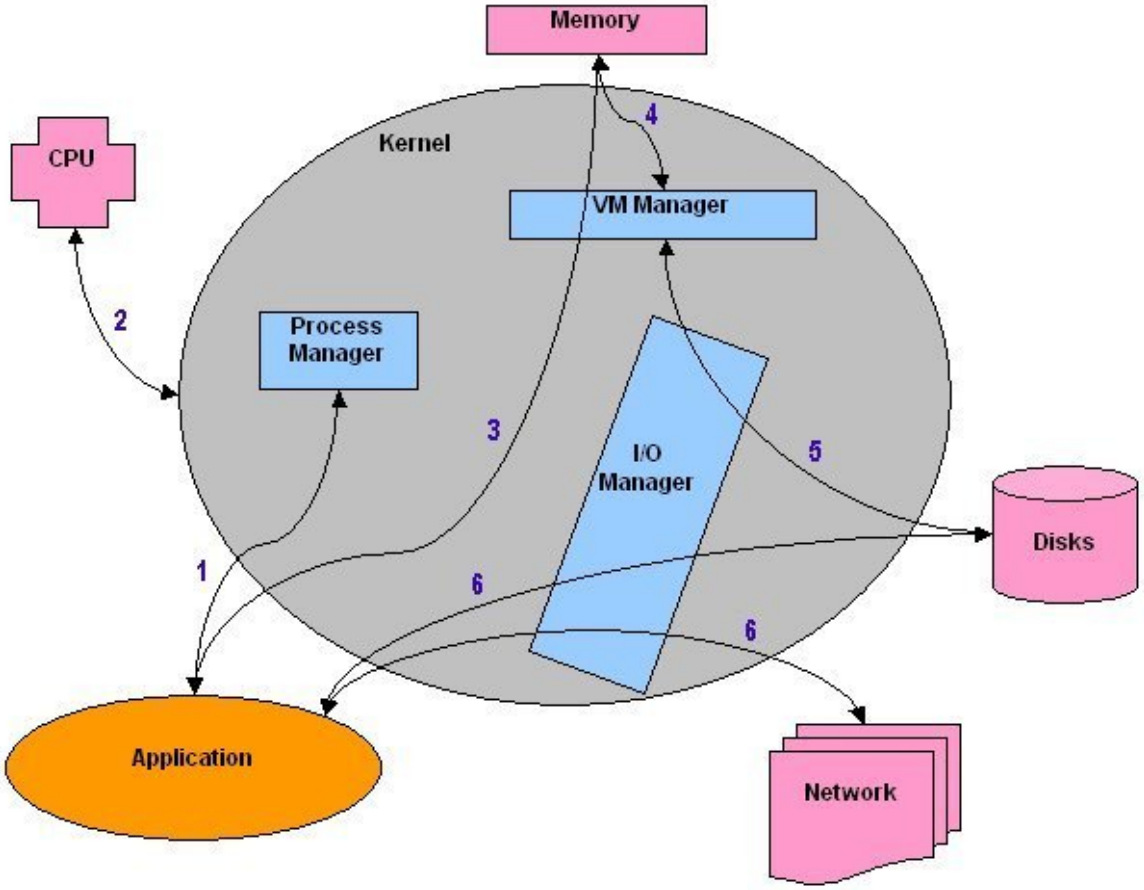
When Spotlight detects a condition that it considers is a potential problem, it not only informs you about it, but also advises you what you could look at to diagnose the problem further, and suggests corrective actions.

Features of Spotlight on Windows

- Spotlight presents a visual representation of process flows within a Windows operating system, allowing you to observe actual system activity in real time.
- It visually identifies system bottlenecks and provides extensive drilldown capabilities.
- It displays the details of problem areas, including CPU resources, paging activity, and memory use, for rapid problem resolution.
- It uses visual and audible warnings to alert you when performance metrics exceed acceptable thresholds.
- Its drilldowns provide detailed information about a specific component allowing you to pinpoint the source of problems.
- Spotlight learns the normal range of values for your system.
- Spotlight assesses the normal rate of process flows via a calibration process and sets the display speed of the visual indicators accordingly.
- It can simultaneously observe multiple systems.
- It is easy to install.

Windows Architecture Overview

This diagram summarizes the architecture of Windows. This architecture is the basis for the design of the Spotlight home page. Spotlight Home Page



For more information on the Windows architecture, see *A Review of the Windows Architecture* in the online help.

Home Page

Spotlight Home Page

The Spotlight home page shows the flow of information and commands between various sub-components and the size and status of internal resources such as processes, disk files and memory structures.

Related operating system statistics are grouped together on panels that are connected by a series of graphical flows and icons. Spotlight updates these flows in real time so you can see how quickly data is moving through the system. The icons change color as Spotlight alarms are raised, upgraded, downgraded and canceled.

The panels on the Spotlight home page are described in more detail next. For a full discussion of the panels, see the Spotlight online help.

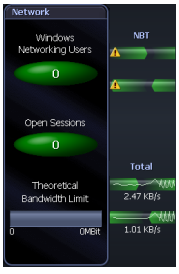
Tip: Hover the mouse pointer over a panel component for more information.

System Panel

The **System** panel indicates:

- The type and version of operating system.
- The name of the service pack installed on the system (if any).

Network Panel



The **Network** panel shows the total number of connected users, and the rate at which packets are being sent from and received by the system:

- The number of clients connected to this system.
- The current number of Windows Networking sessions open on this machine.
- The level of network traffic graphed against a "theoretical" maximum bandwidth for the network card specified.

The flows between the **Network** panel and the **CPU** panel represent the rate of data transfer between the Windows host and the connected network.

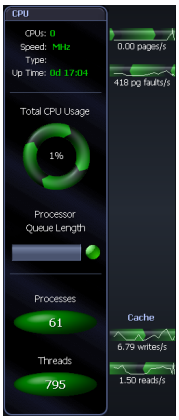
Event Log Panel

The **Event Logs** panel provides a link to the Event Log drilldown.

- It alerts you to items that have reached alarm status as per your configuration of Event Log alarms.
- The button icon shows the number of Event Log alarms that have been raised but not yet cleared. You can acknowledge and clear alarms via the Event Log drilldown.

Note: This button is enabled on **Enable Event Logs** selected. See the online help for more information.

CPU Panel



The **CPU** panel shows processor and load information for the Windows system:

- The number of processors installed in the system.
- The speed of the processors installed in the system.
- The type of processors installed in the system: Intel Pentium for example.
- The length of time since Windows was last booted (started).
- The amount of CPU being used on the system.
- The average number of threads (program execution units) that are waiting to run on each processor.
- The number of applications and services that are currently active on the system.
- The number of threads currently active in all processes.

The flows between the **CPU** panel and the **Memory** panel represent paging information between CPU and memory on the Windows system. The flows include the number of memory pages written out and read in to memory per second.

Memory Panel

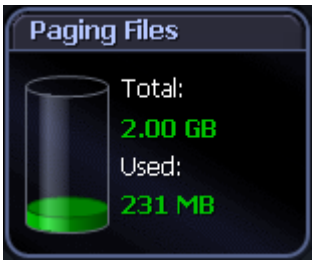
The **Memory** panel shows detailed information on the Windows system.:

- The total amount of physical memory in RAM.
- The amount of physical memory available to applications.
- The percentage of physical memory that is available to applications.
- The amount of physical memory (RAM) Windows is using.
- The maximum amount of virtual memory available without expanding the paging file.
- The amount of virtual memory available.
- The percentage of virtual memory available to applications.
- The amount of Virtual Memory available without expanding the paging file
- How much Virtual Memory is in use.
- The percentage of soft pages versus hard pages found in RAM.
- The percentage of disk requests that are found in cache memory.

The flows between the **Memory** panel and the **Paging Files** panel represent the rate at which virtual memory pages are written to disk from memory, and swapped from disk into memory.

The flows between the **Memory** panel and the **Disks** panel represent the rate at which memory is written to disk and read from disk.

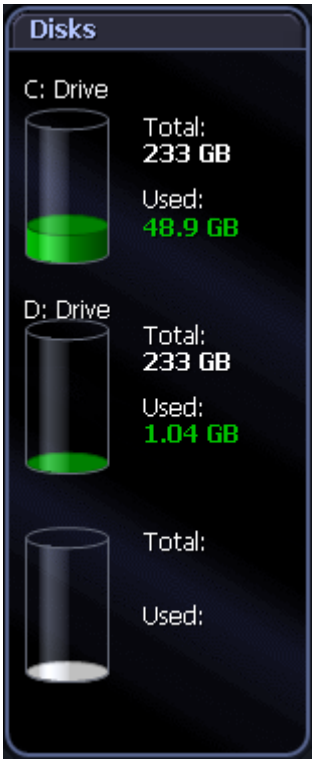
Paging Files Panel



The **Paging Files** panel shows information on paging space for all paging files active on the system.

- The total size (MB) of all paging files on all disks in the system.
- The current amount of space (MB) being used by all paging files on all disks in the system.

Disks Panel



The **Disks** panel shows information for each logical disk on the system.:

- The drive letter.
- The size of the disk (MB).
- The space used on the disk (MB).

Files Panel

The **Files** panel shows the number of files whose file size is currently being tracked by Spotlight on Windows.

Note: This panel is hidden while no files are being tracked. To add / remove files, right click on the Files panel and select **Files Options**. See the online help for more information.

Alarms

Spotlight Alarms

Spotlight alerts you to problems with your system by issuing an alarm. You can configure Spotlight in the level of severity that constitutes an alarm, to disable an alarm, and the actions Spotlight takes on raising the alarm.

When an alarm is raised Spotlight performs one or more of the following actions:

- Changes the color or intensity of relevant components.
- Gives audible warnings.
- Sends email notifications.

Actions you can take on an alarm being raised include:

- View details of the statistics that caused the alarm in a Spotlight drilldown page. Spotlight Drilldowns
- View the Spotlight online help.
- View details of the alarm in the Spotlight **Alarm Log** drilldown.
- Snooze the alarm.
- Save the alarm details.
- Filter the list of alarms.

Following are the alarms specific to Spotlight. For possible solutions to the problems indicated by these alarms or for information on how to diagnose problems further, see Spotlight alarms in the online help.

This alarm...	Alerts you...
Cache alarms	When the level of cache activity exceeds a threshold.
Disk alarms	As the logical disk is filling up, and also when disk activity exceeds a threshold.
Event Log alarm	When an Event Log entry is found which matches an active Event Log severity rule.
Memory alarms	When the available memory (both physical and virtual) drops below specified thresholds.
Paging alarms	When there is excessive paging activity on the target system.
Process alarms	When processes sustain a high CPU load.
Windows CPU alarm	When the server's CPU usage exceeds a specified percentage.

Cache Reads Alarm

This alarm is activated when the level of cache reads exceed a threshold.

High cache reads do not usually indicate a problem.

When this alarm is current you should look at the **Processes** tab in the **Processes** drilldown to see which applications are busy. Look at **Page Faults/Sec** and **% CPU**. These columns will show which applications are causing the high level of cache reads.

Related Topics

Processes Drilldown

Cache Writes Alarm

This alarm is activated when the level of Cache Writes exceeds a threshold.

High cache writes usually mean one of the following:

- There is a lot of updating occurring in memory pages.
- An application is requesting to write information directly to disk.

When this alarm is current you should look at the **Processes** tab on the **Processes** drilldown to see which applications are busy. Look at page faults delta and CPU time. These columns will show which applications are causing the high level of cache writes.

Related Topics

Processes Drilldown

Current Users Nearing Limit Alarm

When the current user count nears the number of user licenses available on the machine, it may be time to upgrade the license count on that particular system.

Diagnose Single Application Alarm

This alarm is raised when a process is terminated that was selected for diagnosis in the Windows Applications Metrics options in the Spotlight on Windows Options window.

Related Links

Windows Applications Metrics

Disk Alarm

This shows that the logical disk is filling up or is full.

To rectify this:

- Inform users of the disk volume to clean up space by deleting or moving files no longer required.
- Go through and delete files that are no longer required from the volume.
- Move files to a volume with spare space.
- Purchase more disk capacity for the system, and move data onto it.

It is recommended that a backup of the system is taken before any files are moved or deleted.

Disk Reads Alarm

The **Disk Reads** alarm is activated when the level of traffic being transmitted from this disk exceeds a threshold. Sustained high disk activity can cause an overall degradation of system responsiveness.

When this alarm is current you should look at:

- The **Page File Transfers** chart on the **Paging Activity** page of the **Memory** drilldown. High paging in suggests that the high number of disk reads could be due to system paging. Adding more memory may alleviate the problem.
- The **NBT** page of the **Network** drilldown and see if any systems are transferring a large amount of data.
- The **Disk Queue** chart on the **Physical Disks Activity** page of the **Disks** drilldown. If the disk queue length is high on a single physical disk you can look at:
    - Spreading frequently accessed data over multiple physical disks.
    - Spreading page files over multiple physical disks.
    - Implementing a faster disk subsystem.
    - Implementing RAID striping technology.

If the high number of reads is causing an overall degradation of the system, consider upgrading the disk subsystem (controller and/or disks).

Related Topics

Summary Page

NBT Page

Physical Disk Activity Page

Disk Writes Alarm

The **Disk Writes** alarm is activated when the level of traffic being transmitted to this disk exceeds a threshold. Sustained high disk activity can cause an overall degradation of system responsiveness.

When this alarm is current you should look at:

- The **Page File Transfers** chart on the **Paging Activity** page of the **Memory** drilldown. High paging out suggests that the high number of disk writes could be due to system paging. Adding more memory may alleviate the problem.
- The **NBT** page of the **Network** drilldown and see if any systems are transferring a large amount of data.
- The **Disk Queue** chart on the **Physical Disks Activity** tab of the **Disks** drilldown. If the disk queue length is high on a single physical disk you can look at:
    - Spreading frequently accessed data over multiple physical disks.
    - Spreading page files over multiple physical disks.
    - Implementing a faster disk subsystem.
    - Implementing RAID striping technology.

If the high number of writes is causing an overall degradation of the system, consider upgrading the disk subsystem (controller and/or disks).

Related Topics

Summary Page

NBT Page

Physical Disk Activity Page

Event Log Alarm

This alarm becomes active when an Event Log entry is found which matches an active Event Log rule.
You can enable event logs and set event log rules. Windows Event Log Metrics

Related Topics
Event Log Page
Event Log Panel
Windows Event Log Metrics

Logical Disk Statistics Alarm

This alarm is activated when disk-based performance counters are not enabled or not updated.

Windows 2000

Not all disk-based performance counters are enabled by default on Windows 2000 systems. If this is the case, Spotlight on Windows cannot retrieve the data in these counters, and the disk activity flows (to the left of the **Disks** panel) are disabled for this machine.

To rectify this situation:

1. Go to the machine's command prompt and type:
   diskperf -y
2. For this change to take effect, you then need to reboot the system under diagnosis.

Dynamic disks and Windows 2000

Windows 2000 systems now have additional support for dynamic disks, but the disk performance counters under Windows 2000 have not been updated to report this information correctly. Because of this, Spotlight on Windows cannot retrieve the data in these counters, and the disk activity flows (to the left of the **Disks** panel) are disabled for this machine.

To rectify this situation:

- Remove all dynamic disks from the machine, or
- Upgrade the machine to the Windows XP operating system.

Related Topics
Disks Panel

Low Memory Alarm

This **Low Memory** alarm is activated when the available memory drops below a threshold. This can result in:

- Applications being unable to secure additional memory.
- New programs being unable to open successfully.
- General performance degradation due to excessive paging.

When this alarm is current you should:

- Look at the **Processes** page in the **Processes** drilldown. Check the **Mem Usage (MB)** column for processes using excessive amounts of memory. You can:
    - Close those applications using excessive memory.
    - Change the maximum memory usage setting for those applications using excessive memory. Refer to the relevant documentation to find out if this setting is supported by the application.
- Purchase more physical memory for your system.
- Determine if any programs have a memory leak. To do this:
    1. Restart your machine to ensure fresh memory usage by all applications.
    2. Use the **Microsoft Performance Monitor** tool and set the update interval to 10 minutes.
    3. Add the **Working Set Peak** counter for all applications from the **Process** object.
    4. Leave the application running on the system overnight.
    5. If there is a memory leak that can be viewed in a day, it will show up with the **Working Set Peak** graph for one of the applications rising smoothly. If the results are inconclusive after a day, some system applications that have a memory leak may exhibit the behavior over a week or more. Adjust the update interval to accommodate the extended period (update once per hour or more).

Related Topics

Processes Drilldown

Missing Performance Counters Alarm

The Missing Performance Counters alarm becomes active when performance counter data is unavailable. This may occur when:

- The machine is unusually busy, or
- The performance counter has been disabled.

To verify the performance counters are unavailable, run Microsoft Performance Monitor and look for the Memory and Processor performance objects in the Add Counters dialog for the machine being diagnosed. If these objects are not listed then they need to be enabled. To do this, download and install Exctrlst.exe from the Microsoft download site.

Run the utility and do the following:

1. Edit the Machine Name to show the name of the machine being diagnosed.
2. Click the **Refresh** button.
3. Select **Service** as the sort order.
4. Select **PerfOS** in the counter list.

5. Check the **Performance Counters Enabled** checkbox if unchecked.
6. Repeat steps 4-5 for the PerfDisk, PerfNet and PerfProc counters.
7. Restart the machine being diagnosed to enable the counters.

