DATA SHEET

Fujitsu BS2000/OSD openSM2 version 9.0 software

Issue November 2011

System Performance Monitor

Pages 4

Round-the-clock performance monitoring forms the basis for effective and economic operation of IT systems.

With the openSM2 product line, Fujitsu Technology Solutions offers a consistent solution for the enterprise-wide performance management of heterogeneous system environments, by which the following system platforms are supported: BS2000/OSD®, Solaris™ (SPARC®), Linux®, Microsoft® Windows, VMware™ ESX Server™ and Xen.

openSM2 (BS2000/OSD) provides a comprehensive online monitoring with configurable alarm management, detailed bottleneck analyses as well as forecasts of future performance requirements and so gives the customer the capability to optimize the performance of his BS2000/OSD systems.

The core element of openSM2 (BS2000/OSD) is the SM2 monitor. This monitor collects a large variety of monitoring data. Some monitoring data is recorded as standard (e.g. CPU, memory and disk utilization), while other statistics are gathered by special monitoring programs which can be activated as needed. The scope of the monitoring data logged is controlled by a privileged user, the SM2 administrator.

Additional to the SM2 monitor openSM2 (BS2000/OSD) consists of components for analysis and administration of the monitoring data.

openSM2 (BS2000/OSD) can be used for the following purposes:

Real-time (online) monitoring

Performance data reflecting the current system status is collected over selectable periods of time – the monitoring intervals – and output on the screen in the form of reports.

With the application INSPECTOR monitoring data can be supervised from a Windows PC. Besides to the graphical presentation of the monitored data INSPECTOR offers a rule-based monitoring of the data, which allows actions to be started automatically in alarm situations.

The real-time monitoring enables serious problem situations and their causes to be quickly recognized.

Background monitoring for later (offline) analysis

The monitoring data is written to a monitoring file by the SM2 monitor. Different monitoring intervals can be selected for real-time monitoring and background monitoring.

The monitoring file can be analyzed on the BS2000/OSD system using the SM2R1 utility program or on a Windows PC using the application ANALYZER.

With the analysis of monitoring files bottleneck and trend analyses as well as long-term capacity planning can be performed.

User-specific monitoring

Task- and program-specific performance data (instruction counter and SVC statistics) can be collected in user-own monitoring files for analysis of user tasks and programs. The analysis is performed by the product SM2-PA.

Enhancements in openSM2 V9.0 (BS2000/OSD)

- Monitoring of openFT applications
- Improvement of analysis functions
- Enhanced support of RSC-IOs
- Support of SQ Business Servers (VM2000 measurement data)

Functional description

SM2 collects all relevant system performance data as standard, including

- CPU utilization according to function states
- Number of I/Os per device type
- Number of tasks per task type
- Main memory and address space utilization
- Channel utilization
- Disk utilization

plus category-specific data, e.g.

- Number of tasks in queues
- Main memory usage

Detailed performance statistics can be collected using additional monitoring programs, e.g.:

- Category- and task-specific resource consumption (CPU time, I/O operations, main memory)
- Response times and transaction rates of UTM applications
- Response and wait times, together with transferred data volumes for BCAM connections
- Data transfer rates for TCP/IP connections
- Data transfer rates for channels
- Catalog accesses
- Number of accesses per cylinder and I/O times for disks
- Device service times
- Accesses to files on selected disks
- Frequency and duration of access to selected files
- Accesses to partitions and emulated GS volumes
- Accesses to ISAM pools
- Accesses and hit rates for DAB caches
- Accesses and hit rates for Symmetrix systems
- Frequency of file migrations by HSMS
- Data on computer communication with MSCF
- Hypervisor and guest system activities in VM2000 systems
- Data on the allocation of pubsets
- Data on the utilization of SESAM/SQL (as of V6.0) or UDS/SQL (as of V2.6) databases

Software developers can initiate the collection of task- and program-related performance data (instruction counter and SVC statistics) with a single user command. This data is written to user-own monitoring files. These files can be analyzed with the SM2-PA analyzer routine.

Program description

The SM2 monitor consists of a privileged subsystem that gathers the performance data and a user program that edits the recorded values and outputs them on the screen. Only user IDs with SWMONADM privilege can start SM2 for the first time during a session; the subsystem is dynamically loaded at the same time. Once loaded, SM2 can be invoked by any users. The administration function can be subdivided into a primary administrator and several secondary administrators. The monitoring intervals for real-time monitoring and background monitoring can be set – independently of each other – to periods of between 10 and 3600 seconds. All the performance data recorded during the monitoring interval is available for analysis by user programs via a program interface (C programming language).

The following programs are available for administration and analysis of SM2 performance data:

SM2U1

The SM2U1 program enables individual SM2 monitoring files to be consolidated in a collective file, with the option of selecting only specific data records for long-term statistical analysis.

■SM2R1

The SM2R1 analysis program analyzes the data stored by SM2. Depending on which parameters are specified, diagrams plotting the course of the performance metrics over time and statistical values such as mean, maximum and minimum, as well as standard deviation, are output. The scope of the performance data to be output can be controlled (suppression of non-critical values) using predefined or freely programmable thresholds. In addition, summation values for the most vital metrics can be output on a few pages. Computerized support for detection of

potential bottlenecks in the system is provided by the built-in "automatic bottleneck analysis" function. SM2R1 also provides a compatible data interface to allow customer-specific analyses of SM2 performance data.

