Datasheet
Fujitsu Software BS2000 HSMS V12.0

Hierarchical File Backup System in BS2000

Exploding storage capacities in data centers pose challenges for the management of data and its resources. The trend toward lifecycle-centric and system-controlled management of mission-critical data is the answer to these challenges.

Fujitsu Software BS2000 HSMS caters for this trend on the BS2000 platform. It is the BS2000 product for data backup and restore as well as migration and archiving on the BS2000 platform. Using a standardized interface backup/restore of files, databases and libraries, including library elements, can be performed. Automated data center solutions are also possible.

Backups to different external storage media are offered, which differ significantly with respect to their availability, access times and costs. HSMS supports the BS2000 data center administrator both in the management of large amounts of data and in optimizing the use of external storage devices. Equally, ordinary users can also use the HSMS functions assigned to their own files.

Add-ons like the automatic media management (MAREN)or the automatic robot control (ROBAR) make HSMS into the scalable kernel for the information lifecycle management in BS2000 environments.

Green IT

Topics

Basic features

Data backup
Backup is the precautionary creation and updating of copies of the data inventory in order to permit the restoration of data lost due to operator errors such as unintentional deletion or due to hardware failures.

Long-term archiving
Archival is the long-term saving of files and job variables that are no longer required online.
Archival saves storage space at the processing level because the files and job variables can be deleted after archival.
Archival is also used for documentation purposes, e.g. if legal regulations prescribe that data must be retained for specific periods of time.
Data saved by the archival function is managed in separate archives independently of the data saved by the backup function

Migration
The migration function offered by HSMS is a mechanism designed to make better use of disk storage capacity: during operation, data that has not been used for some time is moved from the processing level to the background level.
Migration can also be started automatically when saturation levels are reached.
Migration is only possible for BS2000 files on public media variables.

Data transfer
HSMS can be used to transfer files, job variables and catalog entries (of files on private volumes) to other BS2000 systems or other user IDs.

Backup modes

Full and incremental backup
A full backup saves all selected files completely (except for migrated files), regardless of whether or not they have been changed since the last backup.
An incremental backup only saves those files whose contents were modified or newly created since the last backup. Incremental backups can therefore result in a considerable reduction of the time and storage space required for a system backup.

Partial backup
The scope of an incremental backup can be further reduced by what is called a partial backup. Only those parts of a file saved that have changed since the last full backup.

Concurrent Copy
The BS2000 Concurrent Copy function (CCOPY) offers a backup option which enables a database to be backed up in parallel with normal processing operations. This function increases the availability of applications considerably. The applications affected only need to be stopped for backup initialization.

Versions-Backup
With this backup procedure, you can specify the minimum number of versions of a file to be kept in the version backup archive on a file-specific basis. A protection period for files deleted from the pubset ensures that they remain in the archive for a specified period of time. When the archive is reorganized, the valid file versions are transferred to the new backup file and obsolete file versions are removed from the archive.

Supported file systems
HSMS is able to process files belonging to BS2000 operating system, including files on Net-Storage. HSMS can also back up, restore and archive files from a UNIX files system (UFS). These files can reside either in the local BS2000-UFS or on a remote node in the NFS network.

Special features

Product Variants
The product ARCHIVE is a release unit of HSMS. HSMS is based on the software product ARCHIVE. It offers the functions of ARCHIVE, but with a more modern user interface and additional control options. This allows a seamless transition from ARCHIVE to HSMS backup functions.
An EXPORT/IMPORT function permits data exchange of tapes/cartridges between BS2000 installations. The function is compatible with the corresponding ARCHIVE function, i.e. HSMS can also be used to export or import ARCHIVE tapes.

System Managed Storage
HSMS is a key component in the System Managed Storage (SMS) concept. SMS denotes a concept allowing data management by the system. The aim is to simplify data management procedures both for the system administrator and for the end user.
As a tool for managing storage levels the HSMS product is an important component in the System Managed Storage concept.

Flexibility of the storage location for save

files
The previous philosophy in HSMS was the rarer a file is accessed, the "further away" its storage location. This rigid approach became more flexible as of HSMS V10.0 in order to enable higher level of independence from storage location. Significant for data backup via HSMS is only the following: which system is to access the data, the required performance and the capacity available. To enable easy transfer to other media, the save file is substantially transparent from the storage location.
The extended use of backups to disk also allows the import respectively export of each file (JV) from/to any save file on disk.

Data compression
In order to better utilize the capacity of backup volumes, HSMS provides the option of compressing the data before it is written to a save file.

Shadow archives
Shadow archives are set up by HSMS administrator and are used to store the copies of backup files. The backup files are automatically duplicated by HSMS for backup and long term archiving.