Network Failure Alarm

This alarm becomes active when you lose the Spotlight connection to a machine under diagnosis. This may occur when:

- The network is down (and all open connections are lost), OR
- The remote machine is rebooted, OR
- One of the services required by Spotlight is down.

Look for the following on the machine that has raised the alarm:

- Is the machine running?
- Does it respond to commands?
- Do error messages appear on the screen or in the event logs?
- Can it "ping" other machines successfully?
- Can it access shared folders on the network?
- Are the Remote Procedure Call, Remote Registry and Windows Management Instrumentation services running?

If no problems are found, try to reconnect to the machine via Spotlight.

Page Faults Alarm

This alarm is activated when the number of pages being swapped exceeds a threshold. Sustained high paging rates can adversely effect the performance of a system.
When this alarm is current, you should:

- Look at the **Processes** page on the **Processes** drilldown to see which process is causing the paging. Look at the **Page Faults/sec** column. This will help you determine the cause of paging.
- Look at the **Paging** chart on the **Summary** page of the **Memory** drilldown. This shows how long the high paging has been occurring. Short periods of high paging are acceptable, but if the paging rate is high for a sustained period, there may be a problem with the system.
- Consider adding more physical memory to the system.
- Stop unnecessary services and processes on the system.

Related Topics
Processes Drilldown

Summary Page

Page File Location Alarm

This alarm is activated when paging is low, but the disk activity on a paging file disk is high.

You may need to investigate moving paging files to another disk.

Page Hits Alarm

This alarm is activated when the proportion of page requests that can be sourced from memory rather than disk drops below a threshold.

When this alarm is current you should:

- Look at the **Paging** chart in the **Summary** page of the **Memory** drilldown to see if a high level of paging has been occurring for an extended period. Spikes in requirements are expected.
- Look at the **Page Faults/sec** column on the **Processes** page in the **Processes** drilldown.

  This will tell you which applications are making the most page requests. If this is an ongoing problem, look at spreading the load between multiple systems.
- Look at increasing the physical memory of the system.

Related Topics

Summary Page

Processes Drilldown

Page Outs Alarm

This alarm is activated when the number of pages being written to disk exceeds a threshold. Sustained high paging rates can adversely effect the performance of a system.

Only those pages that have been altered are written to disk. Pages that have not been changed are dropped.

When this alarm is current, you should:

- Look at the **Processes** page on the **Processes** drilldown to see which process is causing the paging. Look at the **Page Faults/sec** column. This will help you determine the cause of paging.

  A high level of page faults and page outs indicates memory thrashing. If this is the case, the system may require more memory.
- Look at the **Paging** chart on the **Summary** page of the **Memory** drilldown. This shows how long the high paging has been occurring. Short periods of high paging are acceptable, but if the paging rate is high for a sustained period, there may be a problem with the system.
- Consider adding more physical memory to the system.
- Stop unnecessary services and processes on the system.

Related Topics

Processes Drilldown
Summary Page

Page Reads Alarm

This alarm is activated when the number of pages being read in exceeds a threshold. Sustained high paging rates can adversely effect the performance of a system.

When this alarm is current, you should:

- View the **Processes** page on the **Processes** drilldown to see which process is causing the paging. Look at the **Faults/s** column to determine the cause of paging.
- View the **Page File Transfers** chart on the **Paging Activity** page of the **Memory** drilldown. This shows how long the high paging in has been occurring. Short periods of high paging are acceptable, but if the paging rate is high for a sustained period, there may be a problem with the system.
- Consider adding more physical memory to the system.
- Stop unnecessary services and processes on the system.

Related Topics
Processes Drilldown
Summary Page

Page Writes Alarm

This alarm is activated when the number of pages being written to disk exceeds a threshold. Sustained high paging rates can adversely effect the performance of a system.

Only those pages that have been altered are written to disk. Pages that have not been changed are dropped.

When this alarm is current, you should:

- Look at the **Processes** page on the **Processes** drilldown to see which process is causing the paging. Look at the **Page Faults/Second** column to determine the cause of paging. A high level of page faults and page outs indicates memory thrashing. If this is the case, the system may require more memory.
- View the **Paging** chart on the **Summary** page of the **Memory** drilldown. This shows how long the high paging has been occurring. Short periods of high paging are acceptable, but if the paging rate is high for a sustained period, there may be a problem with the system.
- Consider adding more physical memory to the system.
- Stop unnecessary services and processes on the system.

Related Topics
Processes Drilldown
Summary Page

Paging File Alarm

This alarm is activated when the utilization of the paging file exceeds a threshold.

When this alarm is active you should:

- Look at the **Processes** page of the **Processes** drilldown. Look at the **Virtual MB** column to see which applications are using the most virtual memory.
- Some applications (such as Microsoft Exchange or Microsoft SQL Server) can have their memory utilization limited.
- Close any superfluous processes.
- Look at increasing the size of the page file.
- Look at increasing the amount of RAM in the machine.

Related Topics

Processes Drilldown

Paging File Disk Location Alarm

This alarm becomes active when there is more than one paging file on a single physical disk.

This can cause performance degradation – especially on IDE disks. IDE disks allow only a single disk operation to be active on the bus at any time.

To rectify this:

1. Open the Windows Control Panel.
2. Open the System control panel.
3. Click the Advanced tab.
4. Choose Performance Settings, and change the paging file allocations.

Percentage Bandwidth Alarm

The total network bandwidth capacity of the specified network card is nearing the limit where it is saturating the network link. If this is happening regularly, look at:

- The **NBT** page of the **Network** drilldown to see if any users or other systems are copying an inordinate level of data between systems.
- Moving network applications or shared files to another machine to balance the load.
- Upgrading the network subsystem to a faster technology.
- Adding an additional network card to the machine and configuring the system to utilize it.

Tip: If there are multiple network cards on the target system, use the Windows Network Card Display options in the Spotlight on Windows Options window to choose the one whose data you want to display.

Related Topics

NBT Page

Windows Network Card Display

Physical Memory Usage Alarm

This alarm becomes active when a process is suffering a potential memory leak.

A memory leak occurs when a program continues requesting memory over a period without releasing any memory.

For some programs (such as Spotlight) this behaviour is expected as the program stores information over an extended period for dynamic near-history analysis.

Process CPU Utilization Alarm

This alarm becomes active when a process is sustaining a high CPU load.

When this alarm is active, you may need to:

- Investigate what the application is doing: a high CPU load may be an expected activity.
- Terminate the application if it is not responding. Some applications do not terminate through Windows Task Manager; if this does not work, use the KILL.EXE command from the Windows 2000 resource kit, or the TASKKILL.EXE command on Windows XP or Windows 2003 systems.
- Consider upgrading the system's processor.

Processor Queue Length Alarm

This alarm becomes active when the length of the processor thread queue reaches a threshold for sustained activity.

A long sustained queue length indicates a processor bottleneck - leading to overall system degradation.

To rectify this, you should look at:

- The **Processes** page of the **Processes** drilldown to see which Windows process is consuming the CPU.
- Possibly moving some processing activities to another system.
- Add an additional CPU to the system – the waiting threads will be load balanced between all available processors.
- Upgrade to a faster CPU. This will allow the CPU to process threads faster, but may not reap the same rewards as adding an additional CPU.

Related Topics

Processes Drilldown

Read Hit Alarm

This alarm is activated when the proportion of file read requests that can be sourced from memory cache rather than disk drops below a threshold.

When this alarm is current you should:

- Look at the **NBT** page of the **Network** drilldown.

  If there is a large number of read requests coming from the network clients, the cache can be inundated and temporarily of little use.
- Look at increasing the physical memory of the system.

Related Topics

NBT Page

System Up Time Alarm

This alarm is activated when the system up time exceeds the value specified in the related threshold.

Total CPU Usage Alarm

The Windows CPU alarm is activated when the average CPU utilization of the system exceeds a threshold. This value is taken over a specific number of refresh intervals (by default, four).

Sustained high CPU utilization can adversely effect the performance of the system.

When this alarm is current, you should:

- Look at the **Processes** tab on the **Processes** drilldown to see which Windows process is consuming the CPU.
- Consider upgrading to a faster CPU or adding processors to your system.
- Look at the **Paging Activity** page on the **Memory** drilldown to see if there is a high paging rate. High paging rate can cause inflated CPU utilization. If this is the case, adding more memory to the system may overcome the problem.

Related Topics

Processes Drilldown

Paging Activity Page

Virtual Address Space Alarm

This alarm becomes active when a process approaches the two gigabyte virtual address space limit imposed by Windows. Processes attempting to exceed this limit may fail catastrophically. Any process that approaches this limit should be closed to free the address space and then restarted if required.

Regardless of the amount of physical memory in your system, Windows uses a virtual address space of 4 GB, with 2 GB allocated to user-mode processes (for example, applications) and 2 GB allocated to kernel-mode processes (for example, the operating system and kernel-mode drivers).

NOTE: Some versions of Windows Server allow users to change this ratio to 3 GB for user-mode and 1 GB for kernel-mode processes via the /3GB switch in boot.ini. Versions that support this switch are:

- Windows 2000 Advanced Server
- Windows 2000 Datacenter Server
- Windows Server 2003 Enterprise Edition
- Windows Server 2003 Datacenter Edition.

Windows Server 2003 x64 Editions do not support the /3GB switch. On these systems:

- 32 bit processes compiled with the /LARGEADDRESSAWARE switch can increase their virtual address space limit to 4GB
- 64 bit processes can access up to 8TB of virtual address space.

Thus this alarm is disabled for 64 bit systems.

Virtual Memory Alarm

This alarm is activated when free virtual memory drops below a threshold.

When this alarm is current you should:

- Look at the **Processes** page on the **Processes** drilldown. Look at the VM Size (MB) column to see which applications are using the most virtual memory.

  Some applications (such as Microsoft Exchange or Microsoft SQL Server) can have their memory utilization limited.
- Close any superfluous processes.
- Look at increasing the size of the page file.
- Look at increasing the amount of RAM in the machine.

Related Topics

Processes Drilldown

Windows CPU Alarm

The Windows CPU alarm is activated when the average CPU utilization of the system (taken over a specific number of refresh intervals; the default is four) exceeds a threshold. Sustained high CPU utilization can adversely effect the performance of the system.

When this alarm is current, you should:

- Look at the **Processes** page on the **Processes** drilldown to see which Windows process is consuming the CPU.

- Consider upgrading to a faster CPU or adding processors to your system.
- Look at the **Summary** page on the **Memory** drilldown to see if there is a high paging rate. High paging rate can cause inflated CPU utilization.

  If this is the case, adding more memory to the system may overcome the problem.

Related Topics

Processes Drilldown

Summary Page

WMI Statistics Alarm

For Spotlight on Windows to retrieve WMI information, Spotlight must be able to make a WMI connection between the Spotlight machine and the remote machine.

This connection is made with the user credentials specified for this profile. If this user does not have administrator rights on the remote machine then the connection will fail with an access denied error. To rectify this, either make the specified user an administrator or change the credentials to those of an administrator.

You can continue to diagnose a machine without a WMI connection however some information, such as the **Disk Summary** drilldown, will not be available for this machine.

Note: For troubleshooting information, see WMI connection problems.

Related Topics

Disk Summary Page

WMI Connection Problems

Drilldowns

Spotlight Drilldowns

When you have isolated a problem, you can display a drilldown page, whose charts and tables provide a detailed breakdown of the underlying statistics.

Following are Spotlight drilldowns.

Drilldown	Click to open	Description
Processes		Detailed information about all processes and services currently running on the machine you are diagnosing.
CPUs		Details of recent processor activity as measured by Windows.
Memory		Details about recent physical and virtual memory usage.

Drilldown	Click to open	Description
Disks		Information about the logical and physical disks on the system you are diagnosing.
Network		Detailed information about the network activity to and from the system being diagnosed.
Activity Summary		Summaries of recent Windows activity including, paging and packet rates, CPU usage across all processors, the number of threads waiting to be run, and the number of I/O requests that were queued for each logical disk.
Event Log		Recent event log items that have occurred on the target machine.
Single Application		Detailed information about specified individual processes (or a group of processes) on a Windows system. Choose the processes you want Spotlight to analyze by **View | Options | Data collection | Windows applications metrics**.
Alarm Log		Information on alarms, including the name of the component that issued the alarm, the date and time at which the alarm was logged, and the severity of the alarm.

Processes Drilldown

Processes

Processes Page

The **Processes** page contains a table (grid) that lists all Windows processes that are currently running on the system. (A process is one instance of an application program that is currently executing on the Windows machine.)

To open the Processes page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Processes | Processes**.
   

Note: Not all of these columns will be visible by default. To view hidden columns, right-click a column heading and choose **Organize Columns**... from the shortcut menu. See Show, Hide & Order Columns for more information.

Column	Description
Process	The image name of the application. This can be used as a parameter in system programs, such as the TASKKILL.EXE command on Windows XP or Windows 2003 systems.

Column	Description
	Notes: • Click on a process to display sub pages. Process Details • Right click on the process and select **End Process** (if enabled) to end any processes currently running on the monitored machine (local or remote). • Right click on the process and select **Diagnose Process** (if enabled) to select the processes to monitor performance of in the Single Application drilldown. Windows Files Metrics • Some of the processes may be running other, secondary, processes. Right click the grid and select **Show as Tree** to display the secondary processes as branches of the initial process.
PID	Process ID. This is unique to each process running on the system. This can be used as a parameter in system programs, such as the TASKKILL.EXE command on Windows XP or Windows 2003 systems.
% CPU	The percentage of CPU time that the process is currently consuming. This is an instantaneous result.
Memory Usage (MB)	The current size of the working set of the process.
Virtual Memory Size (MB)	The current memory allocated to the process that cannot be shared with other processes.
Elapsed time	How long it has been since the process was started.
Handles	The overall number of resources that the process currently has open. A handle is a value used to uniquely identify a resource so that a process can access it.
Threads	The number of active threads in the process. A thread is a process execution unit.
Page Faults/sec	An instantaneous view of how many page faults are occurring for the process.
IO/sec	Shows the number of IO accesses (such as hard disk reads and writes and memory reads and writes) being performed by the process.
% Kernel	The percentage of CPU time that the process is currently consuming in privileged mode. (Privileged mode is designed for operating system components and allows direct access to hardware and all memory.)
% User	The percentage of CPU time that the process is currently consuming in user mode. (User mode is a restricted processing mode designed for applications, environment subsystems, and integral subsystems.
Affinity	For systems with multiple CPUs, the process affinity, which can be set via the Windows Task Manager, specifies the CPUs that are permitted to run the current process.

Column	Description
	Use the Configure affinity option to tell Spotlight on Windows about the CPUs where the specified process is permitted to run. This enables Spotlight to report the CPU usage for that process with accuracy. Right click on the process and select **Configure Affinity** (if enabled). See Process Affinity Dialog for more information. **Note**: Spotlight itself CANNOT set process affinity. The Processes Page And Process Affinity
IO data bytes/sec	The rate at which the process is reading and writing bytes in all its I/O operations.
IO other bytes/sec	The rate at which the process is issuing bytes to I/O operations that do not involve data (control operations, for example).
IO other operations/sec	The rate at which the process is issuing I/O operations that do not involve data (control operations, for example).
IO read bytes/sec	The rate at which the process is reading bytes from I/O operations.
IO Reads/sec	Shows the number of IO reads (such as hard disk reads and memory reads) being performed by the process.
IO write bytes/sec	The rate at which the process is writing bytes to I/O operations.
IO Writes/sec	Shows the number of IO writes (such as hard disk writes and memory writes) being performed by the process.
Page file bytes	The current number of bytes that this process has used in the paging file(s).
Page file bytes peak	The maximum number of bytes that this process has used in the paging file(s).
Parent ID	The ID of the process that created the current process.
Peak Address Space (MB)	The peak size of the total address space of the process since it was started.
Peak Memory Usage (MB)	The peak size of the working set of the process since it was started.
Pool nonpaged bytes	The number of bytes of memory currently used by the server that cannot be paged out.
Pool paged bytes	The number of bytes of memory currently used by the server that can be paged out.
Priority	The priority of the process. Program priorities range from 1 to 31, and are dependant upon what the process is currently executing. Processes started in "Real Time" mode run with a

Column	Description
	priority of 16 to 31, whereas processes with "High", "Normal" or "Low" settings run in a priority range of 1 to 15.
Services	The services (if any) associated with the current process permitted to run the current process.
User	The owner of the process on a Windows Server machine (for example, Windows 2000 Advanced Server or Windows Server 2003).
Virtual Address Space (MB)	The current size of the total address space of the process. **Note**: A process is limited to 2GB of address space no matter how much free RAM may be available.

Process Details

Process Details Page

The **Process Details** subpage contains a detailed list of properties for a selected process

To open the Process Details subpage

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Processes | Processes**.
   
3. Select a process to view its details

You can view the information that follows:

Item	Description
Process name	The image name of the application. This can be used as a parameter in system programs, such as the TASKKILL.EXE command on Windows XP or Windows 2003 systems.
Process ID	This is unique to each process running on the system, and can be used as a parameter in system programs, such as the TASKKILL.EXE command on Windows XP or Windows 2003 systems.
Memory Usage (MB)	The current size of the working set of the process.
Virtual Memory Size (MB)	The current memory allocated to this process that cannot be shared with other processes.
Virtual Address Space (MB)	The current size of the total address space of the process. **Note**: A process is limited to 2GB of address space no matter how much free RAM may be available.