INSPECTOR

INSPECTOR enables simultaneous online monitoring of multiple BS2000/OSD systems using a Windows PC. Agents on the server systems record the performance data via the SM2 program interface and send it via TCP/IP connections to the central manager on the PC, where it is monitored and presented in graphical form.

The monitored servers are displayed in the server list of the manager. 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. There are the possibilities "no data", "values in normal range" and "alarm". The status display is constantly updated and enables exceptional situations to be detected instantly and an appropriate response to be made.

Several different types of reports are available for presenting the performance data in graphical or tabular form. Snapshot reports indicate the current system status graphically or in a form corresponding to the SM2 screenshots in BS2000. Time series reports reveal how the performance values have changed over the last hours. There are global reports providing an overview of multiple servers in one chart or table and reports showing selected performance data for a single server.

The user can specify the measurement variables and the monitored objects whose performance data is to be included in a report, as well as defining new measurement variables by linking measurement variables by means of formulae.

The charts in the reports can be customized by selecting various diagram types (bar, line, logarithmic line, etc.) and colors. The charts can be printed with a single mouse click, saved to a graphics file or copied to the Clipboard for pasting into standard programs (Word, PowerPoint, etc.). A header and footer line can be inserted for printout and the labels can be modified.

The monitored data provided by the servers can be supervised by means of user-defined rules. In a rule conditions and actions are defined. If all conditions of a rule are fulfilled an alarm for the rule is set off. The server entry in the server list takes the color of the alarm level assigned to the rule and the actions defined for the rule are executed.

The following actions can be triggered:

- A report with the measurement variable in question is opened automatically for each condition of the rule.
- An audible alarm is triggered.
- A procedure is started on any monitored server.
- A batch file is executed on the PC.
- An e-mail or SMS is sent.
- An SNMP trap is sent.

A rule can be used to link not only conditions for the measurement variables of one server, but also conditions for different servers.

In the rules the user can define different limit values and actions for different times of day in order to take account of different system usage types – for instance, online mode during the day and batch mode during the night.

With the help of an SNMP subagent for openSM2 (BS2000/OSD) the data for some selected measurement variables can be requested from a management station and SNMP traps can be sent to a management station in case of alarm conditions.

ANALYZER

ANALYZER is an application for analyzing SM2 monitoring files. The user specifies the type and scope of the analysis via the user-friendly PC-based interface of the manager component. The analysis job defined in this way is processed by the agent on the BS2000/OSD server and the result is then presented on the PC.

Analyses that are to be repeated at regular intervals can be automated using the macro functionality provided by ANALYZER.

The long-term files generated by ANALYZER enable performance data for arbitrarily selected measurement variables to be stored in compressed form on the PC in order to produce trend analyses and enable long-term capacity planning.

Creation of charts

Several monitoring files – from the same or different servers – can be analyzed simultaneously. The analysis result is provided as chart and table and can be stored in a file for further processing and also copied into standard programs like Excel and Word or to the Clipboard.

Functions:

- Selection of the analysis period, with the option to define time windows and exclude certain periods (e.g. weekends)
- Selection of measurement variables via report group, report and measurement variable
- Linking of several measurement variables by means of formulas

- Selection of monitored objects (e.g. devices, channels, categories, etc.)
- Selection of different analytical functions (mean values, frequencies, minimum, maximum, quantiles)
- Creation of time series or correlation charts
- Identification of overloaded resources by automatic production of hit lists of the monitored objects with the highest utilization values
- Identification of the processes involved in load peaks by automatic production of a list of the processes with highest CPU consumption for each monitoring cycle
- Monitoring of agreed service levels through analysis of frequencies (e.g. "For what percentage of the monitoring interval was the response time between 0.5 and 1.0 seconds?")
- Identification of functional relationships between measurement variables through presentation as a correlation diagram
- Customization of graphics through selection of different diagram types (bar, line, logarithmic line, etc.) and colors

Automatic analysis

The automatic analysis function identifies performance bottlenecks on the basis of predefined rules. The result is presented as a structured list of messages which can be printed and saved.

Output of the configuration

The system configuration of a BS2000/OSD server is edited in a tree structure and can be stored in a file or printed as an easy-to-read graphic, as well as searched for specific devices.

OPENSM2 V9.0

Technical data

Hardware

BS2000/OSD Business Server

PC with INTEL Pentium processor or compatible min. 800 MHz, min. 256 MB RAM, min. 100 MB free disk space, min. 1024 x 768 screen resolution

Software

BS2000/OSD-BC V9.0 or OSD/XC V9.0

optionally: SBA-BS2 from V6.0 (only with usage of the openSM2 subagent)

PC: MS Windows NT 4.0 (Service Pack 6 recommended)
    or MS Windows 2000 or MS Windows XP
      TCP/IP LAN connection with Winsockets

File transfer product (FT, ftp, ...) for tranferring the PC software components.

Operating mode

Interactive and batch mode

User interface

Commands: English
Message texts: English or German
Windows interface: English or German

Implementation language

Assembler, SPL, C, Visual Basic

Installation

See Release Notice

Documentation

openSM2 User Guide

Training

See course offer at:
http://ts.fujitsu.com/training

Demands on the user

In order to analyze and interpret the performance data, users should have an in-depth knowledge of the system.

Conditions

This software product is supplied to the customer under the conditions for the use of software products against a single payment or installments.

Ordering and delivery

This software product may be obtained from your local Fujitsu Technology Solutions GmbH regional office.