

We make sure



SESAM/SQL V4.0 and V5.0

Overview

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SESAM/SQL V4.0

64-bit addressing

Partitioned tables

Application programming

Manageability

Availability

SESAM/SQL V4.0: 64-bit addressing

- **Access via 64-bit pointers to data in the address space above 2GB**
- **with this version:**
 - 64-bit addressing of the secondary data buffer
 - Increase in the SYSTEM-DATA-BUFFER value to 48000000 (from 1000000)
 - Secondary data buffer up to 48 GB
 - Load on program space lightened =>
 - More space for primary data and cursor buffers
 - Increase in the USER-DATA-BUFFER and CURSOR-DAT-BUFFER values to 1500000 (from 1000000)
- **Requirements:**
 - BS2000/OSD V6.0 or OSD/XC V2.0
 - Suitable hardware: inc. all SX models, S170, S180, S190

SESAM/SQL V4.0: 64-bit addressing:

Benefits:

- The support for 64-bit addressing allows vertical growth with larger buffers.
- This produces a substantial reduction in the “elapsed time” by saving on physical I/Os.
- The 64-bit main storage database brings benefits wherever physical I/Os create a bottleneck, in particular for
 - Web applications
 - Information-rich web pages must often be built – with short response times.
 - Statistical analyses (OLAP, data mining)
 - Without in-memory databases, response times for long-running search queries can become unacceptable.
 - Consolidation of multiple SESAM single-task database handlers with one SESAM multitask database handler
 - Multiple DB applications share the same buffer address space
 - OLTP applications with strict response time conditions.

SESAM/SQL V4.0: Partitioned tables:

- Create with CREATE TABLE (see syntax example)
- Partitioning via primary-key range
- A partitioned table
 - can be distributed over max. 16 partitions
 - belongs to precisely one table
 - resides precisely on one space
- A space may contain other objects (indices, tables), but no other partition associated with the same table
- A secondary index of a partitioned table includes all partitions of the table

Partitioned tables:

```
CREATE TABLE parttable
  (cha CHAR(10),
  numi NUMERIC(4,0),
  deci DECIMAL(5,2),
  sma SMALLINT,
  CONSTRAINT pk_parttable
  PRIMARY KEY (cha, deci))
```

USING PARTITION BY RANGE

```
PARTITION 1 VALUE < ('BB', 1.0)           ON SPACE space1,
PARTITION 2 VALUE <= ('LZZZZZ', 999.99)  ON SPACE space2,
PARTITION 3 VALUE <= ('W')               ON SPACE space3,
PARTITION 4                               ON SPACE space4
```

Partitioned tables:

Benefits:

- Application does not need to know / take account of the partitioning
- Smaller DB management units
- Shorter backup and recovery times (smallest recovery unit is the space)
- Parts of a table remain available even if a partition crashes
- DML operation (usually) possible if a partition crashes
- SESAM utility support on partitions
(e.g.: COPY, RECOVER, LOAD, UNLOAD, REORG)

SESAM/SQL V4.0: Application programming:

Enhancements to the JDBC server / JDBC client

- Introduction of connection pooling
 - On the client side, a connection from the client to the server can be used for multiple transactions in succession.
 - This is an advantage when the JDBC client is part of an application server and so operates with multiple connections.
- Reuse of server tasks
 - Server tasks are not terminated at the end of a user session, but can be reused for the next connect request from a client.
 - A single-user application without application server can also exploit this advantage.
- Other improvements:
 - Option handling by the client via “sesamjdbc.properties” file
 - JV for JDBC server status display

SESAM/SQL V4.0: Manageability (1)

- Extension of the max number of SPACES from 200 to 400
- Extension of the backup number from 9999 to max. 999999
 - e.g.: <catalog>.CATALOG.000032
- Extended information for LOAD
 - Upon LOAD abort
 - Number of records processed thus far in the exception file
 - “SKIP FIRST <record number>” parameter
 - Skipping of input records of an input file
- New database dandler option RECOVER-OPTIONS
 - allows tuning of buffer limits for RECOVER and REFRESH utilities

SESAM/SQL V4.0: Manageability (2)

- Next response polling with SESADM information calls
 - Information larger than 32000 bytes possible (e.g. SHOW-USERS >200)
 - Output option to temporary file (#SESADM.<tsn>.RESULT)
 - Reading of last temporary RESULT file (SHOW-LAST-RESULT)
- Checking of SESADM actions
 - MSG7 message of the last ADM statement in
 - SDF-P variable (SESADM-RESULT)
 - or temporary JV (#SESAM.SESADM.JV)

SESAM/SQL V4.0: Manageability (3)

