FUJITSU COMPUTERS SIEMENS

*open*SM2 V7.0

INSPECTOR

Operating Instructions

Contents

1 Basics

1.1 What INSPECTOR can do

With INSPECTOR several BS2000/OSD, UNIX, Linux, Windows and VMware ESX Server systems can be monitored simultaneously. INSPECTOR consists of the manager on a Windows PC and agents which collect continuously measurement data from the monitored servers and send it to the manager which monitors and presents the measurement data.

INSPECTOR is part of the products *open*SM2 (BS2000/OSD)*, *open*SM2 (Solaris), *open*SM2 (Linux) , *open*SM2 (Windows) und *open*SM2 (VMware ESX Server). These products contain the manager and the corresponding agent.

In BS2000/OSD measurement data of the SM2 monitor, in the other systems measurement data of several system interfaces are collected. A list of all supported measurement variables can be found in the appendix.

On request the SM2 monitor resp. the agent additionally write the monitored data into a monitoring file. The monitoring file can be analyzed with the program ANALYZER.

For Solaris, Linux and Windows systems on request the agent additionally writes the process hit list for all intervals into a process hit list file, which can be analyzed together with the monitoring file.

* BS2000/OSD ® is a trade mark of Fujitsu Siemens Computers

1.1.1 Server list

In the manager the monitored servers are displayed in the server list. The server list has a tree structure showing the association of the servers to system platforms and server groups. The color of a server entry indicates the status of the server. The status display is updated with each new monitoring cycle.

1.1.2 Reports

For the presentation of the monitored data different types of reports with graphic or tabular representation are available, which are likewise updated with each new monitoring cycle.

1.1.3 Defining reports and measurement variables

All pre-defined reports are listed in the appendix together with the associated measurement variables under reports and measurement variables. You can define new measurement variables by linking measurement variables by formulas. You can change the assignment of the measurement variables to the pre-defined reports as well as freely define your own reports using the available measurement variables.

1.1.4 Monitoring

For the monitoring of servers rules can be defined, specifying the actions to be executed if certain conditions occur.

1.1.5 Process hit lists

If requested in the "Edit Server" dialog box, the manager can create a process hit list in each monitoring cycle, i.e. a list of the processes consuming the most CPU time in the cycle. The process hit list can be displayed in a server report for each interval in the chart.

1.1.6 Workload classes

Applications can be monitored purposefully by pooling the processes of an application in a workload class. Workload classes can be defined for UNIX, Linux and Windows servers.

1.1.7 Result files

In the configuration file of the agent, you can specify files, which are to be transferred from the server to the manager during each monitoring cycle together with the measurement data. These files are referred to as result files. You can use this mechanism to cyclically transfer any data to the manager in the form of text.

1.1.8 SNMP support

*open*SM2 offers a SNMP support for BS2000/OSD, Solaris and Linux.

1.1.9 Comments to INSPECTOR

After installation of INSPECTOR the application directory contains the file Comments.doc. It would be very helpful for us if you would communicate us your opinion and your suggestions to INSPECTOR. This would make it easier for us to incorporate your requirements in the further development of INSPECTOR.

1.2 Notes on implementation

Please observe the following information when implementing INSPECTOR.

1.2.1 The configuration file of the agent

Before you start the agent for the first time, you must modify the configuration file supplied with the product. For more information please refer to the section "Configuration file" in the chapters BS2000 agent, UNIX agent, Linux agent, Windows agent and VMware ESX Server agent.

1.2.2 Settings in the manager

All servers whose measurement data you want to monitor and present must be entered in the "Servers" dialog box. Here also the information necessary for the communication with the agents is stored.

In the "Settings" dialog box you can specify a port number to be used as default for the communication with the agents. In this dialog box you can also specify general settings for the monitoring.

1.2.3 Controlling of the data transfer

According to standard the agent transfers the measurement values of all measurement variables and monitoring objects in each monitoring cycle to the manager. In order to reduce the quantity of the transferred data, you can prevent the transfer of the measurement data for not required measurement variables and monitoring objects. These settings you make in the "Edit Data Transfer Filters" dialog box. In the server state window is displayed for each server whether data transfer filters are set.

1.2.4 Measurement data and authorization

The following measurement data are only provided if the agent is started with root authorization:

- UNIX systems general: process-specific measurement data
- Rel.UNIX systems: all network measurement data
- Solaris systems: TCP and UDP measurement data

Solaris systems: STORAGE data are only provided if the agent is started under an user ID with the authorization to execute the command "format".

Windows systems: in order that the agent can collect the monitoring data of a server remotely via the WMI interface ("agentless" monitoring), it must establish a connection to the server and therefor needs authentication data. The authentication data can be specified either when entering the server in the "Edit Server" dialog box or in the configuration file of the agent.

1.2.5 SNMP subagent

On Solaris and Linux systems the SNMP subagent must be started with root authorization.

1.2.6 Notes on performance

If you select the time axis greater than 4 hours in the "Settings" dialog box a restriction of the performance is possible dependent on the power of your PC.

This applies particularly to the following situations:

- Opening of reports
- Updating of reports with monitored objects if "In Every Cycle" or "For Time Axis" was selected for "Set Monitored Objects By Hit List". The setting "Once" however does not lead to any performance problems when updating.

1.3 Changes since the last version

***open*SM2 V7.0B INSPECTOR** contains the following main new features over the last version:

- Display of global standard reports in the server list
- Display of Hard- and Software properties of the monitored servers
- New names for reports and measurement variables

***open*SM2 V7.0A INSPECTOR** contains the following main new features over the last version:

- Improved installation of the manager
- Monitoring of VMware ESX Server systems
- Collection of process-specific monitoring data and process hit lists for Linux servers
- Configuration data in the monitoring file
- "Agent-less" collection of monitoring data from Windows servers remotely via WMI
- Configurable extent of data for monitoring file
- Change-over of the manager to MDI application (list of windows in the menu)
- Replacement of server buttons by the server list
- Display of the monitored servers and server groups as well as the standard reports in the server list as a tree structure
- Simplyfied opening of global and server reports
- Improved selection of monitored objects
- Assistent for new users

INSPECTOR V7.0A contains the following main new features over the last version:

- Monitoring of Windows servers
- Increase of the number of measurement variables per report from 10 to 15
- Analysis of process hit lists
- Enter and delete servers without restart
- Executability on terminal servers (user-specific application data directory)
- Redesign of the communication with the agents; a permanent connection is established to each agent

INSPECTOR V6.0A contains the following main new features over the last version **SM2ONLINE-PC V5.0A**:

- New measurement variables for BS2000 and UNIX
- Threshold monitoring replaced by rule-based monitoring
- Zoom function for time series charts
- Time axis adjustable between 15 minutes and 1 day
- Support of SNMP
- Formulas also for measurement variables with monitored objects
- Special formula *SUM for the sum of the measurement values of all monitored objects of a measurement variable

SM2ONLINE-PC V5.0A contains the following main new features over the last version:

- Monitoring of Linux systems
- New UNIX measurement variables
- Threshold values monitoring object-specific definable
- Measurement variable-specific automatic opening of reports during threshold value violation
- New function "Align windows"
- Smoothing function for lines in charts

SM2ONLINE-PC V4.1A contains the following main new features over the last version:

- In UNIX new measurement variables with process- and file system-specific measurement data.
- Monitoring of applications in UNIX by workload classes.

SM2ONLINE-PC V4.0A contains the following main new features over the last version:

- New measurement variables
- Controlling of the data transfer by selection of measurement variables and monitored objects
- Definition of filters for selection of monitored objects in host reports
- Automatic start of host procedures or PC batch files in case of threshold violation
- Shared pubset reports
- Classic reports

The correction level SM2ONLINE -PC V4.0A10 contains the following main new features over the release version SM2ONLINE -PC V4.0A00:

- Different port numbers for the communication of the servers with the PC Client and the communication of the PC Client with the "connector" program on the host.
- For monitored hosts in different time zones the specification of a time difference for the correction of the time stamps is possible.

1.4 Behavior in the event of error

A crossed out server symbol in the server list indicates that no data is being received from the agent or the agent reports an error. In the server state window or with the "Measurement Status" command in the context menu of the server the appropriate error message is output.

In the following error messages resp. symptoms and their possible causes are described.

Socket error 11001: Host not found

The name of the computer the agent is running on is not known on the PC.

The problem can be eliminated by specifying the IP address instead of the name.

Socket error 10060: Connect aborted due to time-out

The computer the agent is running on is not accessible (at the moment).

Possibly a firewall is preventing the connection.

Socket error 10061: Connection refused

The agent is not running or the port number specified for the agent in the manager does not match the port number in the configuration file of the agent.

The agent may have been abnormally terminated after an error. In this case the log file of the agent contains additional information.

ESX agent:

If the log file contains the entry

ESX-Reporter could not be started. GetShortPathName for VMPerlPfadForPl returns = 3

the VMware Scripting API is not installed or in the configuration file of the ESX agent a wrong path to the VmPerlScripting directory was specified (line VMPERL_PATH).

Socket error 10048: All local port numbers are already in use

In the specified range for the local port numberstaballgemein all ports are in use.

Invalid authentication for server <servername>

For this there can be different causes:

- Incorrect data for domain, user name and/or password were specified.
- The service Inspector Agent is running on the local system account.
  The service must be run on an other account with administrator rights.
- The remote system is a Windows 2003 Server system without SP1, which was booted and no login took place so far.
  The problem can be solved with SP1.

With invalid authentication the agent never tries a new start of the monitoring for the concerned server.

WMI error (restart) for server <servername> / WMI error (no restart) for server <servername>

An error occurred during the call of an WMI interface.

Depending on the error the monitoring for the server is started again (restart) or finally terminated (no restart).

Additional information (WMI interface, error code) can be found in the "inspectoragt.log" file.

The following entry in the log file can occur when a remote Windows 2000 Server system is to be monitored from a Windows XP / Windows 2003 Server system:

... WMI_refresh_thread ... Refresh failed with 0x80041001 (meaning: Allgemeiner Fehler)

This problem can be solved with Microsoft hotfix kb823442.

No connection to server <servername>

The agent cannot establish a connection to the server.

For this there can be different causes:

- The server does not exist or is down.
- On the server a firewall blocking the external access is active.

The external access to WMI is made by DCOM, a protocoll basing on RPC (Remote Procedure Call), which uses the ports 135 and 445 and additional dynamically requested ports.

No data is being transferred at present.

The manager announced itself at the agent, but still received no data. If this status persists for a longer time, there is a problem with the communication.

No data for some measurement variables resp. monitored objects

Possibly data transfer filters are defined for these measurement variables resp. monitored objects.

No data for LogicalDisk

On Windows 2000 Server systems the collection of performance data for LogicalDisk is deactivated as default. The collection can be activated with the diskperf -yV command.

In the event of an error, please add the following files for purposes of diagnosis:

- The files Config.mdb and Inspector.ini from the application data directory.
- The log file Collect.log. In this file the communication with the agents is logged if you set the trace level in the "Settings" dialog box to a value greater zero. The trace should only be activated for diagnostic purposes. The file Collect.log is located in the monitoring data directory (i.e. according to standard in the "data" subdirectory of the application data directory).
- All files from the monitoring data directory.
- The log file inspector.log of the UNIX, Linux or Windows agent resp. the log file S.OUT.INSPECTOR.<tsn>.<yyyy>-<mm>-<dd>.<hhmmss> of the BS2000 agent. The agent always writes this file.
- The trace file inspector.trace of the UNIX, Linux or Windows agent trace resp. the trace file SYSTRC.SM2-TOOLS.070.IN.<hostname> of the BS2000 agent. This file is written if you enter the line TRACE=YES in the configuration file of the agent. The agent makes a detailed log of its actions in this file. The trace should only be activated for purposes of diagnosis.

2 Monitoring

2.1 General

After the manager is started, the INSPECTOR dialog box is opened. This dialog box comprises a menu bar and a display area.

You use the commands of the menus in the menu bar to operate the manager.

On the left hand side of the display area beneath the menu bar is the server list, containing the monitored servers. When the manager is started for the first time after installation, the server list is initially empty because no servers are entered.

Beside the server list in the display area, the opened report windows are arranged. Reports can be opened and closed at any time.

2.1.1 Entering servers in the manager

Before you can monitor a server, you must first enter this server.

2.1.2 Activating and deactivating servers

You can activate and deactivate the monitoring for single servers.
You activate and deactivate the servers using the "Servers" dialog box.
If a server is activated, the manager evaluates the measurement data for the server, which the agent of the server sends. The new measurement data are continually checked against the conditions defined in the rules, and the reports are updated using the new measurement data.
If a server is deactivated, no data is collected or evaluated for the server, and the server does not appear in the server list.

2.1.3 Defining server groups

Before you can open global reports, you must define server groups.

2.1.4 Defining rules

For monitoring the servers you can define rules specifying actions to be executed, if certain conditions occur.

2.1.5 Arrangement of report windows

The arrangement of the report windows depends on whether or not "Automatic Arrangement" is marked in the "Windows" area of the "Settings" dialog box.

"Automatic Arrangement" is not marked

The report windows are positioned overlapping in the display area when opened.
You can change the size of the report windows by dragging the margins, and you can move the report windows to the desired position. With the command "Align" in the "Windows" menu you can evenly distribute the report windows over the display area.

"Automatic Arrangement" is marked

The report windows are automatically arranged in the display area.
Your specification for "Arrangement" in the "Windows" area of the "Settings" dialog box defines whether the other report windows are to be arranged on a line basis or on a column basis. The size of the report windows is calculated from the number of reports.

The arrangement is on a line basis or column basis in accordance with the following rules:

The windows of the global table reports are started at the top left, followed by the windows of the global snapshot and time series reports. Subsequently, the windows of the shared pubset reports of type table, snapshot, time series accumulated and time series follow. This is followed by all windows with server reports from server 1, then all reports from server 2 etc., whereby the server reports appear in the same sequence for each server. At last follow all classic reports.

Save Window Arrangement

The arrangement of report windows can be saved at any time.
To do this, use the "Save Arrangement" command in the "Windows" menu.

The saved arrangement can then be re-established at any time using the "Restore Saved Arrangement" command in the "Windows" menu; i.e. the reports which were open at the time of the save are again opened with the same position and size.

Arrangement sequence

You can define a sequence of saved window arrangements and let it be displayed automatically. To do this, use the "Define Arrangement Sequence" resp. "Activate Arrangement Sequence" command in the "Windows" menu.

2.2 Servers and server groups

All servers whose measurement data you want to monitor and present must be defined in the manager.

Server groups serve to summarize several servers, whose data are to be presented in a global report. A server group consists of up to 15 servers and must only contain servers of the same type - BS2000, UNIX, Linux, Windows or ESX. A global report can be opened once for each server group and displays the measurement values of all the servers in the server group. All servers, whose measurement data you want to present in global reports, must belong to a server group.

2.2.1 Editing servers

With the "Edit Servers..." command in the "Servers" menu you open the "Servers" dialog box, via which you can enter new servers or modify and delete existing entries.

2.2.2 Editing server groups

You can edit the server groups with the "Edit Server Groups..." command in the "Servers" menu.

This command opens the "Edit Server Groups" dialog box, via which you can enter new server groups or modify and delete existing entries.

2.3 Server list

In the manager the monitored servers are displayed in the server list. The server list has a tree structure, in which the association of the servers to system platforms and server groups becomes visible. By one click with the right mouse button on a server or a server group in the server list you open a context menu. The instructions of this context menu are described further below.

The server list is normally displayed when starting the manager and can be closed and opened with the "Server List" command in the "Display" menu.

2.3.1 Status display

The server symbol and the color of the server entry in the server list indicate the monitoring status for a server. Below is a description of the stati represented by the various colors.

 **Crossed out server symbol**

No data is being received from the agent, or the agent reports an error.
More information is displayed in the server state window or with the "Measurement Status…" command in the context menu of the server.
A description of possible reasons you find in the section "Behavior in case or error".

 **Normal server symbol**

Data transfer is running normally. The color of the server entry indicates the status of the server.

White

No exception situation exists.

<Color>

An alarm condition is present, i.e. all conditions of a defined rule are fulfilled; <Color> is the color assigned to the alarm level of the rule.
If alarm conditions for several rules are present the rule with the highest alarm level determines the color.

More information is displayed with the "Alarm Messages…" command in the context menu of the server.

2.3.2 Opening default reports

The server list contains for each server group and for each server the global reports resp. server reports defined as default reports. In the "Specify Global Default Reports" dialog box resp. the "Specify Default Reports" dialog box you can define which reports are to belong to the default reports.

You can open a single default report or all default reports by clicking on the corresponding report name or on "Default Reports" with the left mouse button.

2.3.3 The context menu of a server group

When you click on a server group with the right mouse button, a context menu containing the following commands is opened:

Specify Default Reports...

This command opens the "Specify Global Default Reports" dialog box.
In this dialog box you can configure which default reports are to be displayed in the server list.

Open Reports...

This command opens the "Open Global Reports" dialog box.
In this dialog box you can open global reports for the report group.

Close All Reports

With this command you close all global reports for the server group.

2.3.4 The context menu of a server

When you click on a server with the right mouse button, a context menu containing the following commands is opened:

Edit Data Transfer Filters...

This command opens the "Edit Data Transfer Filters" dialog box.
In this dialog box you can define filters for the transfer of measurement values for measurement variables and monitored objects.

Specify Default Reports...

This command opens the "Specify Default Reports" dialog box.
In this dialog box you can configure which default reports are to be displayed in the server list.

Open Reports...

This command opens the "Open Server Reports" dialog box.
In this dialog box you can open server reports.

Close All Reports

With this command you close all server reports for the server.

Edit Time Windows...

This command opens the "Edit Time Windows" dialog box.
In this dialog box you set the time windows for the validity of server-specific rules.

You edit time windows for global rules using the "Servers" menu of the INSPECTOR dialog box.

Edit Rules...

This command opens the "Rules" dialog box.
In this dialog box you set server-specific rules for the monitoring.

You edit global rules using the "Servers" menu of the INSPECTOR dialog box.

Result Files...

This command opens the "Result Files" dialog box.
In this dialog box you can display the contents of result files.

Properties...

You can use this command to obtain information about the hardware and the operating system of the server.

Measurement Status…

You can use this command to obtain information about the current monitoring status.

Alarm Messages...

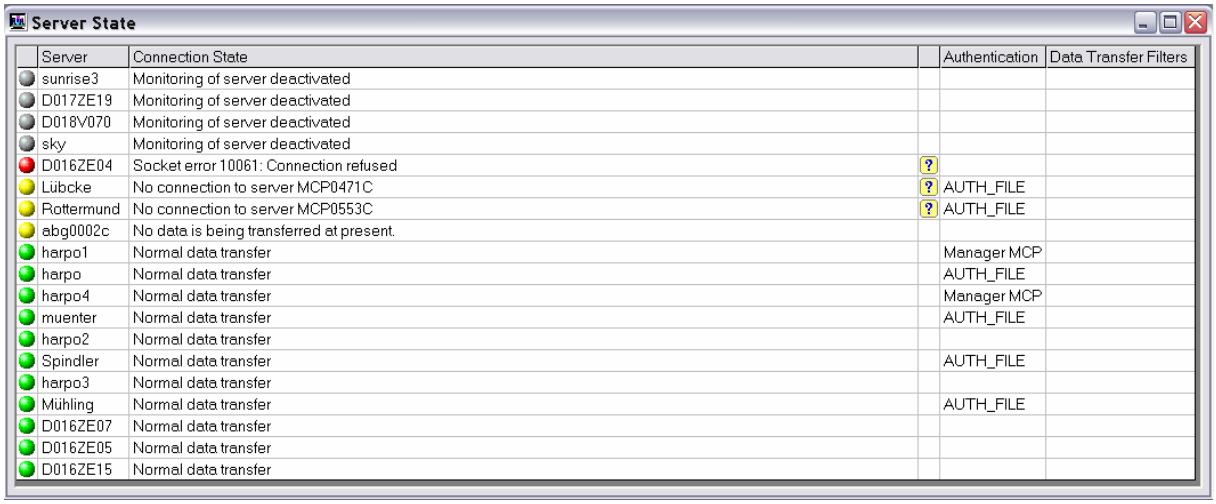
This command is only available if an alarm condition is present, i.e. all conditions of a defined rule are fulfilled.

With this command the conditions of all rules with alarm condition are displayed.

2.4 Server state

In the server state window the state of all servers entered in the manager is displayed.

The server state window can be opened and closed with the "Server State" command in the "Display" menu.



Server	Connection State	Authentication	Data Transfer Filters
sunrise3	Monitoring of server deactivated		
D017ZE19	Monitoring of server deactivated		
D018V070	Monitoring of server deactivated		
sky	Monitoring of server deactivated		
D016ZE04	Socket error 10061: Connection refused		
Lübcke	No connection to server MCP0471C	AUTH_FILE	
Rottermund	No connection to server MCP0553C	AUTH_FILE	
abg0002c	No data is being transferred at present.		
harpo1	Normal data transfer	Manager MCP	
harpo	Normal data transfer	AUTH_FILE	
harpo4	Normal data transfer	Manager MCP	
muenter	Normal data transfer	AUTH_FILE	
harpo2	Normal data transfer		
Spindler	Normal data transfer	AUTH_FILE	
harpo3	Normal data transfer		
Mühling	Normal data transfer	AUTH_FILE	
D016ZE07	Normal data transfer		
D016ZE05	Normal data transfer		
D016ZE15	Normal data transfer		

The servers are listed in a table which contains the following information for each server:

Server

Name of the server

Connection State

State of the connection to the agent. If no connection exists in the Behavior in the event of error section you find an explanation of the error message.

Authentification

Indication, where the authentication data for the server are taken from. This indication is only supplied for Windows servers.

AUTH_FILE

The authentication data were taken from the authentication file of the agent.

Manager ...

The authentication data were supplied by the manager.

Agent

The authentication data of the agent were taken over for the server.

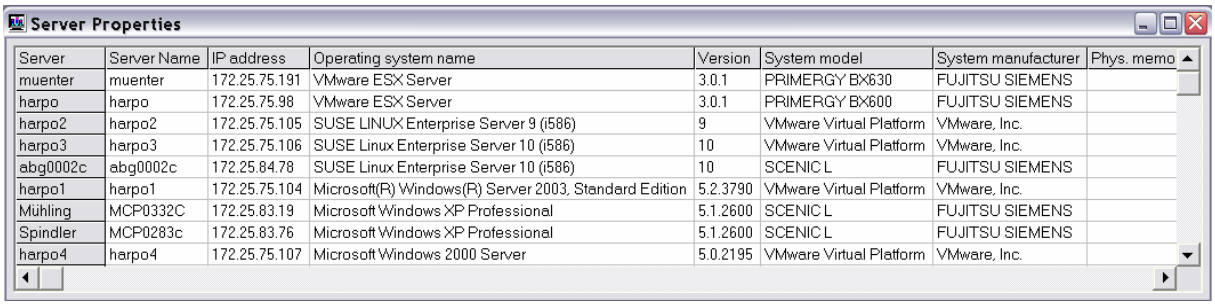
Data Transfer Filters

Indication whether data transfer filters for measurement variables and/or monitored objects are set. Which data transfer filters are set can be determined in the "Edit Data Transfer Filters" dialog box.

2.5 Server properties

In the server properties window information about the hardware and the operating system of all servers entered in the manager is displayed.

The server properties window can be opened and closed with the "Server Properties" command in the "Display" menu.



Server	Server Name	IP address	Operating system name	Version	System model	System manufacturer	Phys. memo
muenter	muenter	172.25.75.191	VMware ESX Server	3.0.1	PRIMERGY BX630	FUJITSU SIEMENS	
harpo	harpo	172.25.75.98	VMware ESX Server	3.0.1	PRIMERGY BX600	FUJITSU SIEMENS	
harpo2	harpo2	172.25.75.105	SUSE LINUX Enterprise Server 9 (i586)	9	VMware Virtual Platform	VMware, Inc.	
harpo3	harpo3	172.25.75.106	SUSE Linux Enterprise Server 10 (i586)	10	VMware Virtual Platform	VMware, Inc.	
abg0002c	abg0002c	172.25.84.78	SUSE Linux Enterprise Server 10 (i586)	10	SCENIC L	FUJITSU SIEMENS	
harpo1	harpo1	172.25.75.104	Microsoft(R) Windows(R) Server 2003, Standard Edition	5.2.3790	VMware Virtual Platform	VMware, Inc.	
Mühling	MCP0332C	172.25.83.19	Microsoft Windows XP Professional	5.1.2600	SCENIC L	FUJITSU SIEMENS	
Spindler	MCP0283c	172.25.83.76	Microsoft Windows XP Professional	5.1.2600	SCENIC L	FUJITSU SIEMENS	
harpo4	harpo4	172.25.75.107	Microsoft Windows 2000 Server	5.0.2195	VMware Virtual Platform	VMware, Inc.	

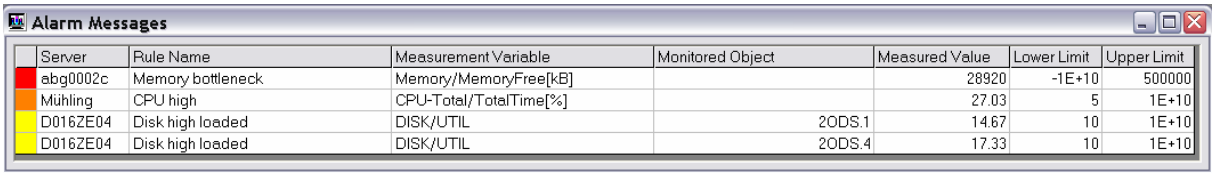
The servers are listed in a table which contains the following information for each server:

- Host name of the server
- IP address of the server
- Name of the operating system
- Version of the operating system
- System model
- System manufacturer
- Size of the physical memory [MB]
- Domain
- Number of CPUs
- CPU clock speed [MHz]
- CPU model
- CPU manufacturer
- Number of disk drives
- Number of network adapters

2.6 Alarm messages

The alarm messages window contains the conditions of all rules with alarm condition.

The alarm messages window can be opened and closed with the "Alarm Messages" command in the "Display" menu.



Server	Rule Name	Measurement Variable	Monitored Object	Measured Value	Lower Limit	Upper Limit
abg0002c	Memory bottleneck	Memory/MemoryFree[kB]		28920	-1E+10	500000
Mühling	CPU high	CPU-Total/TotalTime[%]		27.03	5	1E+10
D016ZE04	Disk high loaded	DISK/UTIL	2ODS.1	14.67	10	1E+10
D016ZE04	Disk high loaded	DISK/UTIL	2ODS.4	17.33	10	1E+10

The conditions are listed in a table which contains the following information for each condition:

- Name of the server
- Name of the rule
- Measurement variable
- Monitoring object, if applicable to the measurement variable
- Measured value of the current monitoring cycle
- Lower limit for the measured value specified in the condition
- Upper limit for the measured value specified in the condition

2.7 Reports

The measurement data is displayed graphically or in tabular form in reports. There are global reports and server reports.

Global reports

Global reports show the measurement values for all servers of a server group. There are five different types of global reports:

- Snapshot reports show the measurement values of the current monitoring cycle graphically. Either the values of up to 15 different measurement variables or the values of one measurement variable for up to 15 different monitored objects are displayed.
- Time series reports show the measurement values of one measurement variable as time series.
- Table reports show the measurement values of the current monitoring cycle for selected servers and selected measurement variables. Only measurement variables without monitored objects can be selected. The measurement values are displayed numerically in tabular form.
- Classic reports show the measurement values of the current monitoring cycle numerically in tabular form.
- Shared pubset reports show the measurement values for disk devices of shared public volume sets. Shared pubset reports are only available for BS2000/OSD systems.

Server reports

Server reports show the measurement values for one server. There are two different types of server reports:

- Time series reports show the measurement values as time series. Either the values of up to 15 different measurement variables or the values of one measurement variable for up to 15 different monitored objects are displayed.
  Server time series reports are briefly called server reports in the following.
- Classic reports show the measurement values of the current monitoring cycle numerically in tabular form.
  Server classic reports are briefly called classic reports in the following.

Definition of reports and measurement variables

In the "Options" menu commands for the definition of reports and measurement variables are available. You can use the "Define Reports" command to change the assignment of the measurement variables to the predefined reports, as well as freely define your own reports using the available measurement variables. You can use the "Define Table Reports" command to determine the assignment of servers and measurement variables to a table report. You can use the "Define Measurement Variables" command to link basic measurement variables by formulas and in this way define new measurement variables.

All predefined reports with their associated measurement variables are listed in the appendix.

Opening reports

Global reports you open with the "Open" command in the "Global Reports" menu or the "Open Reports" command in the context menu of a server group in the server list.

There are several ways of opening server reports:

Using the "Open Reports" command in the "Servers" menu of the menu bar

This allows you to open one or more server reports for one or more servers simultaneously.

Using the "Open Reports" command in the context menu of a server in the server list

This allows you to open several server reports simultaneously for one server.

Clicking on a default report in the server list with the left mouse button

You can configure which server reports are to be displayed as default reports in the server list. This configuration can be defined using the "Specify Default Reports" command in the "Servers" menu or in the context menu of a server in the server list.

Closing reports

You close all reports using the "Close All Report Windows" command in the "Windows" menu.

You close all global reports using the "Close All" command in the "Global Reports" menu.

You close all server reports using the "Close All Reports" command in the "Servers" menu. You close all server reports of one server using the "Close All Reports" command in the context menu of the server in the server list.

Showing and hiding measurement variables

By clicking on the button in the legend, a measurement variable can be hidden and shown again.

Setting of the time axis

In the time series reports the measurement data of the last hour are displayed as default. The presentation period can be modified in the "Settings" dialog box. In addition on a section of the time axis can be zoomed.

Displaying measurement values

In time series reports the mouse pointer is represented as hair cross within the diagram. With pressed left mouse button the time-of-day and the measurement value corresponding to the coordinates of the mouse pointer are displayed.

Displaying process hit lists

If the creation of process hit lists was requested in the entry of the server, with the "Show Process Hit List" command in the context menu a process hit list can be displayed for each interval in a time series diagram.

The context menu

When you click in the chart of a report with the right mouse button, a context menu is opened.

You can use the commands on the context menu to

- edit the chart and set up the layout of the print page
- print the chart, copy the chart to the clipboard or save it as a file
- select monitoring objects for server reports with monitoring objects
- smooth the curves and zoom on sections of the time axis in time series reports
- display the process hit list
- close the report

2.7.1 The context menu of the chart of a report

When you click in the chart of a report with the right mouse button, a context menu is opened.
The following commands are available in the context menu:

Edit...

This command opens the "Edit Chart" dialog box.
In this dialog box you can change the colors and the representation of the chart.
The settings defined here only apply to the report from whose chart you opened the context menu.

Page Setup...

This command opens the "Page Setup" dialog box.
In this dialog box you can define the layout of the print output.
The settings defined here only apply to the report from whose chart you opened the context menu.

Save...

This command opens the "Save Chart" dialog box.
In this dialog box you can save the chart of the report in the clipboard or in a file.

Print...

This command prints the report.

Smooth...

This command is only available for time series reports. This command opens the "Smooth Diagram" dialog box. In this dialog box you can specify a factor for smoothing the curves in the diagram. The specification of the smoothing factor n causes the combination of n intervals in the diagram into one interval. The new interval gets the time stamp of the first of the n intervals.
The smoothing factor applies only to the report from whose chart you opened the context menu.

Zoom

This command is only available for time series reports. This command activates the zoom function. With activated zoom function you can mark a range on the time axis by clicking with the left mouse button first on the left margin and then on the right margin of the range on the time axis. The new time axis then covers only the marked range.
The zoom range applies only to the report from whose chart you opened the context menu.

Reset Zoom

This command resets the time axis to the time interval specified in the "Settings" dialog box.

Show Process Hit List

With this command you display the process hit lists. This command is only available for time series reports if in the entry of the corresponding server the creation of process hit lists was requested.

A line is drawn in the chart, which marks the selected interval. The time corresponding to the selected interval is displayed on the top right. With the arrow command buttons you can change to the preceding resp. next interval. You can move the line in the chart also with the left mouse button.

Below the chart a table is displayed, which contains a line with the monitoring data for each process in the process hit list of the selected interval. The table can be sorted according to the appropriate column by clicking on a column heading.

Displaying the process hit lists is only possible for the chart types lines, lines (log/lin) or 2D area.

Filter Monitored Objects...

This command is only available for server reports displaying a measurement variable with monitored objects. This command opens the "Filter Monitored Objects" dialog box. In this dialog box you can define a filter for the monitored objects. Only the monitored objects corresponding to the filter are then considered for the report.

Set Monitored Objects...

This command is only available for server reports displaying a measurement variable with monitored objects. This command opens the "Set Monitored Objects" dialog box. In this dialog box you can choose which monitored objects are to be displayed in the report.

Legend...

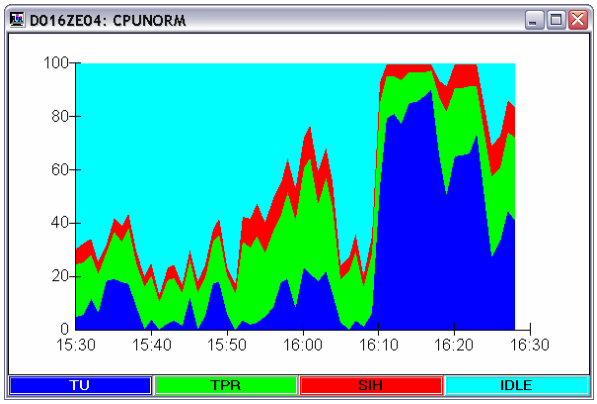
This command is only available for global snapshot reports displaying a measurement variable with monitored objects. This command opens a window, which shows the monitored objects names for each server.

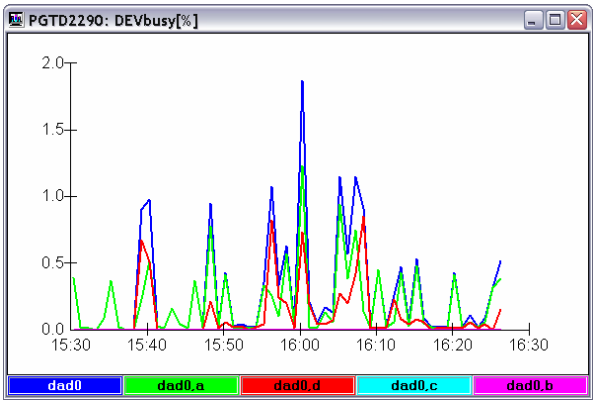
Close

This command closes the report.

2.7.2 Server reports

Server reports display the measurement values for one server graphically as time series. Either the values of up to 15 different measurement variables or the values of one measurement variable for up to 15 different monitored objects are displayed.





Additional to the predefined server reports new server reports can be defined with the Define Reports command in the "Options" menu.

With the commands of the context menu you can edit, print and save the chart and select the monitored objects for server reports displaying a measurement variable with monitored objects.

Structure of server reports

The title bar contains the name of the server for which the server report was opened and the name of the server report itself.

The chart displays the values for the measurement variables of the server report over a time axis. The length of the time axis can be modified with the "Settings" command of the "Options" menu (see the "Settings" dialog box).

For each measurement variable, the legend displays a button in the color assigned to the measurement variable in the chart.

Server reports with measurement data for up to 15 monitored objects of a measurement variable

Some measurement variables supply data for several monitored objects, e.g. disks. A server report can display measurement data of up to 15 monitored objects of one single measurement variable. As default the 15 monitored objects with the highest values are displayed. If you want to consider other monitored objects, these must be specified via the context menu of the server report.

Displaying the report settings

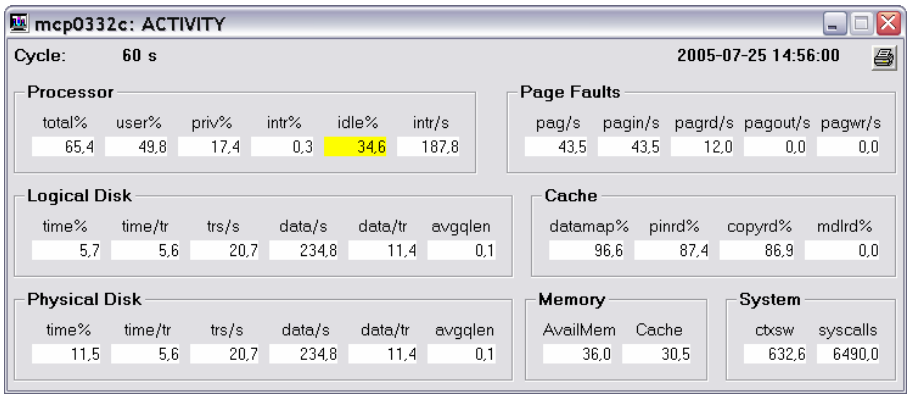
If in a report settings deviating from the default settings were made - e.g. monitored objects were filtered or selected explicitly, the curves were smoothed or it was zoomed on a section of the time axis - or data transfer filters were set for measurement variables or monitored objects of the report, this is indicated by the  icon in the left bottom corner of the chart. When you click on the icon with the left mouse button the report settings are displayed.

2.7.3 Classic reports

Classic reports display the measurement values of the current monitoring cycle in tabular form.

There are global classic reports showing the measurement values of all activated servers of a server group and server-specific classic reports showing the measurement values of one server.

Classic reports contain factually related groups of measurement variables. The assignment of the measurement variables to the report is fixed and cannot be modified.



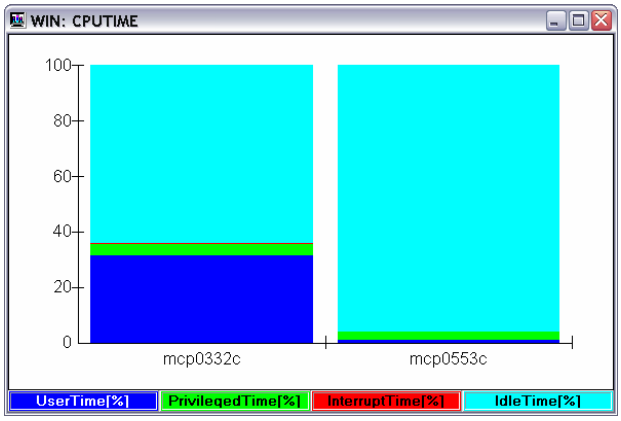
By double-clicking on a measurement value a time series report with the appropriate measurement variable is opened.

In classic reports displaying measurement variables with monitored objects the monitored objects can be sorted according to a measurement variable by clicking on the column header.

An alarm is indicated by a coloring of the measurement value corresponding to the color assigned to the alarm level of the rule.

2.7.4 Global snapshot reports

Global snapshot reports display graphically the measurement values of the current monitoring cycle for all activated servers of a server group. Either the values of up to 15 different measurement variables or the values of one measurement variable for up to 15 different monitored objects are displayed.



Additional to the predefined global snapshot reports new global snapshot reports can be defined with the Define Reports command in the "Options" menu.

With the commands of the context menu you can edit, print and save the chart.

Structure of global snapshot reports

The title bar contains the name of the server group for which the report was opened and the name of the report.

The chart displays the values for the measurement variables of the report over a server axis.

For each measurement variable, the legend displays a button in the color assigned to the measurement variable in the chart.

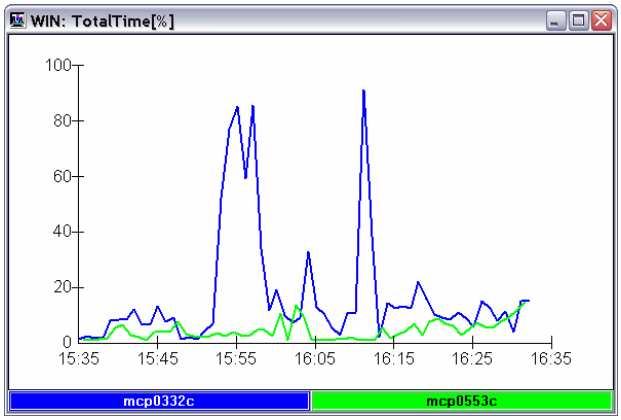
If the global snapshot report displays measurement data for various monitored objects of the same measurement variable the buttons of the legend are labelled with symbolic names. The assignment to the correct monitored object names can be displayed with the "Legend..." command of the context menu.

Displaying the report settings

If data transfer filters were set for measurement variables or monitored objects of the report, this is indicated by the icon in the left bottom corner of the chart. When you click on the icon with the left mouse button the report settings are displayed.

2.7.5 Global time series reports

Global time series reports display the measurement values of one measurement variable for all activated servers of a server group graphically as time series.



Global time series reports are available for all measurement variables without monitored objects.

With the commands of the context menu you can edit, print and save the chart.

Structure of global time series reports

The title bar contains the name of the server group for which the report was opened and the name of the report.

The chart displays the values for the measurement variable of the global time series report over a time axis. The length of the time axis can be modified with the "Settings" command of the "Options" menu (see the "Settings" dialog box).

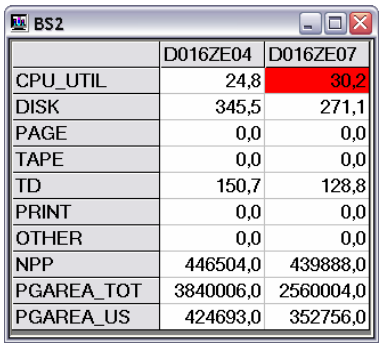
For each server, the legend displays a button in the color assigned to the server in the chart.

Displaying the report settings

If in a report settings deviating from the default settings were made - e.g. the curves were smoothed or it was zoomed on a section of the time axis - or data transfer filters were set for measurement variables of the report, this is indicated by the icon in the left bottom corner of the chart. When you click on the icon with the left mouse button the report settings are displayed.

2.7.6 Global table reports

Global table reports display the measurement values of the current monitoring cycle for all selected servers in tabular form. The values of any number of selected measurement variables are displayed. Only measurement variables without monitored objects can be selected.



	D016ZE04	D016ZE07
CPU_UTIL	24,8	30,2
DISK	345,5	271,1
PAGE	0,0	0,0
TAPE	0,0	0,0
TD	150,7	128,8
PRINT	0,0	0,0
OTHER	0,0	0,0
NPP	446504,0	439888,0
PGAREA_TOT	3840006,0	2560004,0
PGAREA_US	424693,0	352756,0

Global table reports can be defined with the "Define Table Reports" command in the "Options" menu.

If you click on the table of the global table report with the right mouse button, you open a context menu.

You can use the commands on the context menu to

- change the arrangement of the servers (in lines or columns)
- change the font size of the table
- close the report.

Structure of global table reports

The title bar contains the name of the report.

The table contains the current measurement values for the servers and the measurement variables of the report. Alternatively the servers can be output in columns and the measurement variables in lines or the servers can be output in lines and the measurement variables in columns.

By double-clicking a cell of the table a time series report is opened for the corresponding measurement variable.

An alarm is indicated by a coloring of the cell corresponding to the color assigned to the alarm level of the rule.

The context menu of the global table report

If you click in the table of a global table report with the right mouse button, you open a context menu. The following commands are available in the context menu.

Servers in Lines

With this command you arrange the servers in lines and the measurement variables in columns.

Servers in Columns

With this command you arrange the servers in columns and the measurement variables in lines.

Font Size

With this command you can modify the font size of the table. The current font size is marked with a checkmark.

Close

This command closes the report.

2.7.7 Shared pubset reports

Shared pubset reports are only available for BS2000/OSD servers. They display the measurement values of disk devices of shared public volume sets for all activated servers of a server group grafically or in tabular form.

Shared pubset reports are available for the measurement variables DISKIO and DISKQUEUE.

It is recommendable to define a server group, which contains exactly the servers of the shared pubset network.

Shared pubset reports can be defined with the "Define Shared Pubset Reports" command in the "Options" menu.

