

AVAS (BS2000/OSD) V8.0 AVAS-SV (for BS2000/OSD, Windows & UNIX OS) V8.0

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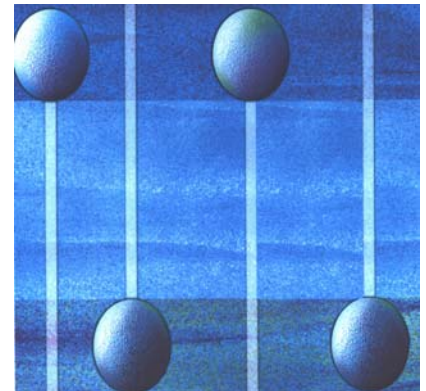
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Job Scheduling System

AVAS implements the automation of planning, preparation, release, control and monitoring of production sequences in BS2000/OSD. The management and controlling functions of AVAS perform on BS2000/OSD. From the BS2000/OSD platform, AVAS can start and monitor jobs on further BS2000/OSD systems as well as on Windows, Solaris/SPARC, Linux, and mySAP.com systems and any third-party systems. The connection of Windows and UNIX platforms is realized by a server AVAS-SV. Various BS2000/OSD Business Servers can be combined via the HIPLEX MSCF multicomputer system or via a server AVAS-SV-BS2 for BS2000/OSD.

Customer benefits:

- Productivity increase in job handling and job management through interactive, quantity-oriented operation.
- Planning, preparation and handling of computer center jobs are fully automatic.
- Deadlines are met consistently.
- Performance monitoring and trend analysis.
- More quality and reliability in job handling.
- More transparency.
- Reduction in attended shifts.
- Enterprise-wide job scheduling



Computer center complexity and workload are increasing all the time. The DP operation therefore has to be clearly structured with a high degree of flexibility and continuously increasing productivity.

A crucial factor in achieving this objective is automation of batch production.

The AVAS job management and handling system is a product that allows the computer center to automate its job production to the extent that dialog entries are reduced to a bare minimum. This makes it considerably easier to move batch production to unattended shifts.

The arrangement of jobs in the net, time specifications, job characteristics, restart variants and dependencies are defined in the job net description. Dependencies with respect to other nets and jobs as well as on condition values and resources can be described. Groups of nets and jobs can be combined into a hypernet.

Scheduling is performed with the aid of calendars containing symbolic data or procedure names which are used in conjunction with the net descriptions to produce a production plan. In the production scheduling phase, the nets can be supplied with run parameters from the production plan via user masks or from the parameter files.

During release for production, transport and tape mount listings for the required data media are prepared by accessing the MAREN catalog. After release the net is started in accordance with the time specifications and dependencies. Job scheduling takes place online, like all the preceding steps. In the event of an error, the predefined restart processing comes into effect: Depending on the definitions in the net, restart occurs automatically, or else it is initiated explicitly by the user, with manual intervention also possible. The entire production sequence within the nets is logged and can be recovered from the journal. In addition, the run control logs can be stored and examined in AVAS.

The AVAS functions may be subdivided into two basic areas:

- Production definition, i.e. creating the required data structures such as net and job descriptions, parameters and schedule for processing to be handled via AVAS, and
- Production handling, i.e. carrying out processing by specified dates on the basis of the data structures created.

Creating nets and jobs

For scheduling under AVAS, logically associated jobs are described in job nets.

A job net consists of 1-n jobs. The jobs can be BS2000, UNIX and Windows jobs. BS2000 jobs can be both conventional ENTER jobs and SDF-P S-procedures. Jobs on any third-party systems are addressed via EXX-type S-procedures. In addition, file transfer requests can be specified within the job nets. File transfer requests allow to transfer files to any third-party systems (using the openFT product). File transfer requests are dealt like jobs during the AVAS processing.

Groups of job nets can be combined into a hypernet.

Instead of having complex control arrangements to define the job sequence, AVAS employs clearly structured nets covering all the logical and time-related dependencies.

Parameter placeholders can be inserted within a job for subsequent updating by the user.

For all platforms, a statement can be included in the JCL of the job to cause AVAS to transfer the run control log to AVAS administration when the job is finished.

The processing sequence and the preconditions for starting the individual processing steps must be defined in the net structure. Dependencies on other nets and jobs and on condition values and resources can be described.

Independent documentation elements can be kept for documenting nets, jobs and dependencies.

Provisions for restarting the net after an error are incorporated in the net structure and the jobs. Real or symbolic start dates can be used for scheduling.