Item	Description
Processor %	The percentage of CPU time that the process is currently consuming. This is an instantaneous result.
CPU User Mode %	The percentage of CPU time that the process is currently consuming in user mode. (User mode is a restricted processing mode designed for applications, environment subsystems, and integral subsystems.)
CPU Kernel Mode %	The percentage of CPU time that the process is currently consuming in privileged mode. (Privileged mode is designed for operating system components and allows direct access to hardware and all memory.)
Elapsed Time	How long it has been since the process was started.
User	The owner of the process on a Windows Server machine (for example, Windows 2000 Advanced Server or Windows Server 2003).
Process Affinity	For systems with multiple CPUs, this shows the CPUs that are permitted to run the current process. See Process Affinity Dialog for more information.
Services	The services (if any) associated with the current process.
Handles	The overall number of resources that the process currently has open. A handle is a value used to uniquely identify a resource so that a process can access it.
Threads	The number of active threads in the process. A thread is a process execution unit.
Priority	The priority of the process. Process priorities range from 1 to 31, and are dependant upon what the process is currently executing. Processes started in "Real Time" mode run with a priority of 16 to 31, whereas processes with "High", "Normal" or "Low" settings run in a priority range of 1 to 15.
Page Faults/s	An instantaneous view of how many page faults are occurring for the process.
Reads/s	Shows the number of IO reads (such as hard disk reads and memory reads) being performed by the process.
Writes/s	Shows the number of IO writes (such as hard disk writes and memory writes) being performed by the process.
IO/s	Shows the number of IO accesses (such as hard disk reads and writes and memory reads and writes) being performed by the process.

Process History Page

The **Process History** subpage of the Processes drilldown opens when you click a process in the table (grid) in the Processes page, and then click the Process History tab.

This page shows the recent activity of the selected process in a series of related charts. By default, the charts in the Process History page now record data from the time that Spotlight on Windows was started.

To open the Process Details page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Processes | Processes**.

3. Select a process to view its details.
4. Click **Process History**

Charts on the Process History subpage

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Processor	Shows the percentage of Privileged and User Time. High Privileged time means that the program is predominantly busy accessing resources through operating system requests. High User time means that the program is predominantly CPU-bound with the program code itself.
Read/Writes	Reads / Second – Shows the rate of IO reads (such as hard disk reads and memory reads) being performed by the process. Writes / Second – Shows the rate of IO writes (such as hard disk writes and memory writes) being performed by the process.
Memory	Shows the current memory allocated to the selected process. Memory Usage – Shows the current size of the working set of the selected process. The working set is the set of memory pages touched recently by the threads in the process. Virtual Memory Size – Shows the current size of the memory allocated to this process that cannot be shared with other processes.
Page Faults	Shows the number of page faults being generated by the program. A consistently high value may indicate a lack of memory. However, this metric includes both soft and hard page faults; as such, there may be no associated problems.

Note: The time frame displayed in the charts will depend on the historical settings you have chosen. See History Browser for more information.

Process Threads Page

The Process Threads sub-page of the Processes drilldown opens when you click a process in the table (grid) in the Processes page, and then click the Process Threads tab.

This page shows current information about the threads that execute the selected process, including:

To open the Process Details subpage

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Processes | Processes**.
   
3. Select a process to view its details.
4. Click **Process Threads**.

You can view the information that follows:

Item	Description
Instance	The instance name of the thread.
Thread ID	The unique identifier of the thread.
% CPU	The percentage of CPU elapsed time that the thread has used in order to execute instructions.
% User	The percentage of elapsed time that the thread has spent executing code in user mode.
% Kernel	The percentage of elapsed time that the thread has spent executing code in privileged mode.
Elapsed time	The total elapsed time the thread has been running.
Switches/sec	The rate of switches from one thread to another.
Thread state	The current state of the thread (Ready, Running or Waiting).
Thread Wait Reason	This is applicable only when the thread is in the Waiting state, and shows the reason why the thread is waiting.

Services Page

The **Services** page shows details of Windows services on the current system.

To open the Services page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Processes | Services**.
   

The **Services** table contains the following information.

Notes:

- Not all of these columns will be visible by default. To view hidden columns, right-click a column heading and choose **Organize Columns**... from the shortcut menu.
- To hide or show the tree structure of the grid, right-click the grid and choose **Hide Tree** or **Show Tree** from the shortcut menu.

Column	Description
Service	This shows the name of the service or driver as reported to the system. The "tree bar" to the left of the names is a dependency tree, showing all services or drivers that depend on the particular service.
Display name	The "friendly" name of the service or driver.
Start up	This shows how the service acts on Windows start: • Automatic – Starts every time the system starts, after the Boot and System devices start. • Manual – Requires manual startup or another service or device to request its startup. • Disabled – Does not start and cannot be started manually. • Boot – Starts every time the system starts, before any other devices start. • Demand – Starts when the device is detected or needed for a specific event. • System – Starts every time the system starts, after the Boot devices start.
Service type	Shows what type of program this is.
Current state	Shows what the current status is of the service or driver. The status can be Running, Not Running or Paused.
Controls accepted	Identifies what can be done with a service or driver. This information is only available for currently running or paused services.
Running PID	The ID of the process associated with the current service (if any).
Process path name	The location of the service executable file.

System Drivers Page

The **System Drivers** page shows details of the Windows kernel drivers and file system drivers on the current system.

To open the Services page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Processes | System Drivers**.

The **System Drivers** table contains the following information for each device.

Note: Not all of these columns will be visible by default. To view hidden columns, right-click a column heading and choose **Organize Columns...** from the shortcut menu.

Column	Description
Driver	The name of the driver as reported to the system. The "tree bar" to the left of the names is a dependency tree, showing all drivers that depend on the particular driver.
Description	The "friendly" name of the driver.
Type	Shows if the device is a Kernel or File System driver.
State	Shows if the driver is Running or Stopped.
Start Mode	This shows how the driver acts when Windows starts. • Automatic – Starts every time the system starts, after the Boot and System devices start. • Manual – Requires manual startup or another service or device to request its startup. • Disabled – Does not start and cannot be manually started. • Boot – Starts every time the system starts, before any other devices start. • Demand – Starts when the device is detected or needed for a specific event. • System – Starts every time the system starts, after the Boot devices start.
Accepts Stop	Identifies whether a driver can be stopped. This information is available only for currently running devices.
File	Shows the file location of the device. This cannot be retrieved for all devices.

CPUs Drilldown

CPUs Page

The **CPUs** page shows performance details of all the CPUs on the current Windows system. The **CPUs** page contains several charts.

To open the CPUs page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **CPUs**.

Charts on the CPUs page

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
CPU Utilization	Shows the CPU utilization for all the processors on the system. Each processor is represented by a single line on the chart, and by an item in the legend at the top right of the chart. **Note:** To view CPU utilization analyzed according to processing mode, see the **Processing** page in the **CPUs** drilldown.
Server Work Queues	Shows the number of threads (program execution units) that are waiting to run on each processor. A sustained queue length greater than four might indicate processor congestion.
Interrupts	The Interrupts chart shows the number of interrupts per second per CPU on the Windows system. Each CPU is represented by a single graph on the chart, and by an item in the legend at the top right of the chart. The Interrupts chart is designed to show if any CPUs on the system are bearing a disproportionate level of the I/O load.
Kilobytes Transferred	The Kilobytes Transferred chart shows the rate of kilobytes transferred per CPU on the Windows system. Each CPU is represented by a single graph on the chart, and by an item in the legend at the top right of the chart.

Processing Page

The **Processing** page on the **CPUs** drilldown shows the overall performance details of CPUs on the current Windows system. To view performance details for individual CPUs in the system, see the CPUs Page and Multiprocessor Page. The **Processing** page contains several charts.

To open the CPUs page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **CPUs | Processing**.
   

Charts on the Processing page

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Total CPU Utilization	Shows the combined CPU utilization for all processors on the system. Two data series are displayed: • User – The percentage of CPU time that is being consumed in User mode. (User mode is a restricted processing mode designed for applications, environment subsystems, and integral subsystems.) • Kernel – The percentage of CPU time that is being consumed in privileged mode. (Privileged mode is designed for operating system components and allows direct access to hardware and all memory.) **Note:** To view CPU utilization for the individual CPUs in the system, see the CPUs Page.
Total Processor Queue Length	Shows the total number of threads (program execution units) that are waiting to be run on ALL processors. A sustained processor queue length greater than three times the number of processors can indicate processor congestion. **Note:** To view Server Work Queues for the individual CPUs in the system, see the CPUs Page.
Total Process & Thread Count	This chart displays the total number of Windows processes and threads that exist. A process is one instance of an application program or system service that is currently executing on the server. Each process will have one or more threads which are the basic entity that can be scheduled. Sophisticated application processes such as SQL Server or Exchange can have dozens of threads running concurrently.
Context Switching	The Context Switching chart shows the rate at which Windows has been processing context switches. A Context Switch occurs when a processor switches from one thread to another. Context switches occur when a running thread voluntarily relinquishes the processor, is preempted by a higher priority ready thread, or switches between user-mode and privileged (kernel) mode to use an Executive or subsystem service.

Multiprocessor Page

The **Multiprocessor** page in the **CPUs** drilldown displays in separate charts the total processor utilization for all CPUs on the Windows system.

To open the Multiprocessor page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **CPUs | Multiprocessor**.
   

Memory Drilldown

Summary Page

The **Memory | Summary** page summarizes recent memory usage.

To open the Summary page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Memory | Summary**.
   

Charts on the Summary page

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Physical Memory	The **Physical Memory** chart shows how much physical memory (RAM) Windows is using. Physical memory usage will normally remain close to the total amount of physical memory installed on the system unless the amount of physical memory you have exceeds the amount of virtual memory that Windows is using. Windows normally keeps some physical memory available (free) for immediate reuse.
Virtual Memory	The total amount of memory in use by the program. This includes Physical Memory and space in the paging file. A steady increase in virtual memory usage can indicate that a process on the system has a memory leak.

<table>
<tr><th>Chart</th><th>Description</th></tr>
<tr><td>Paging</td><td>Shows the rate at which pages are being swapped in and out of memory. The chart displays two data series:
Page ins – The Page Ins value includes hard pages (paging requests that have to go to the paging file on disk) NOT soft pages (requests for memory pages that are not in the program's working set, but still in memory).
Page outs – The Page Outs value provides the number of write requests to the paging file on disk.
A sustained high rate of paging can cause problems with overall system degradation due to disk thrashing and CPU load.</td></tr>
<tr><td>Physical Memory Usage</td><td>The Physical Memory Usage chart shows how Windows is using physical memory.
It displays the following data series:<table><tr><th>Series</th><th>Description</th></tr><tr><td>Free</td><td>Available physical memory not currently in use.</td></tr><tr><td>Processes</td><td>Memory being used by Windows processes. This will normally be the largest area by a significant degree.</td></tr><tr><td>Kernel</td><td>Memory being used by the Windows kernel.</td></tr><tr><td>File Cache</td><td>Memory that Windows is using to cache disk files in order to speed reads and writes.</td></tr></table></td></tr>
</table>

Paging Activity Page

The **Memory | Paging Activity** page shows details of Windows paging activity and page files.

To open the Paging Activity page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Memory | Paging Activity**.


Charts and Grid on the Paging Activity page

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

<table>
<tr><th>Charts and Grid</th><th>Description</th></tr>
<tr><td>Page File Transfers Chart</td><td>The Page File Transfers chart shows recent Windows paging activity. It shows the number of pages read (in) and written (out) per second to and from the Page Files.
Paging occurs when the Windows Virtual Memory Manager moves data or code between physical memory and disk. Sustained high paging rates can degrade system performance significantly.</td></tr>
<tr><td>Page Faults Chart</td><td>The Page Faults chart shows the rate at which Windows is processing page faults. It compares the two types of page fault (soft and hard) and makes it easy to see the ratio between them.
A page fault occurs when a process references a page that is not in that processes working set (the set of pages visible to that process in physical memory). When this happens, the process has to wait while the Windows Virtual Memory Manager retrieves the page from virtual memory.
A soft page fault occurs when Windows finds the required page somewhere in physical memory.
A hard page fault occurs when the page is not in physical memory and Windows has to read it from the page files. This is by far the more expensive of the two as it involves disk I/O. Hard page faults are the cause of paging and can degrade performance significantly.</td></tr>
<tr><td>Page Files Grid</td><td>The Page Files grid shows the page files in use by Windows.
Page files are disk files that the Windows Virtual Memory Manager uses to back physical memory. Code and data is moved between physical memory and the page files as required, giving processes on the system the illusion that there is much more physical memory available than there really is. The process of moving data and code between memory and disk is called paging.
The Page Files grid shows the following:<table><tr><th>Column</th><th>Description</th></tr><tr><td>Location</td><td>Page File location (file name).</td></tr><tr><td>Size</td><td>The page file size (MB).</td></tr><tr><td>Used</td><td>The current Used space (MB) in the page file.</td></tr><tr><td>% Used</td><td>The current Used space as a percentage of the page file size.</td></tr><tr><td>Peak %</td><td>The peak percentage of space used in the specified page file.</td></tr></table></td></tr>
</table>

Cache Page

The **Memory | Cache** page shows detailed information about system cache.

To open the Cache page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Memory | Cache**.


Charts on the Cache page

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Cache Hit Rate	Shows a recent summary of the percentage of file requests that are satisfied by the file cache, and that do not require a disk read.
Cache Size	Shows the recent history of memory allocated to the file cache. Memory allocated to the file cache is dynamic. This is controlled by the Disk Cache Manager, and will alter the level of memory based upon how much physical memory is being used by other applications and is available in the system.
Physical Cache I/O	Shows the rate of Reads and Writes being made to the file cache.
Cache Faults	This chart displays the number of faults that occur when a requested page is not found in the file system cache, and must be retrieved from elsewhere. The chart displays the number of faults, NOT the number of pages faulted in each operation.

Disks Drilldown

Logical Disk Activity Page

The **Disks | Logical Disk Activity** page shows information about the logical disks on this system. It includes I/O information, as well as disk space usage.

To open the Logical Disk Activity page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Disks | Logical Disk Activity**.
   

To view charts on the Logical Disk Activity page

Right-click the **Logical Disk Activity** page and select **View as Chart**.

Notes:

- Each disk is represented by a single line on the chart, and by an item in the legend at the right of the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Disk Reads	Shows a recent summary of the rate at which read requests have been sent to each logical disk.
Disk Writes	Shows a recent summary of the rate at which write requests have been sent to each logical disk.
Disk I/O	Shows a recent summary of the rate at which read and write requests have been sent to each logical disk. This chart is the sum of the **Disk Reads** and **Disk Writes**.
Disk Queue	The Disk Queue chart shows the number of I/O requests that were queued for each logical disk. Disk queue length indicates how heavily loaded a disk subsystem is. High queue lengths mean the disks are struggling to process the I/O load being put on them.
Transfer Time	The Transfer Time chart shows how long it is taking for data to be transferred between disk and memory, and includes both **Disk Reads** and **Disk Writes**. If disk transfers are taking consistently longer than 50 ms, a disk bottleneck may be developing.
Disk Load	Shows how busy overall the individual logical disks are.

To view the Logical Disk Activity page as a table

Right-click the **Logical Disk Activity** page and select **View as Grid**.

In table (grid) mode, the page displays the information contained in the charts, plus additional information in the following columns:

Column	Description
KBs Read/s	The rate (in kilobytes/s) at which data is read from the specified logical disk.
KBs Written/s	The rate (in kilobytes/s) at which data is written to the specified logical disk.

Physical Disk Activity Page

The **Disks | Physical Disk Activity** page shows information about the logical disks on this system. It includes I/O information, as well as disk space usage.

To open the Logical Disk Activity page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Disks | Physical Disk Activity**.

To view charts on the Physical Disk Activity page

Right-click the **Physical Disk Activity** page and select **View as Chart**.

Notes:

- Each disk is represented by a single line on the chart, and by an item in the legend at the right of the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Disk Reads	Shows a recent summary of the rate at which read requests have been sent to each physical disk.
Disk Writes	Shows a recent summary of the rate at which write requests have been sent to each physical disk.
Disk I/O	Shows a recent summary of the rate at which read and write requests have been sent to each physical disk.
Disk Queue	The Disk Queue chart shows the number of I/O requests that were queued for each physical disk. Disk queue length indicates how heavily loaded a disk subsystem is. High queue lengths mean the disks are struggling to process the I/O load being put on them.
Transfer Time	The Transfer Time chart shows how long it is taking for data to be transferred between disk and memory, and includes both **Disk Reads** and **Disk Writes**. If disk transfers are taking consistently longer than 50 ms, a disk bottleneck may be developing.
Disk Load	Shows how busy overall the individual physical disks are.

To view the Physical Disk Activity page as a table

Right-click the **Physical Disk Activity** page and select **View as Grid**.

In table (grid) mode, the page displays the information contained in the charts, plus additional information in the following columns:

Column	Description
KBs Read per sec	The rate (in kilobytes/s) at which data is read from the specified physical disk.
KBs Written per sec	The rate (in kilobytes/s) at which data is written to the specified physical disk.

Logical Disk Space Usage Page

The **Disks | Logical Disk Space Usage** displays a graphical view of used and available space on all logical drives.

To open the Logical Disk Space Usage page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Disks | Logical Disk Space Usage**.