There are four types of shared pubset reports:

- Shared pubset reports of type snapshot graphically display the measurement values of the current monitoring cycle for selected disk devices over a device axis for all activated servers of a server group.
- Shared pubset reports of type time series graphically display the measurement values of a selected disk device for all activated servers of a server group over a time axis.
- Shared pubset reports of type time series accumulated graphically display the measurement values of selected disk devices accumulated over all activated servers of a server group over a time axis.
- Shared pubset reports of type table display in tabular form the measurement values of the current monitoring cycle for disk devices for all activated servers of a server group. All disk devices are represented, which are shared between the servers of the server group.

2.8 Charts

This section describes the available diagram types and styles for the charts in reports.

You can modify the charts in many ways using the "Edit Chart" dialog box.

Diagram types and styles

A range of diagram types is available with numerous style options for presenting the values:

- Line charts
- Log line charts
- Area charts
- Bar charts

Diagram types and negative values

The following diagram types cannot display negative values correctly:

- Log line charts
- Area charts
- Stack bar charts

In area or bar charts negative numbers are represented as null values.

In log line charts negative numbers are not represented, i.e. no value appears in the diagram.

Diagram types and null values

In log line charts null values are not represented, i.e. no value appears in the diagram.

Printing the chart

You can print the chart using the context menu of the report.

If you are printing to a monochrome printer, it may be advisable to switch the presentation mode of the diagram to black/white. If you print in color to a monochrome printer, the printer uses shades of gray instead of the colors. This may produce the desired effect, although colors are frequently converted to either black or white. If you print in black and white, the colors are converted to hatching in the printout.

2.8.1 Diagram type line chart

Layout of diagram

In the case of server reports, global time series reports and shared pubset reports of type time series and time series accumulated, the horizontal axis is the time axis. It is divided with marks, which are labelled with the time.

In the case of global snapshot reports, the horizontal axis is the server axis. The axis contains a subsection for each server.

In the case of shared pubset reports of type snapshot, the horizontal axis is the device axis. The axis contains a subsection for each device.

The vertical axis is the graduated scale of values. It is subdivided and labelled as appropriate in accordance with the size of the values.

Diagram style and presentation of values

The diagram style determines how the values are presented:

Lines Only

The values are joined by a line.

Symbols

The values are marked by a symbol.

Vertical Strokes

The values are represented by vertical strokes.

Vertical Strokes And Symbols

The values are represented by vertical strokes with a symbol at the top.

Lines And Symbols

The values are marked by a symbol and joined by a line.

Lines And Strokes

The values are represented by vertical strokes; the tops of the vertical strokes are joined by a line.

Lines, Strokes And Symbols

The values are represented by vertical strokes with a symbol at the top; the symbols are joined by a line.

2.8.2 Diagram type log line chart

You should choose this diagram type if you want to display very small values and very large values in a chart. Small values are also visible thanks to the logarithmic subdivision of the vertical axis.

Layout of the diagram

In the case of server reports, global time series reports and shared pubset reports of type time series and time series accumulated, the horizontal axis is the time axis. It is divided with marks, which are labelled with the time.

In the case of global snapshot reports, the horizontal axis is the server axis. The axis contains a subsection for each server.

In the case of shared pubset reports of type snapshot, the horizontal axis is the device axis. The axis contains a subsection for each device.

The vertical axis is the graduated scale of values. It is subdivided logarithmically and labelled as appropriate in accordance with the size of the values.

Diagram style and presentation of values

The diagram style determines how the values are presented:

Lines Only

The values are joined by a line.

Symbols

The values are marked by a symbol.

Vertical Strokes

The values are represented by vertical strokes.

Vertical Strokes And Symbols

The values are represented by vertical strokes with a symbol at the top.

Lines And Symbols

The values are marked by a symbol and joined by a line.

Lines And Strokes

The values are represented by vertical strokes; the tops of the vertical strokes are joined by a line.

Lines, Strokes And Symbols

The values are represented by vertical strokes with a symbol at the top; the symbols are joined by a line.

2.8.3 Diagram type area chart

Layout of the diagram

In the case of server reports, global time series reports and shared pubset reports of type time series and time series accumulated, the horizontal axis is the time axis. It is divided with marks, which are labelled with the time.

In the case of global snapshot reports, the horizontal axis is the server axis. The axis contains a subsection for each server.

In the case of shared pubset reports of type snapshot, the horizontal axis is the device axis. The axis contains a subsection for each device.

The vertical axis is the graduated scale of values. It is subdivided and labelled as appropriate in accordance with the size of the values.

Diagram style and presentation of values

The diagram style determines how the values are presented:

Accumulated

The values of the 1st measurement variable are joined by a line, the underlying area is filled in. The following applies to each subsequent value: the values are added above, joined by a line, and the resulting new area is filled in.

Absolute

All values are displayed from the horizontal axis. For each value, the values are joined by a line and the area from the horizontal axis to the line is filled in.

Percentage

The values of a measurement variable are displayed as a percentage of the whole.

2.8.4 Diagram type bar chart

2D and 3D bar charts are available.

Layout of the diagram

In the case of server reports, global time series reports and shared pubset reports of type time series and time series accumulated, the horizontal or the vertical axis is the time axis, depending on the diagram style. It is divided with marks, which are labelled with the time.

In the case of global snapshot reports, the horizontal or the vertical axis is the server axis, depending on the diagram style. The axis contains a subsection for each server.

In the case of shared pubset reports of type snapshot, the horizontal or the vertical axis is the device axis, depending on the diagram style. The axis contains a subsection for each device.

The other axis is the graduated scale of values. It is subdivided and labelled as appropriate in accordance with the size of the values.

Diagram style and presentation of values

The values are represented by bars; the arrangement and appearance of the bars depend on the diagram style:

Vertical, Grouped

The time axis is the horizontal axis.
The bars are vertical and grouped alongside each other.

Horizontal, Grouped

The time axis is the vertical axis.
The bars are horizontal and grouped one above the other.

Vertical, Stacked

The time axis is the horizontal axis.
The bars are vertical and stacked on top of each other.

Horizontal, Stacked

The time axis is the vertical axis.
The bars are horizontal and stacked.

Vertical, Stacked, %

The time axis is the horizontal axis.
The bars are vertical. The values for all measurement variables are added and displayed as a percentage of this total.

Horizontal, Stacked, %

The time axis is the vertical axis.
The bars are horizontal. The values for all measurement variables are added and displayed as a percentage of this total.

Vertical, With Depth Effect (with 3D only)

The time axis is the horizontal axis.
The bars are vertical and grouped one behind the other with a depth effect.

Horizontal, With Depth Effect (with 3D only)

The time axis is the vertical axis.
The bars are horizontal and cascaded with a depth effect.

2.9 Rules

The manager can monitor the measurement data sent by the agents by user-defined rules.

In a rule conditions and actions are defined. If all conditions of a rule are fulfilled, an alarm is initiated for the rule and the actions are executed. The alarm condition for the rule is terminated when at least one of the conditions is no longer fulfilled. In this case for some action types the action is executed again with an end indication.

2.9.1 Conditions

A condition is defined by a measurement variable (and a related monitored objects set if necessary) and limit values for the measured value of the measurement variable. It is fulfilled if, for a given number of sequential monitoring cycles, the measured value of the measurement variable for each monitoring cycle resp. the average value of the measurement variable over all monitoring cycles lies within the limit values.

2.9.2 Alarm

If all conditions of a rule are fulfilled this leads to an alarm. For each rule an alarm level must be defined specifying the importance of the rule. The higher the alarm level is the more important is the rule. To each alarm level a color is assigned. The number of alarm levels and the assigned colors can be modified in the "Settings" dialog box on the "Monitoring" tab.

2.9.3 Actions at alarm

In the case of an alarm the entry in the server list takes the color assigned to the alarm level of the rule. With the "Alarm Messages…" command in the context menu of the server the conditions of the rule are displayed. For all measurement variables concerned by conditions of the rule the cells in eventually opened table and classic reports take also the color assigned to the alarm level of the rule.

Additionally the actions defined for the rule are executed. In the following the actions which you can define are described.

Automatic opening of reports

You can configure that for each condition of the rule a report with the corresponding measurement variable is to be opened automatically. The report is closed again automatically when the alarm ends.

Acoustic alarm

In case of an acoustic alarm a window is opened, which displays the relevant rule. You can stop the acoustic alarm by clicking the bell symbol in this window.

Starting a procedure on a server

You can arrange that a user-defined procedure is started on any monitored server.

The procedure is started at the beginning of the alarm condition with a begin indication in the parameter list and on completion of the alarm condition with an end indication in the parameter list.

A description of the procedure parameters you find in the section Procedures.

Starting a batch file on the PC

You can arrange that a batch file is started on the PC.

The batch file is started at the beginning of the alarm condition with a begin indication in the parameter list and on completion of the alarm condition with an end indication in the parameter list.

A description of the parameters you find in the section Batch files.

Sending an E-mail

You can arrange that you are informed by E-mail about alarm conditions.

The E-mail contains for each rule with beginning of the alarm condition an entry marked with "Begin" and for each rule with completion of the alarm condition an entry marked with "End" of the following format:

<begin/end indication > <rule name>: <condition 1> ... <condition n>

where <condition i> designates the ith condition of the rule. For each condition the following information is inserted:

<time stamp> <server name> < meas. variable>[(<mon. object>)] = meas. value (<lower limit> - <upper limit>)

Sending an SNMP trap

You can arrange that a SNMP trap is transmitted.

The SNMP trap is provided with an appropriate indication at the beginning of the alarm condition and on completion of the alarm condition.

2.9.4 Server-specific and global rules

There are server-specific rules, which contain only conditions for one server, and global rules, which link conditions for different servers.

2.9.5 Time windows

For each server you can specify up to three time windows, for which different limit values and actions can be defined. By this means it is possible to define different rules for the nightly batch operation and for the interactive mode during the day. In addition up to three time windows can be defined for the validity of global rules.

With the "Edit Global Time Windows..." command in the "Servers" menu in the menu bar you open the "Edit Global Time Windows" dialog box. In this dialog box you can define time windows for global rules.

With the "Edit Time Windows..." command in the "Servers" menu in the menu bar resp. in the context menu of a server in the server list you open the "Edit Time Windows" dialog box. In this dialog box you can define time windows for server-specific rules.

2.9.6 Defining rules

With the "Edit Global Rules..." command in the "Servers" menu in the menu bar you open the "Global Rules" dialog box. In this dialog box you can define rules, which link conditions for measurement variables of different servers.

With the "Edit Rules..." command in the "Servers" menu in the menu bar resp. in the context menu of a server in the server list you open the "Rules" dialog box. In this dialog box you can define server-specific rules.

2.9.7 Logging

You can have all alarms starting from a specified alarm level logged in a file. You specify the respective settings in the "Settings" dialog box on the "Monitoring" tab under "Logging".

At the beginning of the alarm condition an entry marked with "Begin" and at the completion of the alarm condition an entry marked with "End" of the following format is written to the log file:

<begin/end indication > <rule name>: <condition 1> ... <condition n>

where <condition i> designates the ith condition of the rule. For each condition the following information is inserted:

<time stamp> <server name> < meas. variable>[(<mon. object>)] = meas. value (<lower limit> - <upper limit>)

2.9.8 Procedures

By the definition of an appropriate rule you can arrange that a procedure created by you is started automatically on a server when certain conditions occur. The procedure is called by the agent with certain parameters.

Procedures for BS2000 servers

The procedure is started by the agent with the ENTER-PROCEDURE command as batch job.

The procedure parameters must be defined as follows:

```
/BEGIN-PARAMETER-DECLARATION
/DECL-PAR NAME = VIOLATION    (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = HOSTNAME1    (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = TIME1        (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = VARIABLE1    (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = OBJECT1      (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = INFO1        (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = LOWERLIMIT1  (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = UPPERLIMIT1  (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = VALUE1       (TYPE = STRING, INIT = *PROMPT)
:
/DECL-PAR NAME = HOSTNAMEn    (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = TIMEn        (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = VARIABLEn    (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = OBJECTn      (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = INFOn        (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = LOWERLIMITn  (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = UPPERLIMITn  (TYPE = STRING, INIT = *PROMPT)
/DECL-PAR NAME = VALUEn       (TYPE = STRING, INIT = *PROMPT)
/END-PARAMETER-DECLARATION
```

Where n is the number of conditions of the rule which initiates the starting of this procedure.

Description of the parameters:

VIOLATION = 0 / 1
Start/end indicator for the alarm state

VIOLATION = 0
Start of the alarm state

VIOLATION = 1
End of the alarm state

HOSTNAMEi = <host name for condition i>
Name of the server concerned by the i-th condition of the rule

TIMEi = <time stamp for condition i>
Time stamp of the monitoring cycle of the server concerned by the i-th condition of the rule in the format YYYY-MM-DD HH:MM:SS

VARIABLEi = <measurement variable for condition i>
Name of the measurement variable of the i-th condition of the rule

OBJECTi = <monitored object for condition i>
Monitored object of the i-th condition of the rule

INFOi = <additional information for condition i>
Additional information to the monitored object of the i-th condition of the rule

LOWERLIMITi = <lower limit value for condition i>
Lower limit value of the i-th condition of the rule

UPPERLIMITi = <upper limit value for condition i>
Upper limit value of the i-th condition of the rule

VALUEi = <measurement value for condition i >
Measurement value of the monitoring cycle for the measurement variable of the i-th condition of the rule

A description of the monitored objects and the additional information you find in the section Description of monitored object types.

Procedures for UNIX and Linux servers

The shell procedure is started by the agent with the c function system( ):

system("trap ‘‘ 1; <proc> $1....$n &");

Description of the parameters:

$1 = 0 / 1
Start/end indicator for the alarm state

$1 = 0
Start of the alarm state

$1 = 1
End of the alarm state

$<1+i) = <server name for condition i>
Name of the server concerned by the i-th condition of the rule

$<2+i) = <time stamp for condition i>
Time stamp of the monitoring cycle of the server concerned by the i-th condition of the rule in the format YYYY-MM-DD HH:MM:SS

$<3+i> = <measurement variable for condition i>
Name of the measurement variable of the i-th condition of the rule

$<4+i> = <monitored object for condition i>
Monitored object of the i-th condition of the rule

$<5+i> = <additional information for condition i>
Additional information to the monitored object of the i-th condition of the rule

$<6+i> = <lower limit value for condition i>
Lower limit value of the i-th condition of the rule

$<7+i> = <upper limit value for condition i>
Upper limit value of the i-th condition of the rule

$<8+i> = <measurement value for condition i>
Measurement value of the monitoring cycle for the measurement variable of the i-th condition of the rule

A description of the monitored objects and the additional information you find in the section Description of monitored object types.

Procedures for Windows servers

The procedure parameters correspond to the parameters of batch files.

2.9.9 Batch files

By the definition of an appropriate rule you can arrange that a batch file created by you is started automatically on your PC when certain conditions occur. The batch file is called by the agent with certain parameters.

Description of the parameters:

%1 = start/end indicator (0 = start, 1 = end)

%<1+i> = <server name for condition i>
Name of the server concerned by the i-th condition of the rule

%<2+i> = <time stamp for condition i>
Time stamp of the monitoring cycle of the server concerned by the i-th condition of the rule in the format YYYY-MM-DD HH:MM:SS

%<3+i> = <measurement variable for condition i>
Name of the measurement variable of the i-th condition of the rule

%<4+i> = <monitored object for condition i>
Monitored object of the i-th condition of the rule

%<5+i> = <additional information for condition i>
Additional information to the monitored object of the i-th condition of the rule

%<6+i> = <lower limit value for condition i>
Lower limit value of the i-th condition of the rule

%<7+i> = <upper limit value for condition i>
Upper limit value of the i-th condition of the rule

%<8+i> = <measurement value for condition i>
Measurement value of the monitoring cycle for the measurement variable of the i-th condition of the rule

A description of the monitored objects and the additional information you find in the section Description of monitored object types.

Example for batch file:

```
if "%1" == "0" goto start
if "%1" == "1" goto end

:start
rem handling of start of alarm state
…
goto exit

:end
rem handling of end of alarm state
…
goto exit

:exit
```

3 The agent

The agent is a program which collects measurement data from monitored servers and transfers it to the Manager on a PC. The agent is available for BS2000/OSD, UNIX, Linux, Windows and VMware ESX Server systems.

The Windows agent can be started on any computer and collects the measurement data of several remote servers via the WMI interface.

The ESX agent can be started on any computer and collects the measurement data of several remote servers via the VMware Scripting API or VI3 web service.

All other agents must be started on each server to be monitored.

3.1 The BS2000 agent

3.1.1 General

The BS2000 agent is a program, which transfers the SM2 measurement data to manager on the PC. You start the BS2000 agent on each server whose measurement data is to be monitored and presented.

The BS2000 agent does not have to be started under a privileged user ID, it can be started under any user ID in the BS2000 system.

When started the manager announces itself automatically at the BS2000 agent on every server to be monitored and logs out when he terminates. The BS2000 agent collects the new measurement data on a continuous basis and sends this data to all the PCs, which are announced. Up to 10 PCs can be at the same time announced with the agent.

3.1.2 Starting and stopping

The commands for starting and stopping the agent are contained in the SYSSDF.SM2-TOOLS.075 syntax file. In order to make these commands available to each user, this syntax file must be activated with the following command:

```
/MODIFY-SDF-PARAMETER SCOPE=*PERMANENT,
        SYNTAX-FILE-TYPE=*SUBSYSTEM(NAME=SYSSDF.SM2-TOOLS.075,
                                    SUBSYSTEM-NAME=SM2TOOLS)
```

When starting, the BS2000 agent loads the data transfer parameters from the configuration file. The BS2000 agent remains active - i.e. cyclically transfers the new measurement data - until it is stopped.

Starting the agent

The agent is started with the START-INSPECTOR command.

Format:

START-INSPECTOR

VERSION = *STD / <product-version mandatory-man-corr> /
<product-version mandatory-man-without-corr> /
<product-version without-man-corr>

MONJV = *NONE / <filename 1..54 without-gen-vers>

CPU-LIMIT = *STD / *NO / <integer 1..32767>

JOB-CLASS = *STD / <name 1..8>

CONFIG-FILE = *STD / <filename 1..54 without-gen-vers>

Operands:

VERSION =

Specifies the program version of INSPECTOR to be called.

VERSION = *STD

The current version is called.

VERSION = <product-version>

The specified version is called.

MONJV =

Specifies the name of the job variable, which is to monitor the INSPECTOR run.

MONJV = *NONE

No job variable is specified.

MONJV = <filename 1..54 without-gen-vers>

Specifies the name of a job variable.

CPU-LIMIT =

Specifies the CPU time, which may be used by the INSPECTOR run. If this time is exceeded the INSPECTOR run is terminated.

CPU-LIMIT = *STD

The default value from the job class definition or, if applicable, the lower time allotment in the user entry is taken over as the maximum CPU time for INSPECTOR.

CPU-LIMIT = *NO

There is no limit on the CPU time available to INSPECTOR.

CPU-LIMIT = <integer 1..32767 >

The specified time is taken as maximum CPU time for INSPECTOR.

JOB-CLASS =

Job class, in which INSPECTOR is to run. The job class must be allowed for batch jobs.

JOB-CLASS = *STD

INSPECTOR is running in the default job class of the target user id.

JOB-CLASS = <name 1..8>

INSPECTOR is running in the specified job class.

CONFIG-FILE =

Specifies the file name of the configuration file to be used.

CONFIG-FILE = *STD

The configuration file SYSDAT.SM2-TOOLS.060.IN.CONF is used.

CONFIG-FILE = <filename 1..54 without-gen-vers>

The specified configuration file is used.

Stopping the Agent

The agent is stopped with the STOP-INSPECTOR command.

Format:

STOP-INSPECTOR

VERSION = *STD / <product-version mandatory-man-corr> /
<product-version mandatory-man-without-corr> /
<product-version without-man-corr>

MONJV = *NONE / <filename 1..54 without-gen-vers>

CPU-LIMIT = *JOB-REST / <integer 1..32767>

Operanden:

VERSION =

Specifies the program version of STOPINSPECTOR to be called.

VERSION = *STD

The current version is called.

VERSION = <product-version>

The specified version is called.

MONJV =

Specifies the name of the job variable, which is to monitor the STOPINSPECTOR run.

MONJV = *NONE

No job variable is specified.

MONJV = <filename 1..54 without-gen-vers>

Specifies the name of a job variable.

CPU-LIMIT =

Specifies the CPU time, which may be used by the STOPINSPECTOR run.

CPU-LIMIT = *JOB-REST

The remaining CPU time of the task is taken as maximum CPU time for STOPINSPECTOR.

CPU-LIMIT = <integer 1..32767 >

The specified time is taken as maximum CPU time for STOPINSPECTOR.

3.1.3 The log file

All actions of the BS2000 agent are logged in the
S.OUT.INSPECTOR.<tsn>.<yyyy>-<mm>-<dd>.<hhmmss>
file. The agent also writes any error messages to this file, e.g. if it terminates abnormally.

3.1.4 The configuration file

When starting, the BS2000 agent loads the data transfer parameters from the configuration file.

Before you start the BS2000 agent on a server for the first time, you must adapt the entries in the configuration file.

A configuration file with the name SYSDAT.SM2-TOOLS.075.IN.CONF is supplied with the BS2000 part of INSPECTOR.

The structure of the configuration file is described below.

The configuration file can contain configuration lines, comment lines, and blank lines. Each line beginning with "#" is interpreted as a comment line.

The following configuration lines are available:

BS2000_HOSTNAME=name

"name" can contain up to 8 characters.
Specify a name for the server from which the BS2000 agent transfers measurement data. This name must match the server name you enter in the manager. If you specify BY_SYSJV for "name", the agent uses the value of the job variable $SYSJV.HOST as the server name.
The configuration file must contain a configuration line of this type.

PORTNUMBER=nnnn

"nnnn" is a port number with 1-5 digits.
Specify the port number of the port via which the manager is to communicate with the BS2000 agent. This port number must match the port number you entered for "Port Number" in the "Edit Servers" dialog box.
The configuration file must contain a configuration line of this type.

SNMP_INTERFACE=YES

If you enter this type of configuration line in the configuration file, you activate the communication with the SNMP subagent.

PORTNUMBER_SNMP=nnnn

"nnnn" is a port number with 1-5 digits.
Specify the port number of the port via which the agent is to communicate with the SNMP subagent "opensm2agt". This port number must match the port number you entered when starting the SNMP subagent.
If this configuration line is missing the port number 4301 is used for the communication with the SNMP subagent.

RESULT_FILE=filename

Here you specify the name of a result file.
"filename" has to be a valid BS2000 file name.
If the specified file has been modified since the last transmission, the agent always transfers it to the manager together with the new measurement data.
In the manager the transferred files can be output using the context menu of the server button.
The configuration file can contain several configuration lines of this type.

TRACE=YES

If you enter this type of configuration line in the configuration file, the BS2000 agent creates a trace file into which it logs its actions in detail.
This configuration line should be entered for diagnostic purposes only.

TRACE_FILE=filename

With this type of configuration line you can specify a name for the trace file of the agent. As default the agent uses the name SYSTRC.SM2-TOOLS.060.IN.<hostname> for the trace file.

"filename" has to be a valid BS2000 file name.

3.2 The UNIX agent

3.2.1 General

The UNIX agent is a program which transfers measurement data collected from different system interfaces (e.g. kstat, /proc, statvfs) to manager on the PC. You start the UNIX agent on each server whose measurement data is to be monitored and presented.

When started the manager announces itself automatically at the UNIX agent on every server to be monitored and logs out when he terminates. The UNIX agent collects the new measurement data on a continuous basis and sends this data to all the manager, which are announced. Up to 10 manager can be at the same time announced with the agent.

If the UNIX agent is to provide process-specific measurement data for all processes in the system it must be started with root authorization. The root authorization is only needed and used for reading the /proc file directory.

If the UNIX agent is to write the monitored data additionally into a monitoring file, this can be specified in the configuration file. The monitoring file can be analyzed with the application ANALYZER.

3.2.2 Starting and stopping

To start the UNIX agent you use the shell script "start.inspectoragt". When starting, the UNIX agent loads the settings for the data transfer and the monitoring file from the configuration file. The UNIX agent remains active - i.e. cyclically transfers the new measurement data - until it is stopped with the shell script "stop.inspectoragt".

3.2.3 Workload classes

Processes can be combined in Workload classes. By Workload classes selected applications can be monitored if they can be assigned to specific user IDs or commands. Commands e.g. can be names of programs or shell procedures. A process is element of a Workload class if user ID and command of the process correspond to the specification of the Workload class.

A Workload class is defined by the specification of a "WORKLOAD_CLASS=…" line in the configuration file.

3.2.4 The log file

All actions of the UNIX agent are logged in the "inspectoragt.log" file. The agent also writes any error messages to this file, e.g. if it terminates abnormally.

3.2.5 The configuration file

When starting, the UNIX agent loads the settings for the data transfer and the monitoring file from the configuration file. Before you start the UNIX agent for the first time, you must adapt the entries in the configuration file.

A configuration file with the name "inspectoragt.config" is supplied with the UNIX agent. The name of the configuration file is transferred to the agent in the shell script "start.inspectoragt" as a parameter. If you change the name of the configuration file, you must insert the new name in the shell script.

The structure of the configuration file is described below.

The configuration file can contain configuration lines, comment lines, and blank lines. Each line beginning with "#" is interpreted as a comment line.

The following configuration lines are available:

UNIX_HOSTNAME=name

"name" can contain up to 255 characters.
Specify a name for the server from which the UNIX agent transfers measurement data. This name must match the server name you enter in the manager. If you specify BY_UNAME for "name", the agent uses the value from "uname -n" as the server name.
The configuration file must contain a configuration line of this type.

PORTNUMBER=nnnn

"nnnn" is a port number with 1-5 digits.
Specify the port number of the port via which the manager is to communicate with the UNIX agent. This port number must match the port number you entered under "Agent" for "Port Number" in the "Edit Server" dialog box.
The configuration file must contain a configuration line of this type.

SNMP_INTERFACE=YES

If you enter this type of configuration line in the configuration file, you activate the communication with the SNMP subagent.

PORTNUMBER_SNMP=nnnn

"nnnn" is a port number with 1-5 digits.
Specify the port number of the port via which the agent is to communicate with the SNMP subagent "opensm2agt". This port number must match the port number you entered when starting the SNMP subagent.
If this configuration line is missing the port number 4301 is used for the communication with the SNMP subagent.

ONLINE_CYCLE=nnnn

"nnnn" can contain up to 4 digits. The smallest value, which can be specified is 5.
Here you specify the online cycle in seconds, i.e. the interval at which the UNIX agent is to collect new measurement data with the sar command.
The configuration file must contain a configuration line of this type.

DATA_FILE=filename

Here you specify the name of the monitoring file if the agent is to write the monitored data into a monitoring file.

"filename" has to be a valid UNIX file name (also with the path name). If the file name contains blanks it must be set in quotation marks.

If the configuration file does not contain such a line the agent does not write a monitoring file.

In the monitoring file name the variables $(HOSTNAME), $(DATE) and $(TIME) can be used.

$(HOSTNAME) is replaced by the server name, $(DATE) is replaced by the current date and $(TIME) is replaced by the current time.

Example:

DATA_FILE=../monitoring_files/$(HOSTNAME).$(DATE).$(TIME)

On the server PGTR0036 the agent creates the following monitoring file on June 15, 2006 at 10:30 AM

../monitoring_files/PGTR0036.2006-06-15.103000

DATA_FILE_CYCLE=nnnn

"nnnn" may be max. with four digits. As the smallest value 5 can be specified.

Here you specify the offline cycle in seconds, i.e. the interval, in which the UNIX agent is to write the monitored data into the monitoring file.

The value must be a multiple of the value specified for ONLINE_CYCLE.

DATA_FILE_CHANGE=*YEARLY | *MONTHLY | *DAILY

Here you specify when the agent is to change the monitoring file automatically. This specification is effective only if you do not use the variables $(DATE) and $(TIME) with the specification of DATA_FILE.

Example:

DATA_FILE=../monitoring_files/$(HOSTNAME)

DATA_FILE_CHANGE=*DAILY

If the agent is started on June 15, 2006, a monitoring file with the following name is created

../monitoring_files/PGTR0036.2006-06-15

On June 16, 2006 at 12:00 AM the monitoring file is closed and the following new monitoring file is created

../monitoring_files/PGTR0036.2006-06-16

This change takes place daily at 12:00 AM as long as the agent runs.

DATA_FILE_REPORTS=<reportlist>

With this line you specify the reports, for which measurement data are to be written into the monitoring file. This can be used to reduce the amount of data in the monitoring file.

<reportlist>: list of desired reports. The reports are specified separated by commas, whereby also the indication n-m is permissible.

If DATA_FILE_REPORTS is not specified, the measurement data of all measurement variables are written into the monitoring file.

Example: DATA_FILE_REPORTS=1,3,8-10,13,15-17

Selects the reports 1,3,8,9,10,13,15,16,17.

For the report numbers, refer to the list of measurement variables in the appendix of the ANALYZER Online Help.

PROCESS_HITLIST_FILE=YES

With such a configuration line you arrange that the agent writes a process hit list file parallel to the monitoring file.

The name of the process hit list file is formed from the name of the monitoring file by appending the suffix ".phl".

MAX_NUMBER_HITLIST_PROCESSES=nn

As smallest value 0, as largest value 20 can be specified.

With this parameter you can specify, how many processes the process hit list file is to contain maximally per monitoring interval.

If this configuration line is missing MAX_NUMBER_HITLIST_PROCESSES=10 is assumed.

WORKLOAD_CLASS=<name>,UID=<uid-list>,CMD=<cmd-list>

With this type of configuration line you can define a Workload class.
The configuration file can contain several configuration lines of this type.
If the definition extends over several lines, then the character "\" is to be used as continuation mark at the end of the line.

<name>: Name of the Workload class. The maximally permissible length is 16.

<uid-list>: Specifies the user IDs, whose processes are to belong to the Workload class.

* : selection of all user IDs

UID1: specification of a single user ID

(UID1,….,UIDn): specification of a list of user IDs

<cmd-list>: Specifies the commands, which are to belong to the Workload class. Commands can be names of programs or shell procedures. The specification of the character "*" for partial qualification is permissible as first or last character.

* : all commands are selected

CMD1: specification of a single (also partial qualified) command

(CMD1,….,CMDn): specification of a list of (also partial qualified) commands

A process is part of a Workload class, if the user ID and the command of the process correspond to the definition of the Workload class.

Example 1:

The processes of a certain application are running under the user ID "systool" and their commands contain the string "backup".
The processes can be combined in the Workload class "wcbackup" by
WORKLOAD_CLASS=wcbackup,UID=systool,CMD=*backup*

Example 2:

The processes of a certain application are running under the user ID "root" or "nettool" and their commands contain the string "net" or "lan".
The processes can be combined in the Workload class "net-lan" by
WORKLOAD_CLASS=net-lan,UID=(root,nettool),CMD=(*net*,*lan*)

RESULT_FILE=filename

Here you specify the name of a result file.
"filename" has to be a valid UNIX file name (also with the path name). If the file name contains blanks it must be set in quotation marks.
If the specified file has been modified since the last transmission, the agent always transfers it to the manager together with the new measurement data.
In the manager the transferred files can be output using the context menu of the server button.
The configuration file can contain several configuration lines of this type.

DEVICE_NAMING=LOGICAL/PHYSICAL

With this parameter you can specify for Solaris systems, how device names are to be represented.

LOGICAL represents the names in the describing format (e.g. c0t3d0s0), PHYSICAL in the hardware depending format (e.g. dad0).

If this configuration line is missing DEVICE_NAMING=PHYSICAL is assumed.

DISK_PARTITIONS=YES/NO

With this parameter you can specify for Solaris systems, whether monitoring data are to be supplied for the partitions of disks.

If you specify NO, only monitoring data for the disks are supplied, but not for the individual partitions of the disks.

If this configuration line is missing DISK_PARTITIONS=YES is assumed.

STORAGE_DATA=YES/NO

With this parameter you can specify, whether measurement data for Symmetrix und CLARiiON (Fibrecat) storage systems of EMC Corporation are to be collected.

The following additional software must be installed:

Symmetrix	CLARiiON (Fibrecat)
EMC ControlCenter Symmetrix Manager V5.x	EMC Navisphere Manager EMC Navisphere Agent EMC Solutions Enabler

If this measurement is activated it is recommended not to adjust the online cycle (parameter ONLINE_CYCLE) smaller than 60 seconds. Thus it is ensured that the performance of the storage systems is not impaired by the collection of the measurement values.

If this configuration line is missing STORAGE_DATA=YES is assumed.

STORAGE_MONITOR_DEVICES=YES/NO

With this parameter you can specify, whether measurement data for the logical disks in the storage system are to be collected.

If this configuration line is missing STORAGE_MONITOR_DEVICES=YES is assumed.

STORAGE_MONITOR_HOST_VISIBLE_DEVICES_ONLY=YES/NO

With this parameter you can specify, whether measurement data are to be collected only for the logical disks visible to the server.

This parameter is only evaluated if the parameter STORAGE_MONITOR_DEVICES=YES is specified.

If this configuration line is missing STORAGE_MONITOR_HOST_VISIBLE_DEVICES_ONLY=YES is assumed.

STORAGE_MONITOR_DISKS=YES/NO

With this parameter you can specify, whether measurement data for the physical disks in the storage system are to be collected.

If this configuration line is missing STORAGE_MONITOR_DISKS=NO is assumed.

STORAGE_MONITOR_ADAPTERS=YES/NO

With this parameter you can specify, whether measurement data for the adapters in the storage system are to be collected.

If this configuration line is missing STORAGE_MONITOR_ADAPTERS=NO is assumed.

STORAGE_DISCOVER_FIRST=YES/NO

With this parameter you can specify, whether during every start of INSPECTOR the current configuration of the storage systems is to be collected and saved as a file in the application directory of INSPECTOR.

It is recommended to set this parameter to NO if no change in the configuration is expected.

Independently of the setting of the parameter a current configuration is always collected, if no configuration file is found when starting INSPECTOR.

If this configuration line is missing STORAGE_DISCOVER_FIRST=NO is assumed.

STORAGE_DELTA_DISCOVER_TIME_DAYS=nnn

"nnn" may be max. with three digits. As the smallest value 0 can be specified.
With this parameter you can specify, in which temporal distances (number of days) INSPECTOR checks the configuration of the storage systems and if necessary allocates a new configuration file and accomplishes a restart of the measurement.

0 means, that the configuration is never checked.

It is recommended to set this parameter to 0 if no change in the configuration is expected.

If this configuration line is missing STORAGE_DELTA_DISCOVER_TIME_DAYS=0 is assumed.

STORAGE_TRACE_OBJECTS=YES/NO

With this parameter you can specify, whether storage-specific trace files are allocated by INSPECTOR.

This parameter should only be set to YES for diagnostic purposes, because the files could become very large.

The parameter is independent of the parameter TRACE.

If this configuration line is missing STORAGE_TRACE_OBJECTS=NO is assumed.

TRACE=n

"n" is the trace level
n=0: no trace is written
n=1,2,3,4,5: a trace is written; the larger n is, the more detailed becomes the trace.

This configuration line should be entered for diagnostic purposes only because the trace file is very extensive.

TRACE_FILE=filename

With this type of configuration line you can specify a name for the trace file of the agent. As default the agent uses the name "inspectoragt.trace" for the trace file.

"filename" has to be a valid UNIX file name (also with the path name). If the file name contains blanks it must be set in quotation marks.

3.3 The Linux agent

3.3.1 General

The Linux agent is a program which transfers measurement data collected with the sar system command to the manager on the PC. You start the Linux agent on each server whose measurement data is to be monitored and presented.

When started the manager announces itself automatically at the Linux agent on every server to be monitored and logs out when he terminates. The Linux agent collects the new measurement data on a continuous basis and sends this data to all the manager, which are announced. Up to 10 manager can be at the same time announced with the agent.

If the Linux agent is to write the monitored data additionally into a monitoring file, this can be specified in the configuration file. The monitoring file can be analysed with the application ANALYZER.

3.3.2 Starting and stopping

To start the Linux agent you use the shell script "start.inspectoragt". When starting, the Linux agent loads the settings for the data transfer and the monitoring file from the configuration file. The Linux agent remains active - i.e. cyclically transfers the new measurement data - until it is stopped with the shell script "stop.inspectoragt".

3.3.3 Workload classes

Processes can be combined in Workload classes. By Workload classes selected applications can be monitored if they can be assigned to specific user IDs or commands. Commands e.g. can be names of programs or shell procedures. A process is element of a Workload class if user ID and command of the process correspond to the specification of the Workload class.

A Workload class is defined by the specification of a "WORKLOAD_CLASS=…" line in the configuration file.

3.3.4 The log file

All actions of the Linux agent are logged in the "inspectoragt.log" file. The agent also writes any error messages to this file, e.g. if it terminates abnormally.

3.3.5 The configuration file

When starting, the Linux agent loads the settings for the data transfer and the monitoring file from the configuration file. Before you start the Linux agent for the first time, you must adapt the entries in the configuration file.

A configuration file with the name "inspectoragt.config" is supplied with the Linux agent. The name of the configuration file is transferred to the agent in the shell script "start.inspectoragt" as a parameter. If you change the name of the configuration file, you must insert the new name in the shell script.

The structure of the configuration file is described below.

The configuration file can contain configuration lines, comment lines, and blank lines. Each line beginning with "#" is interpreted as a comment line.

The following configuration lines are available:

LINUX_HOSTNAME=name

"name" can contain up to 255 characters.
Specify a name for the server from which the Linux agent transfers measurement data. This name must match the server name you enter in the manager. If you specify BY_UNAME for "name", the agent uses the value from "uname -n" as the server name.
The configuration file must contain a configuration line of this type.

PORTNUMBER=nnnn

"nnnn" is a port number with 1-5 digits.
Specify the port number of the port via which the manager is to communicate with the Linux agent. This port number must match the port number you entered under "Agent" for "Port Number" in the "Edit Server" dialog box.
The configuration file must contain a configuration line of this type.

SNMP_INTERFACE=YES

If you enter this type of configuration line in the configuration file, you activate the communication with the SNMP subagent.

PORTNUMBER_SNMP=nnnn

"nnnn" is a port number with 1-5 digits.
Specify the port number of the port via which the agent is to communicate with the SNMP subagent "opensm2agt". This port number must match the port number you entered when starting the SNMP subagent.
If this configuration line is missing the port number 4301 is used for the communication with the SNMP subagent.

ONLINE_CYCLE=nnnn

"nnnn" can contain up to 4 digits. The smallest value, which can be specified is 5.
Here you specify the online cycle in seconds, i.e. the interval at which the Linux agent is to collect new measurement data with the sar command.
The configuration file must contain a configuration line of this type.

DATA_FILE=filename

Here you specify the name of the monitoring file if the agent is to write the monitored data into a monitoring file.

"filename" has to be a valid Linux file name (also with the path name). If the file name contains blanks it must be set in quotation marks.

If the configuration file does not contain such a line the agent does not write a monitoring file.

In the monitoring file name the variables $(HOSTNAME), $(DATE) and $(TIME) can be used.

$(HOSTNAME) is replaced by the server name, $(DATE) is replaced by the current date and $(TIME) is replaced by the current time.

Example:

DATA_FILE=../monitoring_files/$(HOSTNAME).$(DATE).$(TIME)

On the server PGTR0036 the agent creates the following monitoring file on June 15, 2006 at 10:30 AM

../monitoring_files/PGTR0036.2006-06-15.103000

DATA_FILE_CYCLE=nnnn

"nnnn" may be max. with four digits. As the smallest value 5 can be specified.

Here you specify the offline cycle in seconds, i.e. the interval, in which the Linux agent is to write the monitored data into the monitoring file.

The value must be a multiple of the value specified for ONLINE_CYCLE.

DATA_FILE_CHANGE=*YEARLY | *MONTHLY | *DAILY

Here you specify when the agent is to change the monitoring file automatically. This specification is effective only if you do not use the variables $(DATE) and $(TIME) with the specification of DATA_FILE.

Example:

DATA_FILE=../monitoring_files/$(HOSTNAME)

DATA_FILE_CHANGE=*DAILY

If the agent is started on June 15, 2006, a monitoring file with the following name is created

../monitoring_files/PGTR0036.2006-06-15

On June 16, 2006 at 12:00 AM the monitoring file is closed and the following new monitoring file is created

../monitoring_files/PGTR0036.2006-06-16

This change takes place daily at 12:00 AM as long as the agent runs.

DATA_FILE_REPORTS=<reportlist>

With this line you specify the reports, for which measurement data are to be written into the monitoring file. This can be used to reduce the amount of data in the monitoring file.

<reportlist>: list of desired reports. The reports are specified separated by commas, whereby also the indication n-m is permissible.

If DATA_FILE_REPORTS is not specified, the measurement data of all measurement variables are written into the monitoring file.

Example: DATA_FILE_REPORTS=1,3,8-10,13,15-17

Selects the reports 1,3,8,9,10,13,15,16,17.

For the report numbers, refer to the list of measurement variables in the appendix of the ANALYZER Online Help.

PROCESS_HITLIST_FILE=YES

With such a configuration line you arrange that the agent writes a process hit list file parallel to the monitoring file.

The name of the process hit list file is formed from the name of the monitoring file by appending the suffix ".phl".

MAX_NUMBER_HITLIST_PROCESSES=nn

As smallest value 0, as largest value 20 can be specified.

With this parameter you can specify, how many processes the process hit list file is to contain maximally per monitoring interval.

If this configuration line is missing MAX_NUMBER_HITLIST_PROCESSES=10 is assumed.

WORKLOAD_CLASS=<name>,UID=<uid-list>,CMD=<cmd-list>

With this type of configuration line you can define a Workload class.
The configuration file can contain several configuration lines of this type.
If the definition extends over several lines, then the character "\" is to be used as continuation mark at the end of the line.

<name>: Name of the Workload class. The maximally permissible length is 16.

<uid-list>: Specifies the user IDs, whose processes are to belong to the Workload class.

* : selection of all user IDs

UID1: specification of a single user ID

(UID1,….,UIDn): specification of a list of user IDs

<cmd-list>: Specifies the commands, which are to belong to the Workload class. Commands can be names of programs or shell procedures. The specification of the character "*" for partial qualification is permissible as first or last character.

* : all commands are selected

CMD1: specification of a single (also partial qualified) command

(CMD1,….,CMDn): specification of a list of (also partial qualified) commands

A process is part of a Workload class, if the user ID and the command of the process correspond to the definition of the Workload class.

Example 1:

The processes of a certain application are running under the user ID "systool" and their commands contain the string "backup".
The processes can be combined in the Workload class "wcbackup" by
WORKLOAD_CLASS=wcbackup,UID=systool,CMD=*backup*

Example 2:

The processes of a certain application are running under the user ID "root" or "nettool" and their commands contain the string "net" or "lan".
The processes can be combined in the Workload class "net-lan" by
WORKLOAD_CLASS=net-lan,UID=(root,nettool),CMD=(*net*,*lan*)

RESULT_FILE=filename

Here you specify the name of a result file.
"filename" has to be a valid Linux file name (also with the path name). If the file name contains blanks it must be set in quotation marks.
If the specified file has been modified since the last transmission, the agent always transfers it to the manager together with the new measurement data.
In the manager the transferred files can be output using the context menu of the server button.
The configuration file can contain several configuration lines of this type.

SAR_DIR=sar path

"sar path" must be the full-qualified name of the directory, in which the command "sar" is located ("sar" will be installed with the SYSSTAT package).

You must enter this type of configuration line in the configuration file, if the "sar" directory is not /usr/bin.

SADC_DIR=sadc path

"sadc path" must be the full-qualified name of the directory, in which the command "sadc" is located ("sadc" will be installed with the SYSSTAT package).

You must enter this type of configuration line in the configuration file, if the "sadc" directory is not /usr/lib/sa.

TRACE=n

"n" is the trace level
n=0: no trace is written
n=1,2,3,4,5: a trace is written; the larger n is, the more detailed becomes the trace.

This configuration line should be entered for diagnostic purposes only because the trace file is very extensive.

TRACE_FILE=filename

With this type of configuration line you can specify a name for the trace file of the agent. As default the agent uses the name "inspectoragt.trace" for the trace file.

"filename" has to be a valid Linux file name (also with the path name). If the file name contains blanks it must be set in quotation marks.

