

## SNMP-Standard-Collection BS2000 (BS2000/OSD) Version 6.0

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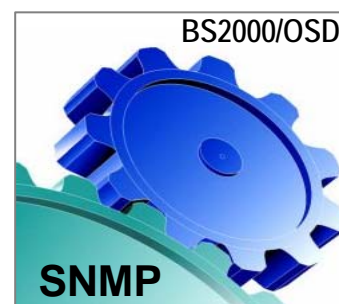
### Standard collection of subagents for system and application management with SNMP in BS2000/OSD

SNMP-Standard-Collection BS2000 has been developed by Fujitsu Siemens Computers for customers wanting a product for management of their BS2000/OSD subsystems and for performance management based on SNMP and/or HTTP. The short name for the product is SSC-BS2. This solution provides suitable SNMP subagents for control and management of job scheduling, file transfer, spool systems, storage systems, monitoring system, cluster systems and the SESAM database, as well as subagents to handle the output of selected BS2000 performance statistics and BS2000 resource values.

In combination with the SNMP Basic Agent, the SNMP Standard Collection in BS2000 serves to connect BS2000/OSD subsystems directly to a central management system for heterogeneous networks on the basis of the standard management protocol SNMP. This enables customers with large multi-vendor networks comprising heterogeneous systems to use SNMP for monitoring and control of the BS2000/OSD systems in the network from a central management platform (control center).

In the sixth level (Version 6.0), the SNMP Standard Collection provides 10 subagents for management of the products AVAS, *openFT* (BS2000), Spool and RSO, the storage systems HSMS, MAREN, ROBAR and TLS, the OMNIS monitoring system, the SESAM database, and the computer cluster software HIPLEX, as well as for the output of performance data and resource data (host resources) relating to the BS2000/OSD system. An independent management application is also provided for displaying the HIPLEX configuration, to be used with the management platform. The ten subagents and the management application are described in more detail below.

The high level of security of the BS2000 server is guaranteed by using the SNMP link. The SNMP connection has been provided with a range of complementary functions designed to protect against unauthorized access that might see the data in the BS2000 or impair the availability of the BS2000 server.



### Functional Description

#### ■ AVAS subagent

The AVAS subagent enables an AVAS system to be monitored in BS2000/OSD systems. It makes use of the AVAS system program interface, which is linked in turn to the AVAS processing tasks by means of inter-task communication. Which of the (possibly several) AVAS systems is monitored, is determined by the control file which must

be specified when starting the subagent. In effect, this can be an extract from the original AVAS system parameter file.

Monitoring of the AVAS system takes place on several levels. Full details of the monitored objects, their types, the access options, possible values and a summary description, can be found in the AVAS MIB supplied with the product.

Critical events which occur during operation of the AVAS system (e.g. one of the tasks UPAM-ZD or PLAM-ZD

crashes, or at least one network is in 'error' status) cause SNMP traps to be generated automatically, so that the administrator is alerted as quickly as possible to the changed situation.

Level 1 determines the status of the monitored subsystem from a combination of the status values for the processing tasks, thus providing information on the overall status of the AVAS system.

The second level provides information about the status of the central processing tasks (PLAM-ZD, UPAM-ZD, CENTRAL) and the job control status values.

The third level supplies information about the AVAS nets in tabular form. This shows the names of the AVAS nets, their status values, the net status selection list and the associated job control.

At the fourth level, information is supplied in tabular form about the AVAS structure elements. This information comprises details of the name, type, status, function, latest start time etc. for the structure elements and their assignment to the nets.

■ openFT subagent

The openFT subagent supplies information during online operation about

- system parameters of openFT (BS2000) (FT Version, TU Size, Task Limit, Connection Limit, ...) and
- statistical data (number of jobs processed and not yet processed, and their operational status).

There are also options enabling the user

- to start and terminate the file transfer (openFT)
- to set the status of a partner system to active, deactivated or automatically deactivated
- to control diagnostics, and
- to change the public key used in encryption.