Note: Use the **Disk Space By...** control to switch between **Disk Space (GB)** and **Disk Space (%)**.

Disk Summary Page

The **Disk Summary** page provides summary information about the physical disks on the current system.

To open the Disk Summary page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Disks | Disk Summary**.

For each physical disk detected, disk summary information is displayed in the columns of a single table (grid).

Column	Description
Disk	Each physical disk in the system is listed in the grid in the order it has been discovered. The first disk is numbered 0 (zero).
Description	A description of each disk discovered. This displays RAID details where applicable.
Type	The type of hard disk discovered (for example, IDE).
Total GB	The total size of the disk in gigabytes.
Device type	More detailed information about the type and configuration of the disk.
Hardware vendor	The vendor code associate with each hard disk.
Partitions	The number of partitions discovered on each disk.

To open the Logical Disks sub page

To provide equivalent details about the logical disks associated with each physical disk:

Click on the entry for the physical disk on the **Disk Summary** page.

At any one time, the Logical Disks grid displays information only on the logical disks associated with the physical disk currently highlighted in the Disks grid.

Column	Description
Drive	The name of the logical disks associated with the physical disk specified in the Disk Summary page.
Label	The label assigned to the logical disk (if any).
File System	The file system used on the logical disk (for example, NTFS).

Column	Description
Total MB	The total amount of space on the logical disk, measured in megabytes.
Free MB	The total amount of free space on the logical disk, measured in megabytes.
Compressed	True or False. Whether the information on the logical disk is maintained in compressed format.

File Sizes Page

The **File Sizes** page displays a grid that contains information on the size of files that you are tracking from the **Windows Files Metrics** dialog.

To open the File Sizes page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Disks | File Sizes**.
   

The File Sizes grid contains the following information:

Chart	Description
File Name	The full pathname of the selected file.
Current Size (MB)	The current size of the file, measured in megabytes.
Max Size (MB)	The maximum size for this file as set in the **Windows Files Metrics** dialog. Setting the maximum file size does NOT prevent the specified file from growing beyond this size. However, if the size of the file exceeds that maximum size, Spotlight raises a critical alarm.
% Max Size	The current size of the file, measured as a percentage of the maximum size.
Severity	The degree of urgency associated with the current size. The severity controls what action Spotlight takes. (For example, if the size of the file exceeds the maximum size, the severity becomes critical, and Spotlight raises a critical alarm.)
File exists	Whether or not the file exists at the specified location

Tip: You can add / remove / configure the tracking of file size. Right-click in the File Sizes grid and select **Files Options**. Windows Files Metrics

Network Drilldown

Network Page

The **Network** page shows recent network activity to and from this system.

To open the Network page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | Network**.

Charts on the Network page

Notes:

- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Total packets in/out	Shows the incoming and outgoing packet rates as an aggregate across all network cards in the system. Packets Sent and Packets Received are each represented by a single line on the chart, and by an item in the legend at the right of the chart.
Packets by network card	Shows the total rate of packets (incoming and outgoing), broken down by network card. Each network card on the current system is represented by a single line on the chart, and by an item in the legend at the right of the chart.
Total kilobytes in/out	Shows the level of traffic being received and sent by the system in kilobytes per second. Kilobytes Sent and Kilobytes Received are each represented by a single line on the chart, and by an item in the legend at the right of the chart.
Errors and Retries	Shows the number of errors and retries on the network subsystem. A consistent number of retries or errors usually means one of the following: • A network segment attached to the system is over-utilized. • There are problems with a network card, cabling or other networking device on a network segment. Inbound Errors and Outbound Errors are each represented by a single line on the chart, and by an item in the legend at the right of the chart.

TCPIP Page

The **TCPIP** page shows recent TCP/IP activity to and from the current system.

TCP/IP (Transmission Control Protocol/Internet Protocol) is one means by which computers communicate across a network. It is the basic protocol used for communication across the Internet.

Communication programs that use the TCP/IP protocol are built in two layers:

- The **TCP layer** converts a data stream into a series of packets for transmission across a network. When these packets are received at their destination, another TCP layer reassembles the data stream.
- The **IP layer** ensures that data packets reach the right destination.

To open the TCPIP page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | TCPIP**.
   

Charts on the TCPIP page

Notes:

- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

<table>
<tr><th>Chart</th><th>Description</th></tr>
<tr><td>TCP Segments</td><td>When TCP transfers a stream data, it breaks up the stream into small segments. The TCP Segments chart displays three different graphs representing the rate at which TCP segments are transmitted or received in the current Windows system.
<table>
<tr><th>Graph</th><th>Description</th></tr>
<tr><td>Sent</td><td>The rate at which TCP segments are transmitted by the current system.</td></tr>
<tr><td>Received</td><td>The rate at which TCP segments are received by the current system.</td></tr>
<tr><td>Retransmitted</td><td>The rate of transmission of TCP segments that have already been sent, but need to be retransmitted because of packet time-out or some other transmission error.</td></tr>
</table>
Sent, Received and Retransmitted are each represented by a single line on the chart, and by an item in the legend at the right of the chart.</td></tr>
<tr><td>IP Fragments</td><td>When data packets are transmitted across a network via TCP/IP, they may be further fragmented en route, and need to be reassembled. The IP Fragments chart displays the rates at which the fragmented packets are received and rebuilt.
The graphs on the chart display one of the following features of IP fragmentation:
<table>
<tr><th>Graph</th><th>Description</th></tr>
<tr><td>Received</td><td>The rate at which IP fragments are received successfully.</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Chart</th><th>Description</th></tr>
<tr><td></td><td>
<table>
<tr><th>Graph</th><th>Description</th></tr>
<tr><td>Created</td><td>The rate at which IP datagram fragments are generated as a result of fragmentation.</td></tr>
<tr><td>Re-assembled</td><td>The rate at which IP fragments are rebuilt into their original data packets. Packets are fragmented when they travel through a router that needs to send packets that are smaller than the packets received.</td></tr>
<tr><td>Datagrams</td><td>The rate at which IP fragments are created on the current system. This applies only to routed packets.</td></tr>
<tr><td>Failures</td><td>The rate at which the current system receives data packets that are too large to be transmitted, and that cannot be fragmented. The cause may be the presence of a "do not fragment" flag in the IP packet header.</td></tr>
<tr><td>Reassembly failures</td><td>The rate at which errors are reported when IP fragments are reassembled into data packets. This may be due to an error in one or more fragments.</td></tr>
</table>
Each data series in the IP Fragments chart is represented by a single line, and by an item in the legend at the right of the chart.
</td></tr>
<tr><td>UDP Datagrams</td><td>
UDP (User Datagram Protocol) is an alternative communications protocol to the Transmission Control Protocol (TCP).
Unlike TCP, UDP does not provide a sequencing service, so when UDP datagrams (packets) arrive at a destination, they are reassembled into a complete message via an end-point application that is active on the port(s) specified in the datagram. The UDP Datagrams chart displays three different graphs representing the rate at which UDP datagrams are transmitted or received in the current Windows system.
<table>
<tr><th>Graph</th><th>Description</th></tr>
<tr><td>Sent</td><td>The rate at which UDP datagrams are transmitted by the current system.</td></tr>
<tr><td>Received</td><td>The rate at which UDP datagrams are received by the current system.</td></tr>
<tr><td>No port</td><td>During transmission, UDP provides port numbers to distinguish different user requests. The No Port metric displays the number of packets received per second that do not have an end-point application active on the specified port.</td></tr>
</table>
Sent, Received and No Port are each represented by a single line on the chart, and by an item in the legend at the right of the chart.
</td></tr>
<tr><td>IP Datagrams / IP Datagram Errors</td><td>
IP datagrams (packets) are the message units that are transmitted across a network (and across the Internet) via the Internet Protocol.
Use the IP Datagrams control to choose to view IP Datagrams or IP Datagram Errors.
The IP Datagrams chart:
</td></tr>
</table>

Chart	Description

The rate at which IP packets are sent, received, and routed to other destinations.

Graph	Description
Sent	The rate at which IP datagrams (packets) are being sent by the current system.
Received	The rate at which IP datagrams are being received by the current system.
Forwarded	The rate at which the current system is routing IP datagrams to another destination.
Received delivered	The rate at which the system successfully receives and accepts IP packets.

The IP Datagram Errors chart:

The number of errors that occur when IP packets are sent, received, and routed to other destinations.

Graph	Description
Outbound discarded	The number of outbound packets discarded because of an issue unrelated to the packets themselves (for example, if the send buffer is full).
Outbound no route	The number of outbound packets discarded because the system cannot route the packets to the destination IP address.
Received address errors	The number of times that the system has received packets that do not have a valid return address.
Received discarded	The rate at which received packets are discarded because of an issue unrelated to the packets themselves (for example, if the receive buffer is full).
Received header errors	The number of times that the system has received packets that have errors in the IP header area (for example, a packet checksum error).
Received unknown protocol	The number of times that the system has received packets that are correctly addressed, but that use a protocol unsupported by the IP handler on the system.

Notes:

- Each data series in the IP Datagrams chart is represented by a single line, and by an item in the legend at the right of the chart.

Chart	Description
	• The information represents the number of errors detected since the chart was last refreshed.

NBT Page

The **NBT** page shows the machines that have a connection to the diagnosed system, and the corresponding level of traffic (in kilobytes per second) being generated between the connections.

Note: This is only for NBT (NetBios over TCP/IP) connections - that is, only Microsoft Networking connection over TCPIP.

To open the NBT page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | NBT**.

SPX Page

The **SPX** page shows recent SPX activity to and from the current system.

SPX (Sequenced Packet Exchange) is a communication protocol used in Novell Netware networks. It is similar to TCP, and provides connection services between nodes on a network. The combination of SPX with IPX (Internetwork Packet Exchange) provides connection services similar to TCP/IP.

To open the SPX page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | SPX**.

Charts on the SPX page

Notes:

- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Bytes In/Out	The rate at which bytes are handled by the IPX/SPX protocol. • Sent – Number of bytes sent using the IPX/SPX protocol • Received – Number of bytes received by the IPX/SPX protocol

Chart	Description
Frames In/Out	The rate at which SPX frames (equivalent to IP datagrams) are handled by the IPX/SPX protocol. • Sent – Number of SPX frames sent per second • Received – Number of SPX frames received per second
Errors (static)	This chart shows all of the SPX static errors counted since the machine was last restarted. The graphs on the chart are: • Adapter – The number of errors in receiving SPX packets due to adapter problems. • Link – The number of errors in receiving SPX packets due to physical network (link) issues such as ethernet problems. • No Listen – The number of errors in receiving SPX packets due to a remote computer not being found. • Resource local – The number of errors in receiving SPX packets due to a lack of computer resources on the local computer. • Resource remote – The number of errors in receiving SPX packets due to due to a lack of computer resources on the remote computer.
Errors (dynamic)	This chart shows the rate at which SPX dynamic errors occur. The graphs on the chart are: • Re-sent – The number of times per second that frames need to be resent for any reason. • Rejected – The number of data frames per second that are rejected from this computer.

Sessions Page

The sessions displayed in this page are the active connections made to the current Windows system by users on other systems.

To open the SPX page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | Sessions**.


The Sessions grid on this page displays data for each connection in the following columns:

Column	Description
Computer	The name of the remote machine connected to the current system.
Elapsed time	How long the connection has been maintained.
Idle time	The part of **Elapsed time** when the connection has been inactive.

Column	Description
Domain	The domain of the user session currently logged in to the remote machine. Domain information is displayed only for Terminal Services and Remote Desktop sessions.
User	The user currently logged in to the remote machine.
Type	The type of user session, for example "Terminal Services" or "Remote Desktop". For normal sessions, the Type column is blank. Remote Desktop sessions are shown only for Windows Server machines (for example, Windows 2000 Advanced Server or Windows Server 2003).
State	The current state of the session. Some examples are "active", "disconnected", and "connecting".
Logon Time	The time that the user last logged in to the remote desktop session. This column shows data only when the session type is Remote Desktop.
Disconnected Time	The time that the user last disconnected from the remote desktop session. This column shows data only when the session type is **Remote Desktop** and the state is **Disconnected**. If the user logs out of the remote desktop session, the session is closed.

Shares Page

Shares Page

The **Shares** page on the Network drilldown displays the resources on the monitored Windows system that can be shared with users on other systems. Each row on the Shares grid represents a shared resource on the current system. The columns in the grid contain relevant data for shared resources.

To open the Shares page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | Shares**.

Note: For each shared resource, you can view more details about the connections currently established to the resource. Double click on the resource's entry in the grid. See the Open Connections and the Permissions Page.

Column	Description
Share	The name of the shared resource.
Local Path	The location of the shared resource.
Comment	A short, meaningful description of the resource.
Type	The type of device that provides the shared resource (for example, Disk or Printer)

Column	Description
Max Users	The maximum number of users who can simultaneously share the resource.
Current Users	The number of users who are now sharing the resource.

Open Connections

Open Connections Page

The Open Connections sub-page provides details about the connections currently established to the shared resources shown on the Shares page of the Network drilldown.

To open the Open Connections subpage

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | Shares**.
   
3. Double click on the resource in the grid.
4. Click **Open Connections**.

For each shared resource, information on its open connections is displayed in the columns of a single table (grid).

Column	Description
Share	The name of the shared resource.
Computer	The remote machine connected to the shared resource.
User	The user logged in to the remote machine.
Type	The type of device that provides the shared resource (for example, Disk or Printer)
Open Files	The number of files currently open on the shared resource.
Elapsed Time	The length of time that the user on the remote machine has been connected to the shared resource.

Permissions Page

The **Permissions** page lists the trustees assigned to the shared resource currently chosen in the Shares page of the Network drilldown, together with the rights granted or denied to the trustees.

Note: Microsoft defines a trustee as:

> "The user account or group account to which an access control entry (ACE) applies. Each ACE in an access control list (ACL) has one security identifier (SID) that identifies a trustee. User accounts include accounts that users or programs such as Windows services use to log on to the local computer. Group accounts cannot be used to log on to a computer, but are useful in ACEs

to allow or deny a set of access rights to one or more user accounts."

To open the Permissions page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | Shares**.
   
3. Double click on the resource in the grid.
4. Click **Permissions**.

For each shared resource, information on its assigned permissions is displayed in the columns of a single table (grid).

Note: Not all of these columns will be visible by default. To view hidden columns, right-click a column heading and choose **Organize Columns**... from the shortcut menu. See Show, Hide & Order Columns for more information.

Column	Description
User	The name of the trustee identified by the User SID.

User Type	The trustee can be one of the following types of user:
	• UNKNOWN – The trustee type is unknown, but not necessarily invalid.
	• USER – A Windows user account.
	• GROUP – A Windows group account.
	• DOMAIN – A domain.
	• ALIAS – A unique SID with a specified User alias.
	Example, BUILTIN\Administrators can have different local names on different resources:
	  • serverA\Administrators on server A
	  • serverB\Administrators on server B
	• KNOWN GROUP – A well known group (for example, the **Authenticated Users** or **Everyone** groups, which are available on all Windows systems).

Grant	The access types (READ ONLY, CHANGE, FULL CONTROL) that have been granted to the current trustee.
Deny	The access types that have been specifically DENIED to the current trustee. **Deny** rights take precedence over **Grant** rights.
Full Name	The full name of the trustee. Hide this column if you do not need this information, as Spotlight obtains it by querying the domain controller for the remote machine; this may cause a significant delay when refreshing data. See Show, Hide & Order Columns for more information.
Share	The name of the shared resource.
User SID	The security identifier for the current trustee of the shared resource. Every account on a network is issued a unique SID when the account is first created.

Open Ports Page

The **Open Ports** page is not available if the Windows SNMP protocol is not installed on:

- The Windows machine under diagnosis, AND
- The machine running the Spotlight client.

Installing The SNMP Protocol

The open communication ports on a Windows machine are not necessarily in use. They may be the inadvertent consequence of a now-stopped service or some other application, or they may have been opened by a virus.

The **Open Ports** page on the Network drilldown summarizes the status of all the communication ports on the machine under diagnosis. Each row in the table (grid) represents an open port, and the columns in the grid display the properties associated with it.

To open the Open Ports page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | Open Ports**.

Note: In the Open Ports page, the term **local** refers to the Windows machine under diagnosis. **Remote** refers to any machines connected to a port on the diagnosed (local) machine.

Column	Description
Protocol	The communication protocol associated with the open port (for example, **TCP** or **UDP**).
Local Address	The address of the diagnosed machine.
Local Port	The registered name of the port on the diagnosed machine, if available. Otherwise it is the number of the port on the diagnosed machine.
Remote Address	The IP address of a remote host connected to the specified **local port**.
Remote Port	The port number by which the specified remote host is connected to the **local port**.
Status	The current status of the network connection between the two machines (for example, **Listening**, **Established**, or **Time_wait**.)

cLAN Gigabit Page

The **cLAN Gigabit** page of the Spotlight on Windows Network drilldown shows recent activity to and from the current system via cLAN Gigabit cards.

Note: The cLAN Gigabit network interface card (NIC) enables high-speed communications across a network. This page in the Network drilldown is enabled only if the current network contains one or more of these cards.

To open the cLAN Gigabit page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Network | cLAN Gigabit**.