3.4 The Windows agent

3.4.1 General

The Windows agent is a program which continuously collects measurement data and transfers it to the manager on the PC. The Windows agent can be started on any Windows computer and can collect measurement data from several remote servers via the WMI interface. The data collection via WMI is however not possible for Windows NT 4.0 Server, in this case the agent must be running on the server.

When started, the manager announces itself automatically at the Windows agent and logs out when he terminates. The Windows agent collects the new measurement data on a continuous basis and sends this data to all the manager, which are announced. Up to 10 manager can be announced with the agent at the same time.

If the Windows agent is to write the monitored data additionally into a monitoring file, this can be specified in the configuration file. The monitoring file can be analysed with the application ANALYZER.

3.4.2 Starting and stopping

The Windows agent is installed as a local service and can be manually started and terminated under
Start → Administrative Tools → Services
The service must not be run on the Local System account, but must be run on an other account with administrator rights.

3.4.3 Workload classes

Processes can be combined in Workload classes. By Workload classes selected applications can be monitored if they can be assigned to specific commands. Commands e.g. can be names of programs or procedures. A process is element of a Workload class if the command of the process corresponds to the specification of the Workload class.

A Workload class is defined by the specification of a "WORKLOAD_CLASS=…" line in the configuration file.

3.4.4 The log file

All actions of the Windows agent are logged in the "inspectoragt.log" file. The agent also writes any error messages to this file, e.g. if it terminates abnormally.

The log file is located in the installation directory of the agent.

3.4.5 Authentication for "agent-less" monitoring

In order that the agent can collect measurement data from remote servers via the WMI interface ("agent-less" monitoring), the agent must establish a connection to the servers and therefor needs authentication data for each server.

The authentication data consist of

- name or IP address of the server
- domain
- user account with administrator rights
- password of the user account

The authentication data can be specified in the manager when entering a server or can be deposited in an authentication file for the agent in encrypted form. The authentication file is necessary if monitoring files are to be written by the agent. The use of an authentication file is recommended also, if several managers are used, in order to administrate the authentication data in a central place. In particular the authentication file can be used to allow the usage of the manager for persons who are not to have a knowledge of the authentication data.

The agent differentiates two cases when using the authentication data for the WMI connect:

1. Servers, for which a monitoring file are to be written (these servers are specified in the configuration file of the agent with a DATA_FILE_ADD_SERVER=... line)
   - The agent performs the WMI connect immediately after the start.
   - The agent takes the authentication data from the authentication file.
   - If no authentication file exists or the agent does not find authentication data in the authentication file the authentication context (i.e. domain, user account and password) of the agent is used.
2. Servers, for which NO monitoring file are to be written (these servers are NOT specified in the configuration file of the agent with a DATA_FILE_ADD_SERVER=... line)
   - The agent performs the WMI connect only when the server is announced by a manager.
   - The agent takes the authentication data from the authentication file.
   - If no authentication file exists or the agent does not find authentication data in the authentication file the agent uses the authentication data supplied by the manager unless a successful WMI connect to the server was not already accomplished with the authentication data of another manager.
   - If the agent does not find authentication data in the authentication file and the manager does not supply authentication data the authentication context (i.e. domain, user account and password) of the agent is used.

Note:

If a manager supplies authentication data for a server which is specified in the configuration file of the agent with a DATA_FILE_ADD_SERVER=... line or to which a successful WMI connect was already accomplished with the authentication data of another manager these authentication data are ignored and the manager does not get a response from the agent in this regard.

3.4.6 The authentication file

If the agent is to use authentication data from an authentication file the desired authentication file must be specified in the configuration file of the agent.

For editing authentication files the Encrypt program is available, with which an authentication file can be created and also decrypted again. This program is installed with the Windows agent and can be started as follows:

Start → All Programs → openSM2 V7.0 → Encrypt

For the creation of an authentication file, the Encrypt program expects a file containing a line with the authentication data for each server. The line consists of the server name, the domain, the user name and the password. The individual data are separated by commas. If a specification is omitted, the associated comma must be written nevertheless.

Examples:

MCP2006,DOMTHER,mchehugo,anyPassword

MCP0007,DOMHERE,mchesepp,0815Password

MCP0815,,mchefritz,hisPassword

MCP4711,,,

For the specification of the authentication data certain rules must be kept, so the user name, the domain and the password respectively need not be specified if they correspond to the current context of the agent. Furthermore the user must have administrator rights.

Examples:

	agent	remote server	authentication data
user name	MCHERott	MCHERott	need not be specified
domain	DOMFSC01	DOMFSC02	must be specified
password	hugo	hugo	need not be specified

3.4.7 The configuration file

When starting, the Windows agent loads the settings for the data transfer and the monitoring file from the configuration file. Before you start the Windows agent for the first time, you must adapt the entries in the configuration file.

The configuration file "inspectoragt.config" is installed into the installation directory of the agent.

The structure of the configuration file is described below.

The configuration file can contain configuration lines, comment lines, and blank lines. Each line beginning with "#" is interpreted as a comment line.

The following configuration lines are available:

WINDOWS_HOSTNAME=name

"name" can contain up to 255 characters.
Specify a name for the server from which the Windows agent transfers measurement data. This name must match the server name you enter in INSPECTOR. If you specify BY_UNAME for "name", the agent uses the value from the system.
The configuration file must contain a configuration line of this type.

PORTNUMBER=nnnn

"nnnn" is a port number with 1-5 digits.
Specify the port number of the port via which the manager is to communicate with the Windows agent. This port number must match the port number you entered under "Agent" for "Port Number" in the "Edit Server" dialog box.
The configuration file must contain a configuration line of this type.

ONLINE_CYCLE=nnnn

"nnnn" can contain up to 4 digits. The smallest value, which can be specified is 5.
Here you specify the online cycle in seconds, i.e. the interval at which the Windows agent is to collect new measurement data.
The configuration file must contain a configuration line of this type.

DATA_FILE=filename

Here you specify the name of the monitoring file if the agent is to write the monitored data into a monitoring file.

"filename" must be a valid Windows file name with full path name. If the file name contains blanks it must be set in quotation marks.

If the configuration file does not contain such a line the agent does not write a monitoring file. The line is only effective if servers, for which monitoring files are to be written, are specified with the DATA_FILE_ADD_SERVER=... line.

In the monitoring file name the variables $(HOSTNAME), $(DATE) and $(TIME) can be used.

$(HOSTNAME) is replaced by the server name, $(DATE) is replaced by the current date and $(TIME) is replaced by the current time.

Example:

DATA_FILE= D:\Monitoring Files\$(HOSTNAME).$(DATE).$(TIME)

On the server PGTR0036 the agent creates the following monitoring file on June 15, 2006 at 10:30 AM

D:\Monitoring Files\PGTR0036.2006-06-15.103000

DATA_FILE_CYCLE=nnnn

"nnnn" may be max. with four digits. As the smallest value 5 can be specified.

Here you specify the offline cycle in seconds, i.e. the interval, in which the Windows agent is to write the monitored data into the monitoring file.

The value must be a multiple of the value specified for ONLINE_CYCLE.

DATA_FILE_CHANGE=*YEARLY | *MONTHLY | *DAILY

Here you specify when the agent is to change the monitoring file automatically. This specification is effective only if you do not use the variables $(DATE) and $(TIME) with the specification of DATA_FILE.

Example:

DATA_FILE=D:\Monitoring Files\$(HOSTNAME)

DATA_FILE_CHANGE=*DAILY

If the agent is started on June 15, 2006, a monitoring file with the following name is created

D:\Monitoring Files\PGTR0036.2006-06-15

On June 16, 2006 at 12:00 AM the monitoring file is closed and the following new monitoring file is created

D:\Monitoring Files\PGTR0036.2006-06-16

This change takes place daily at 12:00 AM as long as the agent runs.

DATA_FILE_REPORTS=<reportlist>

With this line you specify the reports, for which measurement data are to be written into the monitoring file. This can be used to reduce the amount of data in the monitoring file.

<reportlist>: list of desired reports. The reports are specified separated by commas, whereby also the indication n-m is permissible.

If DATA_FILE_REPORTS is not specified, the measurement data of all measurement variables are written into the monitoring file.

Example: DATA_FILE_REPORTS=1,3,8-10,13,15-17

Selects the reports 1,3,8,9,10,13,15,16,17.

For the report numbers, refer to the list of measurement variables in the appendix of the ANALYZER Online Help.

DATA_FILE_ADD_SERVER=[*FILE(<file>),] [*AUTH_FILE,] [*LOCAL,] [<serverlist>]

With this line you specify the servers for which a monitoring file is to be written.

*FILE(<file>):

<file>: file with a list of desired servers. For each server a line must be entered which contains only the name of the server. <file> must be a valid Windows file name with full path name. If <file> contains blanks it must be set in quotation marks.

*AUTH_FILE:

All servers entered in the authentication file are added.

*LOCAL:

The server, on which the agent is running, is added.

<serverlist>:

All servers specified in this list (separated by commas) are added.

Example:

DATA_FILE_ADD_SERVER=*AUTH_FILE,Server01,Server02,Server03

Adds all servers specified in the authentication file as well as the servers Server01, Server02 and Server03.
The configuration file can contain several configuration lines of this type.

AUTH_FILE=dateiname

With this line you specify an authentication file.

"filename" must be a valid Windows file name with full path name. If the file name contains blanks it must be set in quotation marks.

The authentication file contains the authentication data for servers for the WMI connection in encrypted form.

Alternatively you can specifiy the authentication data for servers also in the manager when entering the server.

PROCESS_HITLIST_FILE=YES

With such a configuration line you arrange that the agent writes a process hit list file parallel to the monitoring file.

The name of the process hit list file is formed from the name of the monitoring file by appending the suffix ".phl".

MAX_NUMBER_HITLIST_PROCESSES=nn

As smallest value 0, as largest value 20 can be specified.

With this parameter you can specify, how many processes the process hit list file is to contain maximally per monitoring interval.

If this configuration line is missing MAX_NUMBER_HITLIST_PROCESSES=10 is assumed.

WORKLOAD_CLASS=<name>,CMD=<cmd-list>

With this type of configuration line you can define a Workload class.
The configuration file can contain several configuration lines of this type.
If the definition extends over several lines, then the character "\" is to be used as continuation mark at the end of the line.

<name>: Name of the Workload class. The maximally permissible length is 16.

<cmd-list>: Specifies the commands, which are to belong to the Workload class. Commands can be names of programs or shell procedures. The specification of the character "*" for partial qualification is permissible as first or last character.

* : all commands are selected

CMD1: specification of a single (also partial qualified) command

(CMD1,….,CMDn): specification of a list of (also partial qualified) commands

A process is part of a Workload class, if the command of the process correspond to the definition of the Workload class.

Example 1:

The commands of the processes of a certain application contains the string "backup".
The processes can be combined in the Workload class "wcbackup" by
WORKLOAD_CLASS=wcbackup, CMD=*backup*

Example 2:

The commands of the processes of a certain application contain the string "net" or "lan".
The processes can be combined in the Workload class "net-lan" by
WORKLOAD_CLASS=net-lan, CMD=(*net*,*lan*)

RESULT_FILE=filename

Here you specify the name of a result file.
"filename" has to be a valid Windows file name (also with the path name). If the file name contains blanks it must be set in quotation marks.
If the specified file has been modified since the last transmission, the agent always transfers it to the manager together with the new measurement data.
In the manager the transferred files can be output using the context menu of the server button.
The configuration file can contain several configuration lines of this type.

TRACE=n

"n" is the trace level
n=0: no trace is written
n=1,2,3,4,5: a trace is written; the larger n is, the more detailed becomes the trace.

This configuration line should be entered for diagnostic purposes only because the trace file is very extensive.

TRACE_FILE=filename

With this type of configuration line you can specify a name for the trace file of the agent. As default the agent uses the name "inspectoragt.trace" for the trace file.

"filename" has to be a valid Windows file name with full path name. If the file name contains blanks it must be set in quotation marks.

3.5 The VMware ESX Server agent

3.5.1 General

The VMware ESX Server agent, in the following briefly referred to as ESX agent, is a program which continuously collects measurement data of VMware ESX Servers and transfers it to the manager. The ESX agent can be started on any Windows computer and can collect measurement data from several VMware ESX Servers. The ESX agent uses the VMware Scripting API or VI3 web service depending on the version of VMware ESX Server.

The ESX agent consists of the actual agent and the reporters, a Perl script “inspectorESXreporter.pl” (for ESX Server 2) and the .NET application “inspectorESXClient.exe” (for ESX Server 3) for collecting the measurement data.

When started, the manager announces itself automatically at the ESX agent and logs out when he terminates. The ESX agent collects the new measurement data on a continuous basis and sends this data to all the manager, which are announced. Up to 10 manager can be announced with the agent at the same time.

If the ESX agent is to write the monitored data additionally into a monitoring file, this can be specified in the configuration file. The monitoring file can be analysed with the application ANALYZER.

3.5.2 Software requirements

For monitoring ESX Server 2 the VMware Scripting API must be installed on the PC, on which the agent is running. The software can be downloaded with the appropriate registration from http://www.vmware.com/support/developer/.

For monitoring ESX Server 3 the .NET Framework v2.0 (v2.0.50727) must be installed on the PC, on which the agent is running. The software can be downloaded from http://msdn.microsoft.com/downloads/.

3.5.3 Starting and stopping

The ESX agent is installed as a local service and can be manually started and terminated under
Start → Administrative Tools → Services

After entering resp. activating the server in the manager, the manager announces the server at the ESX agent. The ESX agent allocates the file "<servername>.data.esx" and starts the reporter for collecing the monitored data. The reporter connects itself to the server and collects the monitored data, which the ESX agent sends to the manager.

Following files are created at start of monitoring of ESX Server and located in the installation directory of ESX agent:

<servername>.reporter.log	Logging file of reporter
<servername>.reporter.lock	Lock file of reporter
<servername>.data.esx	Data file of reporter for collecting data

3.5.4 The log files

All actions of the ESX agent and the reporter are logged in the "inspectorESXagt.log" and "<servername>.reporter.log" files. Any error messages are written to this file, e.g. an abnormal termination.

The log files are located in the installation directory of the manager.

3.5.5 Authentication for VMware ESX Server monitoring

In order that the agent can collect measurement data from remote servers, the agent must establish a connection to the servers and therefor needs authentication data for each server.

The authentication data consist of

- name or IP address of the server
- port number of the VMware authd service (if not default)
- user account with administrator rights
- password of the user account

The authentication data can be specified in the manager when entering a server or can be deposited in an authentication file for the agent in encrypted form. The authentication file is necessary if monitoring files are to be written by the agent. The use of an authentication file is recommended also, if several managers are used, in order to administrate the authentication data in a central place. In particular the authentication file can be used to allow the usage of the manager for persons who are not to have a knowledge of the authentication data.

The agent differentiates two cases when using the authentication data for the connection to the server:

1. Servers, for which a monitoring file are to be written (these servers are specified in the configuration file of the agent with a DATA_FILE_ADD_SERVER=... line)
   - The agent establishes the connection immediately after the start.
   - The agent takes the authentication data from the authentication file.
2. Servers, for which NO monitoring file are to be written (these servers are NOT specified in the configuration file of the agent with a DATA_FILE_ADD_SERVER=... line)
   - The agent establishes the connection only when the server is announced by a manager.
   - The agent takes the authentication data from the authentication file.
   - If no authentication file exists or the agent does not find authentication data in the authentication file the agent uses the authentication data supplied by the manager unless a successful connection to the server was not already accomplished with the authentication data of another manager.

Note:

If a manager supplies authentication data for a server which is specified in the configuration file of the agent with a DATA_FILE_ADD_SERVER=... line or to which a successful connection was already accomplished with the authentication data of another manager these authentication data are ignored and the manager does not get a response from the agent in this regard.

3.5.6 The authentication file

If the agent is to use authentication data from an authentication file the desired authentication file must be specified in the configuration file of the agent.

For editing authentication files the Encrypt program is available, with which an authentication file can be created and also decrypted again. This program is installed with the ESX agent and can be started as follows:

Start → All Programs → openSM2 V7.0 → Encrypt

For the creation of an authentication file, the Encrypt program expects a file containing a line with the authentication data for each server. The line consists of the server name, the port number of VMware authd service (if not default), the user account and the password. The individual data are separated by commas. If a specification is omitted, the associated comma must be written nevertheless.

Examples:

ESX2Server,,mchehugo,einPasswort

ESX3Eins,,mchesepp,0815Passwort

ESX3Zwei,443,mchefritz,seinPasswort

ESX3Drei,,mchemichi,nocheinPasswort

The specification of the port number should only be done if server listens on a non-default port.

3.5.7 The configuration file

When starting, the ESX agent loads the settings for the data transfer and the monitoring file from the configuration file. Before the ESX agent is started for the first time, you must adapt the entries in the configuration file.

The configuration file with the name "inspectorESXagt.config" is found in the installation directory of the manager. The name of the configuration file must not be changed.

The structure of the configuration file is described below.

The configuration file can contain configuration lines, comment lines, and blank lines. Each line beginning with "#" is interpreted as a comment line.

The following configuration lines are available:

PORTNUMBER=nnnn

"nnnn" is a port number with 1-5 digits.
Specify the port number of the port via which the manager is to communicate with the ESX agent. This port number must match the port number you entered under "Agent" for "Port Number" in the "Edit Server" dialog box.
The configuration file must contain a configuration line of this type.

VMPERL_PATH=vmPerlScriptingDirectory

Here the path to the VmPerlScripting directory must be specified. If blanks are contained in the path name, the path must be included in quotation marks.

Example:

VMPERL_PATH="C:\Program Files\VMware\VMware VmPerl Scripting API"

ONLINE_CYCLE=nnnn

"nnnn" may be max. with four digits. As the smallest value 30 can be specified.

Here you specify the online cycle in seconds, i.e. the interval at which the ESX agent is to collect new measurement data.

The configuration file must contain a configuration line of this type.

DATA_FILE=filename

Here you specify the name of the monitoring file if the agent is to write the monitored data into a monitoring file.

"filename" has to be a valid Windows file name (also with the path name). If the file name contains blanks it must be set in quotation marks.

If the configuration file does not contain such a line the agent does not write a monitoring file.

In the monitoring file name the variables $(HOSTNAME), $(DATE) and $(TIME) can be used. $(HOSTNAME) is replaced by the server name, $(DATE) is replaced by the current date and $(TIME) is replaced by the current time.

If a manager is to monitor several ESX servers the monitoring file name must contain the variable $(HOSTNAME).

Example:

DATA_FILE= D:\Monitoring Files\$(HOSTNAME).$(DATE).$(TIME)

For the server PGTR0036 the agent creates the following monitoring file on June 15, 2006 at 10:30 AM

D:\Monitoring Files\PGTR0036.2006-06-15.103000

DATA_FILE_CYCLE=nnnn

"nnnn" may be max. with four digits. As the smallest value 30 can be specified.

Here you specify the offline cycle in seconds, i.e. the interval, in which the ESX agent is to write the monitored data into the monitoring file.

The value must be a multiple of the value specified for ONLINE_CYCLE.

DATA_FILE_CHANGE=*YEARLY | *MONTHLY | *DAILY

Here you specify when the agent is to change the monitoring file automatically. This specification is effective only if you do not use the variables $(DATE) and $(TIME) with the specification of DATA_FILE.

Example:

DATA_FILE=D:\Monitoring Files\$(HOSTNAME)

DATA_FILE_CHANGE=*DAILY

If the agent is started on June 15, 2006, a monitoring file with the following name is created

D:\Monitoring Files\PGTR0036.2006-06-15

On June 16, 2006 at 12:00 AM the monitoring file is closed and the following new monitoring file is created

D:\Monitoring Files\PGTR0036.2006-06-16

This change takes place daily at 12:00 AM as long as the agent runs.

DATA_FILE_REPORTS=<reportlist>

With this line you specify the reports, for which measurement data are to be written into the monitoring file. This can be used to reduce the amount of data in the monitoring file.

<reportlist>: list of desired reports. The reports are specified separated by commas, whereby also the indication n-m is permissible.

If DATA_FILE_REPORTS is not specified, the measurement data of all measurement variables are written into the monitoring file.

Example: DATA_FILE_REPORTS=1,3,8-10,13,15-17

Selects the reports 1,3,8,9,10,13,15,16,17.

For the report numbers, refer to the list of measurement variables in the appendix of the ANALYZER Online Help.

DATA_FILE_ADD_SERVER=[*FILE(<file>),] [*AUTH_FILE,] [<serverlist>]

With this line you specify the servers for which a monitoring file is to be written. Each server for which a monitoring file is to be written needs a line in the authentication file to get the authentication data for the server.

*FILE(<file>):

<file>: file with a list of desired servers. For each server a line must be entered which contains only the name of the server. <file> must be a valid Windows file name with full path name. If <file> contains blanks it must be set in quotation marks.

*AUTH_FILE:

All servers entered in the authentication file are added.

<serverlist>:

All servers specified in this list (separated by commas) are added.

Example:

DATA_FILE_ADD_SERVER=*AUTH_FILE

Adds all servers specified in the authentication file.

DATA_FILE_ADD_SERVER=Server01,Server02,Server03

Adds the servers Server01, Server02 and Server03.

The configuration file can contain several configuration lines of this type.

AUTH_FILE=filename

With this line you specify an authentication file.

"filename" must be a valid Windows file name with full path name. If the file name contains blanks it must be set in quotation marks.

The authentication file contains the authentication data for servers for connection in encrypted form.

Alternatively you can specify the authentication data for servers also in the manager when entering the server.

TRACE=n

"n" is the trace level
n=0: no trace is written
n=1,2,3,4,5: a trace is written; the larger n is, the more detailed becomes the trace.

This configuration line should be entered for diagnostic purposes only because the trace file is very extensive.

TRACE_FILE=filename

With this type of configuration line you can specify a name for the trace file of the agent. As default the agent uses the name "<servername>.inspectorESXagt.trace" for the trace file.

"filename" has to be a valid Windows file name with full path name. If the file name contains blanks it must be set in quotation marks.

3.6 The SNMP subagent

3.6.1 General

*open*SM2 offers a SNMP support for BS2000/OSD, Solaris and Linux.

With help of the SNMP subagent "opensm2agt" for *open*SM2 measurement data of selected measurement variable can be requested from a management station.
In addition the SNMP subagent offers the sending of SNMP traps as action in case of alarm.

The objects for monitoring data and SNMP traps are described in the section *open*SM2 MIB in the appendix.

If the agent is to provide monitoring data to the SNMP subagent, the SNMP interface must be activated in the configuration file of the agent by the line "SNMP_INTERFACE=YES".

3.6.2 Software requirements

For the SNMP support by *open*SM2 the following products are required:

BS2000/OSD:
SBA-BS2 (BS2000/OSD) V6.0 or higher – EMANATE SNMP management for BS2000/OSD

Solaris:
SMAWemanate (Solaris) V1.5 – EMANATE SNMP agent system for Solaris

Linux:
SMAWemanate (Linux) V1.5 – EMANATE SNMP agent system for Linux

Please refer to the corresponding documentation for detailed information.

3.6.3 Starting and stopping

As default the port number 4301 is used for the communication between agent and SNMP subagent. If another port number is specified when starting the SNMP subagent this port number must be entered in the configuration file of the agent as follows:
PORTNUMBER_SNMP=<n>

Starting the SNMP subagent:

BS2000/OSD

In the POSIX shell:

opensm2agt [-opensm2port <n>] n = port number

After the start the SNMP subagent demonizes itself.

With the START-SNMP-OPENSM2 command:

The commands for starting and stopping the SNMP subagent are contained in the SYSSDF.SM2-TOOLS.075 syntax file. In order to make these commands available to each user, this syntax file must be activated with the following command:

```
/MODIFY-SDF-PARAMETER SCOPE=*PERMANENT,
        SYNTAX-FILE-TYPE=*SUBSYSTEM(NAME=SYSSDF.SM2-TOOLS.075,
                                    SUBSYSTEM-NAME=SM2TOOLS)
```

Format:

```
START-SNMP-OPENSM2
        VERSION = *STD / <product-version mandatory-man-corr> /
                  <product-version mandatory-man-without-corr> /
                  <product-version without-man-corr>
        MONJV = *NONE / <filename 1..54 without-gen-vers>
        CPU-LIMIT = *JOB-REST / <integer 1..32767 >
        JOB-CLASS = *STD / <name 1..8>
        PORT-NUMBER = 4301 / <integer 1025..65535>
```

Operands:

VERSION =

Specifies the version of the SNMP subagent to be called.

VERSION = *STD

The current version is called.

VERSION = <product-version>

The specified version is called.

MONJV =

Specifies the name of the job variable, which is to monitor the SNMP subagent run. The job variable must already be cataloged.

MONJV = *NONE

No job variable is specified.

MONJV = <filename 1..54 without-gen-vers>

Specifies the name of a job variable already cataloged.

CPU-LIMIT =

Specifies the CPU time, which may be used by the SNMP subagent run. In interactive mode, the user is notified by the system if this time is exceeded. In batch mode, the SNMP subagent run is terminated.

CPU-LIMIT = *JOB-REST

There is no limit on the CPU time available to the program.

CPU-LIMIT = <integer 1..32767 >

Specifies the CPU time, which may be used by the SNMP subagent run.

JOB-CLASS =

Specifies the job class for the SNMP subagent run.

JOB-CLASS = *STD

The standard job class is used.

JOB-CLASS = <name 1..8>

The specified job class is used.

PORT-NUMBER =

Specifies the port number for the communication between agent and SNMP subagent.

PORT-NUMBER = 4301

The port number 4301 is used. This port number is used as default. It does not have to be entered into the configuration file of the agent.

PORT-NUMBER = <integer 1025..65535>

The specified port number is used. The port number must also be entered into the configuration file of the agent.

Solaris and Linux

opensm2agt [-opensm2port <n>] n = port number

The SNMP subagent must be started with root authorization.
After the start the SNMP subagent demonizes itself.

Stopping the SNMP subagent:

BS2000/OSD

In the POSIX shell:

kill <pid>

With the STOP-SNMP-OPENSM2 command:

Format:

STOP-SNMP-OPENSM2

VERSION = *STD / <product-version mandatory-man-corr> /
<product-version mandatory-man-without-corr> /
<product-version without-man-corr>

PORT-NUMBER = 4301 / <integer 1025..65535>

Operands:

VERSION =

Specifies the version of the program STOPSUBAGENT for stopping the SNMP subagent to be called.

VERSION = *STD

The current version is called.

VERSION = <product-version>

The specified version is called.

PORT-NUMBER =

Specifies the port number for the communication between the program STOPSUBAGENT and the SNMP subagent. This port number must match the port number specified for START-SNMP-OPENSM2.

PORT-NUMBER = 4301

The port number 4301 is used. This port number is used as default.

PORT-NUMBER = <integer 1025..65535>

The specified port number is used.

Solaris and Linux

kill <pid>

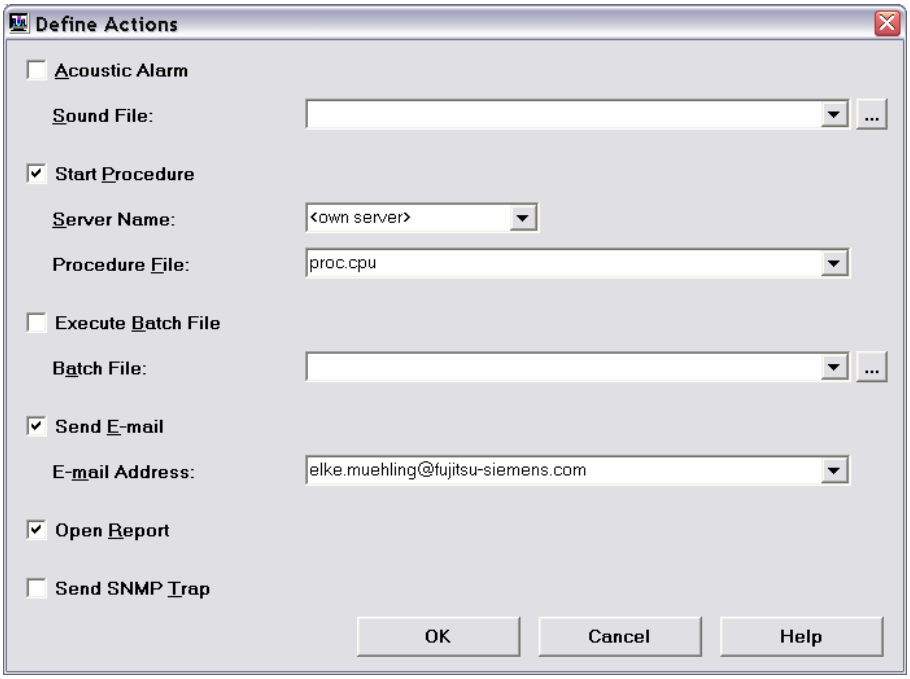
4 Description of dialog boxes

4.1 The Define Actions dialog box

"Actions At Alarm..." command in the "Edit Rules" dialog box

In this dialog box you can define, which actions are to be executed with the occurrence of an alarm, i.e. if all conditions of a rule are fulfilled.

The settings defined here become effective only if permitted by the default settings defined in the "Settings" dialog box.



Dialog box options

Acoustic Alarm

If "Acoustic Alarm" is marked an acoustic alarm is issued, if issuing of an acoustic alarm is defined as default setting.

Sound File

Here you specify the sound file to be played.

If you specify *STD the default setting for the acoustic alarm is used.

The following table shows the kind of alarm which is issued dependent on the default setting and the rule-specific setting:

	Rule-specific setting	
Default setting	***STD**	**<sound file>**
No alarm	no alarm	no alarm
Acoustic signal	acoustic signal	acoustic signal
Sound	default sound file	<sound file>

Start Procedure

If "Start Procedure" is marked at the start and at the end of an alarm state a procedure is started on the specified server if starting of procedures is activated as default setting.

Server Name

Here you specify the name of the server, on which the procedure is to be started. In order that the procedure can be started, an agent must be running on the server and the procedure file must be accessible by the agent.

The specification <own server> designates the server, for which the rule is defined. This specification is possible only for server-specific rules.

Procedure File

Here you specify the name of the procedure file to be started.

The description of the procedure parameters you find in the section Procedures.

BS2000/OSD:
Instead of a procedure file you can also specify an element in a library in the format <library>(<element>). The file name must not contain a catalog or user id, i.e. the file must have the same user id as the agent.

UNIX and Linux:
The file name must not begin with $, / or .., i.e. the file must be located in the same directory as the agent resp. in a subdirectory.

Windows:
As procedure file an executable file with full pathname must be specified.

Start Batch File

If "Start Batch File" is marked at the start and at the end of an alarm state a batch file is started on the PC if starting of batch files is activated as default setting.

Batch File

Here you specify the name of the batch file to be started. The file must be available on the PC.

The description of the parameters you find in the section Batch files.

Send E-mail

If "Send E-mail" is marked at the start and at the end of an alarm state an e-mail is transmitted if sending of e-mails is activated as default setting.

For sending e-mails the e-mail service to be used must be specified additionally on the Services tab in the "Settings" dialog box.

E-mail Address

Here you specify the e-mail address, to which the notification is to be transmitted.

If you specify *STD the default setting for the e-mail address is used.

Open Report

If "Open Report" is marked a time series report with the monitored data of the measurement variable is opened automatically at the beginning of an alarm state if the opening of reports is activated as default setting. The report is closed again automatically at the end of the alarm state.

Send SNMP Trap

If "Send SNMP Trap" is marked at the start and at the end of an alarm state a trap is sent to a SNMP management station if the sending of SNMP traps is activated as default setting.

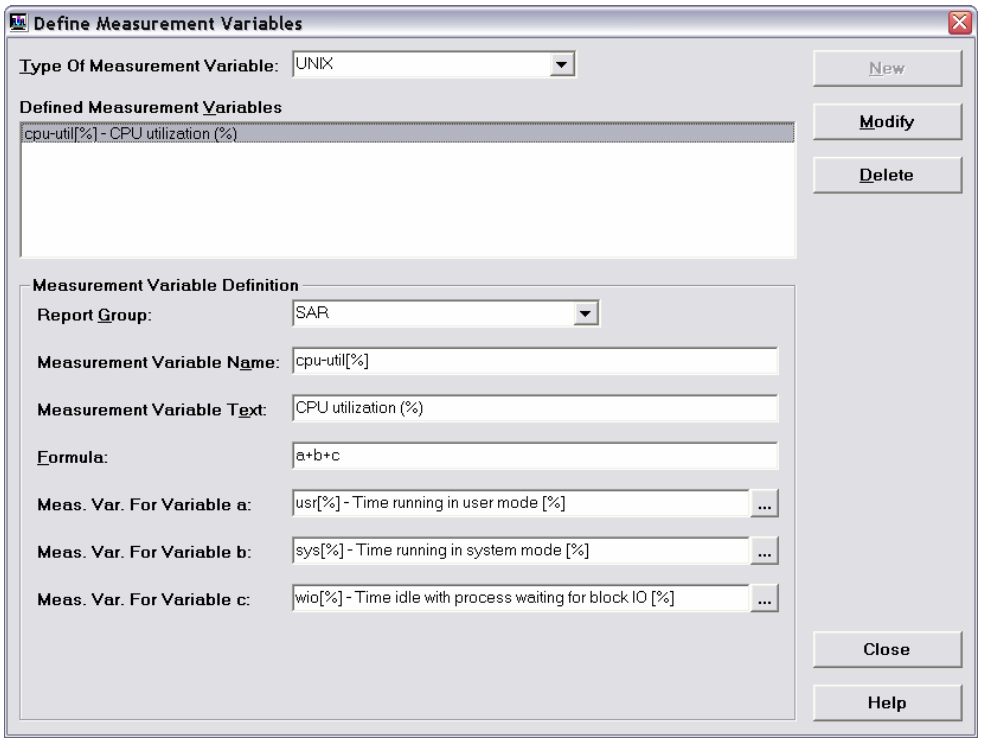
OK

The actions are transferred to the "Edit Global Rule" resp. "Edit Rule" dialog box

4.2 The Define Measurement Variables dialog box

"Define Measurement Variables..." command in the "Options" menu

In this dialog box you can define new composed measurement variables by linking basic measurement variables by formulas. Only basic measurement variables without monitored objects or with the same monitored object type can be linked.



Dialog box options

Type Of Measurement Variable

Choose the type - BS2000, UNIX, Linux, Windows or ESX - of the composed measurement variable to be defined.

Defined Measurement Variables:

The list contains the names and descriptions of all defined composed measurement variables of the selected type.
If you click on a measurement variable in this list, the specifications for this measurement variable are entered in the "Measurement Variable Definition" dialog box items.

Measurement Variable Definition

Enter the specifications for the composed measurement variable to be defined.

Report Group

Here you specify the report group to which the composed measurement variable to be defined is to belong. Either select an already defined report group or specify a freely selectable name, up to 15 characters long, for a report group to be defined.

Measurement Variable Name

Specify a freely selectable name, up to 20 characters long, for the composed measurement variable to be defined. If you enter the name of an already defined measurement variable, the measurement variable will be marked in the list "Defined Measurement Variables" and the specifications for this measurement variable are transferred to the dialog box items.

Measurement Variable Text

Here you enter a text, up to 100 characters long, as description for the composed measurement variable to be defined.
This text will be used as legend in the chart when a report is printed or saved.

Formula

Here you specify the formula for the computation of the composed measurement variable to be defined.
When you exit the text box, e.g. by pressing TAB, a text box appears for each variable of the formula. You then specify the basic measurement variables for each variable.

If you enter the formula *SUM you can select a measurement variable with monitored objects, for which the sum of the measurement values of all monitored objects are to be calculated.

Meas. Var. for Variable <a>

With the "..." command button you open the Select Measurement Variable dialog box, where you select the basic measurement variable by which the variable <a> in the formula is to be replaced.

New

The entry specified for "Measurement Variable Definition" is saved with the specifications displayed there.

Modify

The entry for the measurement variable selected in "Defined Measurement Variables" is changed. The entry is updated with the specifications displayed for "Measurement Variable Definition".

Delete

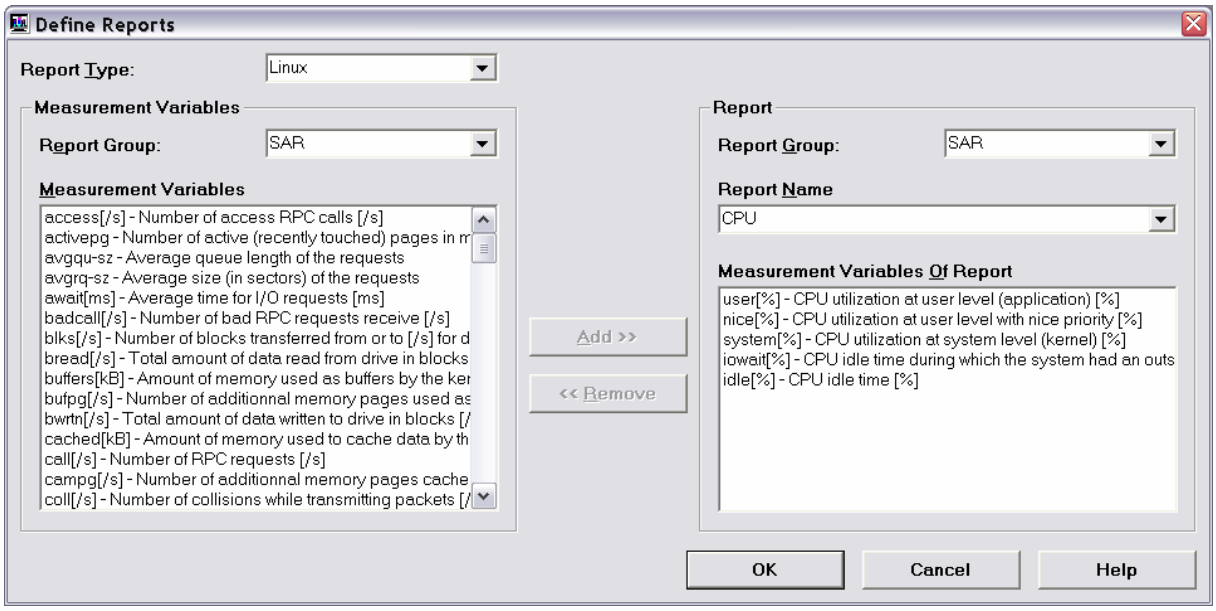
The measurement variable selected under "Defined Measurement Variables" is deleted.

4.3 The Define Reports dialog box

"Define Reports..." command in the "Options" menu

In this dialog box you can change the assignment of the measurement variables to the predefined server reports and global snapshot reports as well as freely define your own reports using the available measurement variables.

All predefined reports are listed in the appendix with their associated measurement variables under BS2000 reports and measurement variables, UNIX reports and measurement variables, Linux reports and measurement variables and Windows reports and measurement variables.



Dialog box options

Report Type

Choose the report type, BS2000, UNIX, Linux, Windows or ESX.

Measurement Variables

In this area the available measurement variables are displayed.

Report Group

Here you select the report group. All report groups of the selected report type are displayed.

Measurement Variables

The list contains all measurement variables available for the selected report group. Mark a measurement variable in the list to add it to the currently selected report by clicking on the "add" button. A report can contain up to 15 measurement variables without monitored objects or one measurement variable with monitored objects.

Report

In this area the specifications of the currently selected report are displayed.

Report Group

Here you specify the report group of the report. Either select an already defined report group or specify a freely selectable name, up to 15 characters long, for a report group to be defined.

Report Name

Either select an already defined report or specify a freely selectable name, up to 25 characters long, for a report to be defined.

Measurement Variables Of Report

The list contains all measurement variables of the currently selected report. Mark a measurement variable in the list to remove it from the report by clicking on the "remove" button. If a report does not contain any measurement variables it will be deleted.

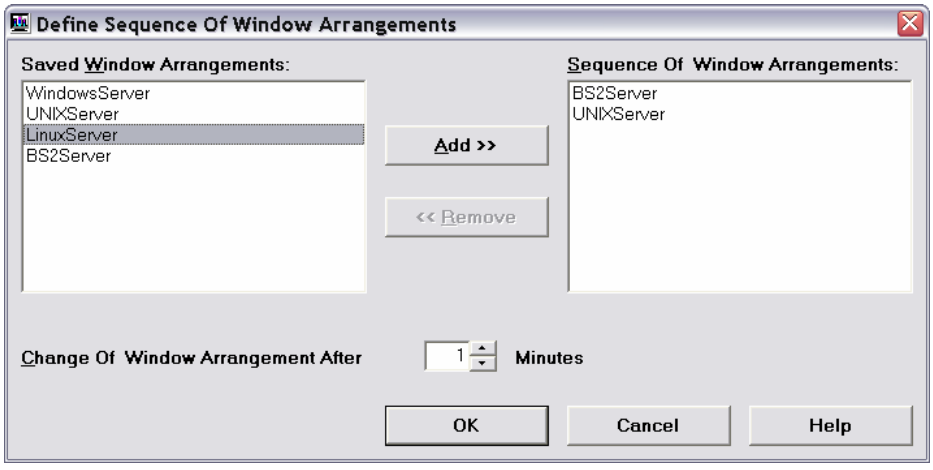
OK

The report definitions are saved.

4.4 The Define Sequence Of Window Arrangements dialog box

"Define Arrangement Sequence..." command in the "Windows" menu

In this dialog box you can define a sequence of saved window arrangements, which are to be displayed automatically one after another.



Dialog box options

Saved Window Arrangements

The list contains all saved window arrangements. Mark a window arrangement in the list to add it to the arrangement sequence by clicking on the command button ”add”.

Sequence Of Window Arrangements

The list contains all window arrangements of the arrangement sequence. Mark a window arrangement in the list to remove it from the arrangement sequence by clicking on the command button ”remove”.

The order of window arrangements in this list determines the order in which the window arrangements are displayed.

Change Of Window Arrangement After <n> Minutes

Here you can specify the number of minutes before the window arrangement will be changed. For example, if you specify 5 here, each window arrangement will be shown for 5 minutes.

OK

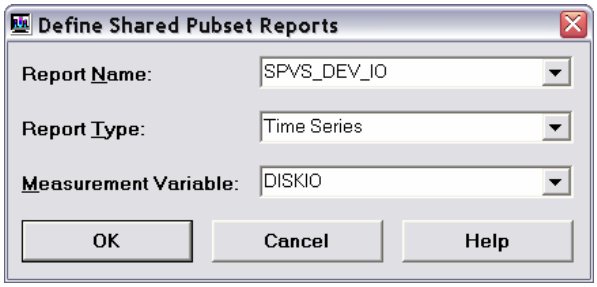
The definitions are saved.

4.5 The Define Shared Pubset Reports dialog box

"Define Shared Pubset Reports..." command in the "Options" menu

In this dialog box you define shared pubset reports. You can define the type of the report and the measurement variable to be presented in the shared pubset report.

You can define several shared pubset reports of the same type and with the same measurement variable in order to open them for different monitored variables.



Dialog box options

Report Name

Here you specify a freely selectable name, up to 20 characters long, for the report to be defined.

Report Type

Here you choose the desired report type - snapshot, time series or time series accumulated.

Measurement Variable

Here you select the desired measurement variable - DISKIO or DISKQUEUE.