Database backup
HSMS enables the user to run online backups of the database files of the BS2000 database systems SESAM/SQL-Server, UDS/SQL and ORACLE. Read and write accesses can continue to be performed to the database files while the backup is being taken. The administrator can collect the changes occurring during this time, also back them up with HSMS and apply them when the backup is being loaded. With SESAM/SQL-Server, UDS/SQL and ORACLE, the user can independently use HSMS to back up the database files. The SESAM/SQL-Server database system provides a separate interface for administration of the backups and uses HSMS internally.

Backup of Clones
If the data to be backed up resides on ETERNUS DX or Symmetrix storage system, the data backup process can be considerably improved by using mirroring functions. The basic idea behind using this functions with Concurrent Copy is that the mirrored pubset disks are split off at the desired backup time and the backup data is then read from the mirror disks.

Backup using mirroring functionality for databases
This HSMS/CCOPY functionality using mirroring functions is also available for online backup of databases (SESAM/UDS). The following new options are provided:
Complete integration of online backup for databases using mirroring functionality
Minimal degradation of performance for the database. The split phase at the checkpoint is short, as with the previous CCOPY
Backup of open files is possible

Backup of Snapsets
DMS offers the easy creation of pubset-copies by exploiting the snapset-mechanism. Due to the limited number of snapsets (the limiting factor is the disk-subsystem) it makes sense to create and delete snapsets in rotation. Before deleting a snapset it is possible to save its files and job-variables with the command BACKUP-FILES into a Backup-Archive.

Library Backup
HSMS provides the possibility to restore individual PLAM elements from secured PLAM libraries.

Backup of files on Net-Storage
In backups with the previous standard settings in HSMS the data is always also backed up on the Net-Storage.
With regard to files on local pubsets and files on remote Net-Storage the backup amount can be selected directly via extended HSMS interfaces. HSMS supports the differentiation according to filetype BS2000 and Node-File for file on Net-Storage.
In restore the selection of Net-Storage files is allowed, and Net-Storage is also provided as a target for the restore.

Accounting
An accounting function enables the CPU time used and the number of I/Os for HSMS backup, migration and long-term archiving functions to be billed precisely to the individual user.

Performance issues
HSMS and ARCHIVE parallelize disk accesses by using the feature PAV (Parallel Access Volume) respectively the I/O parallelization in the feature RSC. This leads to significant performance improvements because parallel disk access avoids that the LTO cassette operation is slowed down by a possibly slower disk operation.

BS2000 Backup Monitor on SE Manager

On SE Server HSMS is integrated into the BS2000 Backup Monitor on SE Manager – on the SE Manager an overview of the current backup jobs (HSMS and FDDRL) of all BS2000 systems in a SE infrastructure is available and a detailed overview of the status of the backup jobs. The report files of HSMS can also be displayed on the BS2000 Backup Monitor. In HSMS the SHOW functions and the reporting have been adapted to the needs of the BS2000 Backup Monitor on the SE Manager.

Support of SE feature BS2000 Backup Server

On SE Servers a relief of the productive systems can be reached by installing a marked BS2000 system as BS2000 Backup Server. The backup server takes over the backup of the Shared Pubsets independent on its role (master or slave) in SPVS.

Innovations with SP 23.2:
The following new features were introduced with HSMS V12.0E:

- New LIST-SAVE-FILE statement to list the contents of a backup file previously created with HSMS on private disk, shared disk or Net-Storage
- New operand DIALOG-FILE-SELECT for RESTORE-NODE-FILES offers the possibility to output a dialogue with a list of path names that can be selected for restore via PATH-NAMES and other operands
- Consistent format of headers when restoring files or JVs with RESTORE-FILES
- New options for deleting a backup file
- Reduction of the number of assembly requests for an input tape with REORGANIZE-VERSION-BACKUP

Technical details

Requirements	
Technical requirements Hardware	Fujitsu Server BS2000 SE Series
Technical requirements Software	BS2000 OS DX V1.0 or OSD/XC V11.0 The product ARCHIVE is delivered as a component of HSMS.
Requirements for the user	BS2000 knowledge
Installation and operation	
Operating mode	Dialog and batch operation
Implementation language	Assembler, SPL, C, C++
User interface	Commands english, message texts german/english
Installation	By the customer according to the release notice and user manuals
Documentation and training	
Documentation	The manuals or Release Notices for HSMS are available on the manual server.
Training	See course offer (German)
Reference and delivery	
Conditions	HSMS is made available to the customer as part of the BS2000 OS DX V1.0 respectively OSD/XC V11.0 operating system package under the conditions for the use of software products against current payment.
Ordering and delivery information	HSMS is part of the BS2000 OS DX V1.0 respectively OSD/XC V11.0 operating system package. The operating system package can be obtained from your local Fujitsu regional office.

Contact

Fujitsu
BS2000 Services
Email: bs2000services@fujitsu.com
Website: www.fujitsu.com/emeia/bs2000
2023-11-30 EM EN