■ SESMON enhancements

□ SERVICE ORDERS mask

- Display of RESTORE progress
- Display of RECOVER / REFRESH progress

□ SYSTEM INFORMATION mask

- Display of restart progress
- During the session: Number of accrued logging blocks
- During the restart: Number of blocks to be processed
 Number of blocks processed
 Percentage of processed blocks

□ Flagging of hit rates with '*' after counter overflow

SESAM/SQL V4.0: Availability (1)

- Online update of CATREC file
 - Removal of RECOVERY_UNIT records or CAT_LOG records in the CAT-REC file during online operation
- Online changing of DBH options possible during ongoing operation
 - MSG-OUTPUT
 - PRIVILEGE-VIOLATION(SEcurity)
 - Sub-options for SERVICE-TASKS(CPU-RESOURCES)
 - RECOVER-OPTIONS
 - SESSION-LOGGING-ID re FILE-RESOURCES
 - TRANSFER-CONTAINER / WORK-CONTAINER re STORAGE-SIZE
 - OLD-TABLE-CATALOG re SYSTEM-LIMITS

SESAM/SQL V4.0: Availability (2)

- CHECK FORMAL in parallel with COPY ONLINE with BCV
 - Formal check of the SESAM copy created on BCV
- COPY ONLINE with BCV and SRDF
 - For backup using BCV, the BCV mirror of a remote data resource managed via SRDF can be used instead of a local BCV mirror.
 - This gives administrators an extended set of options when designing their backup policies.

SESAM/SQL V4.0: Software requirements

- General (starting with version):
 - BS2000/OSD-BC V4.0 (/390)
 - OSD/XC V1.0 (SX servers)
 - CRTE V2.4
 - COBOL85 V2.3
 - COBOL2000 V1.0B
 - ESQL-COBOL V 2.0A
 - DRIVE V3.1
 - HSMS V5.0A50 tape backup only
 - HSMS V6.0 for CCOPY and open BCV files
 - HSMS V7.0 for CHECK FORMAL parallel to CCOPY
 - openUTM V5.1A40
- Specifically for 64-bit addressing
 - BS2000/OSD-BC V6.0 (/390) or higher
 - OSD/XC V2.0 (SX servers) or higher
 - X2000 V3.0
 - CRTE V2.5

SESAM/SQL V5.0

UNICODE support

Large I/O transfer lengths

Backup of DBH options

Main topic of Version 5.0: UNICODE support

- Introduction of the new data types NCHAR / NVARCHAR
- UTF16 notation of the data:
 - used for storing data in columns of type NCHAR / NVARCHAR
 - used for UNICODE host variables and SQL literals
- TRANSLATE function to convert N[VAR]CHAR to [VAR]CHAR and vice versa

SESAM/SQL V5.0: Large I/O transfer lengths

- I/O transfer lengths 64 KB - 160 KB dependent on the disc type (against 32 KB before)
- used internally when SESAM copies files on disc:
 - whenever a backup copy is created on disc
 - whenever a backup copy is restored within the frame of
 - RECOVER
 - CREATE REPLICATION
 - REFRESH SPACE
 - Whenever copying a reorganised SPACE.
- Benefit: significantly reduced copy times on discs.
- Prerequisites:
 - Public Discs (no private discs)

SESAM/SQL V5.0: Backup of DBH options

- SESAM/SQL V4.0 offers new and enhanced SESADM commands for the online modification of DBH options.
- New in V5.0: SESADM command SAVE-DBH-OPTIONS
 - backups the current values of the DBH options
 - The saved values are used by the next DBH start.

SESAM/SQL V5.0: Software requirements

- BS2000/OSD-BC or higher V6.0B
- OSD/XC or higher V2.0
- CRTE or higher V2.6
- LMS or higher V3.3
- SORT or higher V7.8B
- SORT or higher V7.9A (*1)
- TIAM or higher V13.1
- Optional:
 - ADILOS or higher V6.4C
 - ARCHIVE or higher V7.0B
 - COBOL85 or higher V2.3
 - COBOL2000 or higher V1.2
 - COBOL2000 or higher V1.4 (*1)
 - DRIVE or higher V3.1A10
 - EDT or higher V16.6B05
 - EDT or higher V17.0 (*1)
 - ESQL-COBOL or higher V2.0C
 - ESQL-COBOL or higher V3.0 (*1)
 - HSMS or higher V7.0 (for tape backup only)
 - INFPLAN or higher V5.3B
 - JV or higher V14.0B
 - openNet Server or higher V3.0
 - openUTM or higher V5.2
 - SDF-P or higher V2.3
 - SECOS or higher V5.0
 - SESAM-KLDS or higher V3.1D
 - SSC-BS2 or higher V6.0 (for SNMP-Management using RDBMS-MIB only)
 - TOM-REF or higher V3.0B
 - XHCS or higher V2.0 (*1)

(*1) The product is necessary if the UNICODE functions are used