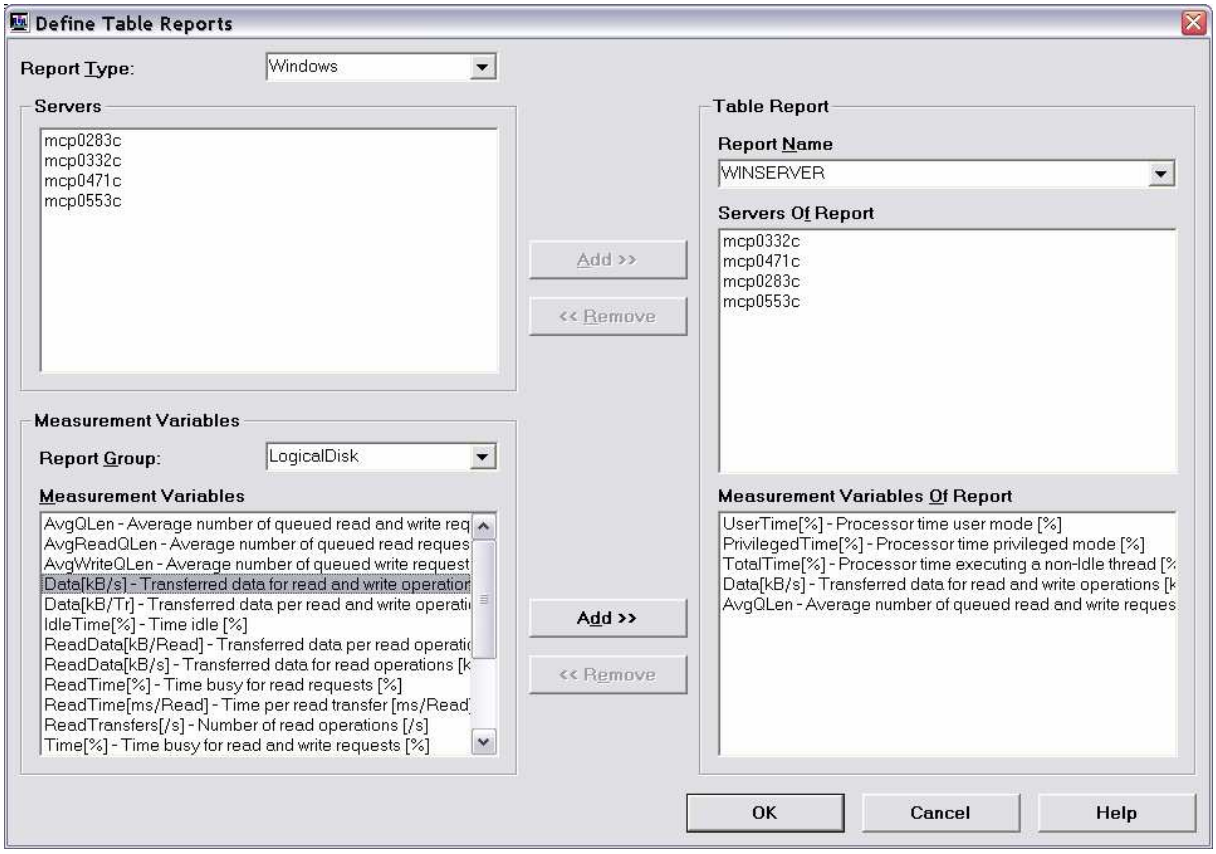
OK

The report definitions are saved.

4.6 The Define Table Reports dialog box

"Define Table Reports..." command in the "Options" menu

In this dialog box you can specify the servers and measurement variables which are to be displayed in the global table report.



Dialog box options

Report Type

Choose the report type, BS2000, UNIX, Linux, Windows or ESX.

Servers

The list contains all servers corresponding to the selected report type. Mark a server in the list to add it to the currently selected table report by clicking on the "Add" button.

Measurement Variables

In this area the available measurement variables are displayed.

Report Group

Here you select the report group. All report groups available for the selected report type are displayed.

Measurement Variables

The list contains all measurement variables without monitored objects of the selected report group. Mark a measurement variable in the list to add it to the currently selected table report by clicking on the "Add" button.

Table Report

In this area the specifications of the currently selected table report are displayed.

Report Name

Either select an already defined table report or specify a freely selectable name, up to 20 characters long, for a table report to be defined.

Servers Of Report

The list contains all servers of the currently selected table report. Mark a server in the list to remove it from the report by clicking on the "Remove" button. If a report does not contain any servers it will be deleted. The sequence of the servers in this list determines the sequence of the servers in the table of the report.

Measurement Variables Of Report

The list contains all measurement variables of the currently selected table report. Mark a measurement variable in the list to remove it from the report by clicking on the "Remove" button. If a report does not contain any measurement variables it will be deleted. The sequence of the measurement variables in this list determines the sequence of the measurement variables in the table of the report.

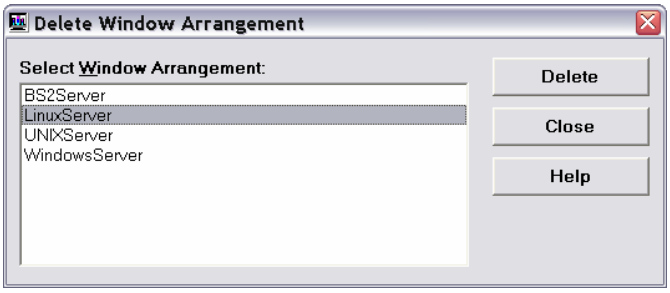
OK

The table report definitions are saved.

4.7 The Delete Window Arrangement dialog box

"Delete Saved Arrangement..." command in the "Windows" menu

In this dialog box you can delete a saved arrangement of report windows.



Dialog box options

Select Window Arrangement

From the list, choose the name of the window arrangement you want to delete.

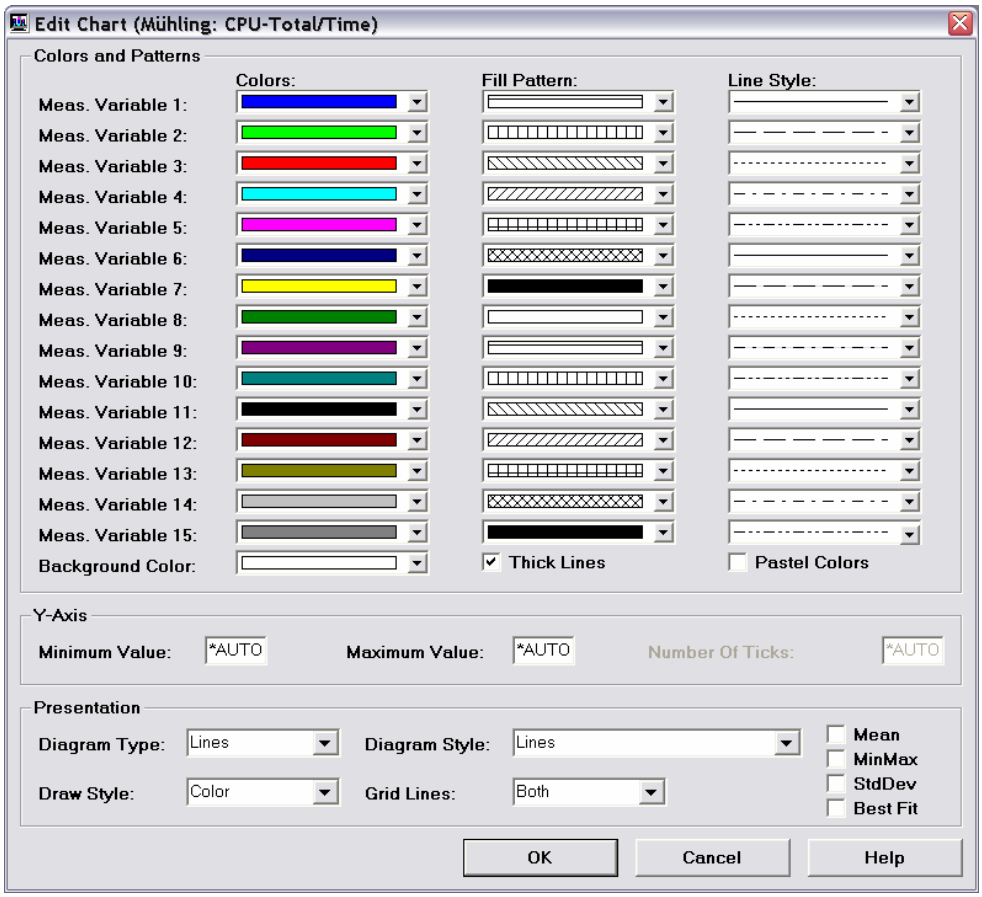
OK

The window arrangement is deleted.

4.8 The Edit Chart dialog box

Commands of the "Edit Chart" submenu in the "Options" menu
or
"Edit..." command in the Context menu of the chart of a report

In this dialog box you can define the settings for the colors, patterns, and presentation of the chart.



Dialog box options

Colors And Patterns

Specify the settings for the colors and patterns.

Color

Specify which colors are to be used for the values in the diagram when the presentation mode "Color" is selected.

Fill Pattern

Specify which fill pattern is to be used for the values in the diagram when the presentation mode "Black/White" is selected.

Line Style

Specify which line styles are to be used for the values in the diagram when the presentation mode "Black/White" is selected.

Background Color

Specify which background color is to be used in the diagram when the presentation mode "Color" is selected.

Thick Lines

Mark this option, if thick lines should be used for lines in the diagram.

Pastel Colors

Mark this option, if pastel colors should be used in the diagram.

Y Axis

Specify the settings for the y-axis.
This option is only available, if you opened the dialog box from the context menu of a report.

Minimum Value

Specify the minimum value on the y-axis. If you specify *AUTO, the minimum value will be set automatically according to the lowest measurement value.
You can either explicitly specify both the minimum and the maximum value or *AUTO for both.

Maximum Value

Specify the maximum value on the y-axis. If you specify *AUTO, the maximum value will be set automatically according to the highest measurement value.
You can either explicitly specify both the minimum and the maximum value or *AUTO for both.

Number Of Ticks

Specify the number of marks on the y-axis, if not *AUTO is specified for "Minimum" and "Maximum".

Presentation

Specify the presentation. The various diagram types and their style options are described in more detail in the section entitled "Chart".

Diagram Type

Choose the diagram type.

Diagram Style

Choose the diagram style. The option you selected for "Diagram Type" determines the style options offered here for selection.

Draw Style

Choose between the options "Color" and "Black/White".

Grid Lines

Draws in the grid lines.

Mean

The mean value over the analysis subintervals is displayed for each value.

MinMax

The minimum and maximum are displayed for each value.

StdDev

The standard deviation is displayed for each value.

Best Fit

An approximation curve (straight line) is displayed for each value.

OK

The settings are applied.

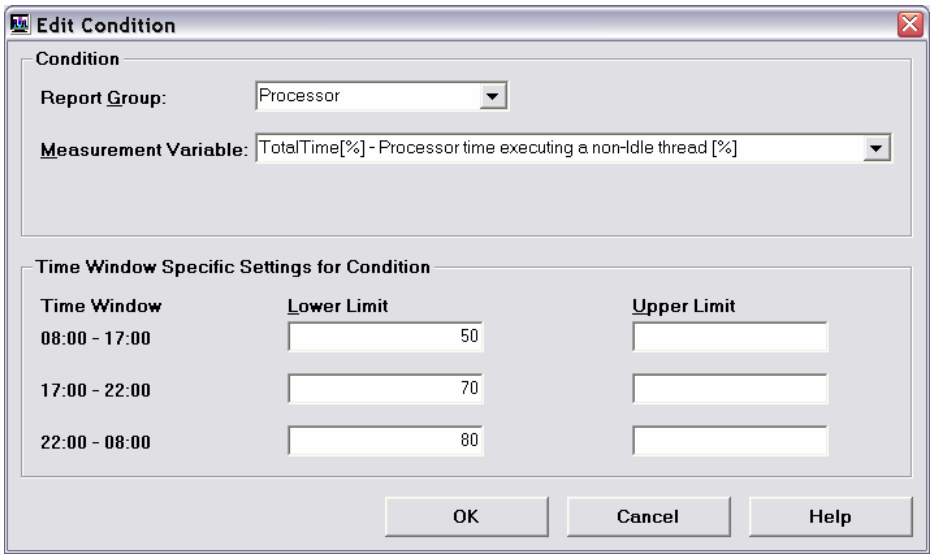
If you opened the dialog box from the context menu of a report, the settings only apply to this report.

If you opened the dialog box from the "Options" menu, the settings are applied as the defaults for all reports of the selected type.

4.9 The Edit Condition dialog box

"New..." command in the "Edit Rules" dialog box
resp.
"Modify..." command in the "Edit Rules" dialog box

In this dialog box you can define a condition for a rule.



Dialog box options

Condition

In this area you select the measurement variable and, if necessary, the monitored objects set for the condition.

Server Name

Here you select the server, for which the condition should apply, if you want to define a condition for a global rule.

Report Group

Here you select the report group containing the measurement variable, for which you want to define the condition.

Measurement Variable

Here you select the measurement variable, for which you want to define the condition.

If you selected a measurement variable with monitored objects, you can specify additionally a filter list for the monitored objects set, in order to limit the condition to certain monitored objects.

Filter List for Monitored Objects Set

Here the filter list for the monitored objects set is displayed.

You can specify resp. modify the filter list for the monitored objects set in the Edit Filter List For Monitored Objects Set dialog box.

Time Window Specific Settings For Condition

In this area you can specify the lower and upper limit value for the measured resp. mean value of the measurement variable for all time windows.

The condition is fulfilled, if the measured resp. mean value of the measurement variable is greater than the lower limit and less or equal the upper limit.

Time Window

Here the global time windows resp. the time windows defined for the server appear.

Lower Limit

Here you specify the lower limit value.
If the lower limit value is not specified the smallest possible value (-1E+10) is assumed as lower limit.

Upper Limit

Here you specify the upper limit value.
If the upper limit value is not specified the greatest possible value (1E+10) is assumed as upper limit.

OK

The condition is transferred to the "Edit Global Rule" resp. "Edit Rule" dialog box.

4.10 The Edit Data Transfer Filters dialog box

"Define Data Transfer Filters..." command in the "Servers" menu
resp.
"Define Data Transfer Filters..." command in the context menu of a server in the server list

In this dialog box you define for which measurement variables and monitored objects measurement data are to be transferred to the manager by the agent.

If you call this dialog box from the "Servers" menu, you can simultaneously set the data transfer filters for several servers.

If you call the dialog box from the context menu of a server in the server list, you can only set the data transfer filters for one server.

 **Dialog box options**

Servers

This area is only displayed when called from the "Servers" menu.

Server Type

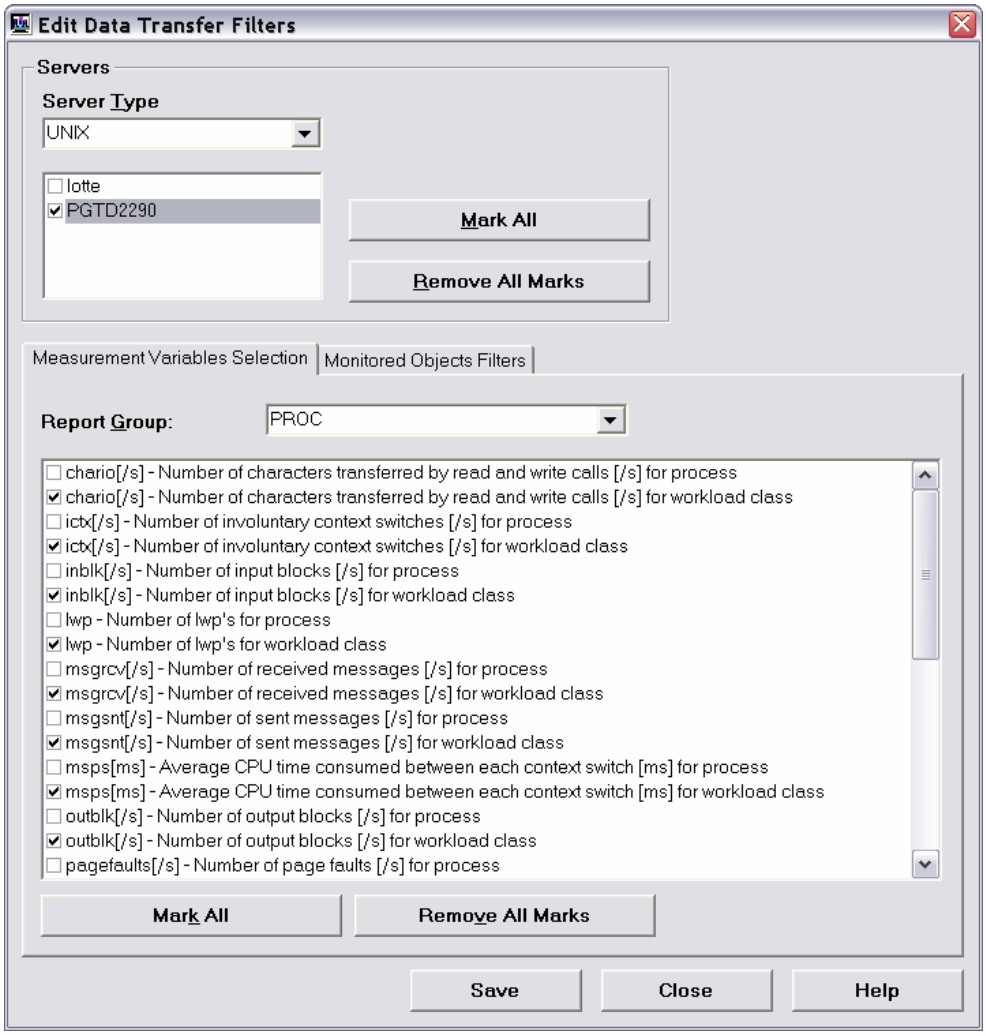
Here you select the server type, BS2000, UNIX, Linux, Windows or ESX.

A list is displayed of all servers belonging to the selected server type.

Mark the server(s) in the list for which you want to set data transfer filters.

The data transfer filters of the server, which has been marked first, are shown below.

Options on the "Measurement Variables Selection" tab:



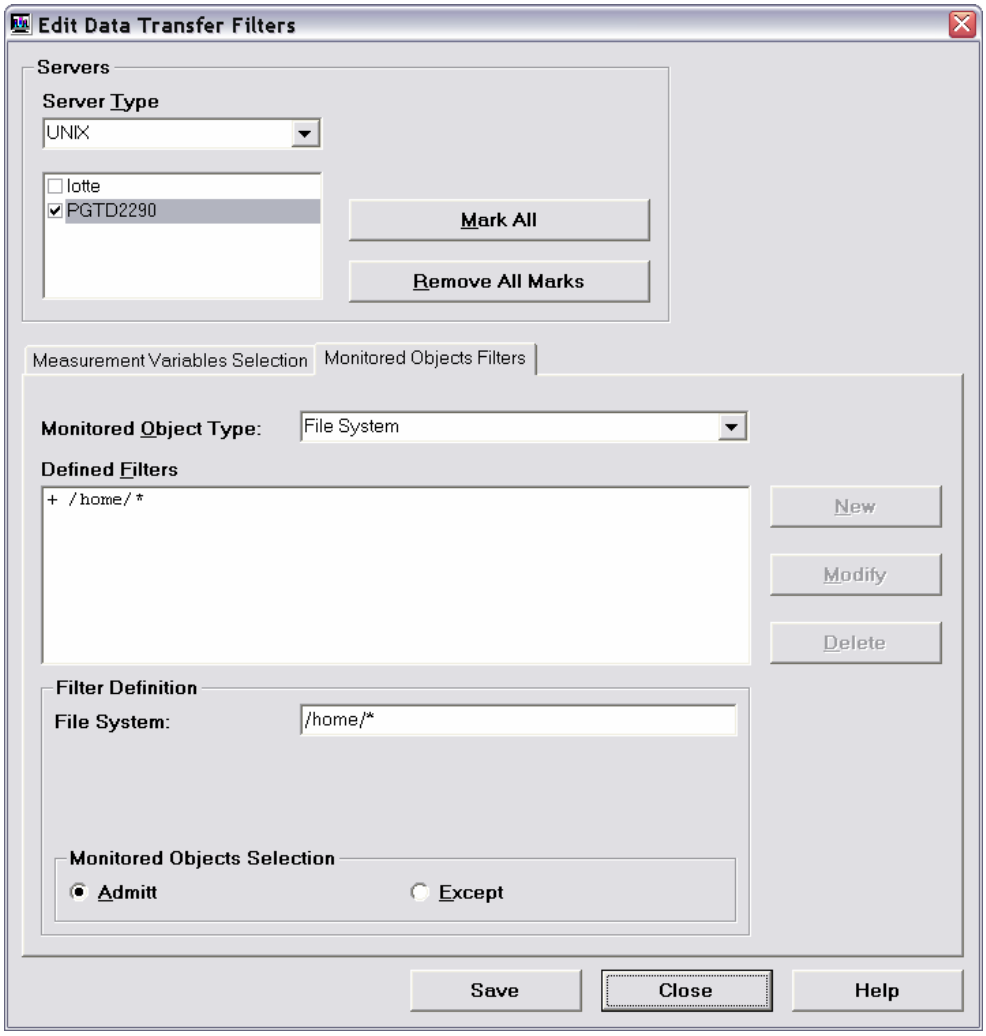
Report Group

Here you choose the report group.

A list of all reports of the selected report group is displayed.

The measurement variables for which measurement values are to be transferred to the manager are marked in the list. Remove the marking for measurement variables for which no measurement values are to be transferred to the manager.

Options on the "Monitored Objects Filters" tab:



Monitored Object Type

Here you select the type of monitored object, for which you want to define filters.

Defined Filters

List of filters already defined.
If you click on an entry in this list, the specifications for the filter are entered in the "Filter Definition" dialog box items.

Filter Definition

Enter the specifications for a filter.

Which fields appear for the specification of the filter, depends on the type of monitoring object.

As last character "*"can be input in the wildcard meaning.

Monitored Objects Selection

Here you specify if measurement data are to be transferred for the monitored objects corresponding to the filter criterions.

Admitt

For the monitored objects corresponding to the filter criterions measurement data is transferred.

Except

For the monitored objects corresponding to the filter criterions no measurement data is transferred to the manager.

New

The entry specified for "Filter Definition" is saved with the specifications displayed there.

Modify

The entry marked in the "Defined Filters" list is changed. The entry is updated with the specifications displayed for "Filter Definition".

Delete

The entry marked in the "Defined Filters" list is deleted.

OK (only when called from the Context menu of a server button)

The measurement variables selection and the monitored object filters are applied to the server.

Save (only when called from the "Servers" menu)

The measurement variables selection and the monitored object filters are saved for the marked servers.

Close (only when called from the "Servers" menu)

The dialog box is closed.

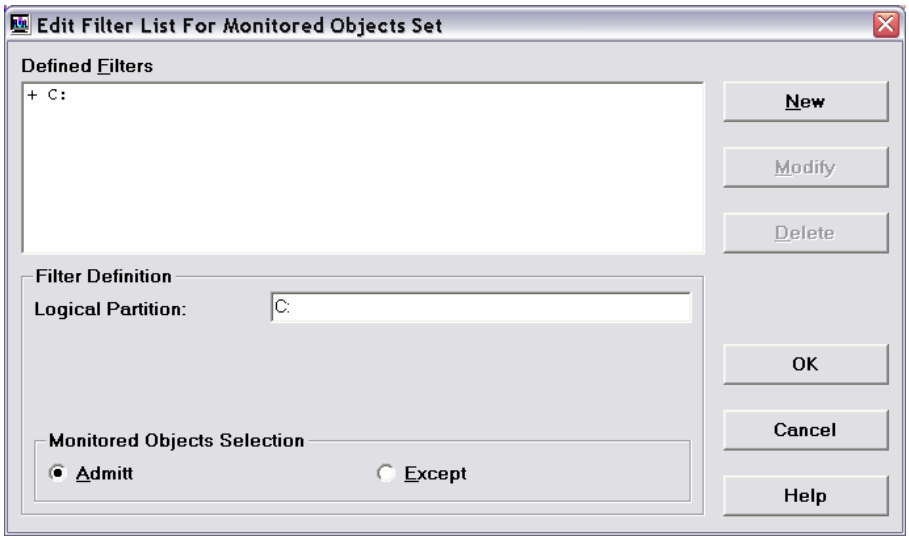
4.11 The Edit Filter List For Monitored Objects Set dialog box

"..." command in the "Edit Condition" dialog box

In this dialog box you edit the filter list for a set of monitored objects.

A filter consists of a full or partial qualified identification of the monitored object and the indication whether monitored objects corresponding to the filter belong to the monitored objects set ("+" filter) or are to be excluded from the monitored objects set ("-" filter).

A monitored object belongs to the monitored objects set exactly if it does not correspond to any of the "-" filters and at least corresponds to one of the "+" filters.



Dialog box options

Defined Filters

List of filters already defined.
If you click on an entry in this list, the specifications for the filter are entered in the "Filter Definition" dialog box items.

Filter Definition

Enter the specifications for a filter.

Which fields appear for the specification of the filter, depends on the type of monitoring object.

As last character "*"can be input in the wildcard meaning.

Monitored Objects Selection

Here you indicate whether the filter is to permit or exclude monitored objects.

Admit

Monitored objects corresponding to the filter belong to the monitored objects set ("+" filter).

Except

Monitored objects corresponding to the filter do not belong to the monitored objects set ("-" filter).

New

The entry specified for "Filter Definition" with the specifications displayed there is added to the "Defined Filters" list.

Modify

The entry marked in the "Defined Filters" list is changed. The entry is updated with the specifications displayed for "Filter Definition".

Delete

The entry marked in the "Defined Filters" list is deleted.

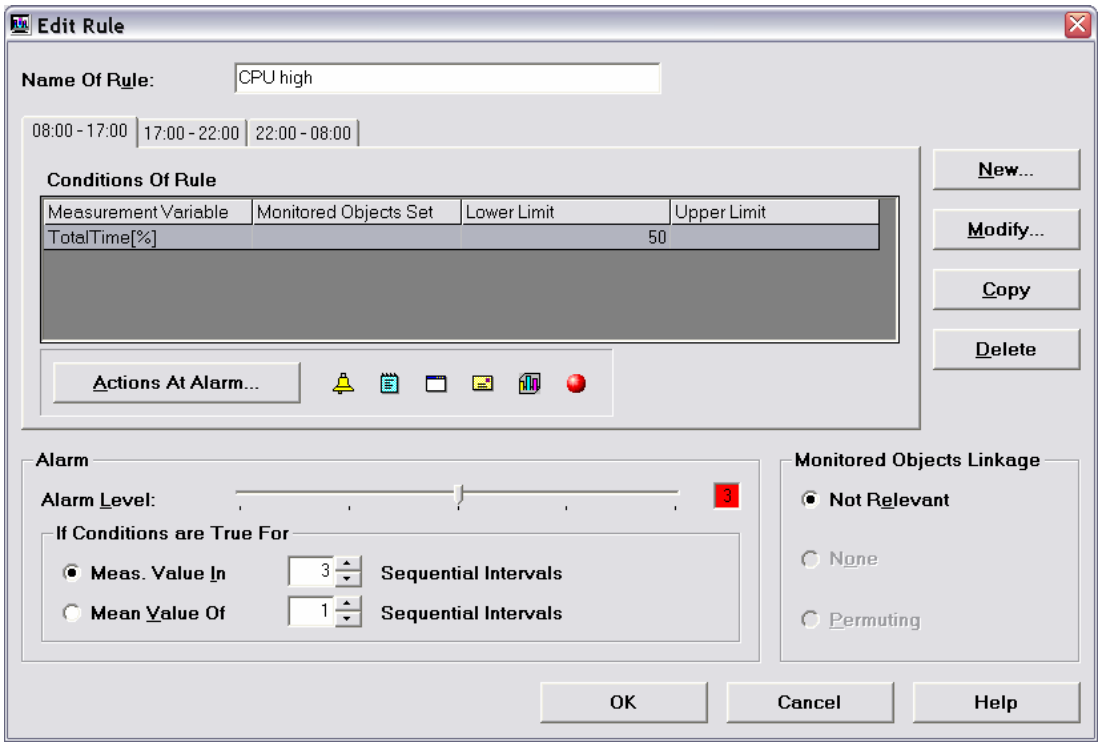
OK

The defined filters for the monitored objects set are transferred to the "Edit Condition" dialog box.

4.12 The Edit Global Rule / Edit Rule dialog box

"New..." command in the "Global Rules" resp. "Rules" dialog box
bzw.
"Modify..." command in the "Global Rules" resp. "Rules" dialog box

In this dialog box you define resp. modify a rule for the monitoring.



Dialog box options

Name Of Rule

Here either the name of the rule to be modified is displayed or you enter a freely selectable name, up to 30 characters long, for a rule to be defined.

For each defined time window a tab with the conditions of the rule is displayed.

Conditions Of Rule

The table contains all conditions defined for the rule.

Server Name

Only for global rules.
Name of the servers, for which the condition is defined.

Measurement Variable

Name of the measurement variable, for which the condition is defined.

Monitored Objects Set

Filter list for the monitored objects set.

Lower Limit

Lower limit value for the measured value.

Upper Limit

Upper limit value for the measured value.

New...

Opens the Edit Condition dialog box.

You can define a new condition in this dialog box.

Modify...

Opens the Edit Condition dialog box with the specifications of the marked condition.
You can change the condition in this dialog box.

Copy

Copies the marked condition. The copy is appended to the end of the list.

Delete

Deletes the marked condition.
If all conditions of a rule were deleted the rule is deleted.

Actions At Alarm...

Opens the Define Actions dialog box.

In this dialog box you can define actions to be executed in case of alarm.

Next to the command button the actions already defined for the rule are displayed symbolically. If the mouse pointer points to a symbol, the appropriate setting is displayed.

 Acoustic alarm

 Starting a procedure on a server

 Starting a batch file on the PC

 Sending an e-mail

 Opening a report

 Sending an SNMP trap

Alarm

Alarm Level

Here you specify the alarm level for the rule.

The number of alarm levels and the assigned colors can be modified in the Settings dialog box.

If Conditions Are True For

Here you specify when a condition is regarded as fulfilled.

Meas. Value In <n> Sequential Intervals

A condition is fulfilled if the measured value of the measurement variable lies within the limit values for a given number n of sequential monitoring cycles, i.e.

lower limit < measured value(i) <= upper limit for i = 1,...,n

Mean Value Of <n> Sequential Intervals

A condition is fulfilled if the mean value of the measured values of the measurement variable for a given number n of sequential monitoring cycles lies within the limit values, i.e.

lower limit < (measured value(1) + ... + measured value(n)) / n <= upper limit

Monitored Objects Linkage

If the rule consists of several conditions and at least one condition for a measurement variable with monitored objects you must specify here the instruction for the linkage of the monitored objects. This instruction determines with which combinations of monitored objects the rule is executed. For each combination of monitored objects, with which all conditions of the rule are fulfilled, an alarm will be released and the demanded actions will be started.

Not relevant

This option is automatically activated if the rule contains no condition for a measurement variable with monitored objects.

None

This option can be selected if the rule contains at least one condition for a measurement variable with monitored objects and all measurement variables with monitored objects have the same monitored object type.
The rule is executed for each monitored object.

Example for a rule with two conditions and n monitored objects:

1st execution of the rule:	condition 1 (monitored object 1) AND condition 2 (monitored object 1)
:	
nth execution of the rule:	condition 1 (monitored object n) AND condition 2 (monitored object n)

Permuting

This option can be selected if the rule contains at least two conditions for measurement variables with monitored objects. In contrast to the option "None" this option is also possible, if the measurement variables with monitored objects have different monitored object types.
The rule is executed with each possible permutation of the monitored objects.

Example for the permuting linkage in a rule with two conditions for measurement variables with different monitored object types. The one monitored object type has m, the other n monitored objects:

1st execution of the rule:	condition 1 (monitored object 1) AND condition 2 (monitored object 1)
:	
nth execution of the rule:	condition 1 (monitored object 1) AND condition 2 (monitored object n)
:	
(m*n)th execution of the rule:	condition 1 (monitored object m) AND condition 2 (monitored object n)

OK

The defined rule is taken over to the "Global Rules" resp. "Rules" dialog box.

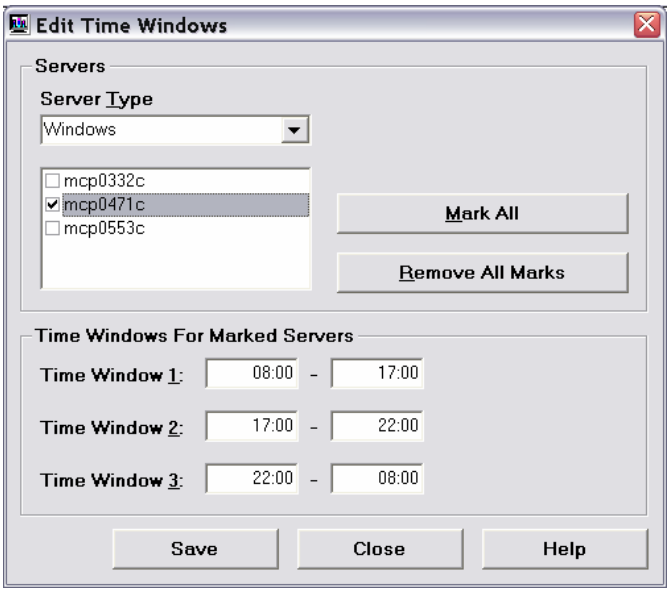
4.13 The Edit Global Time Windows / Edit Time Windows dialog box

"Edit Global Time Windows..." command in the "Servers" menu
or
"Edit Time Windows..." command in the "Servers" menu
or
"Edit Time Windows..." command in the context menu of a server in the server list

In this dialog box you can define up to three time windows for the validity of rules. At least one time window must be specified. The time windows must not overlap and together must cover the whole day.

If you call this dialog box with the "Edit Global Time Windows" command from the "Servers" menu, you can define time windows for global rules, i.e. rules, which link conditions of several servers.

If you call the dialog box with the "Edit Time Windows" command from the "Servers" menu or from the context menu of a server in the server list, you can define time windows for server-specific rules, i.e. rules, which only contain conditions for one server. If you call this dialog box from the "Servers" menu, you can define time windows for several server at the same time. If you call this dialog box from the context menu of a server in the server list, you can define time windows for one server only.



Dialog box options

Server

This area is only visible if the dialog box is called with the "Edit Time Windows" command from the "Servers" menu.

Server Type

Here you choose the server type, BS2000, UNIX, Linux, Windows or ESX.

A list of all servers of the selected type is displayed.

In the list, mark the server(s) for which you want to define time windows.
The time windows of the first marked server are shown beneath "Time Windows For Marked Servers".
The time windows are only taken over for all marked servers, if you click on "Save".

Time Windows (For Marked Servers)

Window 1

Here you specify start and end of the first time window in the format hh:mm.

Window 2

Here you can specify start and end of the second time window in the format hh:mm.

Window 3

Here you can specify start and end of the third time window in the format hh:mm.

OK (only for "Edit Global Time Windows" or "Edit Time Windows" for a single server)

The time windows are saved.

Save (only for "Edit Time Windows" for several servers)

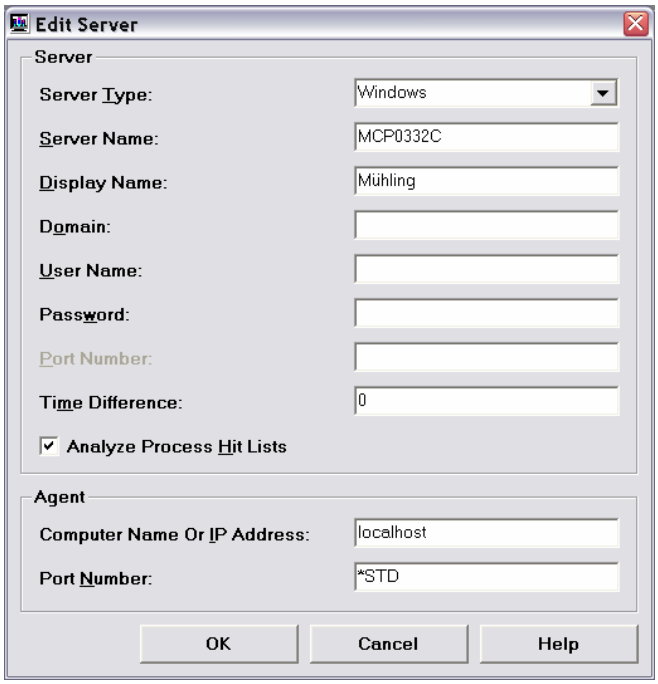
The time windows are saved for the marked servers.

You can simply transfer time windows already defined for one server to one or more other servers by marking first the server, whose time windows you want to transfer, and then marking one or several other servers and clicking on "Save".

4.14 The Edit Server dialog box

"New..." button in the "Servers" dialog box
resp.
"Modify..." button in the "Servers" dialog box

In this dialog box you enter a new server or modify an existing entry.



Dialog box options

Server

Enter the specifications for the server.

Server Type

Select the server type, BS2000, UNIX, Linux, Windows or ESX.

Server Name

Specify the host name of the server (up to 255 characters long), i.e. the unique name of the server in the network.

Display Name

Specify a freely selectable name to be used in INSPECTOR for the display of the server, e.g. Webserver or Mailserver.

Domain

Specify the domain of the user on the server.

This specification is only relevant for Windows servers.

This specification is necessary if the agent is not running on the server, but is to collect the monitoring data from the server remotely ("agentless monitoring") and the domain on the server does not correspond to the domain of the agent. If the server is registered in the authentication file of the agent this specification is not necessary.

User Name

Specify the user name on the server.

This specification is only relevant for Windows and ESX servers.

For Windows servers this specification is necessary if the agent is not running on the server, but is to collect the monitoring data from the server remotely ("agentless monitoring") and the user name on the server does not correspond to the user name of the agent. If the server is registered in the authentication file of the agent this specification is not necessary.

For ESX servers this specification is always necessary.

Password

Specify the password of the user on the server.

This specification is only relevant for Windows and ESX servers.

For Windows servers this specification is necessary if the agent is not running on the server, but is to collect the monitoring data from the server remotely ("agentless monitoring") and the password on the server does not correspond to the password of the agent. If the server is registered in the authentication file of the agent this specification is not necessary.

For ESX servers this specification is always necessary.

Port Number

This specification is only necessary for ESX servers. Specify the port number of the vmauthd service on the ESX server. This should only be specified if the default port of the service is changed on the ESX Server.

Time Difference

Here you can specify a time difference in minutes, which is added to the time stamps of the server. By that time stamps of a server situated in another time zone can be corrected.

If as time correction e.g. -60 is specified, the time stamps of the server are decreased by one hour.

Analyze Process Hit Lists

Here you specify whether in each monitoring interval a process hit list is to be created, i.e. a list of the processes consuming the most CPU time in the interval. Additional to the CPU time the process hit list contains further data for each process.

The process hit list can be displayed in a server report for each interval in the chart.

Agent

Here you enter the specifications for the agent, which is to collect the monitoring data of the server. Usually this agent is running on the server. Exceptions are Windows and ESX servers, from which the monitoring data are remotely collected by the agent ("agentless monitoring").

Computer Name Or IP Address

Specify the name or the IP address of the computer the agent is running on.

If you specify the name the manager determines the IP address of the computer. In this case the computer must be known on the PC, i.e. it must be addressable either via a DNS server or be entered in the HOSTS file of the PC. With the instruction ping you can determine whether the computer is accessible from the PC.

If the computer is not accessible via its name, enter the IP address of the computer. Ask your network administrator for the IP address of the computer.

If the agent is running on the same PC as the manager you can enter "localhost".

Port Number

Here you specify the port number of the port to be used by the manager for the communication with the agent.

If you enter *STD, the default port number specified in the "Settings" dialog box is used.

The specified port number must match the port number entered in the configuration file of the agent.

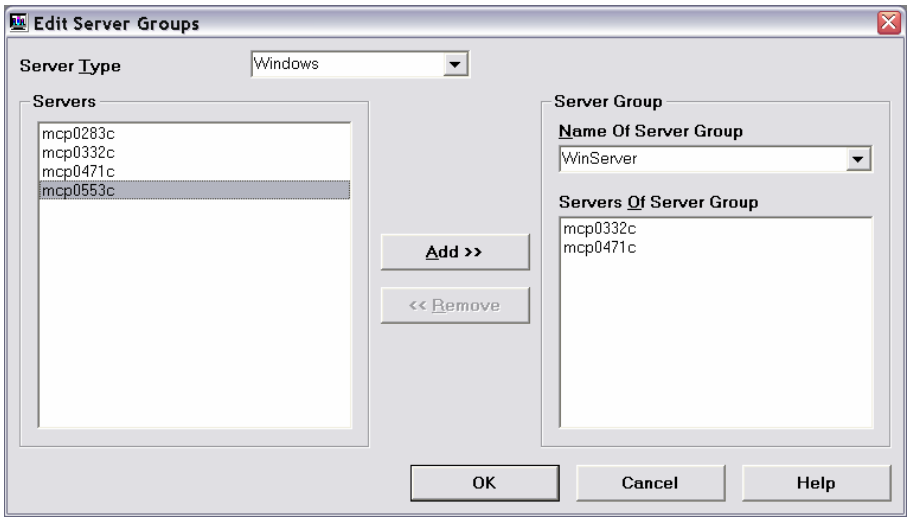
OK

The specifications are transferred to the "Servers" dialog box.

4.15 The Edit Server Groups dialog box

"Edit Server Groups..." command in the "Servers" menu

In this dialog box you can assign servers to server groups.



Dialog box options

Server Type

Select the server type, BS2000, UNIX, Linux, Windows or ESX.

Servers

The list contains all servers available for the selected server type. Mark a server in the list to add it to the currently selected server group by clicking on the "add" command button. A server group can contain up to 15 servers.

Server Group

In this area the specifications of the currently selected server group are displayed.

Name Of Server Group

Either select an already defined server group or specify a freely selectable name, up to 10 characters long, for a server group to be defined.

Servers Of Server Group

The list contains all servers of the currently selected server group. Mark a server in the list to remove it from the server group by clicking on the command button ”remove”. If a server group does not contain any server it will be deleted.

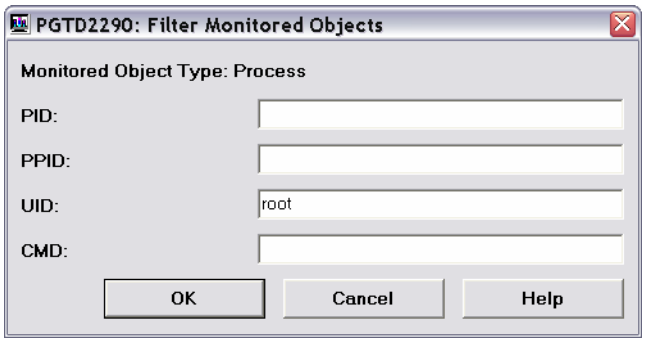
OK

The defined server groups are saved.

4.16 The Filter Monitored Objects dialog box

"Filter Monitored Objects..." command in the context menu of a server report

In this dialog box you define a filter, which determines the monitored objects to be available for the server report. Only the monitored objects corresponding to the filter criterions are used for the determination of the hit list of the monitored objects and are offered for selection in the Select Monitored Objects dialog box.



Dialog box options

Here you specify the filter.

Which fields appear for the specification of the filter, depends on the type of monitoring object.

As last character "*"can be input in the wildcard meaning.

OK

The defined filter becomes effective.

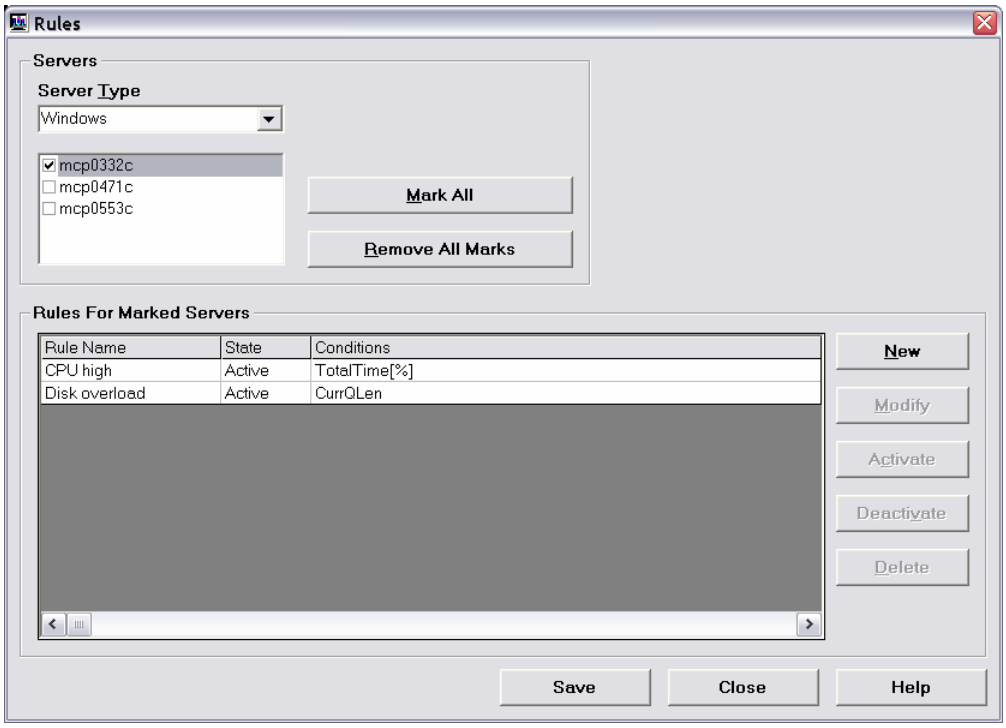
4.17 The Global Rules / Rules dialog box

"Edit Global Rules..." command in the "Servers" menu
or
"Edit Rules..." command in the "Servers" menu
or
"Edit Rules..." command in the context menu of a server in the server list

In this dialog box you define rules for the monitoring.