Charts on the cLAN Gigabit page

Notes:

- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Total MB in/out	Sent – The rate at which megabytes are sent over cLAN Gigabit network cards from this machine. Received – The rate at which megabytes are received by this machine from cLAN Gigabit network cards.
Frames per second	Sent – The rate at which frames are sent over cLAN Gigabit network cards from this machine. Received – The rate at which frames are received by this machine from cLAN Gigabit network cards.
Interrupts per second	Async sent – The rate at which interrupt requests are sent by the cLAN network cards (such as those to CPUs). Async received – The rate at which interrupt requests are received by the cLAN network cards.
Errors	**Note:** This chart does NOT show the **rate** of errors detected, but the number of errors detected **since the chart was last refreshed**. VPI/VCI Rx errors – The number of receive errors in VCI (Virtual Channel Identifier) and VPI (Virtual Path Identifier) packets. Rx NIB congestion – The number of receive errors originating from the NIB (Network Interface Board). Rx Cell Drop – The number of received packets dropped for any reason. Received HEC Errors – The number of received packets with HEC (Header Error Control) errors. Received 10b characters – The number of invalid 10 bit characters received.

Activity Summary Page

The **Activity** page displays summaries of recent Windows activity.

To open the Activity Summary page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Activity Summary**.

Charts on the Activity Summary page

Notes:

- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Processor	Shows the total CPU utilization across all processors in the machine, categorized into **User Time** and **Privileged Time**. • **User Time** is the total time the processor(s) spends in user mode. This is a restricted processing mode designed for applications, environment subsystems, and integral subsystems. • **Privileged Time** is the time the processor(s) spends in privileged mode. This is designed for operating system components and allows direct access to hardware and all memory. **Note:** The User Time and Privileged Time series are each represented by a single line, and by an item in the legend at the right of the chart.
Paging	Shows the rate at which pages are being swapped in and out of memory. • The **Paging Rate (In)** (or Page Reads) value includes hard pages (paging requests that have to go to the paging file on disk) - not soft pages (requests for memory pages that are not in the program's working set, but still in memory). • The **Paging Rate (Out)** (or Page Writes) value provides the rate of write requests to the paging file on disk. A sustained high rate of paging can cause problems with overall system degradation due to disk thrashing and CPU load. **Note**: Each Paging Rate series is represented by a single line, and by an item in the legend at the right of the chart.
Network Packets	Shows the incoming and outgoing packet rates as an aggregate across all network cards in the system. **Note:** The Packets Sent and Packets Received series are each represented by a single line, and by an item in the legend at the right of the chart.
Processor Queue Length	Shows the total number of threads (program execution units) that are waiting to be run on ALL processors. A sustained processor queue length greater than three times the number of processors can indicate processor congestion.

Chart	Description
	Note: To view Server Work Queues for the individual CPUs in the system, see the CPUs Page in the CPU drilldown.
Disk Queue Length	Shows the number of I/O requests that were queued for each logical disk. Disk Queue Length indicates how heavily loaded a disk subsystem is. High queue lengths mean the disks are struggling to process the I/O load being put on them. **Note:** Each logical disk on the system is represented by a single line on the chart, and by an item in the legend at the right of the chart.
Memory	Shows how much physical memory (RAM) and Virtual Memory Windows is using. Physical Memory usage will normally remain close to the total amount of physical memory installed on the system unless the amount of physical memory you have exceeds the amount of virtual memory that Windows is using. Windows normally keeps some physical memory available (free) for immediate reuse. Virtual Memory usage increases and decreases as Windows processes requests and gives up memory and as processes are started and stopped. A steady increase in Virtual memory usage can indicate that a process on the system has a memory leak. **Note**: The Virtual Used and Physical Used series are each represented by a single line, and by an item in the legend at the right of the chart.

Event Log Page

The Windows Event Log is where application or operating system information is written and can be accessed by system administrators. Spotlight on Windows allows you to analyze event data from your Windows system's various logs, and to display the relevant data in the Event Log drilldown.

Note: If the content of this page is disabled then Event Logs are disabled. You can enable them. Windows Event Log Metrics

To open the Event Log page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Event Log**.

Page Control	Description
Event Log	Select an event log to show in the Event Grid. Depending on the monitored system, the logs to select from may include: • Any – Combine all event logs. • Application log – General application events and some system service messages. • Directory Service log – Directory service events (only for Windows domain controllers).

Page Control	Description
	• DNS Server log – DNS server events (only for Windows DNS servers). • File Replication Service log – File replication service events (only for Windows domain controllers). • Security log – Operating system audit events. Logged according to the audit settings that have been configured on the system. • System log – Operating System and most system service messages.
Event Grid	A display of the selected event log.
Total	The number of entries in the selected log.
Days	The period of time for which the oldest entries in the log have been kept.

About the Event Grid

Notes:

- Not all of these columns will be visible by default. To view hidden columns, right-click the grid heading and choose **Organize Columns**... from the shortcut menu.
- Click an event to display the **Event Log Details** page.
- Right click the body of the grid and select **Event Log Options** to configure the Event Log. You can filter, alarm or expand the list of Event Log items. Windows Event Log Metrics.

Column	Description
Date/Time	The time when the entry was entered into the Windows event log, not when it was brought into Spotlight on Windows.
Event ID	A code that identifies the event.
Message	A description of the event.
Source	The software that logged the event.
Type	The type of event: • Warning – There is something out of the ordinary but not an outright failure. • Error – Something has failed. • Information – General information on what is happening on the system. • Security – There are numerous security based message types. These come from the security log and the system auditing that has been configured on the system.
Category	The category of the event. This is used in auditing, and is primarily used by the security log.
Log	Where the error message was generated: • Application log – General application events and some system service messages.

Column	Description
	• Directory Service log – Directory service events (only for Windows domain controllers). • DNS Server log – DNS server events (only for Windows DNS servers). • File Replication Service log – File replication service events (only for Windows domain controllers). • Security log – Operating system audit events. Logged according to the audit settings that have been configured on the system. • System log – Operating System and most system service messages. **Note**: The Directory Service and File Replication Service event logs are available only for Windows domain controllers. The DNS Server event log is available only for DNS servers.
Severity	Shows information on alarms associated with the event log item. This is assigned by the Spotlight on Windows event log rules (available through the Windows Event Log Metrics in Spotlight on Windows Options).
Clear	Select to acknowledge the event and return its status to Normal.
Computer	The name of the machine where the event occurred.
User	The user account which instigated the event log item. This is particularly pertinent to security items.

Single Application

Summary Page

The Summary Page of the Single Application drilldown provides an overview of the Windows performance for the one or more applications chosen in the Windows Applications Metrics options of the Spotlight on Windows Options window.

To open the Summary page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Single Application | Summary**.


Charts on the Summary page

Notes:

- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

- To choose applications to measure the performance of, right click the page and select **Select Application**. This opens the Windows Applications Metrics dialog. Windows Files Metrics

Chart	Description
Processors	For the specified applications, this corresponds to the CPU Utilization chart chart in the CPUs page of the CPU drilldown.
Paging	For the specified applications, this corresponds to the Paging chart in the Summary page of the Memory drilldown.
Virtual Memory Size	For the specified applications, this corresponds to the Virtual Memory Size graph on the Memory chart in the Process History page of the Processes drilldown.
Processor Queue Length	For the specified applications, this corresponds to the Processor Queue Length chart in the Activity Summary drilldown.
Disk Queue Length	For the specified applications, this corresponds to the Disk Queue Length chart in the Activity Summary drilldown.
Network Packets	For the specified applications, this corresponds to the Network Packets chart in the Activity Summary drilldown.

CPUs Page

The **CPUs** Page of the Single Application drilldown provides an overview of the CPU performance for the one or more applications chosen in the Windows Applications Metrics options of the Spotlight on Windows Options window.

To open the CPUs page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Single Application | CPUs**.


Charts on the CPUs page

Notes:

- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.
- To choose applications to measure the performance of, right click the page and select **Select Application**. This opens the Windows Applications Metrics dialog. Windows Files Metrics

Chart	Description
CPUs	For the specified applications, this corresponds to the sum of all graphs on the Processor chart in the Process History page of the Processes drilldown.
CPU per	This displays the CPU resources consumed by each application chosen for analysis in the

Chart	Description
Process	Single Application drilldown. For the specified applications, this corresponds to the %CPU column in the Processes grid in the Processes drilldown.
Queue Length	For the specified applications, this corresponds to the Server Work Queues chart on the CPUs page of the CPU drilldown.
IO Operations	For the specified applications, this corresponds to the IO per second column in the Processes grid on the Processes drilldown.

Memory Page

The Memory Page of the Single Application drilldown provides an overview of the memory performance for the one or more applications chosen in the Windows Applications Metrics options in the Spotlight on Windows Options window.

To open the Memory page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Single Application | Memory**.
   

Charts on the Memory page

Notes:

- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.
- To choose applications to measure the performance of, right click the page and select **Select Application**. This opens the Windows Applications Metrics dialog. Windows Files Metrics

Chart	Description
Memory Usage: Current OR Peak	If the **Current** option is chosen from the associated drop-down menu, the chart shows the current size of the working set of the selected process. The working set is the set of memory pages touched recently by the threads in the process. If the **Peak** option is chosen from the associated drop-down menu, the chart shows the peak size of the working set of the selected process(es) since they were started.
Virtual Memory Size	For the specified applications, this corresponds to the **Virtual Memory Size** graph on the Memory chart in the Process History page of the Processes drilldown.
Virtual Address Space: Current OR Peak	If the **Current** option is chosen from the associated drop-down menu, the chart shows the current size of the total address space of the process. A process is limited to 2GB of address space no matter how much free RAM may be available. If the **Peak** option is chosen from the drop-down menu, the chart shows the peak total

Chart	Description
	address space of the selected process(es) since they were started.
Page Faults	For the specified applications, this corresponds to the Page Faults chart in the Process History page of the Processes drilldown.

Disks Page

The Disks Page of the Single Application drilldown provides an overview of the disk performance for the one or more applications chosen in the Windows Applications Metrics options of the Spotlight on Windows Options window.

To open the Disks page

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Single Application | Disk**.


Charts on the Disks page

Notes:

- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.
- To choose applications to measure the performance of, right click the page and select **Select Application**. This opens the Windows Applications Metrics dialog. Windows Files Metrics

Chart	Description
Disk Reads	For the specified applications, this corresponds to the Disk Reads chart in the Logical Disk Activity page of the Disks drilldown.
Disk Writes	For the specified applications, this corresponds to the Disk Writes chart in the Logical Disk Activity page of the Disks drilldown.
Disk I/O	For the specified applications, this corresponds to the Disk I/O chart in the Logical Disk Activity page of the Disks drilldown.
Disk Queue	For the specified applications, this corresponds to the Disk Queue chart in the Logical Disk Activity page of the Disks drilldown.
Disk Transfer Time	For the specified applications, this corresponds to the Transfer Time chart in the Logical Disk Activity page of the Disks drilldown.
Disk Load	For the specified applications, this corresponds to the Disk Load chart in the Logical Disk Activity page of the Disks drilldown.

Alarm Log

The **Alarm Log** drilldown displays information on the alarms associated with the selected connection.

To open the alarm log

1. Select the **Spotlight** connection in the **Spotlight Browser**.
2. Click **Alarm Log**.

Notes:

- The Alarm Log drilldown is common to all Spotlight applications. See Spotlight Alarms for more information.
- The alarms are specific to the current Spotlight connection. Spotlight Alarms

View | Options

Spotlight on Windows - View | Options

You can set a number of options that affect the behavior and display of Spotlight on Windows via the Spotlight on Windows Options window.

To open the Spotlight on Windows Options window

Click **View | Options**.

Option	Description
Windows Disks Metrics	Configure how disks are represented in the Disks panel on the Spotlight on Windows home page. These options will NOT be displayed if the system you are connected to contains only one logical drive.
Windows Network Card Display	Configure which network card is represented in the Network panel in the Spotlight on Windows home page. This option will NOT be displayed if the system you are connected to contains only one network card.
Windows Applications Metrics	Specify one or more processes running on the current system for detailed analysis.
Windows Event Log Metrics	Create Event Log rules and configure other Event Log settings.
Windows Files Metrics	Specify one or more files whose file size you want Spotlight to track.

Appearance

Windows Disks Metrics

Use Windows Disks Metrics to configure how logical disks are represented in the Disks panel on the Spotlight home page.

Note: If the monitored system contains only one logical drive then these options will not be displayed.

To open the Windows Disks Metrics dialog

1. Click **View | Options**
2. Click **Data Collection | Windows Disks Metrics**

The general appearance of the Disks panel for all Spotlight on Windows connections

Option	Description
Allow up to eight disks	By default, the Disks panel on the home page displays the details of four logical disks in the current connection

Option	Description
on home page	PLUS four "disk container" images that show how full each disk is. Choose this option to display up to eight disks in the Disks panel. If you do, NO container images are shown.
Disk flow units	Choose how you want to display disk-related dataflows: • The number of Read and Write operations performed per second –OR- • The amount of data read and written per second (measured in KB/s).

Connection name - How disk performance is shown for the current Spotlight connection

Option	Description
Automatically configure disk display	When selected, Spotlight determines which disks are displayed in the Disk panel. Deselect this option if you want to configure how disks are displayed in the Disks panel.
By Drive letter/ By Lowest % Free Space	By Drive Letter - Display disk information according to the alphabetical label assigned to each disk. By Lowest % Free Space - Display disk information for disks having the lowest percentage of free space. **Note**: This option is enabled when **Automatically configure disk display** is selected.
Number of disks to show on home page	Type or select the number of disks to be displayed in the Disks panel. **Note**: This option is enabled when **Automatically configure disk display** is deselected.
Disk to edit (numbered top to bottom)	Type or select the number of the disk you want to edit. Disks are numbered from top to bottom starting at one. The number of available disks depends on how many disks you have chosen to display on the home page. **Note**: This option is enabled when **Automatically configure disk display** is deselected.
Display information for	Select the type of information you want to display for the selected disk (Logical Disk, Lowest % Free Space, Smallest Disk Size, Most "Read from" disk, or Most "written to" disk). **Note**: This option is enabled when **Automatically configure disk display** is deselected.
Logical Disk to display	Select the disk whose details you want to display. **Note**: This option is visible when **Display information for** is set to **Logical Disk**.

Windows Network Card Display

The Windows Network Card Display option lists all the NICs (network interface cards) on the Windows system that Spotlight on Windows is connected to.

To select the NIC whose Theoretical Bandwidth Limit you want to show on the Spotlight on Windows home page

1. Click **View | Options**
2. Click **Data Collection | Windows Network Card Display**

3. Select the network card to diagnose.
   Note: Your choice does NOT affect the display of NIC data in any other pages.

Data collection

Windows Applications Metrics

Spotlight on Windows allows you to single out individual processes (or a group of processes) on a Windows system for particular analysis. The details of that analysis are displayed in the Single Application drilldown.

Use Windows Applications Metrics to choose one or more running processes for analysis.

To configure Windows Applications Metrics

1. Click **View | Options**
2. Click **Data Collection | Windows Applications Metrics**
3. Configure the following options:

Option	Description
Processes	Select the processes on the Windows system that you want to analyze.
CPU	Select the CPUs on the Windows system whose processes you want to analyze.
Disks	Select the disks on the Windows system whose processes you want to analyze.
NICs	Select the NICs on the Windows system whose processes you want to analyze.

Windows Event Log Metrics

The Windows Event Log Metrics dialog allows you to define and edit the logical rules that govern which Windows events are displayed in the Event Log drilldown, and allows you to configure a number of Event Log settings.

To configure Windows Event Log Metrics

1. Click **View | Options**
2. Click **Data Collection | Windows Event Log Metrics**
3. The **Global Rules** tab is to the front. Configure this page.

Global Rules

Enable the keeping of event logs and specify the rules that govern the recording of event log data.

Option	Description
Enable Event Logs	Select to permit the display of event log data in the Event Log drilldown. No event log data is displayed while this is deselected.
List of rules to apply to event log items	The list of event log rules defined for the current connection. • Click on a rule to highlight it. • Select the checkbox associated with the rule to enable it. Disabled rules have no effect on the data displayed in the Event Log drilldown.
Add	Click to create an event log rule. See Event Log Rule Editor for more information.
Edit	Highlight a rule. Click to modify the highlighted rule. See Event Log Rule Editor for more information.
Delete	Highlight a rule. Click to remove the highlighted rule from the list.
Rename	Highlight a rule. Click to change the display name of the highlighted rule.
Copy	Highlight a rule. Click to create a copy of the highlighted rule. Usually this is done as the basis for creating a rule that is similar to the copied rule.
Enable All	Click to enable (select) all the rules in the list.
Disable All	Click to disable (deselect) all the rules in the list.
Move Up	Rules are applied in the order in which they appear in the list. Click to move the highlighted rule higher in the list, and so be applied earlier.
Move Down	Rules are applied in the order in which they appear in the list. Click to move the highlighted rule lower down the list, and so be applied later.

Connection

Specify the details of what events are recorded for the current Spotlight connection and how long they are kept.

Option	Description
Display events from the...	Select the logs to show in the Event Log drilldown. The options may include: • Application log • Directory Service log (Windows domain controllers) • DNS Server log (Windows DNS servers) • File Replication Service log (Windows domain controllers) • Security log • System log The Directory Service and File Replication Service event logs are available only for Windows 2000 domain controllers. The DNS Server event log is available only for DNS servers. Under Windows 2000, the only logs available for view are

Option	Description
	the Application log, Security log, and System log.
Limit each event log to a maximum of...	Limit how long events are displayed in the Event Log drilldown before being deleted.