In openFT V7.0 or higher, a number of new console messages have been generated in connection with the monitoring of partner systems, and these messages can also be transferred as traps to the management station.

With the release of openFT V8.0, together with the enhanced openFT subagents in SNMP Level 5, monitoring of the file transfer and its requests has been significantly improved. There are now a number of additional traps, which are subdivided into 7 groups:

- SUBSYSTEM-STATE  
Traps for START/STOP subsystem
- FT-STATE  
Traps for START-FT/STOP-FT/abnormal termination
- PARTNER-STATE  
Traps for FT partner status changes
- PARTNER-UNREACHABLE  
Traps if partner is not accessible
- REQUEST-QUEUE-STATE  
Traps for overshooting/ undershooting limits in queue filling levels
- TRANSFER-SUCCESS  
Traps for successful completion of the FT request
- TRANSFER-FAILURE  
Traps for abortion of the FT request

The trap groups can be activated and deactivated via the management station (by setting MIB objects) as well as via the MODIFY-FT-OPTIONS command. The traps are represented by separate MIB objects. New objects have additionally been defined in the MIB and are sent together with the traps:

- Transfer ID and initiator of the request
- Partner and user ID of the request submitter
- Name of the file to be transferred, and
- Error in the request.

■ Subagent for the PrintService

The PrintService subagent monitors SPOOL and RSO devices and supplies information on print jobs.

The device group supplies information on

- name and status of devices, queues, error messages, pending jobs, assigned host, administrator, poll option, and much more.

The job group provides information about

- number of entries, global ID, origin, source host, destination device, file, priority, size, status, error messages, requested/printed copies, and percentage value.

■ Subagent for storage management

The storage management subagent provides details of the availability of the products / subsystems

- HSMS
- MAREN

- ROBAR and
- TLS.

The subsystem information is displayed in a table which contains the following data:

- name (with details of storage location for ROBAR)
- version and
- status.

In addition, information is provided on the pubset-specific use of resources. The following details can be shown in tabular form for all selected pubsets:

- pubset (catid)
- current saturation level
- capacity (in half pages (HP))
- number of HPs allocated.

The saturation level is shown as one of 6 value levels (ranging from level-0 to level-5).

Changes in subsystem status or any change in the saturation level can be monitored by management station polling or by means of automatically generated traps.

■ HSMS subagent

The HSMS subagent monitors the hierarchical storage management system HSMS. It supports output of

- global HSMS data and
- a table containing all HSMS requests and their current status.

This enables the status of backups to be monitored. The scope of the information displayed can be restricted by means of the selection criteria

- status and
- place of origin.

The agent itself does not send traps. The BS2000 requests can be monitored by the Console and Application Monitor (component of the SNMP-Basic-Agent BS2000 product) using job variables.

■ OMNIS subagent

In OMNIS V8.1 or higher, the OMNIS subagent, which is identified as a special SNMP terminal to the OMNIS monitoring system, supports the use of OMNIS commands for monitoring

- data terminals
- partners and
- applications
- as well as administration of OMNIS itself.

When the subagent is started, the configuration file, which contains a definition of each OMNIS system to be monitored, is read in and attempts to set up a connection to every OMNIS system. Following this, commands can be processed and responses from OMNIS reported back. If exceptional events occur during monitoring of the OMNIS systems and connections, the following messages are generated as traps:

- an OMNIS has been unexpectedly terminated
- an OMNIS has been activated
- a critical OMNIS connection has been cleared
- an OMNIS session has been terminated normally
- a critical OMNIS message has been received
- a critical DSTMAX, PACMAX or PTNMAX threshold has been reached.

With the release of OMNIS V8.2, the user additionally has access to a message exit which permits message outputs to be formatted in a variety of ways. These messages are sent by the subagent with a common trap number.