If you call this dialog box with the "Edit Global Rules" command from the "Servers" menu, you can define global rules, i.e. rules, which link conditions of several servers.

If you call the dialog box with the "Edit Rules" command from the "Servers" menu or from the context menu of a server in the server list, you can define rules, which only contain conditions for one server. If you call this dialog box from the "Servers" menu, you can define rules for several server at the same time. If you call this dialog box from the context menu of a server in the server list, you can define rules for one server only.



Dialog box options

Server

This area is only visible if the dialog box is called with the "Edit Rules" command from the "Servers" menu.

Server Type

Here you choose the server type, BS2000, UNIX, Linux, Windows or ESX.

A list of all servers of the selected type is displayed.

In the list, mark the server(s) for which you want to define rules.
The rules of the first marked server are shown in the table beneath "Rules For Marked Servers". All actions e.g. modifying or deleting a rule first refer only to the entries in the table and are only taken over for all marked servers, if you click on "Save".

Rules (For Marked Servers)

The table contains all defined rules.

Rule Name

Name of the rule.

State

Here the state of the rule is shown.

Active

The rule is active, i.e. the conditions of the rule are checked und the actions are executed if necessary.

Inactive

The rule is not active.

Deleted

The rule was deleted.

Conditions

Here the names of the measurement variables are displayed, for which conditions are defined in the rule.

New...

Opens the Edit Global Rule dialog box resp. the Edit Rule dialog box.

In this dialog box you can define a new rule.

Modify...

Opens the Edit Global Rule dialog box resp. the Edit Rule dialog box with the specifications of the marked rule.

In this dialog box you can modify this rule.

Activate

Sets the state of the marked rule(s) to "Active".

Deactivate

Sets the state of the marked rule(s) to "Inactive".

Delete

Sets the state of the marked rule(s) to "Deleted".

OK (only for "Global Rules" or "Rules" for a single server)

All global resp. server-specific rules are saved.

Save (only for "Rules" for several servers)

For the marked servers all rules resp. the rules marked in the table are saved.

You can simply transfer rules already defined for one server to one or more other servers by marking first the server, whose rules you want to transfer, and then marking one or several other servers and clicking on "Save".

4.18 The INSPECTOR dialog box

The dialog box comprises a menu bar and a display area.

You use the commands in the menus on the menu bar to operate the manager.

Dialog box options in the menu bar

Servers

Opens the command list with the commands for editing servers and server groups, activating servers, defining rules and opening and closing server reports.

Edit Servers...

Opens the "Servers" dialog box. In this dialog box you can enter new servers as well as change and delete existing entries.

Edit Server Groups...

Opens the "Edit Server Groups" dialog box. In this dialog box you can form groups of servers for global reports.

Specify Default Reports...

Opens the "Specify Default Reports" dialog box. In this dialog box you configure which server reports are to be displayed in the server list.

Edit Data Transfer Filters...

Opens the "Edit Data Transfer Filters" dialog box. In this dialog box you define filters for the data transfer from the agents.

Edit Global Time Windows...

Opens the "Edit Global Time Windows" dialog box. In this dialog box you set the time windows for the validity of global rules.

Edit Global Rules...

Opens the "Global Rules" dialog box. In this dialog box you set global rules for the monitoring.

Edit Time Windows...

Opens the "Edit Time Windows" dialog box. In this dialog box you set the time windows for the validity of server-specific rules.

Edit Rules...

Opens the "Rules" dialog box. In this dialog box you set server-specific rules for the monitoring.

Open Reports...

Opens the "Open Server Reports" dialog box. In this dialog box you can open server reports.

Close All Reports...

Use this command to close all server reports.

Exit

Use this command to stop the manager.

Global Reports

Opens the command list with the commands for opening and closing global reports.

Specify Default Reports...

Opens the "Specify Global Default Reports" dialog box. In this dialog box you configure which global reports are to be displayed in the server list.

Open Reports...

Opens the "Open Global Reports" dialog box. In this dialog box you can open global reports.

Close All Reports

Use this command to close all global reports.

Display

Opens the command list with the commands for opening and closing the server list and the server state window.

Server List

Opens resp. closes the server list.

Server State

Opens resp. closes the "Server State" window.

Server Properties

Opens resp. closes the "Server Properties" window.

Alarm Messages

Opens resp. closes the "Alarm Messages" window.

Windows

Opens the command list with the commands for the arrangement of report windows and for closing report windows.

Arrange

Use this command to arrange the windows.

Align

With this command you align the report windows on the screen. Classic reports are not considered during alignment.

Save Arrangement...

Opens the "Save Arrangement" dialog box. In this dialog box you can save the current arrangement of report windows.

Restore Saved Arrangement...

Opens the "Open Arrangement" dialog box. In this dialog box you can restore a saved arrangement of report windows; i.e. the reports which were open at the time of the save are again opened with the same position and size.

Delete Saved Arrangement...

Opens the "Delete Arrangement" dialog box. In this dialog box you can delete a saved arrangement of report windows.

Define Arrangement Sequence...

Opens the "Define Sequence Of Window Arrangements" dialog box. In this dialog box you can define a series of saved arrangements, which can be displayed automatically.

Activate Arrangement Sequence

Activates the automatic display of window arrangements.

Deactivate Arrangement Sequence

Deactivates the automatic display of window arrangements.

Close

Use this command to close the active window.

Close All Report Windows

Use this command to close all report windows.

Options

Opens the command list with the commands for changing certain settings.

Settings...

Opens the "Settings" dialog box. In this dialog box you can enter several general settings as well as settings relating to the monitoring.

Chart

Opens the command list for editing the default settings for charts in reports.

Server Reports...

Opens the "Default Setting for Chart in Server Reports" dialog box. In this dialog box you can change the default settings for charts in server reports.

Global Snapshot Reports...

Opens the "Default Setting for Chart in Global Snapshot Reports" dialog box. In this dialog box you can change the default settings for charts in global snapshot reports.

Global Time Series Reports...

Opens the "Default Setting for Chart in Global Time Series Reports" dialog box. In this dialog box you can change the default settings for charts in global time series reports.

Shared Pubset-Reports

Opens the command list with the commands for editing the default settings for charts in shared pubset reports.

Snapshot...

Opens the "Default Setting for Chart in Shared Pubset Reports of Type Snapshot" dialog box. In this dialog box you can change the default settings for charts in shared pubset reports of type snapshot.

Time Series...

Opens the "Default Setting for Chart in Shared Pubset Reports of Type Time Series" dialog box. In this dialog box you can change the default settings for charts in shared pubset reports of type time series.

Time Series Accumulated...

Opens the "Default Setting for Chart in Shared Pubset Reports of Type Time Series Accumulated" dialog box. In this dialog box you can change the default settings for charts in shared pubset reports of type time series accumulated.

Page layout

Opens the command list for editing the labels for the print of reports.

Global Snapshot Reports...

Opens the "Default Setting for Page Layout of Global Snapshot Reports" dialog box. In this dialog box you can change the default settings for labels for the print of global snapshot reports.

Global Time Series Reports...

Opens the "Default Setting for Page Layout of Global Time Series Reports" dialog box. In this dialog box you can change the default settings for labels for the print of global time series reports.

Server Reports...

Opens the "Default Setting for Page Layout of Server Reports" dialog box. In this dialog box you can change the default settings for labels for the print of server reports.

Shared Pubset Reports

Opens the command list for editing the labels for the print of shared pubset reports.

Snapshot...

Opens the "Default Setting for Page Layout of Shared Pubset Reports of Type Snapshot" dialog box. In this dialog box you can change the default settings for labels for the print of shared pubset reports of type snapshot.

Time Series...

Opens the "Default Setting for Page Layout of Shared Pubset Reports of Type Time Series" dialog box. In this dialog box you can change the default settings for labels for the print of shared pubset reports of type time series.

Time Series Accumulated...

Opens the "Default Setting for Page Layout of Shared Pubset Reports of Type Time Series Accumulated" dialog box. In this dialog box you can change the default settings for labels for the print of shared pubset reports of type time series accumulated.

Define Measurement Variables...

Opens the "Define Measurement Variables" dialog box. In this dialog box you can define new measurement variables by linking basic measurement variables by formulas.

Define Reports

Opens the "Define Reports" dialog box. In this dialog box you can modify the assignment of measurement variables to reports and define new reports.

Define Table Reports...

Opens the "Define Table Reports" dialog box. In this dialog box you can specify the servers and the measurement variables, whose measurement values are to be displays as table.

Define Shared Pubset Reports...

Opens the "Define Shared Pubset Reports" dialog box. In this dialog box you can define new shared pubset reports.

Help

Opens the command list with the commands for Help.

Contents

Opens the online Help of INSPECTOR.

Info...

Opens a dialog box with information on INSPECTOR.

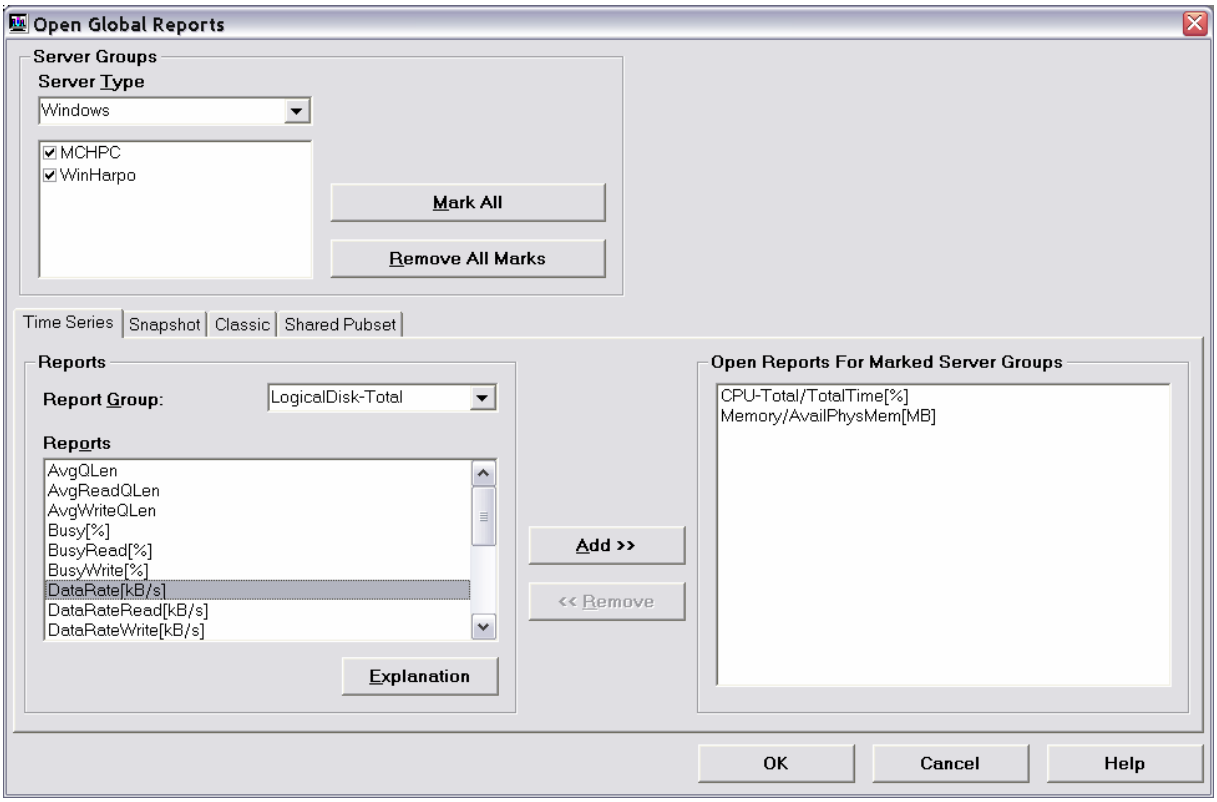
openSM2 On The Web...

Opens a browser window with information on *open*SM2 in the internet.

4.19 The Open Global Reports dialog box

"Open Reports..." command in the "Global Reports" menu
or
"Open Reports..." command in the Context menu of a server group in the server list

In this dialog box you open global classic reports.



Dialog box options

Server Groups (not applicable for table reports)

This area is only displayed when called from the "Global Reports" menu.

Server Type

Here you select the server type, BS2000, UNIX, Linux, Windows or ESX.

A list is displayed of all server groups belonging to the selected server type.

Mark the server group(s) in the list for which you want to open global reports.

The tab set

There are the "Time Series", "Snapshot", "Classic", "Table" and "Shared Pubset" tab to open time series reports, snapshot reports, classic reports, table reports resp. shared pubset reports.

The "Table" and "Shared Pubset" tab are only available if global table reports resp. BS2000 server groups are defined.

Reports

In this area the available reports are displayed.

Report Group (only for time series and snapshot reports)

Here you choose the report group.

A list of all reports belonging to the selected report group is displayed under "Reports".

Report tType (only for shared pubset reports)

Here you choose the report type.

A list of all reports belonging to the selected report type is displayed under "Reports".

Reports

Here you mark the desired reports to add them to the list of reports to be opened with the "add" button.

Explanation (only for time series and snapshot reports)

Shows explanations to the measurement variables of the selected report.

Open Reports

The list contains all reports to be opened. Mark a report in the list to remove it from the list by clicking on the "remove" button.

OK

The selected reports are opened for the selected server group(s) and the dialog box is closed.

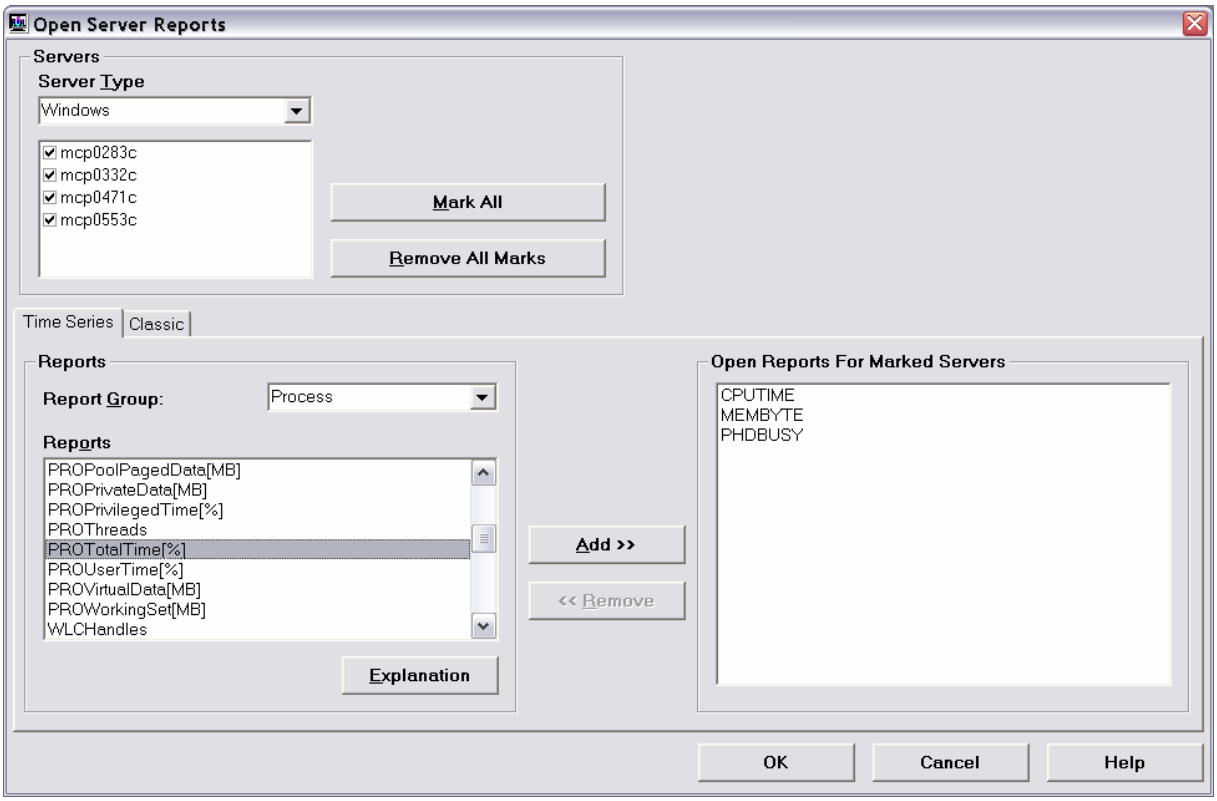
4.20 The Open Server Reports dialog box

"Open Reports..." command in the "Servers" menu
or
"Open Reports..." command in the Context menu of a server in the server list

In this dialog box you open server reports.

If you call this dialog box from the "Servers" menu, you can simultaneously open the server reports for several servers.

If you call the dialog box from the Context menu of a server in the server list, you can only open the server reports for one server.



Dialog box options

Servers

This area is only displayed when called from the "Servers" menu.

Server Type

Here you select the server type, BS2000, UNIX, Linux, Windows or ESX.

A list is displayed of all servers belonging to the selected server type.

Mark the server(s) in the list for which you want to open server reports.

The tab set

There are the "Time Series" and "Classic" tab to open time series reports resp. classic reports.

Reports

In this area the available server reports are displayed.

Report Group (only for time series reports)

Here you select a report group. The list of all reports belonging to the selected report group is displayed under "Reports".

Reports

Here you mark the desired server reports to add them to the list of reports to be opened with the "add" button.

Explanation

Shows explanations to the measurement variables of the selected report.

Open Reports For Marked Servers (when called from the "Servers" menu)
or
Open Reports (when called from the Context menu of a server in the server list)

The list contains all server reports to be opened. Mark a report in the list to remove it from the list by clicking on the "remove" button.

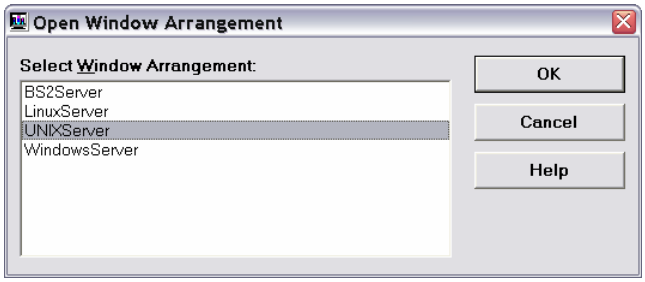
OK

The selected server reports are opened for the selected server(s) and the dialog box is closed.

4.21 The Open Window Arrangement dialog box

"Restore Saved Arrangement..." command in the "Windows" menu

In this dialog box you can restore a saved arrangement of report windows.



Dialog box options

Select Window Arrangement

From the list, choose the name of the window arrangement you want to restore.

OK

The window arrangement is restored.

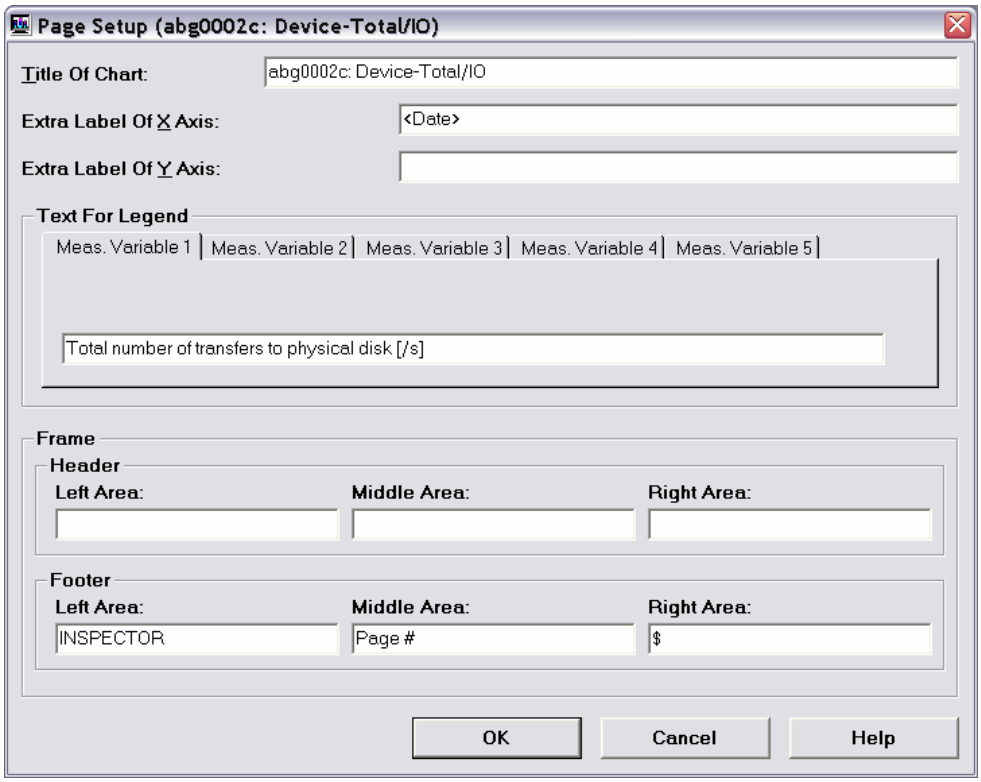
4.22 The Page Setup dialog box

Commands of the "Page Setup" submenu in the "Options" menu
or
"Page Setup..." command in the Context menu of the chart of a report

In this dialog box you can define the layout of the print output for a chart.

When the dialog box is opened, the individual dialog elements are pre-set with the previous specifications for the chart.

If the dialog box is opened from the "Page Setup..." submenu in the "Options" menu only the options for "Frame" are available.



Dialog box options

Title Of Chart

The title of the diagram.

Extra Label Of X Axis

The text specified here is inserted below the labels of the horizontal axis.

For time series reports the date of the begin of the time axis can be inserted with the specification <Date>.

Extra Label Of Y Axis

The text specified here is inserted to the left of the vertical axis.

Text For Legend

The text for the legend can be changed on a tab for each value of the diagram.

Frame

Here you can define the frame.

For all frame specifications, the character "#" is replaced by the current page number and the character "$" is replaced by the date of the printout.

Header

The header appears in the print output above the frame which encloses the chart.

Left Area

The text entered here is inserted at the left margin of the header.

Middle Area

The text entered here is inserted in the middle of the header.

Right Area

The text entered here is inserted at the right margin of the header.

Footer

The footer appears in the print output below the frame which encloses the chart.

Left Area

The text entered here is inserted at the left margin of the footer.

Middle Area

The text entered here is inserted in the middle of the footer.

Right Area

The text entered here is inserted at the right margin of the footer.

OK

The settings are applied.

If you opened the dialog box from the context menu of a report, the settings only apply to this report.

If you opened the dialog box from the "Options" menu, the settings are applied as the defaults for all reports of the selected type.

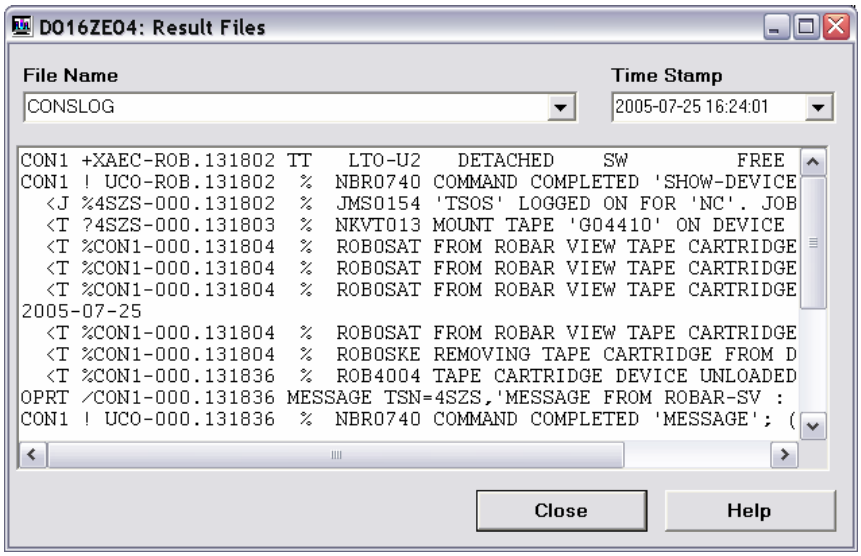
4.23 The Result Files dialog box

"Result Files..." command in the context menu of a server button

In this dialog box you can display the contents of a result file.

A result file is a file which is transferred from the agent to the manager together with the new measurement data during each time interval if the data has been modified since the last transfer. The name of the result file must be specified in the configuration file of the agent.

You can use this mechanism to cyclically transfer any data to the manager in text form.



Dialog box options

File Name

Here you specify the name of the desired file.

Time Stamp

Here you select the timestamp of the desired measurement interval.

The contents of the selected file in the selected measurement interval is then displayed in the text field.

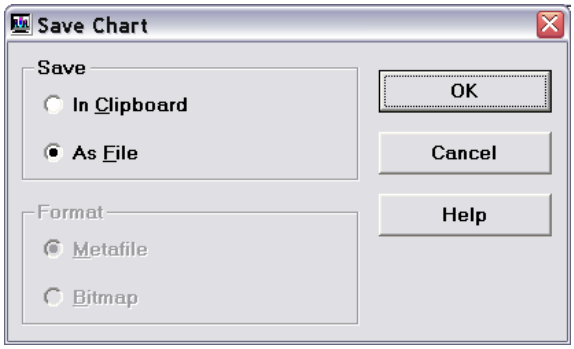
Close

The dialog box is closed.

4.24 The Save Chart dialog box

"Save..." command in the Context menu of the chart of a report

In this dialog box you can save the chart.



Dialog box options

Save

Here you specify where the chart is to be saved.

In Clipboard

Choose this option if you want to save the chart in the clipboard.

As file

Choose this option if you want to save the chart as a file.

Format

For the "In Clipboard" option, here you specify the format in which the chart is to be saved.

Metafile

The chart is saved in Windows Metafile format.

Bitmap

The chart is saved in Windows Bitmap format.

OK

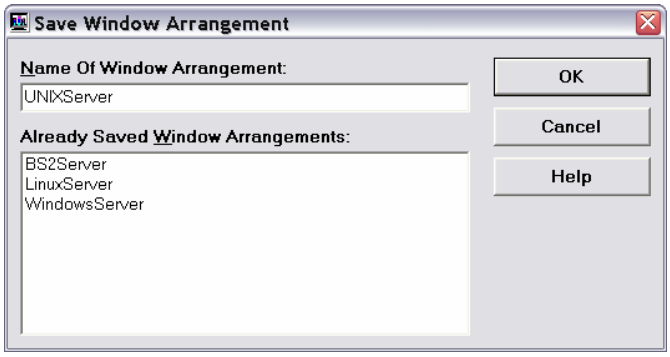
The chart is saved.

If you choose the "As file" option, a dialog box is opened in which you can specify where the file is to be saved and under what name. Furthermore you can choose the file type Bitmap (*.bmp), JPEG (*.jpg), PNG (*.png) or Metafile (*.wmf).

4.25 The Save Window Arrangement dialog box

"Save Arrangement..." command in the "Windows" menu

In this dialog box you can save the window arrangement. This means that the current position and size of the windows for the opened reports are stored.



Dialog box options

Name Of Window Arrangement

Specify the name under which the window arrangement is to be saved.

Already saved Window Arrangements:

Displays a list of the names of the window arrangements that have already been saved.

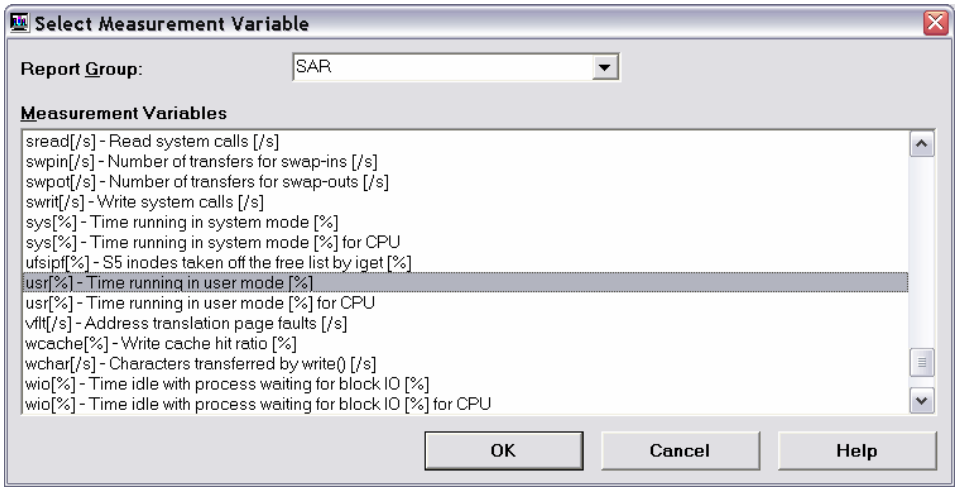
OK

The window arrangement is stored.

4.26 The Select Measurement Variable dialog box

"..." command in the "Define Measurement Variables" dialog box

In this dialog box you select a basic measurement variable, which is to be used for a variable in the formula for the definition of a composed measurement variable.



Dialog box options

Report Group

Here you choose the report group.

Measurement Variable

The list contains all available basic measurement variables of the selected report group.

Measurement variables with monitored objects can only be combined with measurement variables without monitored objects or with measurement variables with the same monitored object type.

Mark the desired measurement variable.

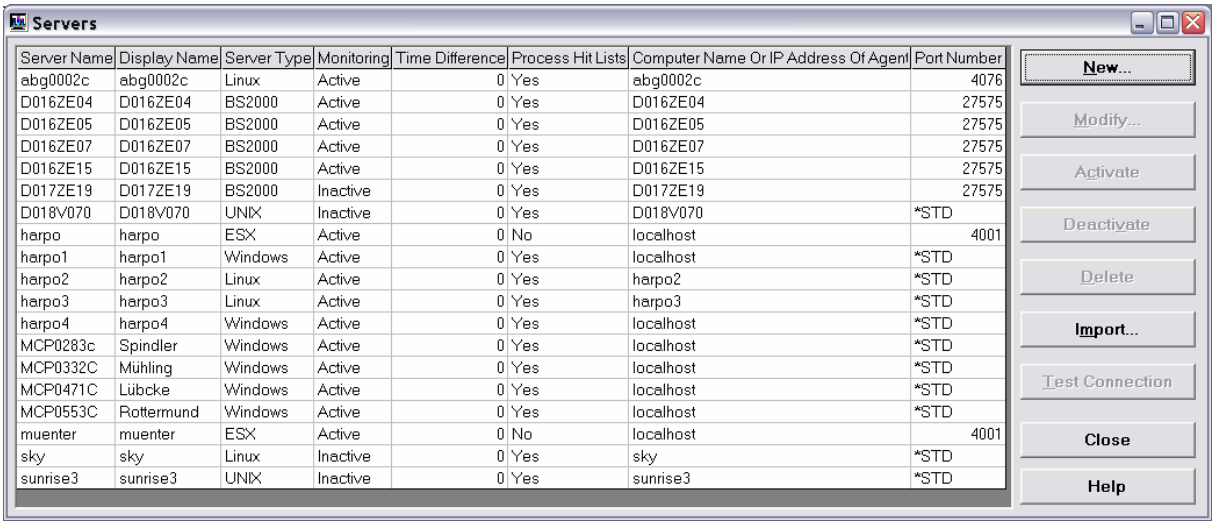
OK

The marked measurement variable is transferred to the "Define Measurement Variables" dialog box

4.27 The Servers dialog box

"Edit Servers..." command in the "Servers" menu

In this dialog box you enter the servers, which are to be monitored by the manager. You can enter new servers or modify and delete existing entries.



Server Name	Display Name	Server Type	Monitoring	Time Difference	Process Hit Lists	Computer Name Or IP Address Of Agent	Port Number
abg0002c	abg0002c	Linux	Active	0	Yes	abg0002c	4076
D016ZE04	D016ZE04	BS2000	Active	0	Yes	D016ZE04	27575
D016ZE05	D016ZE05	BS2000	Active	0	Yes	D016ZE05	27575
D016ZE07	D016ZE07	BS2000	Active	0	Yes	D016ZE07	27575
D016ZE15	D016ZE15	BS2000	Active	0	Yes	D016ZE15	27575
D017ZE19	D017ZE19	BS2000	Inactive	0	Yes	D017ZE19	27575
D018V070	D018V070	UNIX	Inactive	0	Yes	D018V070	*STD
harpo	harpo	ESX	Active	0	No	localhost	4001
harpo1	harpo1	Windows	Active	0	Yes	localhost	*STD
harpo2	harpo2	Linux	Active	0	Yes	harpo2	*STD
harpo3	harpo3	Linux	Active	0	Yes	harpo3	*STD
harpo4	harpo4	Windows	Active	0	Yes	localhost	*STD
MCP0283c	Spindler	Windows	Active	0	Yes	localhost	*STD
MCP0332C	Mühling	Windows	Active	0	Yes	localhost	*STD
MCP0471C	Lübcke	Windows	Active	0	Yes	localhost	*STD
MCP0553C	Rottermund	Windows	Active	0	Yes	localhost	*STD
muenter	muenter	ESX	Active	0	No	localhost	4001
sky	sky	Linux	Inactive	0	Yes	sky	*STD
sunrise3	sunrise3	UNIX	Inactive	0	Yes	sunrise3	*STD

Dialog box options

The table contains information for all registered servers.

Server Name

Host name of the server.

Display Name

Name to be used in INSPECTOR for the server.

Server Type

Type of the server, BS2000, UNIX, Linux, Windows or ESX.

Monitoring

Shows the monitoring state of the server.

Active

The monitoring of the server is active.

Inactive

The monitoring of the server was deactivated.

Time Difference

Time difference in minutes, which is added to the time stamps of the server.

Process Hit Lists

Indication whether in each monitoring interval a process hit list is to be created.

Computer Name Or IP Address Of Agent

Name or IP address of the computer the agent is running on.

Port Number

Port number of the port to be used by the manager for the communication with the agent.

New

Opens the "Edit Server" dialog box. In this dialog box you can enter a new server.

Modify

Opens the "Edit Server" dialog box with the specifications of the marked server. In this dialog box you can modify the specifications of the server.

Delete

Deletes the marked server.

Import

Imports a list of servers from a file.

For each server the file must contain a line with the following data separated by tabulator, semicolon, comma or blank:

- server name
- server type (BS2000, UNIX, Linux, Windows oder ESX)
- domain of user (optional)
- user name (optional)
- password of user (optional)
- port number (optional)
- name or IP address of the computer the agent is running on (optional, default = server name)
- port number of agent (optional, default = *STD)
- time difference (optional, default = 0)
- analyze process hit lists (0 = no, 1 = yes; optional, default = 1)
- name of the server group the server to be monitored belongs to (optional)
- display name of the servers (optional)

Example:

With the line

mcp0123c, Windows,,,,,localhost,4711,,0,Mailserver,Munich

the Windows server mcp0123c is entered under the name "Munich" in the server group "Mailserver". The agent is running on the same PC as the manager and uses port number 4711. No process hit lists are to be analyzed.

The "ImportServer.txt" file containing examples is found in the installation directory of the manager.

Test Connection

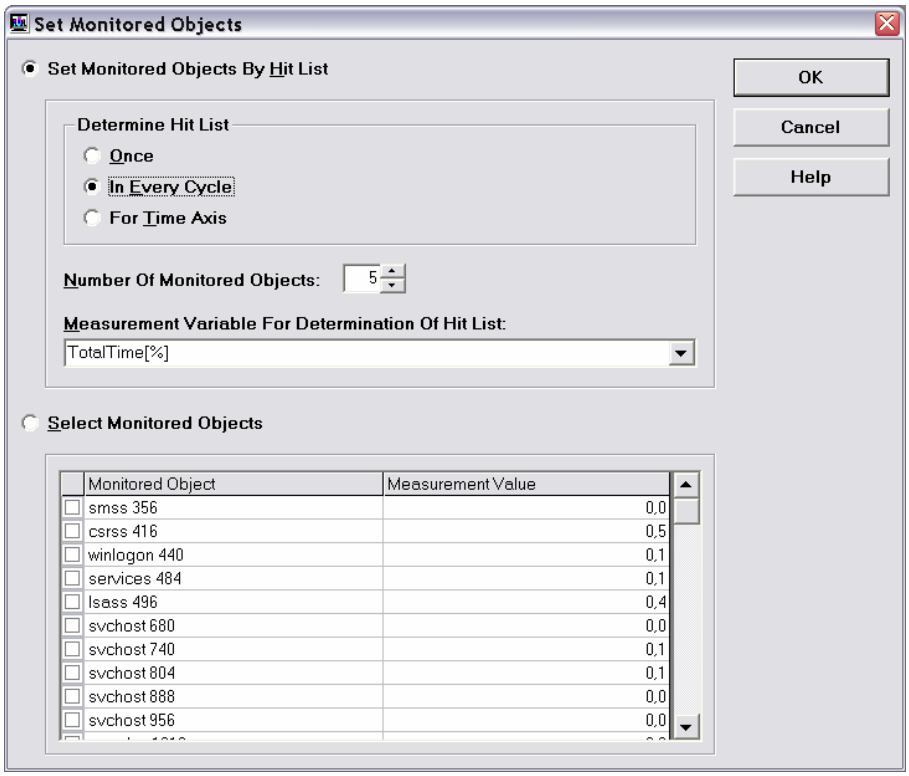
Tests the connection to the agent of the marked server. If the test is successful, it is announced that the agent is active.

In this way you can test e.g. whether the data are correct or whether the agent is started.

4.28 The Set Monitored Objects dialog box

"Set Monitored Objects..." command in the context menu of a server report

In this dialog box you define, which monitored objects are to be displayed in the server report.



Dialog box options

Set Monitored Objects By Hit List

Choose this option, if the hit list of the monitored objects, i.e. the list of monitored objects with the highest measured values, is to be displayed in the report.

Determine Hit List

Here you specify when the hit list of the monitored objects is to be determined.

Once

The hit list of the monitored objects is determined once when opening the report. The monitored objects are displayed, which had the highest measured values when opening the report.

In Every Cycle

The hit list of the monitored objects is determined in every monitoring cycle. The monitored objects are displayed, which have the highest measured values in the current monitoring cycle.

For Time Axis

The hit list of the monitored objects is determined in every monitoring cycle. The monitored objects are displayed, which have the highest measured values in the average over the time axis.

Number of Monitored Objects

Here you can specify the number of monitored objects to be displayed in the report.

Measurement Variable For Determination Of Hit List

Here you select the measurement variable, which is to be used for the determination of the hit list.

Select Monitored Objects

Choose this option, if you want to select the monitored objects to be displayed in the report explicitly.

The table contains the name and the measured value of the current monitoring cycle for each monitored object.

By clicking on a column heading the table can be sorted according to the appropriate column.

Mark the monitored objects to be displayed in the server report. Maximally 15 monitored objects can be marked.

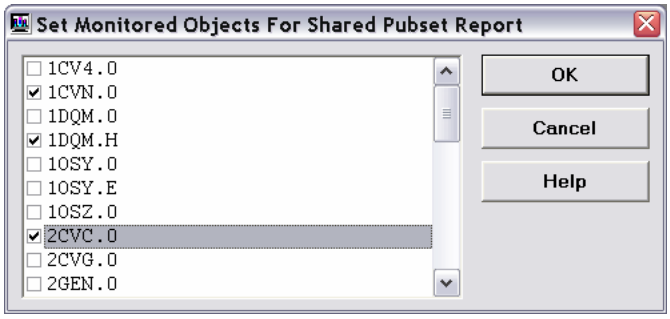
OK

The selected monitored objects are displayed.

4.29 The Set Monitored Objects For Shared Pubset Report dialog box

"Set Monitored Objects..." in the context menu of a shared pubset report

In this dialog box you define, which monitored objects are to be displayed in the shared pubset report.



Dialog box options

The list contains the names of all monitored objects.

Mark the monitored objects to be displayed in the shared pubset report. For a shared pubset report of type time series only one monitored object can be selected, otherwise up to 15 monitored objects can be marked.

OK

The desired monitored objects are displayed.

4.30 The Settings dialog box

"Settings..." command in the "Options" menu

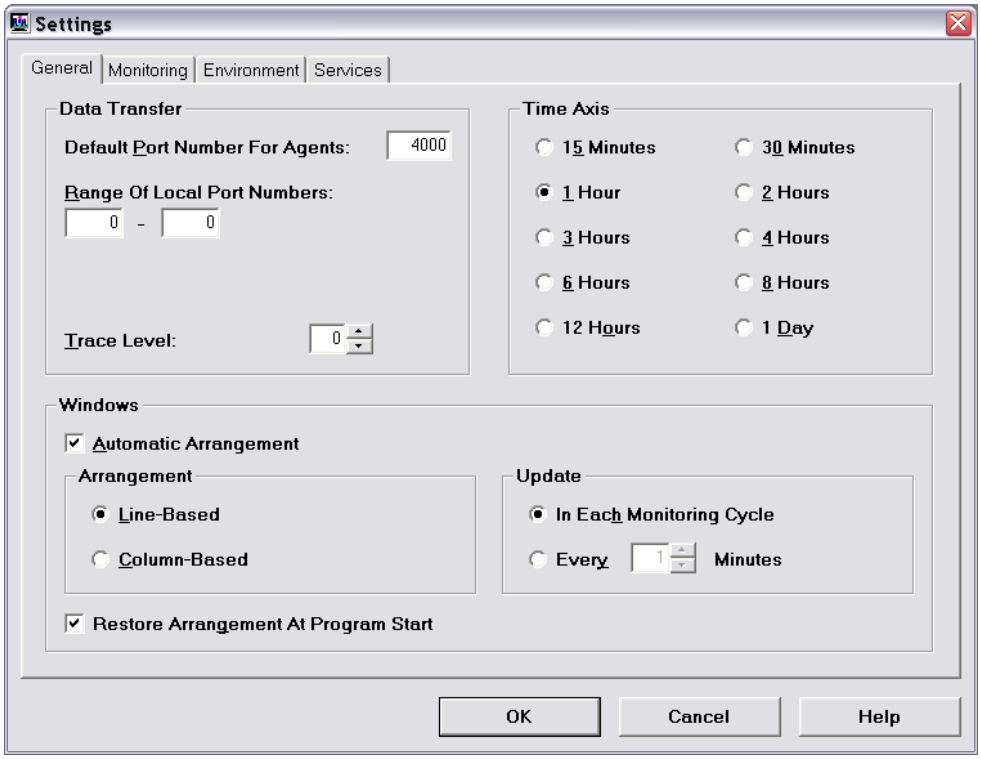
In this dialog box you can make settings for the program start, the arrangement of windows and the length of the time axis of reports, as well as make general settings for the monitoring.

Dialog box options

The tab set

There are the tabs "General", "Monitoring", "Environment" and "Services".

Options on the "General" tab:



Data transfer

In this area you specify the port numbers for the communication with the agents.

Default Port Number For Agents

Here you specify the port number of the port via which the manager is to communicate with the agents as standard.

