Datasheet
Fujitsu Software BS2000
AVAS V8.5

Job Scheduling System

AVAS implements the automation of planning, preparation, release, control and monitoring of production sequences in BS2000. The management and controlling functions of AVAS perform on BS2000. From the BS2000 platform, AVAS can start and monitor jobs on further BS2000 systems.

Various BS2000 Business Servers can be combined via the HIPLEX MSCF multicomputer system or via a server AVAS-SV-BS2 for BS2000.

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.

Offering

Functional Description

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 BS2000 jobs. BS2000 jobs can be both conventional ENTER jobs and SDF-P S-procedures. Groups of job nets can be combined into a hypernet.

From AVAS V8.5 on, hypernets can be optionally marked colored in FHS masks in the summaries of commands for active nets for better clarity. 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.

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.

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. A 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. From AVAS V8.5 on, these journal entries can be logged in an ISAM-file and evaluated with special tools during ongoing running. In addition AVAS maintains a file containing compressed historical data, e.g. average running-times of nets and jobs.

BS2000 multicomputer operation

Various BS2000 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-BS2 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.

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 processed in procedures. 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.

Technical details

Requirements	
Technical requirements Hardware	Fujitsu Server BS2000 SE Serie

Technical requirements Software	Fujitsu Software BS2000 OS DX V1.0 or OSD/XC V11.0B
	optionally:
	  - MAREN for AVAS and MAREN interworking
	  - HIPLEX-MSCF for BS2000 multicomputer operation

Requirements for the user	Knowledge of BS2000

Installation and operation	
Operating mode	Dialog Batch mode for controlling job handling and for AVAS batch functions.
Implementation language	Assembler, C
User interface	Dialog masks: English Message texts in German/English (optional)
Installation	By the customer according to the release notice

Documentation and training	
Documentation	The Manuals and Release Notice for AVAS are available on the [manual server.](#)
Training	See [course offer](#) (German)

Reference and delivery	
Conditions	The software products AVAS and AVAS-SV-BS2 can be leased by the customer in accordance with the conditions for the use of software
Ordering and delivery information	The software product can be obtained from your local Fujitsu regional office.

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