■ Host resources subagent

To support the host resources MIB (RFC 1514), a subagent is available which provides UNIX-based system equivalent functionality. The following object values are displayed:

- system group (uptime, date, number of users and processes)
- storage capacity
- storage table (type, description, unit, size, and storage space used)
- device table (type, description and status)
- partition table (label, ID, size and FS index)
- Filesystem table (MountPoint, type, access, storage index) and
- SWInstalled table (name of subsystems and type).

■ Subagent for the SESAM database management system

The SESAM subagent provides information about SESAM databases and the servers (SESAM database handlers) used for processing these databases, on the basis of the RDBMS MIB (described in RFC 1697).

In order to collect the information, the subagent communicates via the SESAM program interface with the relevant SESAM/SQL server(s). It obtains other information from the configuration file.

The subagent provides information on e.g.:

- name, contact person, size (pages allocated and used) and status of the database
- product name, version number and status of the DB server
- date and time of last start
- number of transactions which are visible and completed
- number of read and write operations, and the number of requests submitted to the DB server
- current and maximum value for the resources, and
- relations between the servers and the databases.

■ Subagent HIPLEX

The HIPLEX subagent provides information about the current configuration in a HIPLEX cluster.

The information offered about the HIPLEX cluster include the status

- of the systems in the cluster,
- of the applications and
- of the resources.

When there is a change of status, the subagent independently sends traps to the management station.

■ Subagent for performance management with basic functionality

This subagent within the SNMP Standard Collection represents a basic functionality for performance management. It permits limited monitoring of the performance values of the BS2000/OSD system and supplies basic data relating to

- CPU usage and
- I/O rates

as average values.

The performance data is obtained via the PFMON interface.

■ Management application "Cluster Monitor"

The management application "Cluster Monitor" provides a graphical display of various conditions in HIPLEX configurations. The values supplied by the HIPLEX subagent give details of the systems, applications and resources in the

cluster. The monitor also coordinates the results of all the HIPLEX subagents available in the cluster.

The Cluster Monitor comes with its own SNMP stack, and can therefore run as a stand-alone unit, i.e. without a management platform, on Reliant UNIX-based, on Windows-, on Solaris- or on LINUX-systems. However, it can also be integrated and operated as an add-on to an existing management platform. The user interface of the management application is based on the look-and-feel of the particular host system. This also allows intuitive operation, supported by a comprehensive online help system.

The SNMP basic agent in BS2000 together with its SNMP subagents can in principle be connected to any management control center via the "open" SNMP protocol. The products CA Unicenter on Windows or Solaris are recommended and supported. This product offers all the facilities necessary for integration of BS2000/OSD with its standardized and proprietary MIBs. Integration in Unicenter has been verified by Computer Associates and has been certificated 'ca smart'.



Integration in other management platforms has been carried out on a project basis, and may be offered for other platforms as a service on request.

In order to make integration of BS2000/OSD into different management platforms easier for the user, the packages SMBS2 and CluMon are provided for the SNMP-Standard-Collection BS2000 product. These packages are supplied on CD-ROM as part of the SNMP-Basic-Agent BS2000 base product shipment. The packages include the new MIBs in the installation, contain the Cluster Monitor management application as well as the runtime environments necessary for Reliant UNIX-based, Solaris-, Windows- and LINUX-systems, contain the trap distributor for Solaris-, LINUX- and Reliant UNIX-based systems, and add the necessary entries to the menus, tables and network maps. In Windows, the Microsoft trap distributor may be used.

**Technical Requirements**

**Hardware**

All systems of the Sxxx, SX1xx and SR2000 series supported by BS2000/OSD V2.0 or higher or OSD-SVP V2.0 or higher. Similarly, the Manager components (MIBs and procedures) must be compatible with all Windows and Solaris systems on which Unicenter runs. A color monitor with a 21" (50 cm) screen diagonal is recommended for the graphical user interface.

For installation of the product on the BS2000/OSD system, approx. 47,000 PAM pages (94 MB) of disk space are required.