Range Of Local Port Numbers

Here you can specify a range for the port numbers to be used on the PC for the communication with the agents.

Each connection to an agent needs its own local port number, i.e. the number of port numbers within the range must be at least as large as the number of agents.

If 0 - 0 is specified as range, on the PC no special port is used, but the protocol selects the port randomly.

Trace level

Here you specify, to which extent the communication with the agents is to be logged.
Level "0": The trace is switched off.
Level "1": All data packets arriving from the agents are traced.
Level "2": The data transfer between the manager and the agents is traced in detail.
Level "3": Additionally to level 2 all data packets arriving from the agents are written to a file.
The levels "1" to "3" should be used only in case of problems with the data transfer.

Time Axis

In this area you specify, which time interval is to be displayed at the time axis of time series reports.

If you choose a time interval of 4 hours or less, in any case the measurement data of the last 4 hours are kept on the PC, otherwise the measurement data of the specified time interval are kept. This leads to the fact that when changing the time interval from e.g. 4 to 12 hours first only measurement values of the last 4 hours are displayed on the time axis, even if the manager runs already more than 4 hours.

15 Minutes

A time interval of 15 minutes will be displayed.

30 Minutes

A time interval of 30 minutes will be displayed.

1 Hour

A time interval of one hour will be displayed.

2 Hours

A time interval of 2 hours will be displayed.

3 Hours

A time interval of 3 hours will be displayed.

4 Hours

A time interval of 4 hours will be displayed.

6 Hours

A time interval of 6 hours will be displayed.

8 Hours

A time interval of 8 hours will be displayed.

12 Hours

A time interval of 12 hours will be displayed.

1 Day

A time interval of one day, i.e. 24 hours will be displayed.

Windows

In this area you can change the arrangement and the update of windows for the reports.

Automatic Arrangement

If "Automatic Arrangement" is marked, the report windows are automatically arranged in the display area. If "Automatic Arrangement" is not marked, the report windows are positioned overlapping in the display area when opened.

Arrangement

In this area you specify how the report windows are to be arranged.

Line-Based

The report windows are to be arranged on a line basis.

Column-Based

The report windows are to be arranged on a column basis.

Update

Here you specify when the report windows are to be updated.

In Each Monitoring Cycle

The report windows are to be updated with each new monitoring cycle; i.e. every time new data from a server arrive, all report windows which present measurement values of the concerned server are updated.

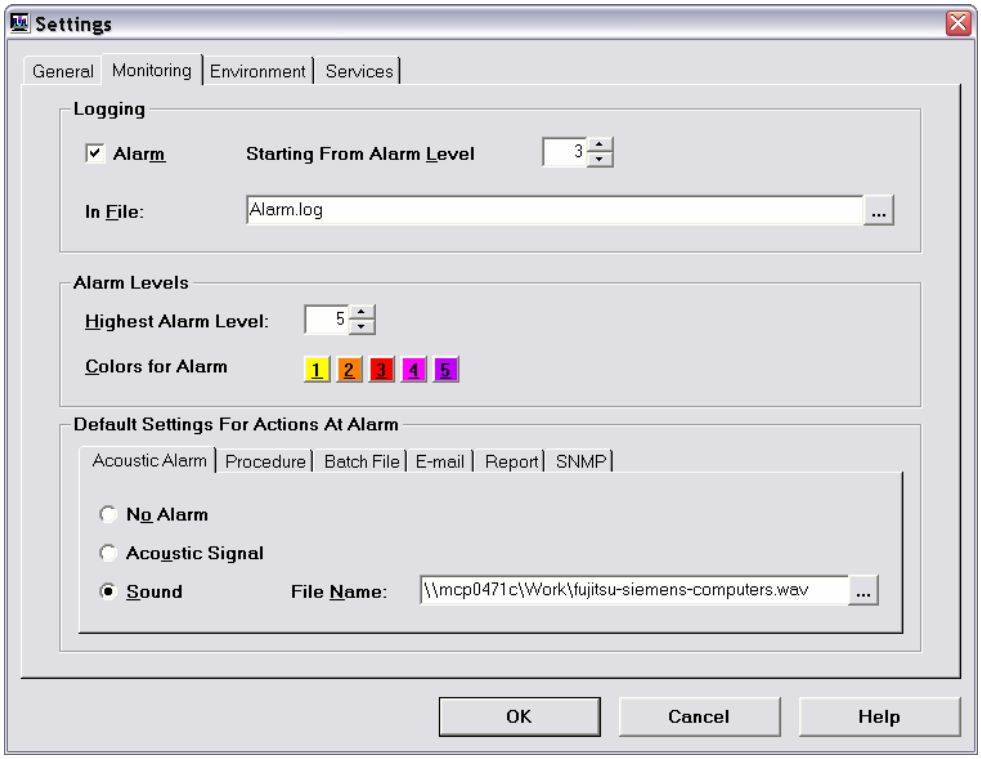
Every <n> Minutes

Here you specify, in which time intervals the report windows are to be updated. For example, if you specify 5 here, every 5 minutes all report windows are updated, independently of the arrival of new data.

Restore Arrangement At Program Start

If "Restore Arrangement At Program Start" is marked, at the start of the manager the report windows, which were open when the manager was stopped are displayed again.

Options on the "Monitoring" tab:



Logging

Here you can specify whether alarm notifications resulting from the monitoring are to be logged to a file.

Alarm

Alarm notifications are logged if the check box is marked.

From Alarm Level

Here you specify the alarm level starting from which alarm notifications are to be logged.

In File

Here you specify the name of the logging file.

Alarm Levels

In this area you define the possible alarm levels for the rules.

Highest Alarm Level

Here you specify the highest possible alarm level.

Colors For Alarm Levels

Here you assign a color for each alarm level. You can change the colors by clicking on the command button corresponding to the alarm level. The color assigned to the alarm level determines the color of the server button in case of an alarm.

Default Settings For Actions At Alarm

In a rule you can define actions to be executed in case of alarm. Here you can activate resp. deactivate centrally the different types of actions and specify the default settings for some action types. If an action type is deactivated actions eventually requested in rules are not executed.

Acoustic Alarm

Selecting either of the options "Acoustic signal" or "Sound" causes a window displaying the relevant rule to be opened automatically whenever there is an alarm. In addition, the acoustic alarm itself takes the form indicated by the setting for "Acoustic signal" or "Sound".
You can stop the acoustic alarm by clicking the bell symbol in the window.

No Alarm

No acoustic alarm should be triggered.

Acoustic Signal

If this option has been selected, the alarm takes the form of an acoustic signal of specified duration (in seconds) and frequency (in Hertz).

Sound

If this option has been selected, the sound file specified under "File name" will be played as an acoustic alarm. This option is only applicable if a sound card is available.

Procedure

Here you activate resp. deactivate the action type "Starting a procedure on a server".

Activated

The start of procedures is activated.

Batch File

Here you activate resp. deactivate the action type "Starting a batch file on the PC".

Activated

The start of batch files is activated.

E-mail

Here you activate resp. deactivate the action type "Sending an E-mail".

Activated

Sending of E-mails is activated.

E-mail Address

Default E-mail address, to which messages are to be sent in case of alarm.

Report

Here you activate resp. deactivate the action type "Automatic opening of reports".

Activated

Opening of reports is activated.

Mark Limit Values in Diagram

Here you can specify whether the limit values for the measurement variable defined in the rule are to be marked as a line in the automatically opened reports. This option is only effective for the diagram types Lines and Lines (Log).

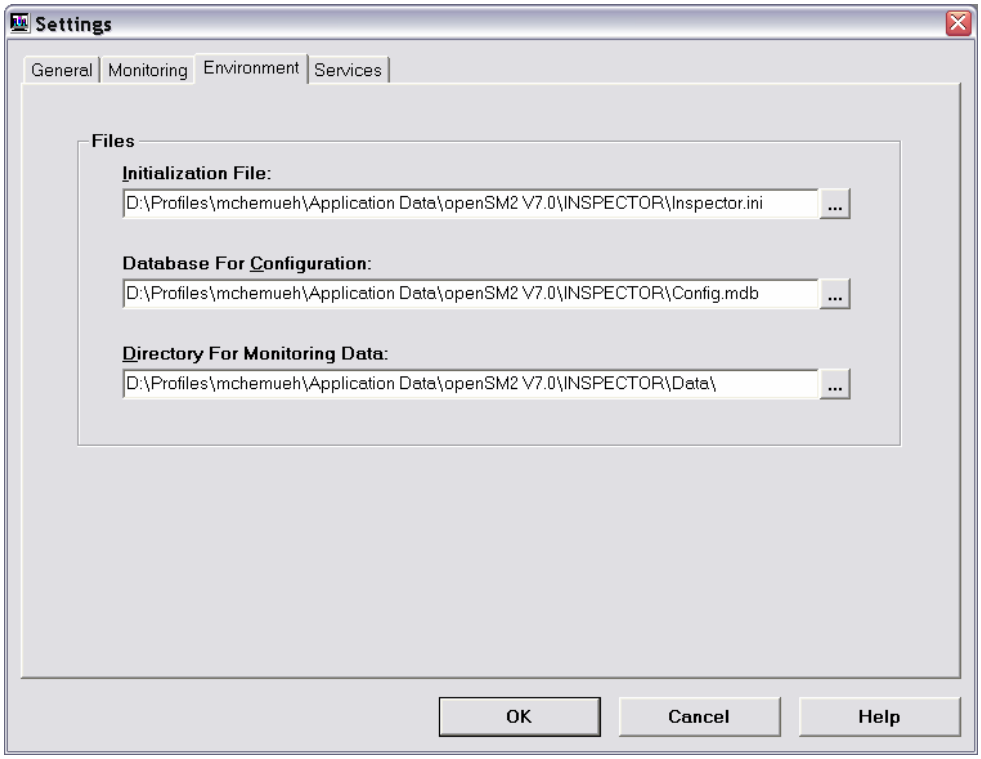
SNMP

Here you activate resp. deactivate the action type "Sending an SNMP trap".

Activated

Sending of SNMP traps is activated.

Options on the "Environment" tab:



Files

Here you can change the path names of the initialization file and the configuration database as well as the monitoring data directory.

Normally these files are in the application data directory of INSPECTOR.

The files can be stored central on a server and be used by several users of INSPECTOR.

Initialization File

Here you specify to the path name of the initialization file.

Database for Configuration

Here you specify to the path name for the database for configuration.

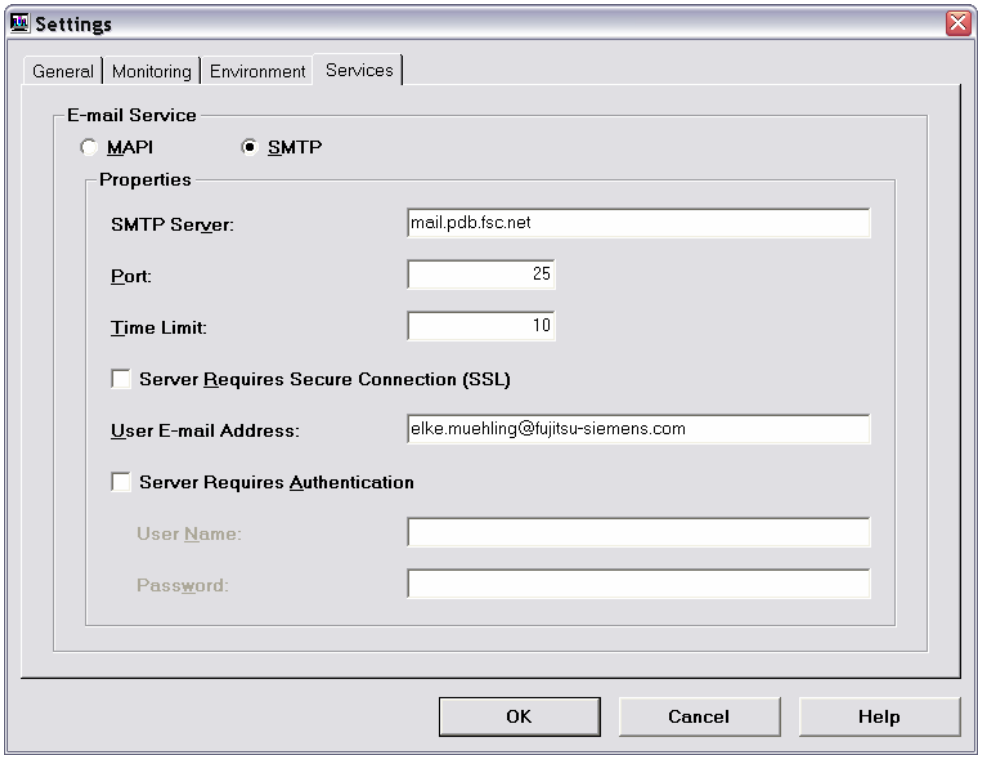
A change will only be effective when the manager is restarted.

Directory For Monitoring Data

Here you specify the directory, in which the monitoring data are to be stored.

As data directory the subdirectory "Data" of the application data directory is pre-set.

Options on the "Services" tab:



E-mail Service

Here you specify the E-mail service to be used if a notification by E-mail is to take place in case of threshold violation.

MAPI

Choose this option if you use a MAPI-compatible E-mail system, e.g. Microsoft Exchange.

Sending E-mails automatically with MAPI is not possible if you are using Outlook 2002 or later or Outlook 2000 with the Outlook E-mail Security Update.

Properties

User Name Or Profile

On computers, on which Microsoft Exchange or Microsoft Outlook is installed, indicate here the profile, which is to be used when creating an E-mail session. Otherwise you specify the user name.

Password

Here you specify your password for the E-mail system. This specification is not necessary, if you indicated a profile for "User Name Or Profile", since profiles cover the user name and the password.

SMTP

Choose this option if you use a SMTP service.

This option is only available on Windows 2000 (Professional and Server Edition) and Windows XP (Professional Edition).

Properties

SMTP Server

Here you specify the name (DNS) or IP address of the machine hosting the SMTP service through which messages are to be sent.

Port

Here you specify the port on which the SMTP service specified by "SMTP Server" is listening for connections. Default is Port 25.

Time Limit

Here you specify the number of seconds to wait for a valid socket to be established with the SMTP service before timing out.

Server Requires Secure Connection (SSL)

Here you indicate if Secure Sockets Layer (SSL) should be used when sending messages using the SMTP protocol over the network.

User E-mail Address

Here you specify the email address used when connecting to the SMTP service.

Server Requires Authentication

Here you specify if authentication is required to send messages to the SMTP service.

User Name

Here you specify the username for authenticating to an SMTP server using basic (clear-text) authentication.

Password

Here you specify the password used to authenticate to an SMTP server using basic (clear-text) authentication.

OK

The settings are applied.

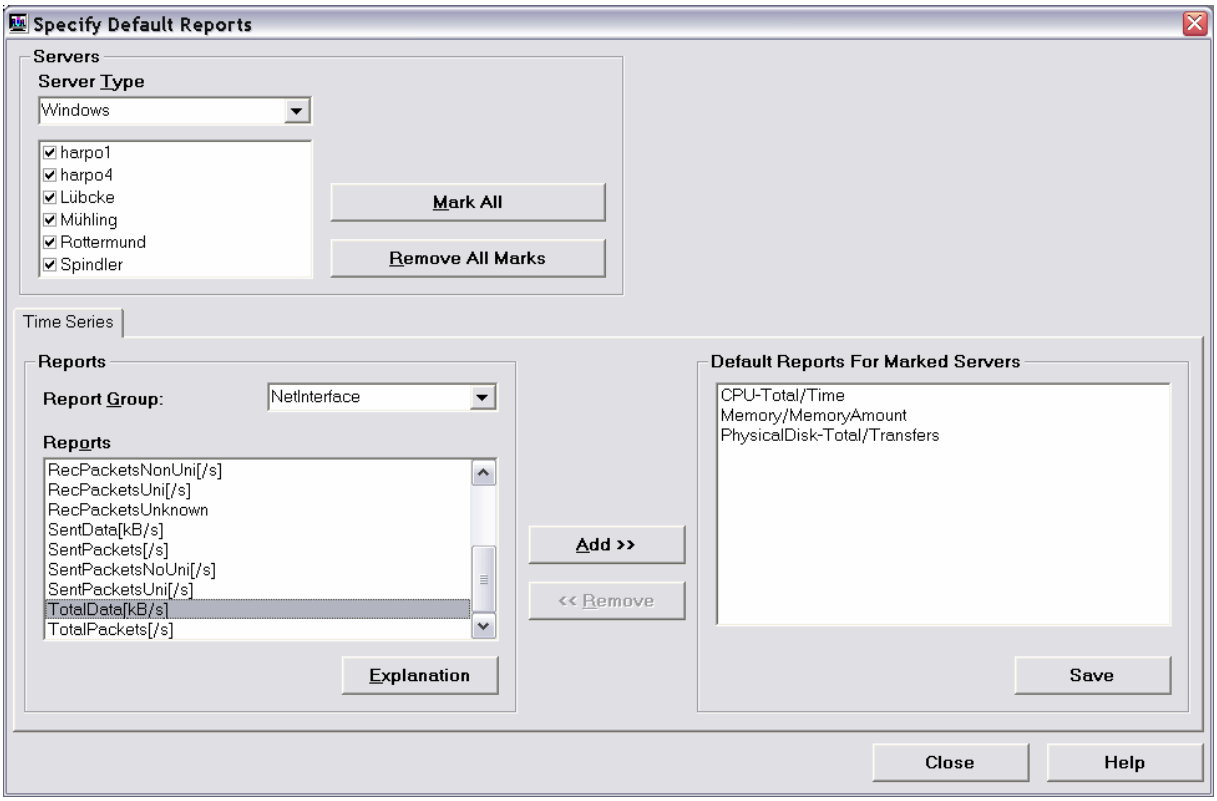
4.31 The Specify Default Reports dialog box

"Specify Default Reports..." command in the "Servers" menu
or
" Specify Default Reports..." command in the Context menu of a server in the server list

In this dialog box you specify which server reports are to be entered as default reports in the server list.

If you call this dialog box from the "Servers" menu, you can define the default reports for several servers simultaneously.

If you call this dialog box from the Context menu of a server in the server list, you can define the default reports for one server only.



Dialog box options

Servers

This area is only displayed when called from the "Servers" menu.

Server Type

Here you select the server type, BS2000, UNIX, Linux, Windows or ESX.

A list is displayed of all servers belonging to the selected server type.

Mark the server(s) in the list whose default reports you want to define.

Reports

In this area the available server reports are displayed.

Report Group

Here you select a report group. The list of all reports belonging to the selected report group is displayed under "Reports".

Reports

Here you mark the desired server reports to add them to the default reports with the "add" button.

Explanation

Shows explanations to the measurement variables of the selected report.

Default Reports For Marked Servers (when called from the "Servers" menu)
or
Default Reports (when called from the Context menu of a server in the server list)

The list contains all server reports currently defined as default reports. Mark a report in the list to remove it from the default reports by clicking on the "remove" button.

OK (only when called from the Context menu of a server in the server list)

The selection under "Default Reports" is applied to the server.

Save (only when called from the "Servers" menu)

The selection under "Default Reports For Marked Servers" is saved for the marked servers.

You can transfer the default reports already defined for a server easily to one or several other server(s), by marking first the server, whose default reports you want to transfer, then mark the other server(s) and subsequently click on "Save".

Close (only when called from the "Servers" menu)

The dialog box is closed.

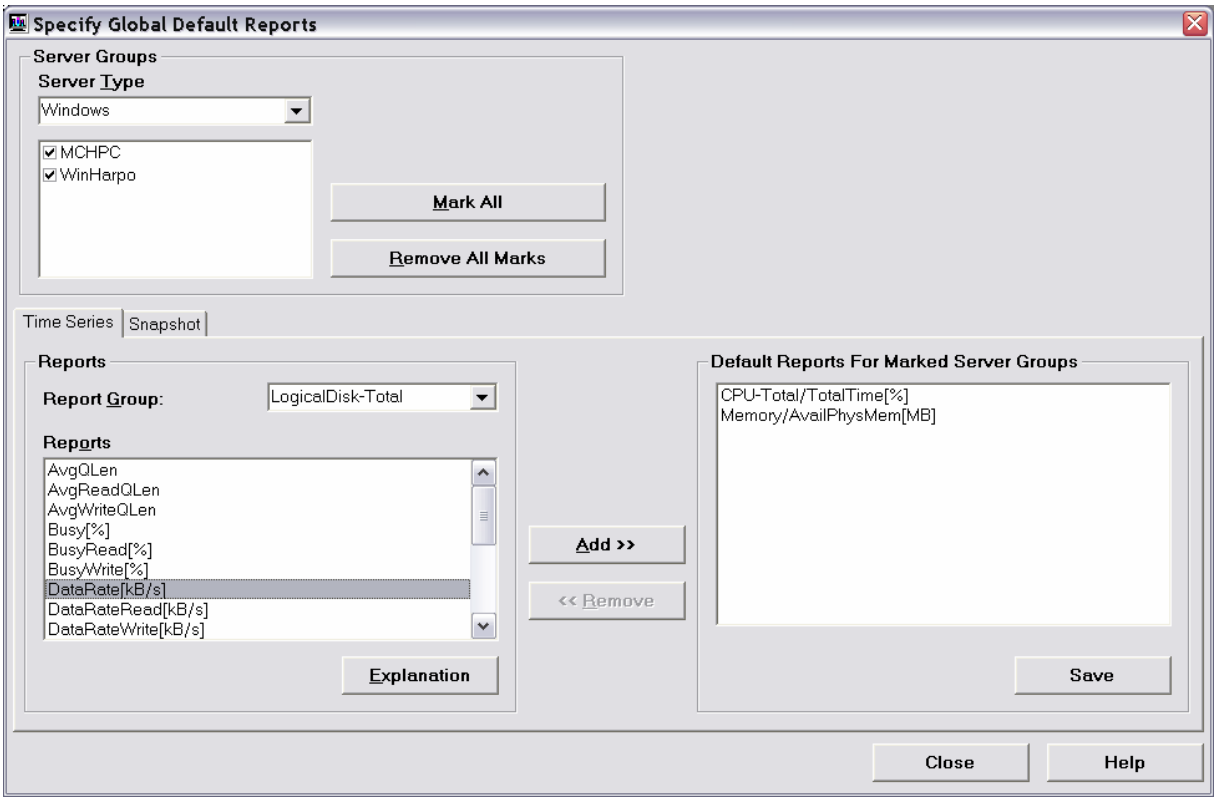
4.32 The Specify Global Default Reports dialog box

"Specify Default Reports..." command in the "Global Reports" menu
or
" Specify Default Reports..." command in the Context menu of a server group in the server list

In this dialog box you specify which global reports are to be entered as default reports in the server list.

If you call this dialog box from the "Global Reports" menu, you can define the default reports for several server groups simultaneously.

If you call this dialog box from the Context menu of a server group in the server list, you can define the default reports for one server group only.



Dialog box options

Server Groups

This area is only displayed when called from the "Global Reports" menu.

Server Type

Here you select the server type, BS2000, UNIX, Linux, Windows or ESX.

A list is displayed of all server groups belonging to the selected server type.

Mark the server group(s) in the list whose default reports you want to define.

The tab set

There are the "Time Series" and "Snapshot" tab to select global time series reports resp. global snapshot reports.

Reports

In this area the available global reports are displayed.

Report Group

Here you select a report group. The list of all reports belonging to the selected report group is displayed under "Reports".

Reports

Here you mark the desired global reports to add them to the default reports with the "add" button.

Explanation

Shows explanations to the measurement variables of the selected report.

Default Reports For Marked Server Groups (when called from the "Global Reports" menu)
or
Default Reports (when called from the Context menu of a server group in the server list)

The list contains all global reports currently defined as default reports. Mark a report in the list to remove it from the default reports by clicking on the "remove" button.

OK (only when called from the Context menu of a server group in the server list)

The selection under "Default Reports" is applied to the server group.

Save (only when called from the "Global Reports" menu)

The selection under "Default Reports For Marked Server Groups" is saved for the marked server groups.

You can transfer the default reports already defined for a server group easily to one or several other server group(s), by marking first the server group, whose default reports you want to transfer, then mark the other server group(s) and subsequently click on "Save".

Close (only when called from the "Global Reports" menu)

The dialog box is closed.

5 Appendix

5.1 BS2000 reports and measurement variables

This section contains an overview of all predefined BS2000 reports together with the associated measurement variables.
Some measurement variables are not available in SM2 versions < V15.0.
A precise description of the measurement variables can be found in the SM2 manual in section "Table of variables reports".

Report Group	Report Name	Meas. Variable	Description
BCAM	CONNECTS	CONNECTS	Number of connections
	INBUFF	INBUFF	Used input buffer [kB]
	INBUFF%	INBUFF%	Used input buffer [%]
	INDATA	INDATA	Number of kB per TSDU received [/s]
	INPDATA	INPDATA	Number of packet data received [/s]
	INPROC	INPROC	Inproc time [ms] for connection set
	INPROC1	INPROC1	Inproc time in bucket 1 [%]
	INPROC2	INPROC2	Inproc time in bucket 2 [%]
	INPROC3	INPROC3	Inproc time in bucket 3 [%]
	INPROC4	INPROC4	Inproc time in bucket 4 [%]
	INPROCO	INPROCO	Inproc time overflow [%]
	INPWIN	INPWIN	Number of packet windows received [/s]
	INTSDU	INTSDU	Number of TSDUs received [/s]
	INWAIT	INWAIT	Inwait time [ms] for connection set
	INWAIT1	INWAIT1	Inwait time in bucket 1 [%]
	INWAIT2	INWAIT2	Inwait time in bucket 2 [%]
	INWAIT3	INWAIT3	Inwait time in bucket 3 [%]
	INWAIT4	INWAIT4	Inwait time in bucket 4 [%]
	INWAITO	INWAITO	Inwait time overflow [%]
	OUTBUFF	OUTBUFF	Used output buffer [kB]
	OUTBUFF%	OUTBUFF%	Used output buffer [%]
	OUTDATA	OUTDATA	Number of kB per TSDU sent [/s]
	OUTPDATA	OUTPDATA	Number of packet data sent [/s]
	OUTPROC	OUTPROC	Outproc time [ms] for connection set
	OUTPROC1	OUTPROC1	Outproc time in bucket 1 [%]
	OUTPROC2	OUTPROC2	Outproc time in bucket 2 [%]
	OUTPROC3	OUTPROC3	Outproc time in bucket 3 [%]
	OUTPROC4	OUTPROC4	Outproc time in bucket 4 [%]
	OUTPROCO	OUTPROCO	Outproc time overflow [%]
	OUTPWIN	OUTPWIN	Number of packet windows sent [/s]
	OUTTSDU	OUTTSDU	Number of TSDUs sent [/s]
	REACT	REACT	React time [ms] for connection set
	REACT1	REACT1	React time in bucket 1 [%]
	REACT2	REACT2	React time in bucket 2 [%]
	REACT3	REACT3	React time in bucket 3 [%]
	REACT4	REACT4	React time in bucket 4 [%]
	REACTO	REACTO	React time overflow [%]
	REJCONN	REJCONN	Number rejected connections for connection set
	SCOM	SCOM	Number of send calls over maximum [/s]
	ZWR	ZWR	Number of packets with zero window information [/s]
CATEGORY	ACT	ACT	Average number of active tasks of category
	ALL	ALL	Total number of tasks of category
	CPU	CPU	CPU time (TU+TPR) [%] for category
	CPUQ	CPUQ	Number of tasks in CPU queue for category
	IO	IO	Number of IOs (DMS) [/s] for category
	IOHWDR	IOHWDR	HW duration of IOs (DMS) [ms] for category
	IOQ	IOQ	Number of tasks in IO queue for category
	IOSWDR	IOSWDR	SW duration of IOs (DMS) [ms] for category
	MAXMPL	MAXMPL	Maximum multiprogramming level for category
	MINMPL	MINMPL	Minimum multiprogramming level for category
	NADM	NADM	Average number of tasks waiting for activation of category
	PAGQ	PAGQ	Number of tasks in paging queue for category

	PIO	PIO	Number of paging IOs [/s] for category
	PIOHWDR	PIOHWDR	HW duration of paging IOs [ms] for category
	PIOSWDR	PIOSWDR	SW duration of paging IOs [ms] for category
	WACT	WACT	Average number of inactive ready tasks of category
	WEIGHT	WEIGHT	Weight for category
CHANNEL	BYTEIO	BYTEIO	Number of IOs (byte transfer) [/s] for channel
	BYTEPAG	BYTEPAG	Number of transferred pages (byte transfer) [/s] for channel
	HIGHLOAD	HIGHLOAD	High load of IO categories [%] for channel
	IO	IO	Number of IOs [/s] for channel
	LEXD	LEXD	Explicit delay factor for IO priority low for channel
	LOWLOAD	LOWLOAD	Low load of IO categories [%] for channel
	MEDLOAD	MEDLOAD	Medium load of IO categories [%] for channel
	MEXD	MEXD	Explicit delay factor for IO priority medium for channel
	NODATA	NODATA	Number of IOs without data transfer [/s] for channel
	NOVL	NOVL	Non overlap busy state [%] for channel
	PAM	PAM	Number of transfered pages [/s] for channel
	PAMIO	PAMIO	Number of IOs (PAM block transfer) [/s] for channel
	PAMPAG	PAMPAG	Number of transferred pages (PAM block transfer) [/s] for channel
	UTIL	UTIL	Busy state [%] for channel
CMS	BLCKQ	BLCKQ	Average number of requests waiting for exclusive lock for catalog
	CEQ	CEQ	Average number of requests waiting for exclusive catalog entry lock for catalog
	HITRATE	HITRATE	Hit rate [%] for catalog
	LFIREAD	LFIREAD	Local read accesses to file entries without LBN [/s] for catalog
	LFIRLBN	LFIRLBN	Local read accesses to file entries with LBN [/s] for catalog
	LFISCAN	LFISCAN	Local accesses to file entries during scanning [/s] for catalog
	LFIUPDR	LFIUPDR	Local update/rename accesses to file entries [/s] for catalog
	LFIWRCL	LFIWRCL	Local write/clear accesses to file entries [/s] for catalog
	LJVREAD	LJVREAD	Local read accesses to JV entries without LBN [/s] for catalog
	LJVRLBN	LJVRLBN	Local read accesses to JV entries with LBN [/s] for catalog
	LJVSCAN	LJVSCAN	Local accesses to JV entries during scanning [/s] for catalog
	LJVUPDR	LJVUPDR	Local update/rename accesses to JV entries [/s] for catalog
	LJVWRCL	LJVWRCL	Local write/clear accesses to JV entries [/s] for catalog
	PHRD	PHRD	Number of physical reads [/s] for catalog
	PHWR	PHWR	Number of physical writes [/s] for catalog
	REQQ	REQQ	Average number of requests waiting for release of buffer management table for catalog
	RFIREAD	RFIREAD	Remote read accesses to file entries without LBN [/s] for catalog
	RFIRLBN	RFIRLBN	Remote read accesses to file entries with LBN [/s] for catalog
	RFISCAN	RFISCAN	Remote accesses to file entries during scanning [/s] for catalog
	RFIUPDR	RFIUPDR	Remote update/rename accesses to file entries [/s] for catalog
	RFIWRCL	RFIWRCL	Remote write/clear accesses to file entries [/s] for catalog
	RJVREAD	RJVREAD	Remote read accesses to JV entries without LBN [/s] for catalog
	RJVRLBN	RJVRLBN	Remote read accesses to JV entries with LBN [/s] for catalog
	RJVSCAN	RJVSCAN	Remote accesses to JV entries during scanning [/s] for catalog
	RJVUPDR	RJVUPDR	Remote update/rename accesses to JV entries [/s] for catalog

	RJVWRCL	RJVWRCL	Remote write/clear accesses to JV entries [/s] for catalog
	RPTREAD	RPTREAD	Response time for read accesses without LBN [ms] for catalog
	RPTRLBN	RPTRLBN	Response time for read accesses with LBN [ms] for catalog
	RPTSCAN	RPTSCAN	Response time for scan accesses [ms] for catalog
	RPTUPDR	RPTUPDR	Response time for update/rename accesses [ms] for catalog
	RPTWRCL	RPTWRCL	Response time for write/clear accesses [ms] for catalog
	SERQ	SERQ	Average number of requests waiting for serialization lock for catalog
	SFIREAD	SFIREAD	Slave read accesses to file entries without LBN [/s] for catalog
	SFIRLBN	SFIRLBN	Slave read accesses to file entries with LBN [/s] for catalog
	SFISCAN	SFISCAN	Slave accesses to file entries during scanning [/s] for catalog
	SFIUPDR	SFIUPDR	Slave update/rename accesses to file entries [/s] for catalog
	SFIWRCL	SFIWRCL	Slave write/clear accesses to file entries [/s] for catalog
	SJVREAD	SJVREAD	Slave read accesses to JV entries without LBN [/s] for catalog
	SJVRLBN	SJVRLBN	Slave read accesses to JV entries with LBN [/s] for catalog
	SJVSCAN	SJVSCAN	Slave accesses to JV entries during scanning [/s] for catalog
	SJVUPDR	SJVUPDR	Slave update/rename accesses to JV entries [/s] for catalog
	SJVWRCL	SJVWRCL	Slave write/clear accesses to JV entries [/s] for catalog
	SMPQ	SMPQ	Average number of catalog index requests (system managed pubset) for catalog
	SPFQ	SPFQ	Average number of speedcat requests (single feature pubset) for catalog
	UIDQ	UIDQ	Average number of requests waiting for lock for catalog
CPU	EMULTIME	EMULTIME	RISC emulation time [%]
		TU_REAL	TU time real [%]
	EMUNORM	EMUNORM	RISC emulation time [%] for processor
	IDLNORM	IDLNORM	Idle time [%] for processor
	IDLREAL	IDLREAL	Idle time real [%] for processor
	NORM	IDLE	Idle time [%]
		SIH	SIH time [%]
		TPR	TPR time [%]
		TU	TU time [%]
	REAL	IDLE_REAL	Idle time real [%]
		SIH_REAL	SIH time real [%]
		TPR_REAL	TPR time real [%]
		TU_REAL	TU time real [%]
	SIHNORM	SIHNORM	SIH time [%] for processor
	SIHREAL	SIHREAL	SIH time real [%] for processor
	STOP	STOP	Stop time [%] for processor
	TPRNORM	TPRNORM	TPR time [%] for processor
	TPRREAL	TPRREAL	TPR time real [%] for processor
	TUNORM	TUNORM	TU time [%] for processor
	TUREAL	TUREAL	TU time real [%] for processor
DAB	AOVER	AOVER	Number of overruns [/s] for DAB area
	ARD	ARD	Number of reads [/s] for DAB area
	ARDHIT	ARDHIT	Read hits [%] for DAB area
	AWR	AWR	Number of writes [/s] for DAB area
	AWRHIT	AWRHIT	Write hits [%] for DAB area
	COVER	COVER	Number of overruns [/s] for DAB cache
	CRD	CRD	Number of reads [/s] for DAB cache
	CRDHIT	CRDHIT	Read hits [%] for DAB cache

	CWR	CWR	Number of writes [/s] for DAB cache
	CWRHIT	CWRHIT	Write hits [%] for DAB cache
DEVICE	OTHERIO	OTHERIO	Utilization [%] for device
	OTHERQL	OTHERQL	Mean length of wait queue for device
	OTHERRDBYT	OTHERRDBYT	Number of bytes read [/s] for device
	OTHERRDIO	OTHERRDIO	Number of read IOs [/s] for device
	OTHERWRBYT	OTHERWRBYT	Number of bytes written [/s] for device
	OTHERWRIO	OTHERWRIO	Number of write IOs [/s] for device
	TAPEIO	TAPEIO	Utilization [%] for tape device
	TAPERDBYTE	TAPERDBYTE	Number of bytes read [/s] for tape device
	TAPERDIO	TAPERDIO	Number of read IOs [/s] for tape device
	TAPEWRBYTE	TAPEWRBYTE	Number of bytes written [/s] for tape device
	TAPEWRIO	TAPEWRIO	Number of write IOs [/s] for tape device
	TDBYTES	TDBYTES	Number of transferred bytes [/IO] for transdata device
	TDRD	TDRD	Number of read IOs [/s] for transdata device
	TDWR	TDWR	Number of write IOs [/s] for transdata device
DISK	HIGHLOAD	HIGHLOAD	High load of IO categories [%] for disk
	IO	IO	Number of IOs [/s] for disk
	LEXD	LEXD	Explicit delay factor for IO priority low for disk
	LIMD	LIMD	Implicit delay factor for IO priority low for disk
	LOWLOAD	LOWLOAD	Low load of IO categories [%] for disk
	MEDLOAD	MEDLOAD	Medium load of IO categories [%] for disk
	MEXD	MEXD	Explicit delay factor for IO priority medium for disk
	MIMD	MIMD	Implicit delay factor for IO priority medium for disk
	PAM	PAM	Number of PAM pages per IO for disk
	QUEUE	QUEUE	Mean length of wait queue for disk
	RDIO	RDIO	Number of read IOs [/s] for disk
	RDKB	RDKB	Number of PAM blocks read [kB/s] for disk
	RSCIO	RSCIO	Number of RSC IOs for disk
	SERVHW	SERVHW	Hardware service time [ms] for disk
	SERVSW	SERVSW	Software service time [ms] for disk
	UTIL	UTIL	Busy state (no paging) [%] for disk
	UTILPG	UTILPG	Busy state (paging) [%] for disk
	WRIO	WRIO	Number of write IOs [/s] for disk
	WRKB	WRKB	Number of PAM blocks written [kB/s] for disk
DLM	NSM	NSMCONVERT	Number of convert lock requests from NSM [/s]
		NSMDEQUEUE	Number of dequeue lock requests from NSM [/s]
		NSMENQUEUE	Number of enqueue lock requests from NSM [/s]
		NSMGRANT	Number of grant events from NSM [/s]
		NSMINFO	Number of information lock requests from NSM [/s]
		NSMRELEASE	Number of release events from NSM [/s]
	TPR	TPRCONVERT	Number of convert lock requests from TPR [/s]
		TPRDEQUEUE	Number of dequeue lock requests from TPR [/s]
		TPRENQUEUE	Number of enqueue lock requests from TPR [/s]
		TPRGRANT	Number of grant events via bourse or user eventing [/s]
		TPRINFO	Number of information lock requests from TPR [/s]
		TPRRELEASE	Number of release events via bourse or user eventing [/s]
	TU	TUCONVERT	Number of convert lock requests from TU [/s]
		TUDEQUEUE	Number of dequeue lock requests from TU [/s]
		TUENQUEUE	Number of enqueue lock requests from TU [/s]
		TUGRANT	Number of grant events via TU contingency [/s]
		TUINFO	Number of information lock requests from TU [/s]
		TURELEASE	Number of release events via TU contingency [/s]
FILE	ACCTIM	ACCTIM	Mean access time [ms] for file
	CHECK	CHECK	Number of check operations [/s] for file
	RD	RD	Number of reads [/s] for file
	WAIT	WAIT	Number of wait operations [/s] for file
	WR	WR	Number of writes [/s] for file
GS	RDIO	RDIO	Number of read IOs [/s] for GS partition
	RDKB	RDKB	Number of data read [kB/s] for GS partition
	VOLRD	VOLRD	Number of read IOs [/s] for GS volume
	VOLWR	VOLWR	Number of write IOs [/s] for GS volume
	WRIO	WRIO	Number of write IOs [/s] for GS partition
	WRKB	WRKB	Number of data written [kB/s] for GS partition
IO	IO	DISK	Non paging disk IOs [/s]

		OTHER	Other IOs [/s]
		PAGE	Paging IOs [/s]
		PRINT	Printer IOs [/s]
		TAPE	Tape IOs [/s]
		TD	Transdata IOs [/s]
		TOTIO	Total number of IOs [/s]
ISAM-FILE	FIXHIT	FIXHIT	Number of fix hits [/s] for ISAM file
	FIXHT%	FIXHT%	Fix hits [%] for ISAM file
	FIXIO	FIXIO	Number of fix IOs [/s] for ISAM file
	FIXOP	FIXOP	Number of fix operations [/s] for ISAM file
	FIXWT	FIXWT	Fix waits [%] for ISAM file
	IDXHIT	IDXHIT	Index hits [%] for ISAM file
	IDXOP	IDXOP	Number of index operations [/s] for ISAM file
	SIZE	SIZE	Number of pages of ISAM file
	SLOTWT	SLOTWT	Slot waits [%] for ISAM file
ISAM-POOL	FIXHIT	FIXHIT	Number of fix hits [/s] for ISAM pool
	FIXHT%	FIXHT%	Fix hits [%] for ISAM pool
	FIXIO	FIXIO	Number of fix IOs [/s] for ISAM pool
	FIXOP	FIXOP	Number of fix operations [/s] for ISAM pool
	FIXWT	FIXWT	Fix waits [%] for ISAM pool
	IDXHIT	IDXHIT	Index hits [%] for ISAM pool
	IDXOP	IDXOP	Number of index operations [/s] for ISAM pool
	SIZE	SIZE	Number of pages of ISAM pool
	SLOTWT	SLOTWT	Slot waits [%] for ISAM pool
MEMORY	BIGPAGES	BIGPAGESTOT	Number of available big pages
		BIGPAGESUSED	Number of used big pages
	MEM	NPP	Number of pageable pages
		PEQ	Number of page frames in free pool empty
		ROQ	Number of page frames in free pool read-only
		RWQ	Number of page frames in free pool read-write
		SWS	Number of page frames for system global wset
		TOTMEM	Total number of page frames in main memory
		TWS	Number of page frames for task local wset
	PAG	FACC	Number of page faults for 1st page access [/s]
		RECL	Number of page reclaims [/s]
		TOT	Total number of page faults [/s]
	PAGIO	RD	Number of page reads from disk [/s]
		RDGS	Number of page reads from ES/GS [/s]
		WR	Number of page writes to disk [/s]
		WRGS	Number of page writes to ES/GS [/s]
	PGAREA	PGAREA_GS	Pages on expanded or global storage
		PGAREA_TOT	Pages on paging devices
		PGAREA_US	Used pages on paging devices disk
	VIRTMEM	CL1	Number of class 1 pages in virtual address space
		CL2	Number of class 2 pages in virtual address space
		CL3	Number of class 3 pages in virtual address space
		CL4	Number of class 4 pages in virtual address space
		CL4S	Number of class 4 pages for shareable modules in virtual address space
	WORKINGSET	PPCACT	Sum of planned page counts of all active tasks
		PPCALL	Sum of planned page counts of all tasks
		PPCWACT	Sum of planned page counts of all ready inactive tasks
		UPGACT	Total number of used pages of active tasks
NSM	NSM	CIRCTIME	Circulation time of token [ms]
		DURTIME	Duration time of token [ms]
		LOCALREQ	Local requests [%]
		LOCKSERVER	Number of lock servers
		MAXMSGLEN	Length of NSM message buffer [kB]
		TOTALREQ	Total number of requests [/s]
		USEDMSGLEN	Used NSM message buffer [%]
		WAITMSG	Number of waiting messages
PCS	DURRO	DURRO	Number of duration time slice runouts for category
	DURROP	DURROP	Number of duration time slice runouts with preemption for category
	PCS	RDACT	Current delay of all jobs in the overall system
		SRACT	Current overall system service rate