Scheduling

The schedule consists of a calendar arrangement of real dates and symbolic start dates which are assigned to the individual calendar days. Individual calendar days can be declared non-working via a special date.

The link between the calendar and the job nets is established by the symbolic start dates. The symbolic start date is also used to specify which subset of jobs and dependencies must be processed on this date. Linking of symbolic start dates using 'AND' and 'NOT' is possible.

This provides the basis for long-term advance planning of DP production.

In order to simplify processing planning over shorter timescales, periods can be defined which specify a planning section within the calendar.

Production planning

For the current production of a period to be specified, a production plan must be drawn up for the computer center. The planning period is freely selectable. The production plan shows what processing (nets) must be carried out on which days and indicates what stage of processing they have reached.

During production planning the nets are logically linked to a real start date, matched to a real sequence and transferred to the production plan. The planning of the subnets takes place

via the hypernet. Planning can be based on the calendar or - for an individual net - without calendar.

The defined periods can be used as planning periods (planning via the calendar).

Production preparation

The primary task of production preparation is to update the parameters which vary from sequence to sequence in the jobs. For this purpose a distinction is drawn in the net structure descriptions between jobs subject to regular modification and jobs which do not need to be adapted to suit the individual processing steps.

To update the parameters, the variables of a job or net can be recorded via a mask assigned to the net or can be entered via a parameter file. AVAS additionally provides predefined system variables such as date and time of day.

For fully automatic production preparation, the names of the files containing the current parameters can be permanently incorporated in the net description. This enables the user to provide the parameter files containing the modification values in machine-readable form via upstream procedures and have them processed automatically by AVAS.

The ability to pre-assign values to the modification masks via the computer center's own routines during production preparation and to check entered values for plausibility both provides a greater degree of automation and considerably improves the quality of production preparation.

Release for production

To implement processing, the nets must be released by work preparation. Specified time intervals can be employed as defined in production planning.

However, it is also possible for an individual net to be released for processing. By using the coupling module to MAREN, all the data media required by the net to be released can be checked for availability. In some cases the VSNs are entered in the JCL. Data media availability lists are produced.

Production implementation

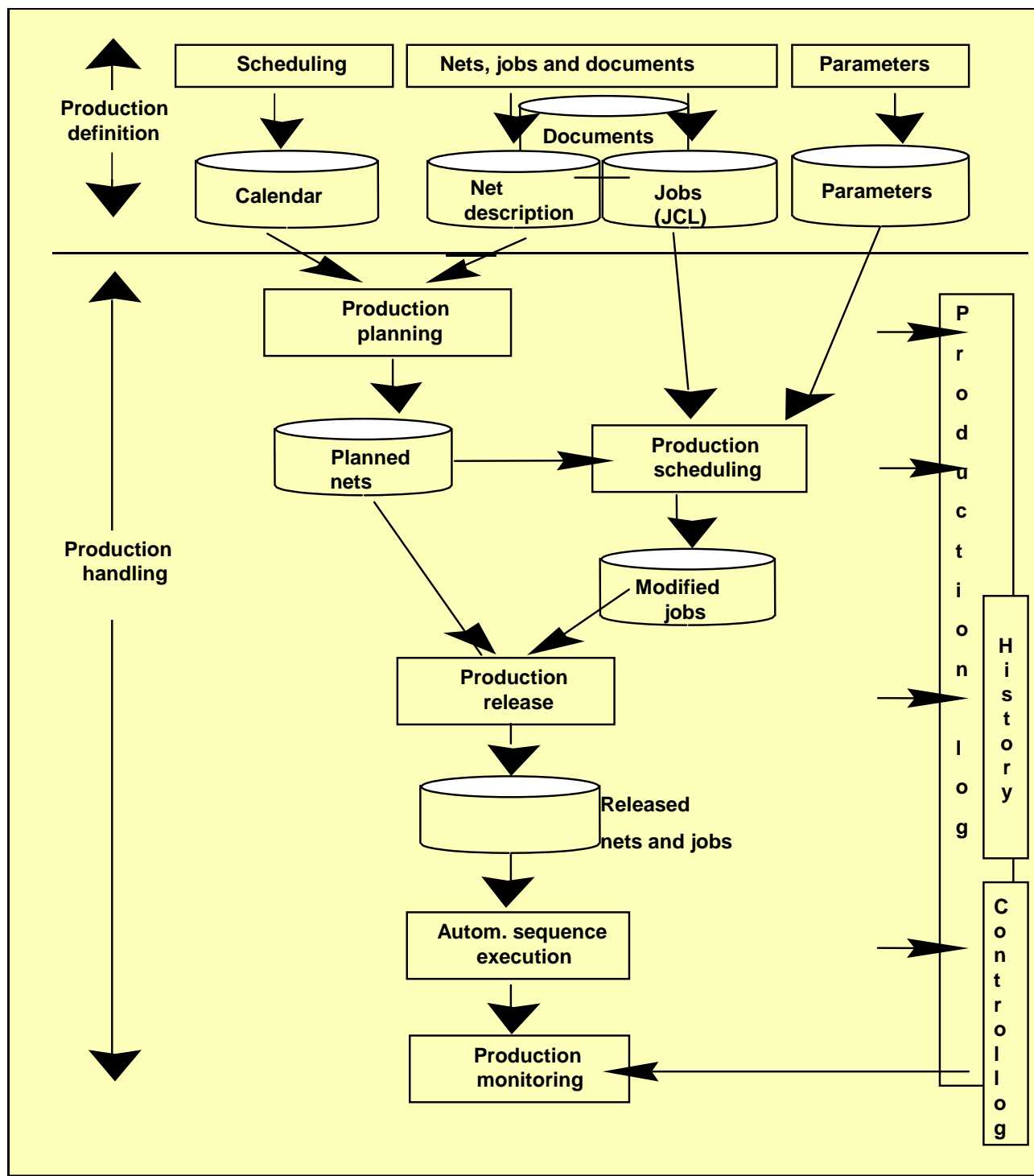
Production implementation is initiated and monitored under AVAS by the AVAS system's job scheduling. Individual jobs are handled fully automatically after release.