Windows Files Metrics

Track the growth of specified files (usually log files) in your Windows system. Spotlight reports an alarm when a page approaches the maximum file size you have set.

To open the Windows Files Metrics dialog

1. Click **View | Options**
2. Click **Data Collection | Windows Files Metrics**

About the dialog

Option	Description
File list	The list of files whose size is monitored for the current connection. There are two columns in this table: the File name and the Maximum size you have specified for the file. **Note**: The maximum file size listed on this page does NOT prevent the specified file from growing beyond that size. However, if the file exceeds that maximum size, Spotlight raises a critical alarm.
Add	Click to add a file to the list of those tracked by Spotlight. See Define Files to Monitor in Windows Files Metrics for more information.
Edit	Highlight a file. Click to change the settings for the highlighted file. See Define Files to Monitor in Windows Files Metrics for more information.
Delete	Highlight a file. Click to remove the highlighted file from the list.

Troubleshooting

Troubleshooting Spotlight on Windows

This section identifies general problems that you may encounter when using Spotlight on Windows, and details how to address those problems. If you do not find a solution in this section then check the *Spotlight on Windows Release Notes*.

Issues Connecting

The Registry ... is not accessible.

On connecting to a Windows machine, if Spotlight returns the following error:

> The registry on "<<MachineName>>" is not accessible. You need to connect to this machine with an account with privileges to retrieve server information, query the registry, and access performance monitor objects.

Solution

Login to the Windows machine using an account with administrative rights.

A login with administrative rights satisfies the requirements of Spotlight on Windows, with the privileges to retrieve server information, query the registry, and access WMI and performance monitor objects.

Network Name (Path) Not Found

On connecting to a Windows 2000 machine, if Spotlight returns the following error:

> Network name not found
>
> or
>
> Network path not found

Solution

Ensure the Remote Registry service is running on the Windows machine.

Spotlight on Windows will return this error if you attempt to connect to a Windows 2000 machine that has the Remote Registry service stopped.

Connecting As The Logged-in User

To connect to a Windows machine as a user who is already logged in, do NOT enter any user credentials (Domain, User or Password) in the Connection Properties window.

Notes:

- Spotlight on Windows requires Administrator access on all the Windows machines under diagnosis. If the current user is not an administrator on a machine, that Spotlight connection will fail.
- Windows connections can only have one set of credentials in use at a time. If a user connects to a machine by using NO user name and password, and then disconnects and reconnects with an Administrator password, Windows returns an ERROR_SESSION_ CREDENTIAL_CONFLICT error.

  For example, if you have mapped a drive to the machine \\serverA\share while logged in as serverA\administrator, you CANNOT map another drive to the same machine while logged in as serverA\user.

  You can, however, connect to the same machine with different credentials if you map to the machine via its IP address.

  In the example above, if serverA has the IP address 192.168.1.100, you CAN employ the net use command to connect to the machine \\192.168.1.100\share as serverA\user.

WMI Connection Problems

If Spotlight on Windows is displaying a WMI access denied error, and the user specified in the connection profile is an administrator on that machine then it may be necessary to adjust your DCOM or Firewall settings.

Complete the following steps to ensure that your DCOM and Firewall settings are configured to allow WMI connections.

To test WMI is working on the Spotlight client:

1. Click **Start | Run**.
2. Enter **WBEMTest** to run the WMI Tester Utility.
3. Click **Connect | Connect**.
4. If an **Access is denied** error is displayed you do not have rights to make WMI connections. In this case, check (and adjust if necessary) your local DCOM setting (see below).

To check the DCOM access permissions for the monitored machine:

1. Login to the monitored machine.
2. Click **Start | Run**.
3. Enter **DCOMCnfg** to run the DCOM configuration utility.
4. Select **Component Services**.
5. Click  .
6. Click **COM Security**.
7. Under Access Permissions, click **Edit Permission**.

   Ensure **Remote Access** is set to **Allow** for the user specified in the connection profile (or the group containing this user).
8. Under Launch and Activation Permissions, click **Edit Permission**.

   Ensure **Remote Launch** and **Remote Activation** are set to **Allow** for the user.

   [[[Undefined variable CommonVariables.for_more_info]]]Securing a Remote WMI Connection on the MSDN site.

To check if Windows Firewall is active on the Spotlight client:

1. Open the **Control Panel | Windows Firewall**.
2. If Windows Firewall is on, see Connecting Through Windows Firewall on the MSDN site for information on how to configure the firewall to allow WMI connections.

For further information, see How to troubleshoot WMI-related issues in Windows XP SP2 on the Microsoft site.

Issues Monitoring A Windows Machine

Display Problems on The Home Page Disks Panel And Disk Drilldown

The Disks panel on the Spotlight on Windows home page and the Disks drilldown are not displaying data. Ensure disk performance counters are enabled on the Windows machine being monitored.

Solution: Enable collection of disk data:

On the Windows system being monitored

1. Start a command line window
2. At the command prompt, type the following
   diskperf -y
3. Restart the system.

Display Problems on The Home Page Network Panel, Flows And Network Drilldown

Spotlight on Windows cannot display data in the Network panel, flows, and drilldowns. The likely cause is that the appropriate performance counters have not been enabled on the Windows machine being diagnosed.

Solution: Enable the collection of network data:

- Check that the **PerfNet** counters are active on the system. To do so, use the **Exctrlst** utility, which you can download from the Microsoft Web site.
- Check that at least one network device is using NBT (NetBIOS over TCP/IP). To do so, check the properties of all network connections (in particular, **Advanced TCP/IP Settings | WINS**) to ensure that the NetBIOS setting is not disabled.
- Check that Service Pack 4 is installed on Windows 2000 systems.

The Processes Page And Process Affinity

In Windows systems where there are multiple processors, an activity (thread) in a process can migrate from processor to processor – and every migration reloads the processor cache.

Process affinity, which you can set on the target Windows machine via the Windows Task Manager, allows you to establish an association that permits specified processes to run ONLY on nominated processors. This limits the number of cache reloads, which may be desirable on systems operating under heavy load.

You CANNOT set process affinity via Spotlight on Windows.

What you CAN do is:

Use the Processes drilldown to indicate the CPUs where the specified process is permitted to run. This enables Spotlight to report the CPU usage for that process with accuracy.

Example: Running a process on an eight-CPU system

Spotlight uses the Windows Performance Monitor (PerfMon) to retrieve important data from target Windows systems, including the total percentage of CPU usage by specified processes.

On a single-CPU system, PerfMon can report a maximum CPU usage of 100%.

On a multiple-CPU system, that maximum value is multiplied by the number of CPUs. For an eight-CPU system, PerfMon can report a maximum CPU usage of 800%. Spotlight on Windows compensates by dividing the reported PerfMon value by the number of CPUs on the system.

However, when the affinity for a process is set so that it can run only on two nominated CPUs of the eight available, the default Spotlight calculation fails. For example, if PerfMon reports a CPU usage of 120% for the process (corresponding to a 60% usage on each permitted CPU), Spotlight initially calculates a value of 15%. Use Spotlight's Configure Affinity function to adjust the Spotlight calculation.

How to set process affinity

Process affinity can be set via the Windows Task Manager on Windows machines that have multiple CPUs.

1. Log in to the monitored Windows machine.
2. Press CTRL+ALT+DEL.
3. Click **Task Manager | Processes**.
4. Right-click the name of the process whose affinity you want to set and select **Set Affinity**.
   Note: This option is unavailable when the system has one CPU.
5. Select which of the available CPUs you want to use for the process.

Note: You can also set process affinity for Microsoft SQL Server through the SQL Server Enterprise Manager.

Installing The SNMP Protocol

Spotlight is unable to display Open Ports information if the SNMP protocol has not been installed on:

- The Windows machine under diagnosis, AND
- The machine running the Spotlight client.

To install the SNMP protocol (Windows XP)

1. Open the **Control Panel | Add or Remove Programs | Add/Remove Windows components**.
2. Select **Management and Monitoring Tools** from the list of components.
3. Click **Details**.

4. Select **Simple Network Management Protocol**.
5. Follow the installation instructions.

Product Authorization Errors

Spotlight on Windows is embedded with a number of other Spotlights, including Spotlight on SQL Server, Spotlight on Active Directory and Spotlight on Exchange.

The embedded version of Spotlight on Windows shares the license of the other Spotlight product. You do not need to license it separately. If Spotlight on Windows reports that its license has expired this means the license of the product Spotlight on Windows shipped with has expired. You can renew the Spotlight on Windows license by renewing the license of the other Spotlight product.

Welcome

Spotlight is powerful diagnostic and problem-resolution tool for Unix and Linux operating systems. Its unique user interface provides you with an intuitive, visual representation of the activity on your host machine.

Spotlight Home Page

The Spotlight home page shows the flow of information and commands between various sub-components and the size and status of internal resources such as processes, disk files and memory structures.

Related operating system statistics are grouped together on panels that are connected by a series of graphical flows and icons. Spotlight updates these flows in real time so you can see how quickly data is moving through the system. The icons change color as Spotlight alarms are raised, upgraded, downgraded and canceled.

The panels on the Spotlight home page are described in more detail next. For a full discussion of the panels, see the Spotlight online help.

Tip: Hover the mouse pointer over a panel component for more information.

Background Information

What is Spotlight

Spotlight is powerful diagnostic and monitoring tool for Unix operating systems. Its unique user interface provides you with an intuitive, visual representation of the activity on your host machine. Graphical flows illustrate the rate at which data is moving between system components. Icons display the value of key statistics and measurements (metrics).

The power of Spotlight lies in its ability to provide visual and audible warnings if the performance metrics exceed acceptable thresholds. The components and dataflows change color to show you the source of the problem.

A range of visual graphs and tabular grids provide you with detailed information about your Unix hosts. This information can be viewed on the screen or printed.

You can set Spotlight to warn you when a threshold is reached. You may set a number of thresholds so that warning messages are displayed well before the traffic levels into or out of a host become critical. Spotlight uses a number of different techniques to warn you when a Unix host is exceeding a threshold.

When Spotlight detects a condition that it considers is a potential problem, it not only informs you about it, but also advises you what you could look at to diagnose the problem further, and suggests corrective actions.

Features of Spotlight

Some of the main features and benefits of Spotlight on Unix are that it:

- Provides a visual representation of process flows within Unix, allowing you to observe actual host activity in real time.
- Visually identifies bottlenecks and provides extensive drilldown capabilities.
- Displays the details of problem areas, including CPUs, disks, processes, and system calls statistics for rapid problem identification.
- Provides visual and audible warnings to alert you when performance metrics exceed acceptable thresholds.
- Provides detailed information about specific components through the use of drilldowns, therefore allowing you to pin point the source of problems.
- Assesses the normal rate of process flows via a calibration process, and sets the display speed of the visual indicators accordingly.
- Is easy to install.

Connect to Unix Systems

Configure the Unix System

To monitor a Unix system with Spotlight, ensure the Unix system is configured as follows.

Unix servers and versions.

Spotlight supports the following server operating systems:

- Sun Solaris 9, 10, 11
- HP-UX 11i, 11i v2, 11i v3
- IBM AIX 5.2, 5.3, 6.1
- Red Hat and SUSE operating systems running Linux 2.4 and 2.6 kernels

Unix programs.

Ensure the following Unix programs are accessible to the Unix login (through Spotlight):

- Perl 5.x
- awk
- cat
- date
- df
- grep
- ifconfig
- iostat (not HP-UX)
- netstat
- ps
- sar
- sed
- tr
- uname
- uptime
- vmstat
- wc
- who

For HP-UX, additionally

- bdf
- cstm
- getconf
- swapinfo
- /usr/sbin/ioscan

For AIX, additionally

- lsattr
- lsdev
- lsps
- prtconf

For Solaris, additionally

- /etc/swap
- mpstat
- nawk
- prtconf

Unix User Permissions and Installation Settings

- The Unix user should have no special processing on log-on. In particular there must be no input required from the user, and nor should any special login banners be displayed.
- On AIX, the user must be a member of the "adm" group to be able to run the **sar** command.
- On Linux, the **sysstat** package must be installed to enable the user to get detailed disk I/O information.

- On Linux the **/proc** filesystem must be present.
- For connection using SSH, the **sshd** daemon must be installed and running.

Remote Connectivity: SSH or REXEC

Spotlight on Unix will require you to select the connection type: SSH or REXEC. Information on SSH and REXEC is freely available on the Internet. We recommend SSH as password data is transmitted encrypted. REXEC does not encrypt password data.

Notes:

- Make sure the relevant SSH or REXEC daemon is running on the Unix machine and is configured to receive remote connections.
- Commands to observe system activity (for example, **netstat, vmstat, iostat, sar**) must be accessible to REXEC / SSH sessions for Spotlight to observe Unix activity. Ensure these commands are located in the search path for REXEC / SSH sessions. If not, Spotlight will display an error.

Notes (Specific to SSH):

- Spotlight supports both SSH1 and SSH2 protocols.
- To allow Spotlight to make SSH connections to any Unix or Linux hosts that permit SSH connections, you may need to alter the **PasswordAuthentication** configuration item in the **sshd_config** file. Set the value of **PasswordAuthentication** to **yes**. Once you have modified the **sshd_config** file you must restart the **sshd process** to apply the new setting.
- Public-key encryption is supported under SSH2 only. DSA and RSA are supported.

Note (Specific to REXEC): When Spotlight is monitoring a Unix operating system via **REXEC** with a valid user ID and password, remote commands may not work on the Unix host unless that user ID is added to the **/etc/hosts.equiv** file on the host.

Connect to Unix Systems

1. From the Spotlight Browser select **All Connections | Spotlight on Unix**
2. Select the machine to connect to. If the Unix machine is not listed then follow the instructions to add a new connection.

Add a new connection

Note: Ensure the Unix system is configured before you connect to it. Configure the Unix System

1. Click **File | Connect**

2. Select **Spotlight on Unix** on the Connections menu.

3. Double-click **Add new connection**.

4. Fill in the **Details** page of the Properties window:

Field	Description
Connection name	Enter the preferred display name for the Unix machine. **Note**: If left blank, the Connection name field resets to the value of the Address field.

Server Connection Details

Field	Description
Address	Enter the hostname or IP address to the Unix machine.
User	Enter the user name to login to the Unix machine. **Note:** The root user is not allowed. Remote login as "root" has been disallowed for security reasons.
Password	Enter the password to login to the Unix machine. **Note:** Not applicable when **Use SSH Public / Private Keys** is selected. Applicable when **Save password details (for this connection)** is selected.
Connection Type	Select according to the Unix system's configuration. The options are: REXEC and SSH. Configure the Unix System
Port Number	Enter the port number for SSH (secure shell) connection to the Unix machine. The default value is *22*. **Note:** Applicable when the **Connection Type** is **SSH**.

SSH Key Authentication

Note: Applicable when the **Connection Type** is **SSH**.

Field	Description
Use SSH Public / Private Keys	Select according to the Unix machine's configuration.
SSH Key Type	Choose the type of key to use when making the Spotlight connection: RSA or DSA. Configure the Unix System
SSH Private key Filename	Locate the file that contains the private key for the Spotlight connection. Either click  or type the filename and location.
SSH Passphrase	Type the passphrase used to decrypt the private key. **Note:** Applicable when **Save password details (for this connection)** is selected.

Select **Save password details (for this connection)** to save all entered password details.

5. Close the dialog.

Click	Description
Connect	Save changes and open the connection in Spotlight. **Note**: If you experience problems connecting there may be an issue with the Unix configuration. Configure the Unix System
OK	Save changes. Do not open the connection in Spotlight.
Cancel	Do not save changes.

Home Page

Spotlight Home Page

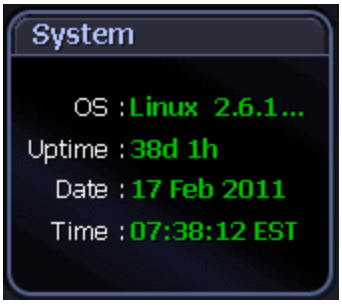
The Spotlight home page shows the flow of information and commands between various sub-components and the size and status of internal resources such as processes, disk files and memory structures.

Related operating system statistics are grouped together on panels that are connected by a series of graphical flows and icons. Spotlight updates these flows in real time so you can see how quickly data is moving through the system. The icons change color as Spotlight alarms are raised, upgraded, downgraded and canceled.

The panels on the Spotlight home page are described in more detail next. For a full discussion of the panels, see the Spotlight online help.

Tip: Hover the mouse pointer over a panel component for more information.

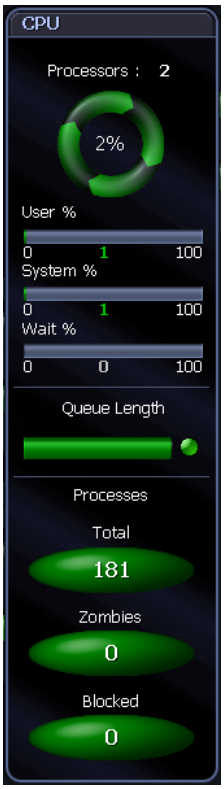
System Panel



The **System** panel indicates the status of the operating system:

- The type and version of operating system.
- The length of time since the machine was last booted.
- The date of the last data collection. (system date)
- The time of the last data collection. (system time)

CPU Panel



The **CPU** panel shows processor and load information for the Unix system:

- The number of CPUs in the machine.
- The CPU load (as a percentage) across all CPUs on the machine.
- The percentage of time the CPU is in the **User** state across all CPUs.
- The percentage of time the CPU is in the **System** state across all CPUs.
- The percentage of time the CPU is in the **Wait** state across all CPUs. **Wait** is where the machine can only wait for I/O, or something similar, to complete.
- The length of the run queue in which processes are waiting to be executed. Processes in this queue will be run when the CPU becomes available.
- The total number of processes that are running on the machine.
- The number of "zombie" processes: child processes whose termination has not been acknowledged by their parent process.
- The number of processes waiting for some event or condition before they can continue execution.