**Software**

**Agent component:**

Product-related requirements:

For SNMP-Standard-Collection BS2000 V6.0: SNMP-Basic-Agent BS2000 V5.0,

BS2000/OSD-BC V2.0 or higher  
or OSD-SVP V2.0 or higher,  
SDF-P-BASYS V2.0B or higher (included in  
BS2000/OSD),  
IMON-GPN V2.0 or higher (included in  
BS2000/OSD),  
POSIX-BC V1.0 or higher (included in  
BS2000/OSD),  
POSIX-Sockets V1.0 or higher (included in  
BS2000/OSD).

And, in addition,

Task-related requirements:

For the AVAS subagent:  
AVAS V3.0 or higher (with JV V11.2 or higher).  
For the file transfer subagent:  
openFT (BS2000) V6.0 or higher (V6.0 or higher recom-  
mended). openFT V8.0 or higher is required for the full  
functionality  
For the PrintService subagent:  
SPOOL V3.0 or higher (already included in BS2000/OSD)  
and/or RSO V2.4 or higher  
For the performance subagent:  
SM2 V11.2 or higher  
For the SESAM subagent:  
SESAM/SQL V2.1B50 or higher  
For the OMNIS subagent:  
OMNIS V8.1 or higher, or V8.2 for the new functions, such  
as the message exit.  
For the HIPLEX subagent:  
HIPLEX-AF V3.0 or higher and HIPLEX-MSCF V1.0 or  
higher  
For the HSMS subagent:  
HSMS from V3.1  
For the host resources subagent:  
none  
For the storage management subagent:  
HSMS V2.0 or higher,  
MAREN V6.5 or higher,  
ROBAR V2.5 or higher,  
TLS V1.1 or higher.

These storage management products are not required for  
running the subagent.  
If one of these products is not present, it is flagged in the table  
as not available.

**Manager component:**

Version 6.0 of the product primarily supports the CA Unicenter  
management platform with the product  
■ Unicenter TNG Framework V2.0 or higher on Windows NT  
V4.0  
■ Unicenter TNG V2.2 on Windows NT V4.0 or Solaris V7 or  
higher and

■ Unicenter V3.0 on Windows NT V4.0 or from  
Solaris 7  
For compatibility reasons, Version 6.0 of the product also last  
supports the management platforms  
■ TransView SNMP V3.1 and V4.0 with  
■ TransView Control Center V3.1 and V4.0  
(optional, not a technical requirement)  
and  
■ OpenViewNetwork Node Manager V3.3 and V4.1 with  
■ TransView Control Center V3.1 and V4.0  
(optional, not a technical requirement)  
on Reliant UNIX V5.41 or higher with the SMBS2 installation  
package.

The management application "Cluster Monitor" (CluMon) can  
be integrated in the management platforms, although it can  
also run as a stand-alone unit on Reliant UNIX-based,  
Windows-, Solaris- and LINUX-systems. Because the Tcl/Tk  
interpreter is supplied in the tclset package for Reliant UNIX-  
based, Windows-, Solaris- and LINUX-systems, the  
application has no special requirements in terms of version.

**Operating mode**

Dialog

**Implementation language**

C

**User interface**

German/English

**Installation**

By the user on the basis of the release notice and user guide.

**Documentation**

User guides

The documentation is available in the form of online manuals  
at <http://manuals.fujitsu-siemens.com> or can be ordered in the  
form of printed manuals for an additional payment at  
<http://FSC-manualshop.com> .

**Demands on the user**

Knowledge of the operation of SNMP management systems  
and product installation in BS2000/OSD.

**Training**

See course offer at:  
<http://www.fujitsu-siemens.com/training>

**Conditions**

This software product is supplied to the customer under our  
conditions against a single payment of installments.

**Warranty**

Class: A  
Delivery format: Machine language

**Ordering and delivery**

This software product may be obtained from your local Fujitsu  
Siemens Computers regional office.