	RDACT	RDACT	Current delay of jobs in category
	SQACT	SQACT	Current system performance quota [%] for category
	SQPLN	SQPLN	Planned system performance quota [%] for category
	SRACTCP	SRACTCP	CPU service rate [/s] for category
	SRACTIO	SRACTIO	IO service rate [/s] for category
	SRACTTO	SRACTTO	Total service rate [/s] for category
PERIODIC-TASK	JOBCPU	JOBCPU	CPU-time (TU+TPR) [%] for job
	JOBCRYPTIO	JOBCRYPTIO	Number of encrypted file IOs [/s] for job
	JOBIO	JOBIO	Number of IOs [/s] for job
	JOBRD	JOBRD	Number of page reads [/s] for job
	JOBSERV	JOBSERV	Service Rate [SU/s] for job
	JOBUPG	JOBUPG	Mean UPG for job
	TSNCPU	TSNCPU	CPU-time (TU+TPR) [%] for task
	TSNCRYPTIO	TSNCRYPTIO	Number of encrypted file IOs [/s] for task
	TSNIO	TSNIO	Number of IOs [/s] for task
	TSNRD	TSNRD	Number of page reads [/s] for task
	TSNSERV	TSNSERV	Service Rate [SU/s] for task
	TSNUPG	TSNUPG	Mean UPG for task
	UIDCPU	UIDCPU	CPU-time (TU+TPR) [%] for user id
	UIDCRYPTIO	UIDCRYPTIO	Number of encrypted file IOs [/s] for user id
	UIDIO	UIDIO	Number of IOs [/s] for user id
	UIDRD	UIDRD	Number of page reads [/s] for user id
	UIDSERV	UIDSERV	Service Rate [SU/s] for user id
	UIDUPG	UIDUPG	Mean UPG for user id
PFA	CAOVER	CAOVER	Number of overruns [/s] for PFA cache
	CARD	CARD	Number of read accesses [/s] for PFA cache
	CARDHIT	CARDHIT	Read hits [%] for PFA cache
	CAWR	CAWR	Number of write accesses [/s] for PFA cache
	CAWRHIT	CAWRHIT	Write hits [%] for PFA cache
	CTOVER	CTOVER	Number of overruns [/s] for PFA controller
	CTRD	CTRD	Number of read accesses [/s] for PFA controller
	CTRDHIT	CTRDHIT	Read hits [%] for PFA controller
	CTWR	CTWR	Number of write accesses [/s] for PFA controller
	CTWRHIT	CTWRHIT	Write hits [%] for PFA controller
POSIX	POSIX	FORK/S	Forks [/s]
		SCALL/S	System calls [/s]
PUBSET	ALLOC	ALLOC	Space allocation [%] for pubset
	FREE	FREE	Free space [GB] for pubset
	SATL	SATL	Saturation level for pubset
	SMALLOC	SMALLOC	Space allocation [%] for SM pubset
	SMFREE	SMFREE	Free space [GB] for SM pubset
	SMTOT	SMTOT	Total space (capacity) [GB] for SM pubset
	SMUSED	SMUSED	Used space [GB] for SM pubset
	TOT	TOT	Total space (capacity) [GB] for pubset
	USED	USED	Used space [GB] for pubset
RESPONSE-TIME	INPLEN	INPLEN	Mean length of input messages [bytes]
	OUTPLEN	OUTPLEN	Mean length of output messages [bytes]
	RESPRATE	RESPRATE	Rate of interactions with response time (without overflow data) [/s] for connection set
	RESPTIME	RESPTIME	Mean response time [s] for connection set
	RESPTIMEL	RESPTIMEL	Mean response time (without overflow data) [s] for connection set
	THNKAVG	THNKAVG	Mean think time (without overflow data) [s] for connection set
	THNKRATE	THNKRATE	Rate of interactions with think time (without overflow data) [/s] for connection set
	TRANSACT	TRANSACT	Number of transactions [/s] for connection set
	TRNSAVG	TRNSAVG	Mean transaction time (without overflow data) [s] for connection set
	TRNSRATE	TRNSRATE	Rate of interactions with transaction time (without overflow data) [/s] for connection set
	WAITAVG	WAITAVG	Mean wait time (without overflow data) [s] for connection set
	WAITRATE	WAITRATE	Rate of interactions with wait time (without overflow data) [/s] for connection set

STORAGE-SYSTEM	DEVBEDRD	DEVBEDRD	Back end data read [kB/s] for device
	DEVBEDRW	DEVBEDRW	Back end data read + written [kB/s] for device
	DEVBEDWR	DEVBEDWR	Back end data written [kB/s] for device
	DEVBERD	DEVBERD	Back end reads [/s] for device
	DEVBERW	DEVBERW	Back end reads + writes [/s] for device
	DEVBEWR	DEVBEWR	Back end writes [/s] for device
	DEVDRD	DEVDRD	Data read [kB/s] for device
	DEVDRW	DEVDRW	Data read + written [kB/s] for device
	DEVDWR	DEVDWR	Data written [kB/s] for device
	DEVRD	DEVRD	Reads [/s] for device
	DEVRDH	DEVRDH	Read hits [/s] for device
	DEVRDH%	DEVRDH%	Read hits quota [%] for device
	DEVRW	DEVRW	Reads + writes [/s] for device
	DEVRWH	DEVRWH	Read + write hits [/s] for device
	DEVRWH%	DEVRWH%	Read + write hits quota [%] for device
	DEVSRD	DEVSRD	Sequential reads [/s] for device
	DEVSRDH	DEVSRDH	Sequential read hits [/s] for device
	DEVSRDH%	DEVSRDH%	Sequential read hits quota [%] for device
	DEVSWR	DEVSWR	Sequential writes [/s] for device
	DEVWR	DEVWR	Writes [/s] for device
	DEVWRH	DEVWRH	Write hits [/s] for device
	DEVWRH%	DEVWRH%	Write hits quota [%] for device
	DIRRD	DIRRD	Reads [/s] for symmetrix director
	DIRRW	DIRRW	Reads + writes [/s] for symmetrix director
	DIRRWH	DIRRWH	Read + write hits [/s] for symmetrix director
	DIRWR	DIRWR	Writes [/s] for symmetrix director
	PHDDRD	PHDDRD	Data read [kB/s] for physical disk
	PHDDRW	PHDDRW	Data read + written [kB/s] for physical disk
	PHDDWR	PHDDWR	Data written [kB/s] for physical disk
	PHDRD	PHDRD	Reads [/s] for physical disk
	PHDRW	PHDRW	Reads + writes [/s] for physical disk
	PHDWR	PHDWR	Writes [/s] for physical disk
	PUBBEDRD	PUBBEDRD	Back end data read [kB/s] for pubset
	PUBBEDRW	PUBBEDRW	Back end data read + written [kB/s] for pubset
	PUBBEDWR	PUBBEDWR	Back end data written [kB/s] for pubset
	PUBBERD	PUBBERD	Back end reads [/s] for pubset
	PUBBERW	PUBBERW	Back end reads + writes [/s] for pubset
	PUBBEWR	PUBBEWR	Back end writes [/s] for pubset
	PUBDRD	PUBDRD	Data read [kB/s] for pubset
	PUBDRW	PUBDRW	Data read + written [kB/s] for pubset
	PUBDWR	PUBDWR	Data written [kB/s] for pubset
	PUBRD	PUBRD	Reads [/s] for pubset
	PUBRDH	PUBRDH	Read hits [/s] for pubset
	PUBRDH%	PUBRDH%	Read hits quota [%] for pubset
	PUBRW	PUBRW	Reads + writes [/s] for pubset
	PUBRWH	PUBRWH	Read + write hits [/s] for pubset
	PUBRWH%	PUBRWH%	Read + write hits quota [%] for pubset
	PUBSRD	PUBSRD	Sequential reads [/s] for pubset
	PUBSRDH	PUBSRDH	Sequential read hits [/s] for pubset
	PUBSRDH%	PUBSRDH%	Sequential read hits quota [%] for pubset
	PUBSWR	PUBSWR	Sequential writes [/s] for pubset
	PUBWR	PUBWR	Writes [/s] for pubset
	PUBWRH	PUBWRH	Write hits [/s] for pubset
	PUBWRH%	PUBWRH%	Write hits quota [%] for pubset
	RADDRCSN	RADDRCSN	Data received + sent [kB/s] for RA director
	RADDRECV	RADDRECV	Data received [kB/s] for RA director
	RADDSENT	RADDSENT	Data sent [kB/s] for RA director
	SYSDRD	SYSDRD	Data read [kB/s] for symmetrix system
	SYSDRW	SYSDRW	Data read + written [kB/s] for symmetrix system
	SYSDWR	SYSDWR	Data written [kB/s] for symmetrix system
	SYSRD	SYSRD	Reads [/s] for symmetrix system
	SYSRDH	SYSRDH	Read hits [/s] for symmetrix system
	SYSRDH%	SYSRDH%	Read hits quota [%] for symmetrix system
	SYSRW	SYSRW	Reads + writes [/s] for symmetrix system
	SYSRWH	SYSRWH	Read + write hits [/s] for symmetrix system
	SYSRWH%	SYSRWH%	Read + write hits quota [%] for symmetrix system

	SYSSRD	SYSSRD	Sequential reads [/s] for symmetrix system
	SYSWR	SYSWR	Writes [/s] for symmetrix system
	SYSWRH	SYSWRH	Write hits [/s] for symmetrix system
	SYSWRH%	SYSWRH%	Write hits quota [%] for symmetrix system
SYMMETRIX	CTLR	CTLR	Number of read accesses [/s] for Symmetrix controller
	CTLRHIT	CTLRHIT	Number of read hits [/s] for Symmetrix controller
	CTLTHIT	CTLTHIT	Total hits [%] for SYMMETRIX controller
	CTLW	CTLW	Number of write accesses [/s] for Symmetrix controller
	CTLWHIT	CTLWHIT	Number of write hits [/s] for Symmetrix controller
	DEVR	DEVR	Number of read accesses [/s] for Symmetrix device
	DEVRHIT	DEVRHIT	Number of read hits [/s] for Symmetrix device
	DEVTHIT	DEVTHIT	Total hits [%] for SYMMETRIX device
	DEVW	DEVW	Number of write accesses [/s] for Symmetrix device
	DEVWHIT	DEVWHIT	Number of write hits [/s] for Symmetrix device
	PUBR	PUBR	Number of read accesses [/s] for SYMMETRIX pubset
	PUBRHIT	PUBRHIT	Read hits [%] for SYMMETRIX pubset
	PUBTHIT	PUBTHIT	Total hits [%] for SYMMETRIX pubset
	PUBW	PUBW	Number of write accesses [/s] for SYMMETRIX pubset
	PUBWHIT	PUBWHIT	Write hits [%] for SYMMETRIX pubset
TASK	QUEUE	CPUQ	Number of tasks in CPU queue
		IOQ	Number of tasks in IO queue
		PAGQ	Number of tasks in Paging queue
	TASK	ACT	Number of active tasks
		BAT	Number of batch tasks
		DIA	Number of dialog tasks
		SYS	Number of system tasks
		TOTTASKS	Average number of all tasks in the systems
		TP	Number of tp tasks
UTM	ASYCONV	ASYCONV	Number of completed asynchronous conversations [/s] for application
	ASYCPDB	ASYCPDB	CPU time consumed in db per asynchronous conversation [ms] for application
	ASYCPU	ASYCPU	CPU time per asynchronous conversation [ms] for application
	ASYCURR	ASYCURR	Number of open asynchronous conversations for application
	ASYDB	ASYDB	Asynchron db time [s/ds] for application
	ASYDBCA	ASYDBCA	Number of db calls per asynchronous conversation for application
	ASYDDP	ASYDDP	Asynchron ddp time [s/ds] for application
	ASYIO	ASYIO	Number of IOs per asynchronous conversation for application
	ASYIODB	ASYIODB	Number of IOs in db per asynchronous conversation for application
	ASYOTH	ASYOTH	Asynchron other time [s/ds] for application
	ASYSDB	ASYSDB	Number of asynchronous conversations with db calls [/s] for application
	ASYSDDP	ASYSDDP	Number of asynchronous conversations with ddp [/s] for application
	ASYTA	ASYTA	Number of asynchron transactions [/s] for application
	ASYTASK	ASYTASK	Maximum number of tasks available for asynchronous processing for application
	ASYTDB	ASYTDB	Total time per asynchronous conversation with db calls [s] for application
	ASYTDDP	ASYTDDP	Total time for asynchronous conversations with ddp [s] for application
	ASYTIM	ASYTIM	Asynchron time [s/ds] for application
	ASYTOT	ASYTOT	Total time per asynchronous conversation [s] for application
	ASYWDB	ASYWDB	Wait time for db calls per asynchronous conversation [s] for application
	ASYWDDP	ASYWDDP	Wait time for ddp per asynchronous conversation [s] for application
	BOURWT	BOURWT	Bourse wait time [ms] for application
	CHIT	CHIT	Hit rate in UTM cache [%] for application
	DBCALLS	DBCALLS	Number of db calls per dialog step for application

	DBWAIT	DBWAIT	Wait time for db calls [%] for application
	DDPWAIT	DDPWAIT	Wait time for ddp [%] for application
	DIACPDB	DIACPDB	CPU time consumed in db per dialog step [ms] for application
	DIACPU	DIACPU	CPU time per dialog step [ms] for application
	DIACURR	DIACURR	Number of open dialog conversations for application
	DIADB	DIADB	Dialog db time [s/ds] for application
	DIADBCA	DIADBCA	Number of db calls per dialog step for application
	DIADDP	DIADDP	Dialog ddp time [s/ds] for application
	DIAIO	DIAIO	Number of IOs per dialog step for application
	DIAIODB	DIAIODB	Number of IOs in db per dialog step for application
	DIAOTH	DIAOTH	Dialog other time [s/ds] for application
	DIASDB	DIASDB	Number of dialog steps with db calls [/s] for application
	DIASDDP	DIASDDP	Number of dialog steps with ddp [/s] for application
	DIAST	DIAST	Number of dialog steps [/s] for application
	DIATA	DIATA	Number of dialog transactions [/s] for application
	DIATAC	DIATAC	Dialog tac class wait time [s/ds] for application
	DIATDB	DIATDB	Total time per dialog step with db calls [s] for application
	DIATDDP	DIATDDP	Total time for dialog steps with ddp [s] for application
	DIATIM	DIATIM	Dialog time [s/ds] for application
	DIATOT	DIATOT	Total time per dialog step [s] for application
	DIAWDB	DIAWDB	Wait time for db calls per dialog step [s] for application
	DIAWDDP	DIAWDDP	Wait time for ddp per dialog step [s] for application
	FRPOOL	FRPOOL	Free pages in UTM page pool [%] for application
	TACWAIT	TACWAIT	Wait time because of tac bottlenecks [%] for application
	TASKS	TASKS	Number of tasks for application
	USERS	USERS	Number of users for application
	WTATAC	WTATAC	Number of waiting jobs for asynchronous programs for application
	WTDPUT	WTDPUT	Number of waiting time-driven jobs for application
	WTPRINT	WTPRINT	Number of waiting print jobs for application
VM2000	CPUMAX	CPUMAX	Maximum CPU utilization [%] for VM
	CPUMEAS	CPUMEAS	Measured CPU utilization [%] for VM
	CPUPLAN	CPUPLAN	Planned CPU utilization [%] for VM
	GROUPMAX	GROUPMAX	Maximum CPU utilization [%] for VM group
	GROUPMEAS	GROUPMEAS	Measured CPU utilization [%] for VM group
	GROUPPLAN	GROUPPLAN	Planned CPU utilization [%] for VM group
	POOLHACT	POOLHACT	Hypervisor active time [%] for CPU pool
	POOLHIDL	POOLHIDL	Hypervisor idle time [%] for CPU pool
	POOLUTIL	POOLUTIL	Utilization [%] for CPU pool
	VM2000	CMEAS	CPU utilization measured [%]
		CPLAN	CPU utilization planned [%]
		HACT	Hypervisor active [%]
		HIDL	Hypervisor idle [%]

5.2 UNIX reports and measurement variables

This section contains an overview of all predefined UNIX reports together with the associated measurement variables.
Some measurement variables are not available for all UNIX derivatives.

Report Group	Report Name	Meas. Variable	Description
CPU	DelayInterrupts[/s]	DelayInterrupts[/s] *)	Number of delayed interrupts [/s] for CPU
	IdleTime[%]	IdleTime[%]	Time idle [%] for CPU
	IdleWaitIOTime[%]	IdleWaitIOTime[%]	Time idle with process waiting for block IO [%] for CPU
	Interrupts[/s]	Interrupts[/s] *)	Number of interrupts [/s] for CPU
	ProcessSwitches[/s]	ProcessSwitches[/s]	Process switches [/s] for CPU
	SystemTime[%]	SystemTime[%]	Time running in system mode [%] for CPU
	UserTime[%]	UserTime[%]	Time running in user mode [%] for CPU
	WaitSpinLocks	WaitSpinLocks	Waits due to spin locks for CPU
CPU-Total	Interrupts	DelayInterrupts[/s	Number of delayed interrupts [/s]
		Interrupts[/s]	Number of interrupts [/s]
	Queue	QueueLength	Average number of runnable processes in memory
		Queue[%]	Utilization of cpu queue [%]
	Time	IdleTime[%]	Time idle [%]
		IdleWaitIOTime[%]	Time idle with process waiting for block IO [%]
		SystemTime[%]	Time running in system mode [%]
		UserTime[%]	Time running in user mode [%]
	TotalTime	TotalTime[%]	CPU utilization total [%]
Device	Blocks[/s]	Blocks[/s]	Number of 512-byte blocks transferred [/s] for device
	Busy[%]	Busy[%]	Time device spent servicing a transfer request [%] for device
	QueueLength	QueueLength	Average number of outstanding requests for device
	Reads+Writes[/s]	Reads+Writes[/s]	Number of data transfers [/s] for device
	Reads[/s]	Reads[/s]	Number of read data transfers [/s] for device
	ServiceTime[ms/Tr]	ServiceTime[ms/Tr]	Average service time for transfers [ms/Tr] for device
	WaitTime[ms/Tr]	WaitTime[ms/Tr]	Average wait time for transfers [ms/Tr] for device
	Writes[/s]	Writes[/s]	Number of write data transfers [/s] for device
Device-Total	BlocksReadWritten	Blocks[/s]	Total amount of data transferred to physical disk in 512-byte blocks [/s]
	Reads+Writes	Reads+Writes[/s]	Total number of data transfers to physical disk [/s]
FileSystem	AvailableSpace[kB]	AvailableSpace[kB]	Available disk space [kB] for file system
	FreeSpace[kB]	FreeSpace[kB]	Free disk space [kB] for file system
	TotalSpace[kB]	TotalSpace[kB]	Total disk space [kB] for file system
	UsedSpace[%]	UsedSpace[%]	Used disk space [%] for file system
	UsedSpace[kB]	UsedSpace[kB]	Used disk space [kB] for file system
Memory	Cache	CacheDeviceReads[/s]	Number of 512-byte blocks transferred from disk to system buffers [/s]
		CacheDeviceWrite[/s]	Number of 512-byte blocks transferred from system buffers to disk [/s]
		CacheReadHits[%]	Read cache hit ratio [%]
		CacheReads[/s]	Read accesses to system buffers [/s]
		CacheWriteHits[%]	Write cache hit ratio [%]
		CacheWrites[/s]	Write accesses to system buffers [/s]
		RawDeviceReads[/s]	Number of physical reads [/s]
		RawDeviceWrites[/s]	Number of physical writes [/s]
	Free	MemoryFree[pages]	Average number of pages available to user processes
		SwapFree[blocks]	Disk blocks available for page swapping

	Kernel	LargePoolAllo[bytes]	Number of bytes allocated for requests for large amounts of memory
		LargePoolFails	Number of not satisfied requests for large amounts of memory
		LargePoolSize[bytes]	Number of bytes for large pool
		OversizedAllo[bytes]	Number of bytes allocated for oversize fail requests
		OversizedFails	Number of not satisfied oversize requests
		SmallPoolAllo[bytes]	Number of bytes allocated for requests for small amounts of memory
		SmallPoolFails	Number of not satisfied requests for small amounts of memory
		SmallPoolSize[bytes]	Number of bytes for small pool
	PageIn	AddrTransFaults[/s]	Address translation page faults [/s]
		LockIOFaults[/s]	Faults caused by software lock requests requiring physical IO [/s]
		PageInRequests[/s]	Page-in requests [/s]
		PageReclaims[/s]	Page reclaimings [/s]
		PagesPagedIn[/s]	Pages paged-in [/s]
		ProtErrorsFaults[/s]	Page faults from protection errors [/s]
	PageOut	PageOutRequests[/s]	Page-out requests [/s]
		PagesFreed[/s]	Pages placed on the free list by page stealing daemon [/s]
		PagesPagedOut[/s]	Pages paged-out [/s]
		PagesScanned[/s]	Pages scanned by page stealing daemon [/s]
		S5InodesFreeList[%]	UFS inodes taken off the free list by iget [%]
		UFSInodesFreeList[%]	S5 inodes taken off the free list by iget [%]
	Swap	ProcessSwitches[/s]	Process switches [/s]
		SwapInPages[/s]	Number of 512-byte units transferred for swap-ins [/s]
		SwapInTransfers[/s]	Number of transfers for swap-ins [/s]
		SwapOutPages[/s]	Number of 512-byte units transferred for swap-outs [/s]
		SwapOutTransfers[/s]	Number of transfers for swap-outs [/s]
Net	TCP1 **)3)	DataIn[bytes/s]	Total data received [bytes/s]
		DataOutRetr[%]	OutDataBytes retransmitted [%]
		DataOutRetr[bytes/s]	Total data retransmitted [bytes/s]
		DataOut[bytes/s]	Total data sent [bytes/s]
		ListenDropsDub[/s]	Number of dubious looking listen drops from q0 [/s]
		ListenDropsQ0[/s]	Number of incomplete connections dropped from q0 [/s]
		ListenDrops[/s]	Number of connections dropped due to listen overflow [/s]
		OpensActive[/s]	Number of outgoing connections SYN-SENT [/s]
		OpensPassive[/s]	Number of incoming connections SYN-RCVD [/s]
	TCP2 **)3)	DataInDupl[%]	InDataBytes retransmitted [%]
		DataInDupl[bytes/s]	Total data duplicate received [bytes/s]
		FailedSessions[/s]	Number failed sessions [/s]
		Resets[/s]	Number resets generated [/s]
		SegsIn[/s]	Number of segments in [/s]
		SegsOut[/s]	Number of segments out [/s]
	TCP3 **)3)	AcksOut[/s]	Total number of acks sent [/s]
		RetransTimeouts[/s]	Total number of retransmit timeouts [/s]
		SegsFastRetrans[/s]	Total number of segments sent due to fast retransmit [/s]
		SegsInAck[/s]	Total number of ack segments received [/s]
		SegsInDupl[/s]	Total number of complete duplicate data segments received [/s]
		SegsInPartDupl[/s]	Total number of partial duplicate data segments received [/s]

		SegsRetrans[/s]	Total number of segments retransmitted [/s]
		SegsSackRetrans[/s]	Total number of retransmitted segments by SACK retransmission [/s]
		WindowProbesIn[/s]	Total number of zero window probes received [/s]
		WindowProbesOut[/s]	Total number of zero window probes sent [/s]
	TCPReliant1 *)	DataInSequ[/s]	Number of bytes received in sequence [/s]
		PacketsOutAck[/s]	Number of ack-only packets sent [/s]
		PacketsOut[/s]	Number of data packets sent [/s]
		PacketsRetrans[/s]	Number of data packets retransmitted [/s]
		RetransTimeOuts[/s]	Number of retransmit timeouts [/s]
		TotalDataOut[/s]	Total number of data bytes sent [/s]
		TotalPacketsIn[/s]	Total number of packets received [/s]
		TotalPacketsOut[/s]	Total number of packets sent [/s]
	TCPReliant2 *)	PacketsInAck[/s]	Number of rcvd ack packets [/s]
		PacketsInDup[/s]	Number of duplicate-only packets received [/s]
		PacketsInOO[/s]	Number of out-of-order packets received [/s]
		PacketsInPartDup[/s]	Number of packets with some duplicate data [/s]
		PacketsInProbe[/s]	Number of rcvd window probe packets [/s]
		PacketsInSequ[/s]	Number of packets received in sequence [/s]
	UDPInOut 3)	DatagramsIn[/s]	UDP datagrams delivered to UDP users [/s]
		DatagramsOut[/s]	UDP datagrams sent [/s]
NetInterface 2)	CollisionsOut[%]	CollisionsOut[%]	Collisions on output attempt [%] for network interface
	Collisions[/s]	Collisions[/s]	Collisions [/s] for network interface
	DataIn[bytes/s]	DataIn[bytes/s]	Data received [bytes/s] for network interface
	DataOut[bytes/s]	DataOut[bytes/s]	Data transmitted [bytes/s] for network interface
	ErrorsIn[/s]	ErrorsIn[/s]	Input errors [/s] for network interface
	ErrorsOut[/s]	ErrorsOut[/s]	Output errors [/s] for network interface
	PacketsIn[/s]	PacketsIn[/s]	Input packets [/s] for network interface
	PacketsOut[/s]	PacketsOut[/s]	Output packets [/s] for network interface
Process 1)	BlocksRead[/s]	BlocksRead[/s] **)	Number of input blocks [/s] for process
	BlocksWritten[/s]	BlocksWritten[/s] **)	Number of output blocks [/s] for process
	CPUTimePerSwitch[ms]	CPUTimePerSwitch[ms]**)	Average CPU time consumed between each context switch [ms] for process
	CharactersR+W[/s]	CharactersR+W[/s] **)	Number of characters transferred by read and write calls [/s] for process
	ChildSystemTime[%]	ChildSystemTime[%]	Accumulated system time of exited child processes [%] for process
	ChildUserTime[%]	ChildUserTime[%]	Accumulated user time of exited child processes [%] for process
	InvolContextSws[/s]	InvolContextSws[/s] **)	Number of involuntary context switches [/s] for process
	LWP	LWP **)	Number of lwp's for process
	PageFaults[/s]	PageFaults[/s] **)	Number of page faults [/s] for process
	ReceivedMessages[/s]	ReceivedMessages[/s] **)	Number of received messages [/s] for process
	ResidentSize[kB]	ResidentSize[kB]	Resident set size [kB] for process
	SentMessages[/s]	SentMessages[/s] **)	Number of sent messages [/s] for process
	SwapTransfers[/s]	SwapTransfers[/s] **)	Number of swaps [/s] for process
	SystemCalls[/s]	SystemCalls[/s] **)	Number of system calls [/s] for process
	SystemTime[%]	SystemTime[%]	Time running in system mode [%] for process
	UserTime[%]	UserTime[%]	Time running in user mode [%] for process

	VirtualSize[kB]	VirtualSize[kB]	Virtual address space size [kB] for process
	VolContextSws[/s]	VolContextSws[/s] **)	Number of voluntary context switches [/s] for process
StorageAdapter	DataR+W[kB/s]	DataR+W[kB/s]	Data read and written [kB/s] for storage adapter
**)4)	Read+WriteHits[%]	Read+WriteHits[%] 5)	Read and write hits [%] for storage adapter
	Read+WriteHits[/s]	Read+WriteHits[/s] 5)	Number of read and write hits [/s] for storage adapter
	Reads[/s]	Reads[/s]	Number of reads [/s] for storage adapter
	Writes[/s]	Writes[/s]	Number of writes [/s] for storage adapter
StorageArray	DataR+W[kB/s]	DataR+W[kB/s]	Data read and written [kB/s] for storage array
**)4)	DataRead[kB/s]	DataRead[kB/s]	Data read [kB/s] for storage array
	DataWritten[kB/s]	DataWritten[kB/s]	Data written [kB/s] for storage array
	ReadHits[%]	ReadHits[%] 5)	Read hits [%] for storage array
	ReadHits[/s]	ReadHits[/s] 5)	Number of read hits [/s] for storage array
	Reads[/s]	Reads[/s]	Number of reads [/s] for storage array
	WriteHits[%]	WriteHits[%] 5)	Write hits [%] for storage array
	WriteHits[/s]	WriteHits[/s] 5)	Number of write hits [/s] for storage array
	Writes[/s]	Writes[/s]	Number of writes [/s] for storage array
StorageDevice	DataR+W[kB/s]	DataR+W[kB/s]	Data read and written [kB/s] for storage device
**)4)	DataRead[kB/s]	DataRead[kB/s]	Data read [kB/s] for storage device
	DataWritten[kB/s]	DataWritten[kB/s]	Data written [kB/s] for storage device
	ReadHits[%]	ReadHits[%]	Read hits [%] for storage device
	ReadHits[/s]	ReadHits[/s]	Number of read hits [/s] for storage device
	Reads[/s]	Reads[/s]	Number of reads [/s] for storage device
	WriteHits[%]	WriteHits[%]	Write hits [%] for storage device
	WriteHits[/s]	WriteHits[/s]	Number of write hits [/s] for storage device
	Writes[/s]	Writes[/s]	Number of writes [/s] for storage device
StorageDisk	DataR+W[kB/s]	DataR+W[kB/s]	Data read and written [kB/s] for storage disk
**)4)	DataRead[kB/s]	DataRead[kB/s] 5)	Data read [kB/s] for storage disk
	DataWritten[kB/s]	DataWritten[kB/s] 5)	Data written [kB/s] for storage disk
	Reads[/s]	Reads[/s]	Number of reads [/s] for storage disk
	Writes[/s]	Writes[/s]	Number of writes [/s] for storage disk
System	FileAccesses	DirBlockReads[/s]	Number of read S5 directory blocks [/s]
		IgetCalls[/s]	Number of files located by inode entry [/s]
		NameiCalls[/s]	Number of file system path searches [/s]
	Messages	MessageOps[/s]	Number of message operations [/s]
		SemaphoreOps[/s]	Number of semaphore operations [/s]
	SystemCalls	ExecCalls[/s]	Exec system calls [/s]
		ForkCalls[/s]	Fork system calls [/s]
		ReadCallsData[/s]	Characters transferred by read() [/s]
		ReadCalls[/s]	Read system calls [/s]
		SystemCalls[/s]	All types of system calls [/s]
		WriteCallsData[/s]	Characters transferred by write() [/s]
		WriteCalls[/s]	Write system calls [/s]
	SystemTable1	InodeTabMaxEntries	Max number of entries in inode table
		InodeTabOver	Overflows for inode table
		InodeTabUsedEntries	Number of entries in inode table
		ProcTabMaxEntries	Max number of entries in process table
		ProcTabOver	Overflows for process table
		ProcTabUsedEntries	Number of entries in process table
	SystemTable2	FileTabMaxEntries	Max number of entries in file table
		FileTabOver	Overflows for file table
		FileTabUsedEntries	Number of entries in file table
		LockTabMaxEntries	Max number of entries in lock table
		LockTabUsedEntries	Number of entries in lock table
	TTY	InputCharsCanon[/s]	Input characters processed by canon

			[/s]
		InputChars[/s]	Input characters [/s]
		ModemInterrupts[/s]	Modem interrupts [/s]
		OutputChars[/s]	Output characters [/s]
		RecInterrupts[/s]	Receiver hardware interrupts [/s]
		TransmInterrupts[/s]	Transmitter hardware interrupts [/s]
WorkloadClass	BlocksRead[/s]	BlocksRead[/s] **)	Number of input blocks [/s] for workload class
1)	BlocksWritten[/s]	BlocksWritten[/s] **)	Number of output blocks [/s] for workload class
	CPUTimePerSwitch[ms]	CPUTimePerSwitch[ms]**)	Average CPU time consumed between each context switch [ms] for workload class
	CharactersR+W[/s]	CharactersR+W[/s] **)	Number of characters transferred by read and write calls [/s] for workload class
	ChildSystemTime[%]	ChildSystemTime[%]	Accumulated system time of exited child processes [%] for workload class
	ChildUserTime[%]	ChildUserTime[%]	Accumulated user time of exited child processes [%] for workload class
	InvolContextSws[/s]	InvolContextSws[/s] **)	Number of involuntary context switches [/s] for workload class
	LWP	LWP **)	Number of lwp's for workload class
	PageFaults[/s]	PageFaults[/s] **)	Number of page faults [/s] for workload class
	ReceivedMessages[/s]	ReceivedMessages[/s] **)	Number of received messages [/s] for workload class
	ResidentSize[kB]	ResidentSize[kB]	Resident set size [kB] for workload class
	SentMessages[/s]	SentMessages[/s] **)	Number of sent messages [/s] for workload class
	SwapTransfers[/s]	SwapTransfers[/s] **)	Number of swaps [/s] for workload class
	SystemCalls[/s]	SystemCalls[/s] **)	Number of system calls [/s] for workload class
	SystemTime[%]	SystemTime[%]	Time running in system mode [%] for workload class
	UserTime[%]	UserTime[%]	Time running in user mode [%] for workload class
	VirtualSize[kB]	VirtualSize[kB]	Virtual address space size [kB] for workload class
	VolContextSws[/s]	VolContextSws[/s] **)	Number of voluntary context switches [/s] for workload class

*) not available on Solaris systems
**) not available on ReliantUNIX systems
1) measurement data for all processes in the system only with root authorization of the servers
2) measurement data on ReliantUNIX systems only with root authorization of the servers
3) measurement data only with root authorization of the servers
4) measurement data are provided for Symmetrix and CLARiiON / FibreCAT storage systems
5) measurement data not available for CLARiiON / FibreCAT

Solaris systems:
- Storage data are only provided if the agent is started under a user ID with the authorization to execute the command "format".
- No process data for 64-bit processes are supplied.

5.3 Linux reports and measurement variables

This section contains an overview of all predefined Linux reports together with the associated measurement variables.
Some measurement variables are not available for all Linux kernel versions.

Report Group	Report Name	Meas. Variable	Description
CPU	IdleTime[%]	IdleTime[%]	CPU idle time [%] for CPU
	IdleWaitIOTime[%]	IdleWaitIOTime[%]	CPU idle time during which the system had an outstanding disk I/O request [%] for CPU
	Interrupt000[/s]	Interrupt000[/s] *)	Number of interrupts [/s] for CPU
	Interrupt001[/s]	Interrupt001[/s] *)	Number of interrupts [/s] for CPU
	Interrupt002[/s]	Interrupt002[/s] *)	Number of interrupts [/s] for CPU
	Interrupt003[/s]	Interrupt003[/s] *)	Number of interrupts [/s] for CPU
	Interrupt004[/s]	Interrupt004[/s] *)	Number of interrupts [/s] for CPU
	Interrupt005[/s]	Interrupt005[/s] *)	Number of interrupts [/s] for CPU
	Interrupt006[/s]	Interrupt006[/s] *)	Number of interrupts [/s] for CPU
	Interrupt007[/s]	Interrupt007[/s] *)	Number of interrupts [/s] for CPU
	Interrupt008[/s]	Interrupt008[/s] *)	Number of interrupts [/s] for CPU
	Interrupt009[/s]	Interrupt009[/s] *)	Number of interrupts [/s] for CPU
	Interrupt010[/s]	Interrupt010[/s] *)	Number of interrupts [/s] for CPU
	Interrupt011[/s]	Interrupt011[/s] *)	Number of interrupts [/s] for CPU
	Interrupt012[/s]	Interrupt012[/s] *)	Number of interrupts [/s] for CPU
	Interrupt013[/s]	Interrupt013[/s] *)	Number of interrupts [/s] for CPU
	Interrupt014[/s]	Interrupt014[/s] *)	Number of interrupts [/s] for CPU
	Interrupt015[/s]	Interrupt015[/s] *)	Number of interrupts [/s] for CPU
	NiceTime[%]	NiceTime[%]	CPU utilization at user level with nice priority [%] for CPU
	SystemTime[%]	SystemTime[%]	CPU utilization at system level (kernel) [%] for CPU
	UserTime[%]	UserTime[%]	CPU utilization at user level (application) [%] for CPU
CPU-Total	ContextSwitches	ContextSwitches[/s]	Total number of context switches [/s]
	Interrupts	Interrupts[/s]	Total number of interrupts received [/s]
	Queue	LoadAverage1	System load average for the last minute
		LoadAverage15	System load average for the past 15 minutes
		LoadAverage5	System load average for the past 5 minutes
		ProcessListLength	Number of processes in the process list
		QueueLength	Number of processes waiting for run time
	Time	IdleTime[%]	CPU idle time [%]
		IdleWaitIOTime[%]	CPU idle time during which the system had an outstanding disk I/O request [%]
		NiceTime[%]	CPU utilization at user level with nice priority [%]
		SystemTime[%]	CPU utilization at system level (kernel) [%]
		UserTime[%]	CPU utilization at user level (application) [%]
	TotalTime	TotalTime[%]	CPU utilization total [%]
Device	Blocks[/s]	Blocks[/s] *)	Number of blocks transferred [/s] for device
	CPUUtilization[%]	CPUUtilization[%] *)	CPU utilization during I/O requests [%] for device
	QueueLength	QueueLength *)	Average queue length of the transfers for device
	Reads+Writes[/s]	Reads+Writes[/s] *)	Number of transfers issued [/s] for device
	RequestSize[Sectors]	RequestSize[Sectors] *)	Average size of the transfers [sectors] for device
	SectorsRead[/s]	SectorsRead[/s] *)	Number of sectors read [/s] from device
	SectorsWritten[/s]	SectorsWritten[/s] *)	Number of sectors written [/s] to device
	Sectors[/s]	Sectors[/s] *)	Number of sectors transferred [/s] for

			device
	ServiceTime[ms/Tr]	ServiceTime[ms/Tr] *)	Average service time for transfers [ms/Tr] for device
	Time[ms/Tr]	Time[ms/Tr] *)	Average (round trip) time for transfers [ms/Tr] for device
Device-Total	IO	BlocksRead[/s]	Total amount of data read from drive in blocks [/s]
		BlocksWritten[/s]	Total amount of data written to drive in blocks [/s]
		Reads+Writes[/s]	Total number of transfers to physical disk [/s]
		Reads[/s]	Total number of read transfers from physical disk [/s]
		Writes[/s]	Total number of write transfers to physical disk [/s]
Memory	Pages	PagesCached[/s]	Number of additional memory pages cached by the system [/s]
		PagesForBuffer[/s]	Number of additional memory pages used as buffers by the system [/s]
		PagesFreed[/s]	Number of memory pages freed by the system [/s]
		PagesShared[/s]	Number of additional memory pages shared by the system [/s]
	Paging	BlocksPagedIn[/s]	Total number of blocks paged in from disk [/s]
		BlocksPagedOut[/s]	Total number of blocks paged out to disk [/s]
		MajorPageFaults[/s]	Number of major faults made by the system [/s], which have required loading a memory page from disk
		PageFaults[/s]	Number of page faults (major + minor) made by the system [/s]
		PagesActive	Number of active (recently touched) pages in memory
		PagesInactiveClean	Number of inactive clean (not modified) pages in memory
		PagesInactiveDirty	Number of inactive dirty (modified or potentially modified) pages in memory
		PagesInactiveStolen	Number of 'stolen' pages in order to satisfy memory demand [/s]
	Swap	SwapInPages[/s]	Total number of swap pages brought in [/s]
		SwapOutPages[/s]	Total number of swap pages brought out [/s]
	Utilization	MemoryForBuffer[kB]	Amount of memory used as buffers by the kernel [kB]
		MemoryForCache[kB]	Amount of memory used to cache data by the kernel [kB]
		MemoryFree[kB]	Amount of free memory available [kB]
		MemoryShared[kB]	Amount of memory shared by the system [kB]
		MemoryUsed[%]	Used memory [%]
		MemoryUsed[kB]	Amount of used memory [kB]
		SwapCached[kB]	Amount of cached swap memory [kB]
		SwapFree[kB]	Amount of free swap space [kB]
		SwapUsed[%]	Used swap space [%]
		SwapUsed[kB]	Amount of used swap space [kB]
Net	NFSClient	RPCsAccess[/s]	Number of access RPC calls [/s]
		RPCsGetAttr[/s]	Number of getattr RPC calls [/s]
		RPCsRead[/s]	Number of read RPC calls [/s]
		RPCsRetrans[/s]	Number of retransmitted RPC requests [/s]
		RPCsWrite[/s]	Number of write RPC calls [/s]
		RPCs[/s]	Number of RPC requests [/s]
	NFSServer	PacketsIn[/s]	Number of network packets receive [/s]
		PacketsTCP[/s]	Number of TCP packets receive [/s]
		PacketsUDP[/s]	Number of UDP packets receive [/s]
		RPCsInAccess[/s]	Number of access RPC calls received

			[/s]
		RPCsInError[/s]	Number of bad RPC requests receive [/s]
		RPCsInGetAttr[/s]	Number of getattr RPC calls received [/s]
		RPCsInRead[/s]	Number of read RPC calls received [/s]
		RPCsInWrite[/s]	Number of write RPC calls received [/s]
		RPCsIn[/s]	Number of RPC requests receive [/s]
		ReplyCacheHits[/s]	Number of reply cache hits [/s]
		ReplyCacheMiss[/s]	Number of reply cache misses [/s]
	Socket	IPFragments	Number of IP fragments currently in use
		Sockets	Total number of used sockets
		SocketsRaw	Number of RAW sockets currently in use
		SocketsTCP	Number of TCP sockets currently in use
		SocketsUDP	Number of UDP sockets currently in use
NetInterface	CollisionsOut[/s]	CollisionsOut[/s]	Number of collisions while transmitting packets [/s] for network interface
	DataIn[bytes/s]	DataIn[bytes/s]	Total number of bytes received [bytes/s] for network interface
	DataOut[bytes/s]	DataOut[bytes/s]	Total number of bytes transmitted [bytes/s] for network interface
	PacketInAlignErr[/s]	PacketInAlignErr[/s]	Number of frame alignment errors on received packets [/s] for network interface
	PacketInErr[/s]	PacketInErr[/s]	Total number of bad packets [/s] for network interface
	PacketInFIFOErr[/s]	PacketInFIFOErr[/s]	Number of FIFO overrun errors on received packets [/s] for network interface
	PacketOutCarrErr[/s]	PacketOutCarrErr[/s]	Number of carrier-errors while transmitting packets [/s] for network interface
	PacketOutErr[/s]	PacketOutErr[/s]	Total number of errors while transmitting packets [/s] for network interface
	PacketOutFIFOErr[/s]	PacketOutFIFOErr[/s]	Number of FIFO overrun errors on transmitted packets [/s] for network interface
	PacketsComprIn[/s]	PacketsComprIn[/s]	Number of compressed packets received (for cslip etc.) [/s] for network interface
	PacketsComprOut[/s]	PacketsComprOut[/s]	Number of compressed packets transmitted [/s] for network interface
	PacketsInDrop[/s]	PacketsInDrop[/s]	Number of received packets dropped due to buffer shortage [/s] for network interface
	PacketsIn[/s]	PacketsIn[/s]	Total number of packets received [/s] for network interface
	PacketsMulcastIn[/s]	PacketsMulcastIn[/s]	Number of multicast packets received [/s] for network interface
	PacketsOutDrop[/s]	PacketsOutDrop[/s]	Number of transmitted packets dropped due to buffer shortage [/s] for network interface
	PacketsOut[/s]	PacketsOut[/s]	Total number of packets transmitted [/s] for network interface
Process	ChildMajPgFaults[/s]	ChildMajPgFaults[/s]	Number of major page faults of exited child processes [/s] for process
	ChildMinPgFaults[/s]	ChildMinPgFaults[/s]	Number of minor page faults of exited child processes [/s] for process
	ChildSystemTime[%]	ChildSystemTime[%]	Accumulated system time of exited child processes [%] for process
	ChildUserTime[%]	ChildUserTime[%]	Accumulated user time of exited child processes [%] for process
	CodeSize[kB]	CodeSize[kB]	Code Size [kB] for process
	DataSize[kB]	DataSize[kB]	Data Size [kb] for process
	LWP	LWP	Number lwps for process
	MajPageFaults[/s]	MajPageFaults[/s]	Number of major page faults [/s] for

			process
	MemorySize[kB]	MemorySize[kB]	Memory size [kB] for process
	MemoryUsage[%]	MemoryUsage[%]	Currently used share of physical memory [%] for process
	MinPageFaults[/s]	MinPageFaults[/s]	Number of minor page faults [/s] for process
	ResidentSize[kB]	ResidentSize[kB]	Resident size [kb] for process
	SharedMemory[kB]	SharedMemory[kB]	Shared Memory [kB] for process
	SwappedOutMemory[kB]	SwappedOutMemory[kB]	Swapped out portion of virtual memory image [kB] for process
	SystemTime[%]	SystemTime[%]	Time running in system mode [%] for process
	UserTime[%]	UserTime[%]	Time running in user mode [%] for process
	VirtualMemory[kB]	VirtualMemory[kB]	Virtual memory [kB] used by process
System	KernelTables	DiskQuotaEntrs	Number of allocated disk quota entries
		DiskQuotaEntrs[%]	Allocated disk quota entries [%]
		QueuedRTSignals	Number of queued RT signals
		QueuedRTSignals[%]	Queued RT signals [%]
		SuperBlockHandlrs	Number of super block handlers allocated by the kernel
		SuperBlockHandlrs[%]	Allocated super block handlers [%]
		UnusedDirCacheEntrs	Number of unused cache entries in the directory cache
		UsedFileHandles	Number of used file handles
		UsedFileHandles[%]	Used file handles [%]
		UsedInodeHandlrs	Number of used inode handlers
	ProcessCreates	ProcessCreates[/s]	Total number of processes created [/s]
	TTYRecInterr[/s]	TTYRecInterr[/s]	Number of receive interrupts for current serial line [/s] for TTY
	TTYTransInterr[/s]	TTYTransInterr[/s]	Number of transmit interrupts for current serial line [/s] for TTY
WorkloadClass	ChildMajPgFaults[/s]	ChildMajPgFaults[/s]	Number of major page faults of exited child processes [/s] for workload class
	ChildMinPgFaults[/s]	ChildMinPgFaults[/s]	Number of minor page faults of exited child processes [/s] for workload class
	ChildSystemTime[%]	ChildSystemTime[%]	Accumulated system time of exited child processes [%] for workload class
	ChildUserTime[%]	ChildUserTime[%]	Accumulated user time of exited child processes [%] for workload class
	CodeSize[kB]	CodeSize[kB]	Code Size [kB] for workload class
	DataSize[kB]	DataSize[kB]	Data Size [kb] for workload class
	LWP	LWP	Number lwps for workload class
	MajPageFaults[/s]	MajPageFaults[/s]	Number of major page faults [/s] for workload class
	MemorySize[kB]	MemorySize[kB]	Memory size [kB] for workload class
	MemoryUsage[%]	MemoryUsage[%]	Currently used share of physical memory [%] for workload class
	MinPageFaults[/s]	MinPageFaults[/s]	Number of minor page faults [/s] for workload class
	ResidentSize[kB]	ResidentSize[kB]	Resident size [kb] for workload class
	SharedMemory[kB]	SharedMemory[kB]	Shared Memory [kB] for workload class
	SwappedOutMemory[kB]	SwappedOutMemory[kB]	Swapped out portion of virtual memory image [kB] for workload class
	SystemTime[%]	SystemTime[%]	Time running in system mode [%] for workload class
	UserTime[%]	UserTime[%]	Time running in user mode [%] for workload class
	VirtualMemory[kB]	VirtualMemory[kB]	Virtual memory [kB] used by workload class

*) not available on s390 systems

5.4 Windows reports and measurement variables

This section contains an overview of all predefined Windows reports together with the associated measurement variables.

