BRMS Overview – What Does It Do and How Do I Implement It?

Speaker : Kendall Kinnear

Based on materials created by: Debbie Saugan, IBM
About the Speaker
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About KS2

• Founded 1992 as an IBM value added reseller
• IBM Premier Business Partner
• Oracle Certified Partner
• IBM Business Continuity Partner
• VMWare Partner
• Solution areas:
  – Service Oriented Architecture (SOA)
  – ERP (Oracle/JDE)
  – Application Modernization
  – Systems & Technology
Agenda

What is BRMS and what does it do?
  Are you ready for recovery?
  What will BRMS do for my Business?

Installing BRMS and implementing BRMS
  Main BRMS functions
    5.4 Enhancements
    6.1 Enhancements
  What are the various BRMS entities?
  What order should I create the BRMS entities?
  What BRMS reports should I review each day?
  What resources are available to help me?
Are You Ready for Recovery?
What will BRMS do for my Business?
Backup Recovery and Media Services (BRMS)

- IBM i’s Strategic Backup and Tape Management Product (5722-BR1, 5761BR1)
  - Manages Your Media
  - Automates Your Backups
  - Simplifies Your Recoveries
  - Provides Detailed Reporting
    - Detailed Reports on What Was Saved, Not Saved
    - Detailed Instructions on Recovery Process
  - Tape Library Support
  - Virtual Tape Support (New for 5.4)
  - Software Tape Encryption (New for 6.1)
 Agenda

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    6.1 Enhancements
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  What order should I create the BRMS entities?
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  What resources are available to help me?
**BASE Function**

### Backup Planning
- Critical Application
  - Lib1
  - Lib2
- Non-Critical Application
  - Lib3
  - Lib4

- What Objects should be backed up?
- What media? Tape, savefile, or TSM?
- Full, Incremental, or Cumulative Backups?
- Save-while-active, Parallel saves
- Spoolfile and Object Level saves
- Duplicate Backup Tapes
- Did last night's backup run OK?
- Virtual Tape Support

### Tape Library Support
- 3494
- LTO
- 3590/2
- 3570/3575

### Media Management
- What is on Tape XYZ?
- What tapes should be in location DEF?
- What tapes are old or have a lot of errors?
- What tapes should move offsite today?
- What tape has the latest copy of Object ABC?

### Recovery
- List of Tapes required
- List of Steps to Recover
- On-Line Progress Report
- Location-specific Recovery Steps

### BRMS GUI

### Option #1: Network

### Network

### Option #2: Advanced

### Hierarchical Storage Management
- Migrate libraries, root folders, and spoolfiles among disk ASPs based on age, size, and last use criteria
- Archive objects to tape based on age, size, frequency of use, and ASP storage criteria
- Dynamically recall database files, DLO's and streamfiles when needed

- Software Data Encryption
- Media Library Mgmt
- User Defined System Name
- Tape Library Status Tool

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**BASE Function**

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- List of Tapes required
- List of Steps to Recover
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- Location-specific Recovery Steps

**BRMS GUI**

**Option #1: Network**

**Network**
- BRMS Media Database
- On-Demand Media Database

**Option #2: Advanced**

**Hierarchical Storage Management**
- Software Data Encryption
- Media Library Mgmt
- User Defined System Name
- Tape Library Status Tool

Migrate libraries, root folders, and spoolfiles among disk ASPs based on age, size, and last use criteria
Archive objects to tape based on age, size, frequency of use, and ASP storage criteria
Dynamically recall database files, DLO's and streamfiles when needed
### Media Management

- Tracks all the media used for backup
- Maintains database of information
  - Volume/Serial #
  - When created (used)
  - When expires
  - Where located
  - When it will move from current location
  - What kind of media
  - Contents of media
  - Related media
  - System that created tape
  - How many times used
  - Number of read/write errors