Job scheduling starts the nets at a predefined point in time and the associated jobs in the sequence specified by the structure description, taking into account the specified dependencies on other nets, jobs, condition values and resources.

If errors occur, the restart variants defined when the nets were created are initiated automatically by AVAS or at the handler's request, depending on the net defaults. The structure planned for a restart is in turn processed automatically by the run control system.

If a job or the AVAS net terminates abnormally, AVAS offers the possibility of branching to a computer center resident routine. In these routines, the user can provide error sequence handling functions particularly in low-attendance/unattended computer center environments. For example, in the event of abnormal termination of strategic sequences, a standby service can be activated or, in the case of dependent processes, a backup strategy.

AVAS Schematic function diagram



Production monitoring

Monitoring of net processing is provided at all stages of production. The processing status of an individual net can be checked, and also the status of production as a whole. Likewise, all nets in a particular status can be interrogated.

In addition, the run control logs transferred from AVAS can be displayed. An revisable check of the entire DP production handled via the AVAS system can be performed via the journal file. This file contains all the user activities and all the AVAS system actions for the processed nets. In addition AVAS maintains a file containing compressed historical data, e.g. average running-times of nets and jobs.

BS2000 multicomputer operation

Various BS2000/OSD Business Servers can be combined via the HIPLEX MSCF multicomputer system to form a multicomputer network (HIPLEX).

In AVAS multicomputer mode, one computer is the AVAS master running the AVAS system including job scheduling. AVAS can distribute complete nets or individual jobs to any computers within the MSCF system and can supervise the execution of the distributed jobs.

The distributed handling of nets and jobs in the MSCF system enables optimum load distribution to be implemented in multicomputer mode, with automatic compliance with logical and time dependencies.

In the case of a long distance between the BS2000 servers, the remote BS2000 can be linked via an AVAS-SV server alternatively, which starts the BS2000 job, monitors the sequence and reports the result back to the AVAS Master. The job can be processed on the local and on the remote BS2000 without modification.

Job scheduling and monitoring for heterogeneous open systems servers

As well as BS2000 jobs, UNIX and Windows jobs can also be defined within AVAS nets. In AVAS (BS2000), the same functions are used for managing UNIX and Windows jobs as for BS2000 jobs. The Solaris/SPARC, Linux or Windows system is linked via an AVAS-SV server on the respective platform which starts the UNIX or Windows job, monitors the sequence and reports the result back to BS2000-AVAS. With AVAS-SV V8.0, AVAS V8.0 can start and monitor SAP R/3 jobs on the Solaris/SPARC and Windows platforms. The JCL of the UNIX or Windows jobs (Shell Script) can be stored in BS2000 and transferred to the UNIX or Windows system, but can also be present in the UNIX or Windows system. These functions allow inter-dependent batch runs to be formulated and handled on BS2000/OSD and Solaris/SPARC, Linux or Windows platforms, with job scheduling and monitoring provided by AVAS in BS2000/OSD.