Report Group	Report Name	Measurement Variable	Description
CPU	CurrDPCRate	CurrDPCRate	Current number of deferred procedure calls (DPCs) added to the processor's DPC queue for CPU
	DPCTime[%]	DPCTime[%]	Processor time receiving and servicing deferred procedure calls (DPCs) [%] for CPU
	DPCsQd[/s]	DPCsQd[/s]	Number of deferred procedure calls (DPCs) added to the processor's DPC queue [/s] for CPU
	IdleTime[%]	IdleTime[%] **)	Processor idle time [%] for CPU
	InterruptTime[%]	InterruptTime[%]	Processor time receiving and servicing hardware interrupts [%] for CPU
	Interrupts[/s]	Interrupts[/s]	Number of hardware interrupts [/s] for CPU
	PrivilegedTime[%]	PrivilegedTime[%]	Processor time privileged mode [%] for CPU
	TotalTime[%]	TotalTime[%]	Processor time executing a non-Idle thread [%] for CPU
	UserTime[%]	UserTime[%]	Processor time user mode [%] for CPU
CPU-Total	Incidents	DPCsQd[/s]	Number of deferred procedure calls (DPCs) added to the processor's DPC queue [/s]
		Interrupts[/s]	Number of hardware interrupts [/s]
	Time	IdleTime[%] **)	Processor idle time [%]
		InterruptTime[%]	Processor time receiving and servicing hardware interrupts [%]
		PrivilegedTime[%]	Processor time privileged mode [%]
		UserTime[%]	Processor time user mode [%]
	TotalTime	TotalTime[%]	Processor time executing a non-Idle thread [%]
Cache	CopyReads	AsyncCopyReads[/s]	Number of asynch. reads from file system cache involving a copy from cache to appl. buffer [/s]
		CopyReads[/s]	Number of reads from file system cache involving a copy from cache to appl. buffer [/s]
		SyncCopyReads[/s]	Number of synch. reads from file system cache involving a copy from cache to appl. buffer [/s]
	DataMapping	AsyncDataMaps[/s]	Number of pages mapped asynch. into file system cache to read the page [/s]
		DataMaps[/s]	Number of pages mapped into file system cache to read the page [/s]
		SyncDataMaps[/s]	Number of pages mapped synch. into file system cache to read the page [/s]
	Hits	CopyReadHits[%]	Cache copy read hit requests [%]
		DataMapHits[%]	Mapped pages in file system cache without retrieving a page from the disk [%]
		MDLReadHits[%]	Memory Descriptor List (MDL) read hit requests to file system cache [%]
		PinReadHits[%]	Pin read requests that hit file system cache [%]
	MDLReads	AsyncMDLReads[/s]	Number of asynch. reads from file system cache that use a Memory Descriptor List (MDL) [/s]
		MDLReads[/s]	Number of reads from file system cache that use a Memory Descriptor List (MDL) [/s]
		SyncMDLReads[/s]	Number of synch. reads from file system cache that use a Memory Descriptor List (MDL) [/s]

	Miscellaneous	AsyncFastReads[/s]	Number of asynch. fast reads from file system cache retrieving the data directly from cache [/s]
		DataFlushPages[/s]	Number of pages the file system cache has flushed to disk [/s]
		DataFlushes[/s]	Number of operations the file system cache has flushed its contents to disk [/s]
		FastReadNotPoss[/s]	Number of attempts by API calls to get to data in file system cache invoking the file system [/s]
		FastReadResMiss[/s]	Number of cache misses necessitated by lack of available resources to satisfy the request [/s]
		FastReads[/s]	Number of fast reads from file system cache retrieving the data directly from cache [/s]
		LazyWriteFlushes[/s]	Number of writes to disk from Lazy Writer thread [/s]
		LazyWritePages[/s]	Number of pages written to disk from Lazy Writer thread [/s]
		ReadAheads[/s]	Number of reads from file system cache in which the cache detects sequential access to a file [/s]
		SyncFastReads[/s]	Number of synch. fast reads from file system cache retrieving the data directly from cache [/s]
	Pins	AsyncPinReads[/s]	Number of asynch. reads into file system cache preparatory to writing the data back to disk [/s]
		DataMapPins[/s]	Number of pages mapped into file system cache that resulted in pinning a page in main memory [/s]
		PinReads[/s]	Number of reads into file system cache preparatory to writing the data back to disk [/s]
		SyncPinReads[/s]	Number of synch. reads into file system cache preparatory to writing the data back to disk [/s]
JobObject	CurrKernelTime[%]	CurrKernelTime[%]	Processor time spent executing code in kernel mode [%] for object
	CurrProcTime[%]	CurrProcTime[%]	Processor time spent executing code [%] for object
	CurrUserTime[%]	CurrUserTime[%]	Processor time spent executing code in user mode [%] for object
	Pages[/s]	Pages[/s]	Number of page faults of all processes in the Job object [/s] for object
	ProcessCntActive	ProcessCntActive	Current number of processes associated with the Job object for object
	ProcessCntTerminated	ProcessCntTerminated	Total number of processes terminated because of a limit violation for object
	ProcessCntTotal	ProcessCntTotal	Total number of processes (active,terminated) in the Job object for object
	ThisPerPrivTime[ms]	ThisPerPrivTime[ms]	Processor kernel mode time used by all processes in the Job object [ms] for object
	ThisPerProcTime[ms]	ThisPerProcTime[ms]	Processor time used by all processes in the Job object [ms] for object
	ThisPerUserTime[ms]	ThisPerUserTime[ms]	Processor user mode time used by all processes in the Job object [ms] for object
	TotalPrivTime[ms]	TotalPrivTime[ms]	Total kernel mode processor time used by all processes in the Job object [ms] for object
	TotalProcTime[ms]	TotalProcTime[ms]	Total processor time used by all processes in the Job object [ms] for object

	TotalUserTime[ms]	TotalUserTime[ms]	Total user mode processor time used by all processes in the Job object [ms] for object
JobObjectDetail	Handles	Handles	Current number of handles open for process
	IODataOps[/s]	IODataOps[/s]	Number of read and write I/O operations [/s] for process
	IOData[kB/s]	IOData[kB/s]	Data read and written in I/O operations [kB/s] for process
	IOOtherData[kB/s]	IOOtherData[kB/s]	Data transferred for I/O operations without e.g. control operations [kB/s] for process
	IOOtherOps[/s]	IOOtherOps[/s]	Number of I/O operations that are neither a read or a write operation [/s] for process
	IOReadData[kB/s]	IOReadData[kB/s]	Data read from I/O operations [kB/s] for process
	IOReadOps[/s]	IOReadOps[/s]	Number of read I/O operations [/s] for process
	IOWriteData[kB/s]	IOWriteData[kB/s]	Data written to I/O operations [kB/s] for process
	IOWriteOps[/s]	IOWriteOps[/s]	Number of write I/O operations [/s] for process
	PageFaults[/s]	PageFaults[/s]	Number of page faults [/s] for process
	PageFileData[MB]	PageFileData[MB]	Current data used in the paging file(s) [MB] for process
	PoolNonpgData[MB]	PoolNonpgData[MB]	Current data in the nonpaged pool (nonpageable memory) [MB] for process
	PoolPagedData[MB]	PoolPagedData[MB]	Current data in the paged pool (pageable memory) [MB] for process
	PrivateData[MB]	PrivateData[MB]	Current data allocated that cannot be shared with others [MB] for process
	PrivilegedTime[%]	PrivilegedTime[%]	Processor time spent executing code in privileged mode [%] for process
	Threads	Threads	Current number of threads active for process
	TotalTime[%]	TotalTime[%]	Processor time spent executing code [%] for process
	UserTime[%]	UserTime[%]	Processor time spent executing code in user mode [%] for process
	VirtualData[MB]	VirtualData[MB]	Current virtual address space size [MB] for process
	WorkingSet[MB]	WorkingSet[MB]	Current Working Set [MB] for process
LogicalDisk	AvgQLen	AvgQLen	Average number of queued read and write requests for logical partition
	AvgReadQLen	AvgReadQLen	Average number of queued read requests for logical partition
	AvgWriteQLen	AvgWriteQLen	Average number of queued write requests for logical partition
	BusyRead[%]	BusyRead[%] *)	Time busy for read requests [%] for logical partition
	BusyWrite[%]	BusyWrite[%] *)	Time busy for write requests [%] for logical partition
	Busy[%]	Busy[%] *)	Time busy for read and write requests [%] for logical partition
	CurrQLen	CurrQLen	Current number of requests outstanding for logical partition
	DataRateRead[kB/s]	DataRateRead[kB/s]	Transferred data for read operations [kB/s] for logical partition
	DataRateWrite[kB/s]	DataRateWrite[kB/s]	Transferred data for write operations [kB/s] for logical partition
	DataRate[kB/s]	DataRate[kB/s]	Transferred data for read and write operations [kB/s] for logical partition
	DataTransferR[kB/Rd]	DataTransferR[kB/Rd]	Transferred data per read operation [kB/Read] for logical partition
	DataTransferW[kB/Wr]	DataTransferW[kB/Wr]	Transferred data per write operation [kB/Write] for logical partition

	DataTransfer[kB/Tr]	DataTransfer[kB/Tr]	Transferred data per read and write operation [kB/Transfer] for logical partition
	FreeSpace[%]	FreeSpace[%]	Current free space available [%] for logical partition
	FreeSpace[GB]	FreeSpace[GB]	Current free space available [GB] for logical partition
	Idle[%]	Idle[%]	Time idle [%] for logical partition
	SplitIOs[/s]	SplitIOs[/s]	Number IOs splitted into multiple IOs [/s] for logical partition
	TimeRead[ms/Read]	TimeRead[ms/Read]	Time per read transfer [ms/Read] for logical partition
	TimeWrite[ms/Write]	TimeWrite[ms/Write]	Time per write transfer [ms/Write] for logical partition
	Time[ms/Tr]	Time[ms/Tr]	Time per read and write transfer [ms/Transfer] for logical partition
	TransfersRead[/s]	TransfersRead[/s]	Number of read operations [/s] for logical partition
	TransfersWrite[/s]	TransfersWrite[/s]	Number of write operations [/s] for logical partition
	Transfers[/s]	Transfers[/s]	Number of read and write operations [/s] for logical partition
LogicalDisk-Total	BusyTime	BusyRead[%] *)	Time busy for read requests [%]
		BusyWrite[%] *)	Time busy for write requests [%]
		Busy[%] *)	Time busy for read and write requests [%]
		Idle[%]	Time idle [%]
	DataRate	DataRateRead[kB/s]	Transferred data for read operations [kB/s]
		DataRateWrite[kB/s]	Transferred data for write operations [kB/s]
		DataRate[kB/s]	Transferred data for read and write operations [kB/s]
	DataTransfer	DataTransferR[kB/Rd]	Transferred data per read operation [kB/Read]
		DataTransferW[kB/Wr]	Transferred data per write operation [kB/Write]
		DataTransfer[kB/Tr]	Transferred data per read and write operation [kB/Transfer]
	Queue	AvgQLen	Average number of queued read and write requests
		AvgReadQLen	Average number of queued read requests
		AvgWriteQLen	Average number of queued write requests
	TransferTime	TimeRead[ms/Read]	Time per read transfer [ms/Read]
		TimeWrite[ms/Write]	Time per write transfer [ms/Write]
		Time[ms/Tr]	Time per read and write transfer [ms/Transfer]
	Transfers	TransfersRead[/s]	Number of read operations [/s]
		TransfersWrite[/s]	Number of write operations [/s]
		Transfers[/s]	Number of read and write operations [/s]
Memory	MemoryAmount	AvailPhysMem[MB]	Current amount of physical memory available to processes [MB]
		CommitLimit[MB]	Current amount of virtual memory that can be committed [MB]
		CommittedData[MB]	Current amount of committed virtual memory [MB]
	Miscellaneous	CommittedBytesUse[%]	Current amount of committed virtual memory [%]
		FreeSysPagTableEntr	Current number of unused page table entries
		SystemCodeTotal[MB]	Current size of pageable operating system code in virtual memory [MB]
		SystemDrvTotal[MB]	Current size of pageable virtual memory being used by device drivers [MB]

	PageFaults	CacheFaults[/s]	Number of faults which occur when a page must be retrieved from memory or disk [/s]
		DemandZeroFaults[/s]	Number of page faults that require a zeroed page to satisfy the fault [/s]
		PageFaults[/s]	Number of page faults [/s]
		TransPagesRePurp[/s]	Number of transition cache pages reused for a different purpose [/s]
		TransitionFaults[/s]	Number of page faults resolved by recovering pages [/s]
		WriteCopies[/s]	Number of page faults caused by attempts to write satisfied by coping the page in memory [/s]
	Paging	PageReads[/s]	Number of times the disk was read to resolve hard page faults [/s]
		PageWrites[/s]	Number of page write operations to disk to free up space in physical memory [/s]
		PagesInput[/s]	Number of pages read from disk to resolve hard page faults [/s]
		PagesOutput[/s]	Number of pages written to disk to free up space in physical memory [/s]
		Pages[/s]	Number of pages read from or written to disk to resolve hard page faults [/s]
	PoolAllocs	PoolNonpagAllocs[/s]	Current number of calls to allocate space in the nonpaged pool [/s]
		PoolPagedAllocs[/s]	Current number of calls to allocate space in the paged pool [/s]
	PoolData	PoolNonpgData[MB]	Current data in the nonpaged pool (nonpageable memory) [MB]
		PoolPagedData[MB]	Current data in the paged pool (pageable memory) [MB]
	Resident	CacheData[MB]	Current cache resident memory [MB]
		PoolPagedResd[MB]	Current size of paged pool [MB]
		SystemCacheResd[MB]	Current size of pageable operating system code in the file system cache [MB]
		SystemCodeResd[MB]	Current size of operating system code that can be written to disk [MB]
		SystemDrvResd[MB]	Current size of pageable physical memory being used by device drivers [MB]
NetInterface	CurrBandwdth[Mbit/s]	CurrBandwdth[Mbit/s]	Current interface bandwidth (Mbit/s) for network interface
	CurrOutputQLen	CurrOutputQLen	Current length of the output packet queue (packets) for network interface
	PacketsOutbndDiscrd	PacketsOutbndDiscrd	Total number of outbound packets without errors discarded for network interface
	PacketsOutbndErrors	PacketsOutbndErrors	Total number of outbound packets with errors discarded for network interface
	RecData[kB/s]	RecData[kB/s]	Data received (including framing characters) [kB/s] for network interface
	RecPacketsDiscrd[/s]	RecPacketsDiscrd[/s]	Number of inbound packets without errors discarded [/s] for network interface
	RecPacketsErrors	RecPacketsErrors	Total number of inbound packets with errors discarded for network interface
	RecPacketsNonUni[/s]	RecPacketsNonUni[/s]	Number of received non-unicast packets [/s] for network interface
	RecPacketsUni[/s]	RecPacketsUni[/s]	Number of received unicast packets [/s] for network interface
	RecPacketsUnknown	RecPacketsUnknown	Total number of inbound packets with unknown protocol discarded for network interface
	RecPackets[/s]	RecPackets[/s]	Number of packets received [/s] for network interface
	SentData[kB/s]	SentData[kB/s]	Data sent (including framing

			characters) [kB/s] for network interface
	SentPacketsNoUni[/s]	SentPacketsNoUni[/s]	Number of requests to sent packets to non-unicast addresses [/s] for network interface
	SentPacketsUni[/s]	SentPacketsUni[/s]	Number of requests to sent packets to unicast addresses [/s] for network interface
	SentPackets[/s]	SentPackets[/s]	Number of packets sent [/s] for network interface
	TotalData[kB/s]	TotalData[kB/s]	Data sent and received (including framing characters) [kB/s] for network interface
	TotalPackets[/s]	TotalPackets[/s]	Number of packets sent and received [/s] for network interface
Objects	Global	Events	Current number of events
		Mutexes	Current number of mutexes
		Processes	Current number of processes
		Sections	Current number of sections
		Semaphores	Current number of semaphores
		Threads	Current number of threads
PagingFile	Usage[%]	Usage[%]	Current usage of the Page File [%] for paging file
PhysicalDisk	AvgQLen	AvgQLen	Average number of queued read and write requests for disk drive
	AvgReadQLen	AvgReadQLen	Average number of queued read requests for disk drive
	AvgWriteQLen	AvgWriteQLen	Average number of queued write requests for disk drive
	BusyRead[%]	BusyRead[%] *)	Time busy for read requests [%] for disk drive
	BusyWrite[%]	BusyWrite[%] *)	Time busy for write requests [%] for disk drive
	Busy[%]	Busy[%] *)	Time busy for read and write requests [%] for disk drive
	CurrQLen	CurrQLen	Current number of requests outstanding for disk drive
	DataRateRead[kB/s]	DataRateRead[kB/s]	Transferred data for read operations [kB/s] for disk drive
	DataRateWrite[kB/s]	DataRateWrite[kB/s]	Transferred data for write operations [kB/s] for disk drive
	DataRate[kB/s]	DataRate[kB/s]	Transferred data for read and write operations [kB/s] for disk drive
	DataTransferR[kB/Rd]	DataTransferR[kB/Rd]	Transferred data per read operation [kB/Read] for disk drive
	DataTransferW[kB/Wr]	DataTransferW[kB/Wr]	Transferred data per write operation [kB/Write] for disk drive
	DataTransfer[kB/Tr]	DataTransfer[kB/Tr]	Transferred data per read and write operation [kB/Transfer] for disk drive
	Idle[%]	Idle[%]	Time idle [%] for disk drive
	SplitIOs[/s]	SplitIOs[/s]	Number IOs splitted into multiple IOs [/s] for disk drive
	TimeRead[ms/Read]	TimeRead[ms/Read]	Time per read transfer [ms/Read] for disk drive
	TimeWrite[ms/Write]	TimeWrite[ms/Write]	Time per write transfer [ms/Write] for disk drive
	Time[ms/Tr]	Time[ms/Tr]	Time per read and write transfer [ms/Transfer] for disk drive
	TransfersRead[/s]	TransfersRead[/s]	Number of read operations [/s] for disk drive
	TransfersWrite[/s]	TransfersWrite[/s]	Number of write operations [/s] for disk drive
	Transfers[/s]	Transfers[/s]	Number of read and write operations [/s] for disk drive
PhysicalDisk-Total	BusyTime	BusyRead[%] *)	Time busy for read requests [%]
		BusyWrite[%] *)	Time busy for write requests [%]
		Busy[%] *)	Time busy for read and write requests [%]
		Idle[%]	Time idle [%]

	DataRate	DataRateRead[kB/s]	Transferred data for read operations [kB/s]
		DataRateWrite[kB/s]	Transferred data for write operations [kB/s]
		DataRate[kB/s]	Transferred data for read and write operations [kB/s]
	DataTransfer	DataTransferR[kB/Rd]	Transferred data per read operation [kB/Read]
		DataTransferW[kB/Wr]	Transferred data per write operation [kB/Write]
		DataTransfer[kB/Tr]	Transferred data per read and write operation [kB/Transfer]
	Queue	AvgQLen	Average number of queued read and write requests
		AvgReadQLen	Average number of queued read requests
		AvgWriteQLen	Average number of queued write requests
	TransferTime	TimeRead[ms/Read]	Time per read transfer [ms/Read]
		TimeWrite[ms/Write]	Time per write transfer [ms/Write]
		Time[ms/Tr]	Time per read and write transfer [ms/Transfer]
	Transfers	TransfersRead[/s]	Number of read operations [/s]
		TransfersWrite[/s]	Number of write operations [/s]
		Transfers[/s]	Number of read and write operations [/s]
PrintQueue	AddNetwPrinterCalls	AddNetwPrinterCalls	Total number of calls from other print servers since last restart for print queue
	CurrJobs	CurrJobs	Current number of jobs for print queue
	CurrJobsSpooling	CurrJobsSpooling	Current number of spooling jobs for print queue
	CurrReferences	CurrReferences	Current number of references (open handles) for print queue
	EnumNetwPrinterCalls	EnumNetwPrinterCalls	Total number of calls from browse clients since last restart for print queue
	JobErrors	JobErrors	Total number of job errors since last restart for print queue
	NotReadyErrors	NotReadyErrors	Total number of printer not ready errors since the last restart for print queue
	OutofPaperErrors	OutofPaperErrors	Total number of out of paper errors since the last restart for print queue
	PrintedData[kB/s]	PrintedData[kB/s]	Data printed [kB/s] for print queue
	TotalJobsPrinted	TotalJobsPrinted	Total number of jobs printed since the last restart for print queue
	TotalPagesPrinted	TotalPagesPrinted	Total number of pages printed through GDI since the last restart for print queue
Process	Handles	Handles	Current number of handles open for process
	IODataOps[/s]	IODataOps[/s]	Number of read and write I/O operations [/s] for process
	IOData[kB/s]	IOData[kB/s]	Data read and written in I/O operations [kB/s] for process
	IOOtherData[kB/s]	IOOtherData[kB/s]	Data transferred for I/O operations without e.g. control operations [kB/s] for process
	IOOtherOps[/s]	IOOtherOps[/s]	Number of I/O operations that are neither a read or a write operation [/s] for process
	IOReadData[kB/s]	IOReadData[kB/s]	Data read from I/O operations [kB/s] for process
	IOReadOps[/s]	IOReadOps[/s]	Number of read I/O operations [/s] for process
	IOWriteData[kB/s]	IOWriteData[kB/s]	Data written to I/O operations [kB/s] for process
	IOWriteOps[/s]	IOWriteOps[/s]	Number of write I/O operations [/s] for

			process
	PageFaults[/s]	PageFaults[/s]	Number of page faults [/s] for process
	PageFileData[MB]	PageFileData[MB]	Current data used in the paging file(s) [MB] for process
	PoolNonpgData[MB]	PoolNonpgData[MB]	Current data in the nonpaged pool (nonpageable memory) [MB] for process
	PoolPagedData[MB]	PoolPagedData[MB]	Current data in the paged pool (pageable memory) [MB] for process
	PrivateData[MB]	PrivateData[MB]	Current data allocated that cannot be shared with others [MB] for process
	PrivilegedTime[%]	PrivilegedTime[%]	Processor time spent executing code in privileged mode [%] for process
	Threads	Threads	Current number of threads active for process
	TotalTime[%]	TotalTime[%]	Processor time spent executing code [%] for process
	UserTime[%]	UserTime[%]	Processor time spent executing code in user mode [%] for process
	VirtualData[MB]	VirtualData[MB]	Current virtual address space size [MB] for process
	WorkingSet[MB]	WorkingSet[MB]	Current Working Set [MB] for process
Redirector	Buffer	ReadPacketsSmall[/s]	Number of read operations with less than 1/4 of the servers negotiated buffer size [/s]
		ReadsLarge[/s]	Number of read operations with over 2 times the server's negotiated buffer size [/s]
		WritePacketsSmal[/s]	Number of write operations with less than 1/4 of the servers negotiated buffer size [/s]
		WritesLarge[/s]	Number of write operations with over 2 times the server's negotiated buffer size [/s]
	Cache	ReadCache[kB/s]	Data read by accessing file system cache (hits and non-hits) [kB/s]
		WriteCache[kB/s]	Data written to file system cache [kB/s]
	Connect	ConnectsCore	Total number of connections to servers running the original MS-Net SMB protocol
		ConnectsLanManager20	Total number of connections to LAN Manager 2.0 servers
		ConnectsLanManager21	Total number of connections to LAN Manager 2.1 servers
		ConnectsWindowsNT	Total number of connections to Windows NT computers
		ServerDisconnects	Total number of disconnects
		ServerReconnects	Total number of reconnects to a server to complete a new active request
	Data	ReadNetwork[kB/s]	Data read across the network [kB/s]
		ReadNonPaging[kB/s]	Data read in response to normal file requests [kB/s]
		RecData[kB/s]	Data received from the network [kB/s]
		SentData[kB/s]	Data transmitted to the network [kB/s]
		TotalData[kB/s]	Data processed (application/file data, protocol information) [kB/s]
		WriteNetwork[kB/s]	Data written across the network [kB/s]
		WriteNonPaging[kB/s]	Data written in response to normal file outputs [kB/s]
	FileOperations	ReadFileOps[/s]	Number of file read operations [/s]
		TotalFileOps[/s]	Number of file data operations [/s]
		WriteFileOps[/s]	Number of file write operations [/s]
	Miscellaneous	CurrCommands	Current number of requests queued for service
		NetwErrors[/s]	Number of serious unexpected errors indicating serious communication difficulties [/s]
		ReadsDenied[/s]	Number of denied raw read requests

			[/s]
		ServerSessions	Total number of security objects managed
		ServerSessionsHung	Total number of active sessions timed out due to a lack of response
		WritesDenied[/s]	Number of denied raw write requests [/s]
	Packets	ReadPackets[/s]	Number of read packets placed on the network [/s]
		RecPackets[/s]	Number of packets (SMBs) recieved from the network [/s]
		TotalPackets[/s]	Number of data packets processed [/s]
		TransPackets[/s]	Number of packets (SMBs) sent to the network [/s]
		WritePackets[/s]	Number of write packets sent to the network [/s]
	Paging	ReadPaging[kB/s]	Data read in response to page faults [kB/s]
		WritePaging[kB/s]	Data written changed in pages being used by applications [kB/s]
	RandomOperations	ReadOpsRandom[/s]	Number of non sequential read operations [/s]
		WriteOpsRandom[/s]	Number of non sequential write operations [/s]
Server	Errors	ErrorsAccPermissions	Total number of times opens on behalf of clients have failed with STATUS_ACCESS_DENIED
		ErrorsGrantedAcc	Total number of times accesses to files opened successfully were denied
		ErrorsLogon	Total number of failed logon attempts
		ErrorsSystem	Total number of times an internal server error was detected
	File	FileDirSearches	Current number of searches for files active
		FilesOpen	Current number of files opened
		FilesOpenedTotal	Total number of successful open attempts performed of behalf of clients
	Miscellaneous	BlockingReqsRejected	Total number of times the server has rejected blocking SMBs
		ContextBlocksQd[/s]	Number of placed work context blocks on FSP queue to await server action [/s]
		LogonTotal	Total number of logons since last boot
		Logon[/s]	Number of all logons [/s]
		WorkItemShortages	Total number of times STATUS_DATA_NOT_ACCEPTED was returned at receive indication time
	NetworkData	RecData[kB/s]	Data received from network [kB/s]
		SentData[kB/s]	Data sent to network [kB/s]
		TotalData[kB/s]	Data sent to and received from network [kB/s]
	Pool	PoolNonpagedFailures	Total number of times allocations from nonpaged pool have failed
		PoolNonpgData[MB]	Current used non-pageable memory [MB]
		PoolPagedData[MB]	Current used pageable memory [MB]
		PoolPagedFailures	Total number of times allocations from paged pool have failed
	Sessions	ServerSessions	Current number of sessions active
		SessionsErroredOut	Total number of sessions closed due to unexpected errors or autodisconnect timeout
		SessionsForcedOff	Total number of sessions forced to logoff
		SessionsLoggedOff	Total number of sessions terminated normally
		SessionsTimedOut	Total number of sessions closed due to idle time exceeding the

			AutoDisconnect parameter
ServerWorkQueue	ActiveThreads	ActiveThreads	Current number of threads working on a request from the server client for queue
	AvailThreads	AvailThreads	Current number of threads not working on requests from a client for queue
	AvailWorkItems	AvailWorkItems	Current number of available work items for queue
	BorrowedWorkItems	BorrowedWorkItems	Current number of borrowed free work items from another CPU for queue
	ContextBlocksQd[/s]	ContextBlocksQd[/s]	Number of placed work context blocks on FSP queue to await server action [/s] for queue
	CurrClients	CurrClients	Current number of the clients being serviced for queue
	QLen	QLen	Current length of server work queue for queue
	ReadData[kB/s]	ReadData[kB/s]	Data read from files for the clients [kB/s] for queue
	ReadOps[/s]	ReadOps[/s]	Number of file read operations for the clients [/s] for queue
	RecData[kB/s]	RecData[kB/s]	Data recieved from network clients [kB/s] for queue
	SentData[kB/s]	SentData[kB/s]	Data sent to network clients [kB/s] for queue
	TotalOps[/s]	TotalOps[/s]	Number of file read and write operations for the clients [/s] for queue
	TotalRWData[kB/s]	TotalRWData[kB/s]	Data read and written to files for the clients [kB/s] for queue
	TotalTransData[kB/s]	TotalTransData[kB/s]	Data received and sent with the network clients [kB/s] for queue
	WorkItemShortages	WorkItemShortages	Current number of work item shortages for queue
	WriteData[kB/s]	WriteData[kB/s]	Data written to files for the clients [kB/s] for queue
	WriteOps[/s]	WriteOps[/s]	Number of file write operations for the clients [/s] for queue
System	FileData	ContrFileData[kB/s]	Data transferred for file system operations that is neither read nor write [kB/s]
		ReadFileData[kB/s]	Data read for file system operations from all devices or file system cache [kB/s]
		WriteFileData[kB/s]	Data written for file system operations to all devices or file system cache [kB/s]
	FileOperations	ContrFileOps[/s]	Number of file system operations that are neither reads nor writes [/s]
		ReadFileOps[/s]	Number of file system read operations to all devices (including file system cache) [/s]
		TotalFileOps[/s]	Number of read and write operations on all logical disks [/s]
		WriteFileOps[/s]	Number of file system write operations to all devices (including file system cache) [/s]
	Miscellaneous	AlignmentFixups[/s]	Number of alignment faults fixed [/s]
		ContextSwitches[/s]	Number of switches from one thread to another [/s]
		CurrCPUQLen	Current number of threads (ready, not running) in the processor queue
		ExcDispatches[/s]	Number of exceptions dispatched [/s]
		FloatingEmul[/s]	Number of floating emulations [/s]
		RegistryQuotaUse[%]	Current usage of the Total Registry Quota Allowed [%]
		SystemCalls[/s]	Number of calls to system service routines [/s]
	Objects	Processes	Current number of processes

		Threads	Current number of threads
WorkloadClass	Handles	Handles	Current number of handles open for workload class
	IODataOps[/s]	IODataOps[/s]	Number of read and write I/O operations [/s] for workload class
	IOData[kB/s]	IOData[kB/s]	Data read and written in I/O operations [kB/s] for workload class
	IOOtherData[kB/s]	IOOtherData[kB/s]	Data transferred for I/O operations without e.g. control operations [kB/s] for workload class
	IOOtherOps[/s]	IOOtherOps[/s]	Number of I/O operations that are neither a read or a write operation [/s] for workload class
	IOReadData[kB/s]	IOReadData[kB/s]	Data read from I/O operations [kB/s] for workload class
	IOReadOps[/s]	IOReadOps[/s]	Number of read I/O operations [/s] for workload class
	IOWriteData[kB/s]	IOWriteData[kB/s]	Data written to I/O operations [kB/s] for workload class
	IOWriteOps[/s]	IOWriteOps[/s]	Number of write I/O operations [/s] for workload class
	PageFaults[/s]	PageFaults[/s]	Number of page faults [/s] for workload class
	PageFileData[MB]	PageFileData[MB]	Current data used in the paging file(s) [MB] for workload class
	PoolNonpgData[MB]	PoolNonpgData[MB]	Current data in the nonpaged pool (nonpageable memory) [MB] for workload class
	PoolPagedData[MB]	PoolPagedData[MB]	Current data in the paged pool (pageable memory) [MB] for workload class
	PrivateData[MB]	PrivateData[MB]	Current data allocated that cannot be shared with others [MB] for workload class
	PrivilegedTime[%]	PrivilegedTime[%]	Processor time spent executing code in privileged mode [%] for workload class
	Threads	Threads	Current number of threads active for workload class
	TotalTime[%]	TotalTime[%]	Processor time spent executing code [%] for workload class
	UserTime[%]	UserTime[%]	Processor time spent executing code in user mode [%] for workload class
	VirtualData[MB]	VirtualData[MB]	Current virtual address space size [MB] for workload class
	WorkingSet[MB]	WorkingSet[MB]	Current Working Set [MB] for workload class

*) Measured values greater than 100% can occur, because the value also comprises the wait time for the device.
The busy value corresponds to the wait queue value (AvgQLen/ AvgReadQLen/ AvgWriteQLen) of the device.
A real busy value can be obtained using the idle value (100-Idle[%]).

**) Not available on Windows 2000 Server.

5.5 VMware ESX Server reports and measurement variables

This section contains an overview of all predefined VMware ESX Server reports together with the associated measurement variables.

Report Group	Report Name	Meas. Variable	Description
ServerCPU	RealCPUs	NumberRealCPUs	Number of real CPUs (physical or logical)
	Time	Idle[%]	CPU idle time [%]
		UsedVMs[%]	Time CPUs are in use by virtual machines which are alive at the end of measurement interval [%]
		Used[%]	CPU used time [%]
	Usage *)	Usage[MHz]	CPU usage [MHz]
	VMs	NumberVMs	Number of virtual machines
ServerDisk	DataIO[kB/s]	DataIO[kB/s]	Average of I/O data [kB/s]
	DataRead[kB/s]	DataRead[kB/s]	Average of data read [kB/s]
	DataWrite[kB/s]	DataWrite[kB/s]	Average of data written [kB/s]
	IOs[/s]	IOs[/s]	Average number of I/Os [/s]
	Reads[/s]	Reads[/s]	Average number of reads [/s]
	TotalDataRate	TotalDataIO[kB/s]	Sum of I/O data over all disks [kB/s]
	TotalOperationRate	TotalIOs[/s]	Sum of I/Os over all disks [/s]
	Writes[/s]	Writes[/s]	Average number of writes [/s]
ServerMemory	HeapSize *)	HeapFree[MB]	Free heap space [MB]
		HeapTotal[MB]	Total heap space [MB]
	Physical	Available[MB]	Memory available for general use by the system or the virtual machines [MB]
		ServiceConsole[MB]	Memory allocated to service console [MB]
		System[MB]	Memory assigned to system services (ServiceConsole + VirtualMem) [MB]
		Total[MB]	Total memory of the system (VMkernel + ServiceConsole) [MB]
		VMKernelUsed[MB]	Memory currently used by VMkernel [MB]
		VMKernel[MB] **)	Memory currently allocated to VMkernel [MB]
		VMs[MB]	Memory assigned to the virtual machines [MB]
		VirtOverhead[MB]	Overhead memory for virtualization [MB]
	Reservable	Reservable[MB]	Reservable memory [MB]
		Reserved[MB]	Reserved memory [MB]
	SwapRate	SwapIn[kB/s]	Average of memory swapped in [kB/s]
		SwapOut[kB/s]	Average of memory swapped out [kB/s]
	SwapSize	SwapReserved[MB]	Reserved swap space [MB]
		SwapTotal[MB]	Total swap space [MB]
	Usage *)	Usage[%]	Memory usage [%]
	VM	Active[MB]	Memory recently used [MB]
		Balloon[MB]	Memory reclaimed by balloon driver(s) [MB]
		Consumed[MB] *)	Average amount of host memory consumed by virtual machine for guest memory [MB]
		Overhead[MB] *)	Average amount of memory that is overhead [MB]
		Shared[MB] *)	Average amount of memory that is shared [MB]
		Size[MB]	Size of actual memory [MB]
		Target[MB]	Target memory size [MB]
ServerNet	DataReceived[kB/s]	DataReceived[kB/s]	Average of data received [kB/s]
	DataTransfer[kB/s]	DataTransfer[kB/s]	Average of transferred data [kB/s]
	DataTransmit[kB/s]	DataTransmit[kB/s]	Average of data transmitted [kB/s]
	PacketReceived[/s]	PacketReceived[/s]	Average number of packets received [/s]
	PacketTransfer[/s]	PacketTransfer[/s]	Average number of packets transferred [/s]
	PacketTransmit[/s]	PacketTransmit[/s]	Average number of packets transmitted [/s]
	TotalDataRate	TotDataTransf[kB/s]	Sum of transferred data [kB/s]
	TotalPacketRate	TotPacketTransf[/s]	Sum of all packets transferred [/s]

VMCPU	Max[%] **)	Max[%]	Maximum CPU [%]
	Min[%] **)	Min[%]	Guaranteed minimum CPU [%]
	NumberShares **)	NumberShares	Number of CPU shares
	NumberVirtualCPUs	NumberVirtalCPUs	Number of virtual CPUs
	Plan[%] **)	Plan[%]	Planned CPU [%]
	Usage[MHz] *)	Usage[MHz]	CPU usage [MHz]
	UsedTime[ms]	UsedTime[ms]	Absolute value of used CPU time [ms]
	Used[%]	Used[%]	Used CPU [%]
VMDisk	DataIO[kB/s]	DataIO[kB/s]	Average of I/O data [kB/s]
	DataRead[kB/s]	DataRead[kB/s]	Average of data read [kB/s]
	DataWrite[kB/s]	DataWrite[kB/s]	Average of data written [kB/s]
	IOs[/s]	IOs[/s]	Average number of I/Os [/s]
	Reads[/s]	Reads[/s]	Average number of reads [/s]
	Writes[/s]	Writes[/s]	Average number of writes [/s]
VMMemory	Active[MB]	Active[MB]	Memory recently used [MB]
	Actual[MB]	Actual[MB]	Size of actual memory [MB]
	Balloon[MB]	Balloon[MB]	Memory reclaimed by balloon driver(s) [MB]
	Consumed[MB] *)	Consumed[MB]	Average amount of host memory consumed by virtual machine for guest memory [MB]
	Max[MB] **)	Max[MB]	Size of maximum memory [MB]
	Min[MB] **)	Min[MB]	Size of minimum memory [MB]
	NumberShares **)	NumberShares	Number of memory shares
	Overhead[MB] *)	Overhead[MB]	Average amount of memory that is overhead [MB]
	Shared[MB] *)	Shared[MB]	Average amount of memory that is shared [MB]
	SwapIn[kB/s]	SwapIn[kB/s]	Average of memory swapped in [kB/s]
	SwapOut[kB/s]	SwapOut[kB/s]	Average of memory swapped out [kB/s]
	Target[MB]	Target[MB]	Target memory size [MB]
	Usage[%] *)	Usage[%]	Memory usage [%]
VMNet	DataReceived[kB/s]	DataReceived[kB/s]	Average of data received [kB/s]
	DataTransfer[kB/s]	DataTransfer[kB/s]	Average of transferred data [kB/s]
	DataTransmit[kB/s]	DataTransmit[kB/s]	Average of data transmitted [kB/s]
	PacketReceived[/s]	PacketReceived[/s]	Average number of packets received [/s]
	PacketTransfer[/s]	PacketTransfer[/s]	Average number of packets transferred [/s]
	PacketTransmit[/s]	PacketTransmit[/s]	Average number of packets transmitted [/s]

*) not available on VMware ESX 2 hosts.
**) not available on VMware ESX 3 hosts.

5.6 *open*SM2 MIB

The proprietary MIB for *open*SM2 offers global objects and objects for monitoring data and SNMP traps. This section contains the description of these objects.

Global data

MIB definition	Description
subagentVersion	Version des Subagenten

Monitoring data

MIB definition	Description
cpu utilization	
cpuIdle	BS000/OSD: Idle time (%) UNIX: Time idle (%) Linux: CPU idle time (%)
cpuSystem	BS000/OSD: SIH time (%) UNIX: Time running in system mode (%) Linux: CPU utilization at system level (kernel) (%)
cpuUser	BS000/OSD: TU time (%) UNIX: Time running in user mode (%) Linux: CPU utilization at user level (application) (%)
cpuUserPriv	BS000/OSD: TPR time (%) UNIX: Not supported - set to zero Linux: CPU utilization at user level with nice priority (%)
cpuIoWait	BS000/OSD: Not supported - set to zero UNIX: Time idle with process waiting for block IO (%) Linux: CPU idle time during which the system had an outstanding disk I/O request (%)
memory	
memoryFree	BS000/OSD: Number of page frames in free pool read-only + Number of page frames in free pool read-write UNIX: Average number of pages available to user processes Linux: Amount of free memory available (kB)
paging	
pageIn	BS000/OSD: Number of page reads from disk (1/s) UNIX: Page-in requests (1/s) Linux: Total number of blocks paged in from disk (1/s)
pageOut	BS000/OSD: Number of page writes to disk (1/s) UNIX: Page-out requests (1/s) Linux: Total number of blocks paged out to disk (1/s)
disc	
discNumbers	Number entries in discTable
discName	disk name
discBlockTrans	BS000/OSD: Number of PAM blocks read + Number of PAM blocks written (kB/s) UNIX: Number of 512-byte blocks transferred (1/s) Linux: Number of blocks transferred from or to device (1/s)
discIos	BS000/OSD: Number of IOs (1/s) UNIX: Number of data transfers from or to device (1/s) Linux: Number of transfers issued for device (1/s)

Trap informations

MIB objects sent together with the traps.

MIB definition	Description	
ruleMsgSystem	System generating the trap.	
ruleMsgTime	Time of trap generation.	
ruleMsgRuleName	Name of the rule	
ruleMsgObject	If the rule contains one condition: If the rule contains more than one condition:	monitored object or '-' '-'
ruleMsgResource	If the rule contains one condition: If the rule contains more than one condition:	measurement variable '-'
ruleMsgValue	If the rule contains one condition: If the rule contains more than one condition:	measured value '-'
ruleMsgMax	If the rule contains one condition: If the rule contains more than one condition:	upper limit '-'

ruleMsgMin	If the rule contains one condition: If the rule contains more than one condition:	lower limit '-'
ruleMsgState	At start of alarm condition: At end of alarm condition:	begin end
ruleMsgDecription	Free text	