- WRKMEDBRM command provides primary access to information
- Also accessed via Navigator GUI

```
<table>
<thead>
<tr>
<th>Opt</th>
<th>Volume</th>
<th>Creation</th>
<th>Expiration</th>
<th>Move</th>
<th>Media</th>
<th>Dup</th>
<th>Location</th>
<th>Dupe</th>
<th>Class</th>
<th>Status</th>
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<tr>
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<td></td>
<td></td>
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<td>2/12/03</td>
<td>TAPMLB01</td>
<td>2/12/03</td>
<td>FMT3590</td>
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<td>3/12/03</td>
<td>OFFSITE</td>
<td>2/12/03</td>
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</table>

More...  
F3=Exit  F5=Refresh  F11=Volume statistics  F12=Cancel  F23=More options
```
Media Management

- Many reports available to manage media
  - Media by Expiration Date
    - Scratch listing
  - Media Movement Report
    - Consolidated report, or
    - Separate page per location
  - Media Threshold Information
    - Media with errors
  - Media Inventory Listing
    - All media in database
  - Media Information Report
    - Everything saved in last 24 hours

---

### Media Movement Report All Volumes

<table>
<thead>
<tr>
<th>Volume</th>
<th>Creation</th>
<th>Expire</th>
<th>Move</th>
<th>Move</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial</td>
<td>Date</td>
<td>Date</td>
<td>Policy</td>
<td>Date</td>
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<tr>
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<td>3/28/03</td>
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<td>3/1/03</td>
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<td>SAM421</td>
<td>3/1/03</td>
<td>3/28/03</td>
<td>OFFSITE</td>
<td>3/1/03</td>
</tr>
<tr>
<td>SAM422</td>
<td>3/1/03</td>
<td>3/28/03</td>
<td>OFFSITE</td>
<td>3/1/03</td>
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<td>3/28/03</td>
<td>OFFSITE</td>
<td>3/1/03</td>
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</table>

Total Volumes ........: 4

---

### Media Threshold Information

<table>
<thead>
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<th>Volume</th>
<th>Creation</th>
<th>Expire</th>
<th>Read</th>
<th>Write</th>
<th>Exception</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial</td>
<td>Date</td>
<td>Date</td>
<td>Uses</td>
<td>Errors</td>
<td>Errors</td>
</tr>
<tr>
<td>ABC001</td>
<td>2/1/03</td>
<td>2/28/03</td>
<td>3</td>
<td>2</td>
<td>*2</td>
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<tr>
<td>ABC032</td>
<td>3/1/03</td>
<td>3/29/03</td>
<td>9</td>
<td>4</td>
<td>*3</td>
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<td>ABC138</td>
<td>1/6/03</td>
<td>2/03/03</td>
<td>5</td>
<td>8</td>
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<tr>
<td>ABC151</td>
<td>3/2/03</td>
<td>3/30/03</td>
<td>2</td>
<td>1</td>
<td>*2</td>
</tr>
</tbody>
</table>

*2 = Media has exceeded use count
*3 = Read error threshold has been exceeded
*4 = Write error threshold has been exceeded.
**BASE Function**

**Backup Planning**
- Critical Application: Lib1, Lib2
- Non-Critical Application: Lib3, Lib4

- What Objects should be backed up?
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**Media Management**
- What is on Tape XYZ?
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---

**Option #1: Network**

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**Option #2: Advanced**
Backup Planning

• Defined by Backup Control Group
  – Defines
    • What to backup
    • How to back up
    • Where to store media after the backup
    • How long to retain the media after the backup
    • Shutdown users or not
    • Subsystems to shut down

  – Three default control groups provided
    • *BKUGRP – Backup entire system except *SAVSYS, *IBM, and spooled files
    • *SYSGRP – Backup *SAVSYS and *IBM
    • *SYSTEM – Backup the full system

  – Use the Work with Control Group for BRMS (WRKCTLGBRM) or GUI to update

  – Several steps to define a control group
    • Edit entries (Opt 2)
    • Set attributes (Opt 8)
    • Subsystems to manage (Opt 9)
    • Job queues to manage (Opt 10)
Backup Planning