The flows between the **CPU** panel and the **Memory** panel represent paging information between CPU and memory on the Unix host. The flows indicate the rate data is written out of and read in to memory. The unit of measure is dependent on the Operating System. See "CPU Panel" in the online help for more information.

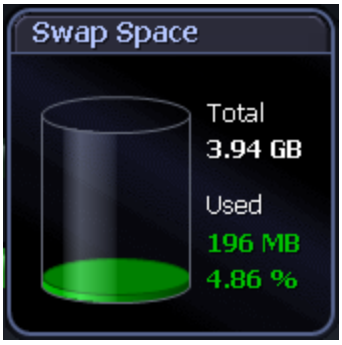
Memory Panel

The **Memory** panel displays detailed information about the physical and virtual memory on the Unix system. It shows statistics such as:

- The total amount of physical memory in RAM.
- The amount of physical memory that is free.
- The total amount of virtual memory for the system.
- The amount of virtual memory that is free or unused.
- The amount of virtual memory consumed, expressed as a percentage of its maximum size.
- Where applicable, the number of processes whose pages have all been moved into swap space.

The flows between the **Memory** panel and the **Swap Space** panel represent the rate at which processes are being swapped out to disk and swapped in from disk.

Swap Space Panel



The **Swap Space** panel shows the configured swap space on the Unix system:

- The total amount of configured swap space on the system.
- The amount of swap space currently in use.

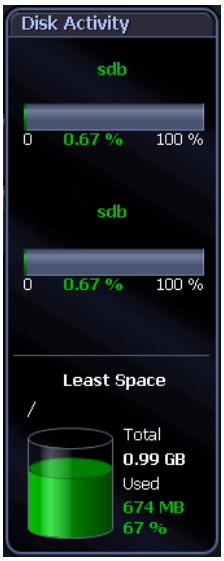
Network Panel

The **Network** panel shows the logins, connections and movement of data on the Unix system:

- The number of users currently logged on to the machine.
- The number of external programs with which the machine is currently communicating. The three types of connections shown are **Established**, **Time_Wait**, and **Close_Wait**.
- How fast is data moving through the NICs (network interface cards). The statistics refer to the rate at which network packets and errors are being received and sent through the NICs.

The flows between the **Network** panel and the **CPU** panel represent the rate of data transfer between the Unix host and the connected network. The flows include the incoming and outgoing rates of data to and from the Unix host, and the rates at which bad packets are received from, or sent to, the network.

Disk Activity Panel



The **Disk Activity** panel shows information on disk usage:

- Activity gauges that display the percentage activity of the disks or partitions with the highest and second-highest read/write rates.
- The name of the mount point of the disk with the least amount of free space that is not already 100% full.

  Note: You can configure this control to display the total and used space on ANY available disk on the system. Click **View | Options**. For more information see the online help.
- The total size of this disk.
- The amount and percentage of disk space that is currently being used by this disk.

The flows between the **Disk Activity** panel and the **Memory** panel represent the number of writes the system makes to the disks per second, and the number of reads the system makes from the disks per second.

Alarms

Spotlight Alarms

Spotlight alerts you to problems with your system by issuing an alarm. You can configure Spotlight in the level of severity that constitutes an alarm, to disable an alarm, and the actions Spotlight takes on raising the alarm.

When an alarm is raised Spotlight performs one or more of the following actions:

- Changes the color or intensity of relevant components.
- Gives audible warnings.
- Sends email notifications.

Actions you can take on an alarm being raised include:

- View details of the statistics that caused the alarm in a Spotlight drilldown page. Spotlight Drilldowns
- View the Spotlight online help.
- View details of the alarm in the Spotlight **Alarm Log** drilldown.
- Snooze the alarm.
- Save the alarm details.
- Filter the list of alarms.

Following are the alarms specific to Spotlight. For possible solutions to the problems indicated by these alarms or for information on how to diagnose problems further, see Spotlight alarms in the online help.

Alarm	Description
Blocked Processes alarm	Blocked processes are processes that are waiting on information to become available in memory, or that are waiting for a shared resource, or for the completion of disk I/O or network I/O. A high level of blocked processes may indicate an under-configured machine.
Input Error Packets Flow alarm	The Input Error flow represents the number of erroneous network packets coming into the machine per second. The **Input Error Packets Flow** alarm may warrant investigation as even a low error rate can indicate network problems.
Output Error Packets Flow alarm	The Output Error flow represents the number of erroneous network packets sent by the machine per second. The **Output Error Packets Flow** alarm may warrant investigation as even a low error rate can indicate network problems.
Page In alarm	A large number of page-ins may be a symptom of a large number of recent page-outs (see Page Out alarm below). To find out what process is reading these pages in, check the resident size of the processes you are running, and see which ones are increasing in size. Alternatively, a large number of page-ins may occur when a large process has just stopped, and the kernel decides to fill that space with memory pages owned by other processes. Check if an important process has ended unexpectedly.

Alarm	Description
Page Out alarm	If an active process asks the kernel for more memory than there is immediately available, the kernel will write old memory pages out to swap space. This is known as paging. To stop paging, make sure that there is enough RAM available to support the size of the processes you want to run.
Percentage Busy alarm	The **Most Active Disk** gauge shows the disk with the highest read/write rates. The **Percentage Busy** alarm is triggered when the read/write rate of the most active disk exceeds a specified threshold. The type of alarm that is activated is determined by the percentage of read/write activity experienced by the disk.
Swap Space alarm	If the total amount of swap space allocated to a Unix host becomes full, the machine may halt all processes, or critical actions may be prevented from occurring. The **Swap Space** alarm may indicate a runaway process or an under-configured machine.
Swap In Flow alarm	The Swap In flow represents the number of processes swapped from disk per second. The **Swap In Flow** alarm may indicate a machine that is under-configured for its workload.
Swap Out Flow alarm	The Swap Out flow represents the number of processes swapped to disk per second. The **Swap Out Flow** alarm may indicate a machine that is under-configured for its workload.
Used Percentage alarm	The **Least Space / Disk Space** container displays the percentage of used disk space for a specified filesystem. The **Used Percentage** alarm indicates that the specified filesystem is full or filling up. If the filesystem fills up completely, no more data can be written to it.
Zombie Processes alarm	The **Zombie** button in the CPU panel shows the number of terminated child processes that have not been acknowledged by their parent process. The **ZombieProcesses** alarm may indicate the presence of an inferior program, or an entry in **/etc/inittab** (or equivalent) that prevents **init** from completing its startup sequence.

Blocked Process Alarm

The Blocked Processes button in the **CPU panel** shows the number of processes waiting on information to become available in memory.

Processes can also become blocked when they are waiting for:

- disk I/O completion,
- network I/O completion, or
- a shared resource.

A high level of blocked processes may indicate an under-configured machine.

The type of alarm that is activated is determined by the number of blocked processes waiting on information.

Related Topics

CPU Panel

Input Error Packets Flow Alarm

The Input Error Flow represents the number of erroneous network packets coming in to the machine per second.

The **Input Error Packets Flow** alarm may warrant investigation as even a low error rate can indicate network problems.

The type of alarm that is activated is determined by the number of erroneous network packets coming in to the machine every second.

Related Topics

Network Panel

Output Error Packets Flow Alarm

The Output Error Flow represents the number of erroneous network packets sent by the machine per second.

The **Output Error Packets Flow** alarm may warrant investigation as even a low error rate can indicate network problems.

The type of alarm that is activated is determined by the number of erroneous network packets sent by the machine every second.

Related Topics

Network Panel

Page In Alarm

A large number of page-ins may be a symptom of a large number of recent page-outs. To find out what process is reading these pages in, check the resident size of the processes you are running, and see which ones are increasing in size.

A large number of page-ins may also occur when a large process has just stopped, and the kernel decides to fill that space with memory pages owned by other processes. Make sure that an important process hasn't died unexpectedly.

Page Out Alarm

If an active process asks the kernel for more memory than there is immediately available, the kernel will write old memory pages out to swap space. This is known as **paging**.

To stop paging, make sure that there is enough RAM available to support the size of the processes you want to run.

Percentage Busy Alarm (Most Active Disk)

The **Most Active Disk** gauge in the **Disk Activity** panel shows the disk with the highest read/write rates.

The **Percentage Busy** alarm is triggered when the read/write rate of the most active disk exceeds a specified threshold.

A disk that is more than 20% busy (according to *Sun Performance and Tuning* by A. Cockroft) should be investigated, and possibly have data on it split up and moved to different disks.

The type of alarm that is activated is determined by the percentage of read/write activity experienced by the disk.

Related Topics

Disk Activity Panel

Swap Space Alarm

The **Swap Space** panel on the main Spotlight on Unix window shows the total amount of swap space allocated to the machine you are diagnosing, and the amount of swap space currently in use.

If the total amount of swap space allocated to a Unix host becomes full, the machine may halt all processes, or critical actions may be prevented from occurring. Running out of swap space may indicate a runaway process or an under-configured machine.
The type of alarm that is activated is determined by the percentage of swap space currently in use.

Related Topics
Swap Space Panel

Swap In Flow Alarm

The Swap In Flow represents the number of processes swapped from disk per second.
A machine that is swapping processes to or from disk is usually under-configured for its workload.
The type of alarm that is activated is determined by the number of processes swapped from disk every second.

Swap Out Flow Alarm

The Swap Out Flow represents the number of processes swapped to disk per second.
A machine that is swapping processes to or from disk is usually under-configured for its workload.
The type of alarm that is activated is determined by the number of processes swapped to disk every second.

Used Percentage Alarm

The **Least Space / Disk Space** container in the **Disk Activity** panel displays the percentage of used disk space for the specified filesystem.
The **Used Percentage** alarm indicates that the filesystem is full or filling up. If the filesystem fills up completely, no more data can be written to it. For example:

- If the /var filesystem fills, you may have problems with system activities such as e-mail or printing.
- If the /home filesystem fills, user applications may be affected.
- If the /tmp filesystem fills, any applications that use temporary files may be affected.

Notes:

- The data displayed in the **Least Space / Disk Space** container is collected from:
  - The filesystem that has the least amount of free space, OR
  - A user-specified filesystem on the Unix host.
- To choose the filesystem whose details are displayed in the container, right-click the container and select **Disk Options**.

Related Topics
Disk Activity Panel

Zombie Processes Alarm

The Zombie button in the **CPU panel** shows the number of terminated child processes that have not been acknowledged by their parent process.

A high level of zombie processes is indicative of the presence of an inferior program, or an entry in /etc/inittab (or equivalent) preventing init from completing its startup sequence.

The type of alarm that is activated is determined by the number of zombie processes waiting to be exited.

Related Topics

CPU Panel

Drilldowns

Spotlight Drilldowns

When you have isolated a problem, you can display a drilldown page, whose charts and tables provide a detailed breakdown of the underlying statistics.

Following are Spotlight drilldowns.

Drilldown	Description
Processes and Services	The pages in the **Processes and Services** drilldown list all the processes running on the Unix machine (including "zombie" processes), and all the services found in the **/etc/services** file (running or not). Useful features in this drilldown include: • **Processes page**: View processes in a standard table or tree structure. In the tree structure secondary processes are shown as "children" of the processes that run them. Click on a process for more detailed information on that process including CPU and Memory utilization. From the Memory Usage chart it is possible to detect memory leaks of the process over the display period. • **Zombies page**: View child processes whose termination has not been acknowledged by their parent process. • **Services page**: Use a shortcut menu option to test whether a specified service is available.
Activity Summary	The pages in the **Activity Summary** drilldown – **Activity, Disk, Memory, CPU, Network**, and **Logins** – show details of the different types of activity on the Unix system.
Filesystems	The **Filesystems** drilldown displays detailed information about the filesystems on the Unix machine. This information can be viewed in chart or table form: right click over the drilldown page.
Alarm Log	The **Alarm Log** drilldown displays information on the alarms associated with the Unix machine.

Processes and Services

Processes

Processes Page

The **Processes** page lists the processes currently running on the Unix system.

Note: The **Processes** page shows the output from the Unix ps command.

To open the Processes page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Processes | Processes**.

For each process, you can view the information that follows:

Notes:

- Some columns in the table are hidden by default. To view hidden columns, right-click a column heading and choose **Organize Columns...** from the shortcut menu.
- Refer to man ps(1) for further details on the values shown in the **Processes** grid.
- When the table is displayed as a flat grid (not a tree), right click any value in the table and select **Show processes where...** or **Hide processes where...** to filter the table by that value.

Column	Description
Process	The name of the process. **Notes:** • Click on a process to display more information on that process. Process Details Page • Right click on the process and select **Kill Process** (if enabled) to end any processes currently running on the Unix machine. • Some of the processes may be running other, secondary, processes. Right click the grid and select **Show as Tree** to display the secondary processes as branches of the initial process. 
Nice	The Nice value describes the relative priority of the specified process. A process with a low Nice value is running at a higher priority than a process with a high Nice value.
PID	The process identifier for the specified process.
PPID	The process identifier for the process that is the parent of the specified process.
% CPU	The percentage of CPU time used by the process in the last sample interval.
State	The state of the process. Process states are platform dependent.

Platform	Value	Description
AIX	A	Active
	W	Swapped
	I	Idle
HP-UX	W	Waiting
	I	Intermediate
	X	Growing

Column	Description
	Platform / **Value** / **Description** Linux / D / Uninterruptible Sleep Linux / W / Has no resident pages Linux / < / High priority process Linux / N / Low priority tasks Linux / L / Has pages locked into memory Solaris / O / Process is running on a processor Solaris / S / Sleeping. That is, the process is waiting for an event to complete. Solaris / R / Runnable. That is, the process is on the run queue. Solaris / Z / Zombie state. That is, the process has been terminated and the parent process is no longer waiting. Solaris / T / The process has been stopped by a job control signal, or because it is being traced.
Terminal	The Unix terminal session where a user started the specified process. If the process was not started by an interactive user, the Terminal value is set to "?".
User	The name of the user to whom the process belongs.
Time	The amount of CPU time the process has consumed.
Virt Mem (MB)	The amount of virtual memory in use by the process, measured in megabytes.

Process Details Page

The **Process Details** page contains a detailed list of properties for the process selected on the **Processes** page.

To open the Process Details page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Processes | Processes**.

3. Select a process to view its details

For the selected process

The **Memory Usage** chart displays data series for the virtual memory and physical memory used by the selected process.

The **CPU Usage** chart displays CPU usage for the selected process.

The information grid is as follows.

Item	Description
Process	The name of the process.
Process ID	The process identifier for the specified process.
User	The name of the user to whom the process belongs.
Parent PID	The process identifier for the process that is the parent of the specified process.
Group ID	The group identifier for the user that owns the specified process.
Processor %	The percentage of CPU time used by the process in the last sample interval.
Elapsed Time	How long the process has been running.
Cumulative Time	The amount of CPU time the process has consumed.
State	The state of the process. Process states are platform dependent.

Platform	Value	Description
AIX	A	Active
	W	Swapped
	I	Idle
HP-UX	W	Waiting
	I	Intermediate
	X	Growing
Linux	D	Uninterruptible Sleep
	W	Has no resident pages
	<	High priority process
	N	Low priority tasks
	L	Has pages locked into memory
Solaris	O	Process is running on a processor
	S	Sleeping. That is, the process is waiting for an event to complete.
	R	Runnable. That is, the process is on the run queue.
	Z	Zombie state. That is, the process has been terminated and the parent process is no longer waiting.
	T	The process has been stopped by a job control signal, or because it is being traced.

Terminal	The Unix terminal session where a user started the specified process. If the process was not started by an interactive user, the Terminal value is set to "?".
Priority	The basic priority assigned to the process – the lower the number, the higher the priority. Unix can modify this priority by

Item	Description
	means of the renice command.
Nice	The Nice value describes the relative priority of the specified process. A process with a low Nice value is running at a higher priority than a process with a high Nice value.
Virt Mem (MB)	The amount of virtual memory in use by the process, measured in megabytes.
Physical Mem (MB)	The amount of physical memory in use by the process, measured in megabytes.
Command	The command executed by the process.

Zombies Page

Unix expects a parent process to acknowledge the termination of any child process. If it fails to do so, the terminated child process is classified by the kernel as a **zombie**.

A high number of zombie processes indicates that one or more processes are not handling their child processes properly. You may need to **kill** the parent process to eliminate its zombie child process.

To open the Zombies page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Processes | Zombies**.