A web-based surface for server monitoring is enclosed in AVAS-SV V8.0 allowing the server administrator to check which jobs were started by a foreign system. In addition, given the appropriate authorization, administrative interventions (stopping/restarting job distribution, modifying the configuration file, canceling jobs, changing log file attributes) are possible in AVAS-SV V8.0. As an option, the communication of the web browser with the server surface process can be crypted with openSSL.

In order also to allow mixed batch operation between BS2000/OSD and any third-party systems, AVAS additionally provides an interface for invoking a user-specific S procedure enabling a separate server to be connected. This can also be used, for example, to control handling systems on other platforms.

Security concept

Process protection is provided by a personal access control in the form of an AVAS user ID and password. The user may only invoke those AVAS functions stored in his function table.

Several users can be combined to form a user group. Each user can only access the net and job libraries allocated to his user group. This means, for example, that the nets and jobs of different departments can be segregated.

Batch interface

Frequently recurring AVAS control tasks can also be proceduralized. Batch-oriented statements are available for the majority of the AVAS action functions.

Program interface

A program interface permits read access to the run control and journal file and therefore to the operational AVAS data. In addition, selected AVAS action functions are available via the program interface.

User interface

The AVAS dialog system offers the user a mask-based interface implemented by FHS in BS2000/OSD. It can be transferred to a PC using FHS-DOORS. Suitably modified masks are available as part of AVAS ('AVAS-DOORS').

Technical data**Hardware**

For AVAS (BS2000/OSD): S series or SX series
BS2000/OSD Business Servers

For AVAS-SV (for Windows OS): Intel processors as of
I486 processor (Primergy Server, Desktop, PCs) and 16
MB RAM or higher

For AVAS-SV (for Solaris OS): PRIMEPOWER systems or
SPARC Enterprise systems

For AVAS-SV (for Linux OS): Intel-based Linux Platforms

For AVAS-SV (BS2000/OSD): S series or SX series
BS2000/OSD Business Servers

Software

For AVAS (BS2000/OSD) V8.0 and AVAS-SV-BS2
(BS2000/OSD) V8.0:

On S series Business Servers:
BS2000/OSD-BC V5.0 or higher
openNet Server V2.0 or higher
TIAM, JV
EDT V16.6 or higher

On SX series Business Servers:
OSD/XC V1.0 and higher

optionally:
IFG V8.1 or higher for creating user masks for recording
the modification parameters in the jobs as part of
production preparation.
MAREN V9.0 or higher for AVAS and MAREN product
interworking.
HIPLEX-MSCF V3.0 or higher for supporting BS2000
multicomputer operation.
The HIPLEX-MSCF and JV products must be used on all
systems on which AVAS is to start jobs in multicomputer
operation.
openFT V9.0 and higher for supporting file transfer
requests within AVAS job nets.

For AVAS-SV (for Windows OS) V8.0:
Windows2000, Windows XP, Windows Server 2003 (incl.
support of Microsoft cluster server), Windows Vista

For AVAS-SV (for Solaris OS) V8.0:
Solaris V8.0 or higher

For AVAS-SV (for Linux OS) V8.0:
SuSe Linux 8.0, Red Hat EL 5

Optionally: SAP R/3 V4.0/V4.5/V4.6/V6.1/V6.2/V6.4/V7.0
for the control of SAP R/3 jobs on Windows and UNIX
platforms.

Operating mode

Timesharing mode for dialog functions
Batch mode for controlling job handling and for AVAS batch
functions.

Implementation language

Assembler, C

User interface

Dialog masks: English
Messages: German / English (optional)

Installation

By the user in accordance with the Release Notice

Documentation

English:
AVAS Functions (User Guide)
AVAS Statements (User Guide)
AVAS for Administrators (System Administrator Guide)
AVAS Ready Reference
German:
AVAS Funktionen (Benutzerhandbuch)
AVAS Anweisungen (Benutzerhandbuch)
AVAS für den Administrator (Systemverwalter-
handbuch)
AVAS Tabellenheft

Conditions

The software products AVAS (BS2000/OSD) and AVAS-
SV-BS2 (BS2000/OSD) are supplied to the customer under
our conditions against a single payment or installments.
The software product AVAS-SV (for Windows & UNIX OS)
is supplied to the customer under our conditions against a
single payment.

Ordering and delivery

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

License notice:

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>).

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).