For each process, you can view the information that follows:

Column	Description
PID	The process identifier for the specified process.
PPID	The process identifier for the process that is the parent of the specified process.
UID	The user identifier for the user to whom the process belongs.
State	**Z** for Zombie. That is, the process has been terminated and the parent process is no longer waiting.
Priority	The basic priority assigned to the process – the lower the number, the higher the priority.
Nice	The Nice value describes the relative priority of the specified process. A process with a low Nice value is running at a higher priority than a process with a high Nice value.
CPU Utilization	A value representing the amount of CPU time used by the process. The metric used here may differ across Unix implementations.
Terminal	The Unix terminal session where a user started the specified process. If the process was not started by an interactive user, the Terminal value is set to "**?**".
Command	The command executed by the process.

Services Page

The **Services** page lists (by name) the popular services found in the /etc/services file of the Unix machine. These services may or may not be enabled.

To open the Services page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Processes | Services**.
   

The **Services** table contains the following information.

Column	Description
Service name	The name of the specified service.
Port number	The logical port used by the service to handle data.
Protocol	The transfer protocol used by the service. Possible protocols include TCP (Transmission Control Protocol) and UDP (User Datagram Protocol).
Aliases	Alternative names for the service.
Active?	The status of the port used by the service (initially blank). To display the status, right-click on a service in the table and select **Test port**. Possible values are: • Yes - A process on the server is listening on that port. • No - There is no process listening on that port. • Connecting... - Spotlight is waiting for a response from the server.

Activity Summary

Activity Page

The **Activity** page contains several charts.

To open the Activity page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Activity Summary | Activity**.
   

Charts on the Activity page

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
CPU Utilization	The **CPU Utilization** chart shows the CPU activity of the host machine. If the current activity reaches levels of greater than **100** or less than **0**, run **vmstat(1)** to determine the reason for the erroneous values.
Run Queue	The **Run Queue** chart shows the amount of CPU time that will be spent performing tasks. The value is expressed as a fraction. Divide the value by the number of processors running. If the result of the calculation is greater than **1**, you may need more processors. The lines on the chart show the run queue averaged over 1, 5, and 15 minutes. If the value of the **1 minute** line divided by the number of processors exceeds the value **1**, there is merely a spike in activity. However, if the value of the **15 minute** line divided by the number of processors exceeds **1**, you may need more processors.
Total Disk I/O	The **Total Disk I/O** chart shows the total number of I/O operations for each disk and NFS server.
Network Utilization	The **Network Utilization** chart represents the current network activity for the machine you are diagnosing. It shows the rate at which packets are being received by the machine and are being sent by the machine.
Paging	The **Paging** chart shows the rate of data pages read from, and written out to, disk over time. Typically, high paging rates indicate insufficient system memory, a large number of processes, or a number of very large processes. The unit of measure on the Y-axis is dependent on the Operating System.
Free Memory	The **Free Memory** chart shows the amount of available physical memory in the machine. For Solaris, this is typically a low number. If necessary, the page-stealing daemon will seek out memory pages to re-claim them.

Operating System	Unit of Measure
Sun Solaris	Kilobytes per second
HP-UX	Pages per second
IBM AIX	Pages per second
Linux	Kilobytes per second. Old versions of the kernel may measure in blocks per second. Refer to your Linux documentation.

Disk Page

The **Disk** page contains several charts.

To open the Disk page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Activity Summary | Disk**.

To view charts on the Disk page

Right-click the **Disk** page and select **View as Chart**.

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Disk Reads	The **Disk Reads** chart shows the rate at which data is being read off each disk.
Service Time	The **Service Time** chart shows the sustained service time for all disks on the machine you are diagnosing. If the sustained service time of any of your disks exceeds **50** milliseconds, move your data onto the under-utilized disks.
Disk Writes	The **Disk Writes** chart shows the rate at which data is being written to each disk.
Queue Length	The **Queue Length** chart shows the average number of write operations waiting to be completed for each disk.
Wait Time	The **Wait Time** chart shows the amount of time that the queue for each disk is not empty. The time is expressed as a percentage of total time.
Busy	The **Busy** chart shows the amount of time each disk spends processing its transactions. The time is expressed as a percentage of total time.

To view the Disk page as a table

Right-click the **Disk** page and select **View as Grid**.

Memory Page

The **Memory** page contains several charts.

To open the network page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Activity Summary | Memory**.

Charts on the Memory page

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Physical	The **Physical Memory** chart shows the total physical memory (RAM) on the Unix host, and the amount of physical memory that is currently free.
Virtual	The **Virtual Memory** chart shows the total amount of memory in use on the Unix host. This includes physical memory plus space in the paging files. A steady increase in virtual memory usage can indicate that a process on the system has a memory leak.
Paging	The Paging chart shows the rate at which pages are being swapped in and out of memory. The chart displays three data series: • **Page In** - The rate at which **read** requests are made to the swap device. • **Page Out** - The rate at which **write** requests are made to the swap device. • **Scan rate** - The rate at which the memory manager scans for a free page in swap. If this rate is rising, it indicates that system memory is under pressure. A sustained high rate of paging can cause problems with overall system degradation due to disk thrashing and CPU load. **Note**: Scan rate is not available for Linux.
Cache	The **Cache** chart shows the percentage of recent file requests (**read** and **write**) that are satisfied by the memory cache, and that do not require a request to the paging areas on disk.

CPU Page

The **CPU** page contains several charts.

To open the network page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Activity Summary | CPU**.
   

Charts on the CPU page

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Total CPU Usage	The total CPU utilization for all processors on the Unix host.
CPU Usage by Processor	The CPU utilization for each processor on the Unix host. Each processor is represented by a single line on the chart, and by an item in the legend at the top right of the chart.
Run Queues	The number of threads (program execution units) that are waiting to run on the Unix host.
Context Switching	The rate at which the Unix host has been processing context switches. A context switch occurs when a processor switches from one thread to another. Context switches occur when a running thread voluntarily relinquishes the processor, is pre-empted by a higher priority ready thread, or switches between user-mode and privileged (kernel) mode to invoke a system service.

Network Page

The **Network** page contains several charts.

To open the network page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Activity Summary | Network**.
   

Charts on the Network page

Notes:

- Every chart has a **legend** (list of symbols) to its right that describes the various series (line graphs) on the chart.
- Click an item in the legend to highlight its series (line) in the chart. Click a second time to return the series to its normal appearance.
- Move the mouse pointer over an item in the legend to view the current value for that series within the chart.

Chart	Description
Network Utilization	The total rate of data traffic across all network cards (NICs) for the Unix host, measured in packets/second. Separate graphs on the chart indicate the rates at which data packets are being: • Received by the Unix host from the network (**Packets In**). • Transmitted by the Unix host to the network (**Packets Out**).
Connections	The number of external services with which the Unix host is communicating. The graphs on this chart represent three types of connections: • Established - The total number of TCP/IP connections to this machine in the ESTABLISHED state.

Chart	Description
	• TIME_WAIT - The total number of TCP/IP connections to this machine in the TIME_WAIT state, where the local socket has closed, and it is waiting for the remote end to signal that it has done the same. • CLOSE_WAIT - The total number of TCP/IP connections to this machine in the CLOSE_WAIT state, where the remote end of the connection has shut down, and it is waiting for the local end to do the same.
Network Utilization by Kilobytes	The total rate of data traffic across all network cards (NICs) for the Unix host, measured in kilobytes/second. Separate graphs on the chart indicate the rates at which data is being: • Received by the Unix host from the network (**KB In**). • Transmitted by the Unix host to the network (**KB Out**).
Packets by Network Card	This chart shows the rate of data traffic for every network card (NIC) in the Unix host, measured in packets/second. For every NIC, a separate graph represents the data packets: • Received by the NIC from the network (**Packets In**). • Transmitted by the NIC to the network (**Packets Out**).
Error Rates by Network Card	This chart shows error rates for the data transferred by every network card (NIC) in the Unix host, measured in errors/second. For every NIC, a separate graph represents the errors in data: • Received by the NIC from the network (**Errors In**). • Transmitted by the NIC to the network (**Errors Out**).
Collisions by Network Card	A **collision** is the result of two devices trying to transmit data packets across the network at the same time. The network detects the collision of the two transmitted packets as an error, and discards them both. Both devices then need to re-send the data. This chart shows the rate at which collisions occur for every network card (NIC) in the Unix host.

Logins Page

The **Logins** page displays the users currently logged in to the selected connection.

To open the logins page

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Activity Summary | Logins**.

Data in the Logins page

For each login, you can view the information that follows.

Note: Not all of the columns in the Logins table may be visible by default. To view hidden columns, right-click the grid heading and select **Organize columns...**.

Column	Description
UserName	The name of a user logged in to the Unix host.
Line	The terminal device associated with this connection.
LoginTime	The date and time when the user logged in for this session.
Idle	The time elapsed since the user's last activity (if available).
PID	The Process ID of the connection or login.
Comments	Additional information about the connection, including the address from which the connection was made (if available).

Filesystems And Disk Information

The **Filesystems** drilldown displays information on the disk usage for each filesystem on the Unix system, and the proportion of disk space that has been used for each filesystem.

Note: Refer to man df(1) for further details on the values shown in the **Filesystems** page.

To open the Filesystems and Disk Information drilldown

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Filesystems**.

To view disk usage in a chart

Right-click the **Filesystems** page and select **View as Chart**.

The information is displayed on a set of bar graphs that represent used and free disk space. Use the drop-down **By Megabyte / By Percentage** control to specify how to view disk usage.

To view disk usage in a table

Right-click the **Filesystems** page and select **View as Grid**.

Column	Description
Filesystem	The Unix device that holds a filesystem.
Used Space	The amount of used space on the filesystem.
Free Space	The amount of free space on the filesystem.
Mounted On	The mount point for the filesystem.

To view disk usage for NFS mounted disks

NFS (Network File System) was developed by Sun Microsystems to allow a Unix host to use disk space on a remote machine as if it were local storage. Spotlight provides a shortcut option to allow you to show or hide disk usage for NFS mounted disks.

Right-click the **Filesystems** page and select **Show NFS mounted Filesystems**.

Alarm Log

The **Alarm Log** drilldown displays information on the alarms associated with the selected connection.

To open the alarm log

1. Select the **Spotlight on Unix** connection in the **Spotlight Browser**.
2. Click **Alarm Log**.
   

Notes:

- The Alarm Log drilldown is common to all Spotlight applications. See Spotlight Alarms for more information.
- The alarms are specific to the current Spotlight connection. Spotlight Alarms

Related Topics
Spotlight Alarms
Spotlight Alarms

View | Options

Spotlight on Unix - View | Options

You can set a number of options that affect the behavior and display of Spotlight on Unix via the Spotlight on Unix Options window. Each of the pages within the Spotlight on Unix Options window Disks and Other covers one aspect of Spotlight on Unix behavior.

To open the Spotlight on Unix Options window

Click **View | Options**.

Use this option…	To…
Unix Filesystem Metric	Control the display of disk information on the specified Spotlight on Unix drilldown pages.

Appearance

Unix Filesystem Metric

Use the Unix Filesystem Metric option in the Spotlight on Unix Options window to configure how disks are represented in the Disk Activity panel on the Spotlight home page. The Disk Activity panel represents the logical disks in the system you are analyzing.

To set the Unix Filesystem Metric option

1. Select **View | Options**.
2. Select **Appearance | Unix Filesystem Metric**.
3. Choose one of the following options:

Option	Description
Display Fullest Filesystem	For the current Spotlight connection, choose this option to display the details of the disk with the least available space. When you choose this option, the associated label in the lower half of the Disk Activity panel displays the text Least Space.
Display Following Filesystem	Choose this option to select a specific disk. Use the drop-down list to choose which disk whose details will be displayed. When you choose this option, the associated label in the lower half of the Disk Activity panel changes to Disk Space.

Troubleshooting Spotlight on Unix

This section identifies general problems that you may encounter when using Spotlight on Unix, and details how to address those problems. If you do not find a solution in this section then check the *Spotlight on Unix Release Notes*.

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Using Trace To Add Details To Support Bundle

When you contact Questsupport to seek assistance on a Spotlight issue, you can use **Spotlight tracing** to include additional information in the **support bundle** that you send to us.

To turn on Spotlight tracing

1. Close all open Spotlight on Unix connections.
2. Click **View | Options | Tracing**
3. Select **Turn client tracing on** to turn on tracing for the computer Spotlight on Unix is running on.
4. Select **Turn server tracing on** to turn on tracing for the Unix computer system.
5. Click **OK**.
6. Open the connection whose performance you want to trace.

With tracing turned on, Spotlight can collect additional information (such as the output from operating-system commands) for the rest of the current session.

When you create a support bundle with tracing turned on, the support bundle contains the additional information that Questcan use to investigate your support issue.

Note: All tracing information gathered for Spotlight on Unix is from the Spotlight client. There is no server tracing capability.

iostat Not Installed

Spotlight works with full functionality only when the **iostat** command is installed on the Unix system. This is NOT true for (HP-UX).

If **iostat** is NOT installed, Spotlight may display an error message such as **iostat: command not found**. If you encounter this error, you can:

- Choose to **ignore** the error. When you do so, the Spotlight error will no longer appear, but neither will a number of important disk statistics.
- Install the **iostat** command on the server. (On Red Hat Linux, this command is included in the **sysstat** package.)

Issues With Data Availability

Some data is unavailable for certain Unix configurations. See the *Spotlight on Unix Release Notes* for more information.

Authorize Spotlight

Spotlight is supplied with a time-limited trial key so you may test the product. When the trial key expires Spotlight reverts to a preview mode, which limits access to Spotlight. You will be able to see the Spotlight home page and one connection at a time. If you select to open a drilldown in preview mode the following message is displayed:

> The current license does not allow access to this functionality.

Contact your Quest representative to obtain the necessary authorization keys to ensure Spotlight remains fully functional when the trial key expires.

To enter a new authorization key:

While Spotlight is running

1. Click **Help | About Spotlight**.
2. Ensure **Installed Products** is to the front.
3. Locate Spotlight in the list of installed products.
4. Select **View / change product license**.
5. Click **Change this license**.
6. Enter the **Authorization key**.

Notes:

- The Windows user that updates the authorization key must have administrator access to the Windows registry and write access to the **Console\Licenses** sub-folder of the Spotlight installation folder.
- Make sure you enter the authorization key exactly as stated on your Product Authorization sheet or as provided by your Quest distributor. The site message is case sensitive. If you enter the authorization key incorrectly, the following message is displayed: Invalid authorization key
- If Spotlight is in preview mode and the trial period has not expired, check your computer system date is set correctly.

About us

We are more than just a name

We are on a quest to make your information technology work harder for you. That is why we build community-driven software solutions that help you spend less time on IT administration and more time on business innovation. We help you modernize your data center, get you to the cloud quicker and provide the expertise, security and accessibility you need to grow your data-driven business. Combined with Quest's invitation to the global community to be a part of its innovation, and our firm commitment to ensuring customer satisfaction, we continue to deliver solutions that have a real impact on our customers today and leave a legacy we are proud of. We are challenging the status quo by transforming into a new software company. And as your partner, we work tirelessly to make sure your information technology is designed for you and by you. This is our mission, and we are in this together. Welcome to a new Quest. You are invited to Join the Innovation.

Our brand, our vision. Together.

Our logo reflects our story: innovation, community and support. An important part of this story begins with the letter Q. It is a perfect circle, representing our commitment to technological precision and strength. The space in the Q itself symbolizes our need to add the missing piece – you – to the community, to the new Quest.

Contacting Quest

For sales or other inquiries, visit www.quest.com/contact.

Technical support resources

Technical support is available to Quest customers with a valid maintenance contract and customers who have trial versions. You can access the Quest Support Portal at https://support.quest.com.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. The Support Portal enables you to:

- Submit and manage a Service Request
- View Knowledge Base articles
- Sign up for product notifications
- Download software and technical documentation
- View how-to-videos
- Engage in community discussions
- Chat with support engineers online
- View services to assist you with your product

Third-party contributions

Third-party contributions

This product contains some third-party components (listed below). Copies of their licenses may be found at referencing http://www.quest.com/legal/license-agreements.aspx. Source code for components marked with an asterisk (*) is available at http://opensource.quest.com.

Table 1: List of Third-Party Contributions

Component	License or Acknowledgement
SynEdit 1.0	Portions created by Martin Waldenburg are Copyright (C) 1998 Martin Waldenburg. All Rights Reserved. Mozilla Public License Version 2.0 ================================== 1. Definitions ---------- 1.1. "Contributor" means each individual or legal entity that creates, contributes to the creation of, or owns Covered Software. 1.2. "Contributor Version" means the combination of the Contributions of others (if any) used by a Contributor and that particular Contributor's Contribution. 1.3. "Contribution" means Covered Software of a particular Contributor. 1.4. "Covered Software" means Source Code Form to which the initial Contributor has attached the notice in Exhibit A, the Executable Form of such Source Code Form, and Modifications of such Source Code Form, in each case including portions thereof. 1.5. "Incompatible With Secondary Licenses" means (a) that the initial Contributor has attached the notice described in Exhibit B to the Covered Software; or (b) that the Covered Software was made available under the terms of version 1.1 or earlier of the License, but not also under the terms of a Secondary License. 1.6. "Executable Form" means any form of the work other than Source Code Form. 1.7. "Larger Work" means a work that combines Covered Software with other material, in a separate file or files, that is not Covered Software. 1.8. "License" means this document. 1.9. "Licensable" means having the right to grant, to the maximum extent possible, whether at the time of the initial grant or subsequently, any and all of the rights conveyed by this License. 1.10. "Modifications" means any of the following: (a) any file in Source Code Form that results from an addition to, deletion from, or

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