- When to perform activities
  - Full or incremental
  - Day of week
- List of items to be saved
  - Specific libraries
  - Generic libraries
  - Special values
    - *ALLUSR
    - *ALLDLO
    - *SAVSECDTA
    - Etc.
  - User command to run before, during, or after backup
    - *EXIT backup item
  - Save while active action
  - Level of information to retain in history

<table>
<thead>
<tr>
<th>Group</th>
<th>Default activity</th>
<th>Text</th>
<th>Weekly</th>
<th>Retain</th>
<th>Save</th>
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<tbody>
<tr>
<td>TESTSAVE</td>
<td>Fiiiiff</td>
<td>Demo Backup Control Group</td>
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<table>
<thead>
<tr>
<th>Seq</th>
<th>Items</th>
<th>Activity</th>
<th>Object</th>
<th>While</th>
<th>Detail</th>
<th>Active</th>
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<tr>
<td>10</td>
<td>*EXIT</td>
<td>*DFTACT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>*SAVSECDTA</td>
<td>*DFTACT</td>
<td>*NO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>LIB*</td>
<td>*DFTACT</td>
<td>*ERR</td>
<td>*NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>PAYLIB</td>
<td>FFFFFF</td>
<td>*NO</td>
<td>*LIB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>CUSTLIB</td>
<td>*DFTACT</td>
<td>*MBR</td>
<td>*SYNCLIB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>EMPLIB</td>
<td>*DFTACT</td>
<td>*MBR</td>
<td>*SYNCLIB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Parallel Saves and Restores

- **Parallel Saves**
  - Save large library, large object or list libraries to multiple tape devices in parallel
    - Spreads data objects across tapes
    - Divide libraries across tapes
    - BRMS determines best spreading options
  - Improves save performance for very large objects
    - Not designed for small objects
  - End user interface with BRMS
  - Same number of tape devices on save "recommended" for restore
    - Special values for serial restore mode (One Tape Device)
  - Media Library with multiple devices provides tape mounting automation
Backup Planning

• Control group attributes
  – What media to use
    • Full
    • Incremental
  – What device(s) to use
  – Parallel backup requirements
  – Are interactive users signed off
    • How long to delay
  – What type of incremental backup
    • Cumulative
    • Differential
  – Save access paths
  – Save spool files
  – Other options from the save commands
Running the Backup

- **Start Backup using BRMS**
  - STRBKUBRM command
  - Executes control group
  - Where to run backup
    - Batch
    - Interactive
    - Console
    - Restricted batch
  - Append to existing media
  - Override control group attributes
  - Override media policy settings
- **BRMS versions of “normal” save commands**
  - SAVLIBBRM, SAVSYSBRM, SAVBRM, etc.
  - No SAVSECDTA or SAVCFG function until V6R1
- Each method has it's place
- All activities logged
BRMS Log

Begin processing for control group DENNISTEST type *BKU.
Interactive users are allowed to stay active.

Starting save of library EXAMPLE to save file.
*FILE DSPPTF2 in EXAMPLE not saved.
11 objects were saved; 2 objects were not saved.
Starting save of library JEFFM to save file.
7 objects saved from library JEFFM.
Starting save of library JOHND to save file.
134 objects saved from library JOHND.
Starting save of BRM media information at level *LIB to device *SAVF.
11 objects saved from library QUSRBRM.
Save of BRM media information at level *LIB complete.

Control group DENNISTEST type *BKU completed with errors.
**IBM Power Systems**

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Recovery Volume Summary Report

Vol123  Offsite        3/01/03
Vol456  Comproom 3/01/03
Vol789  MLD01       3/01/03

Recovery Analysis Report

Step 5: Recover your BRMS database by mounting VOL123 and typing RSTLIB QUSRBRM.

Step 6: Recover your user profiles by mounting VOL456 and typing STRRCYBRM *SYSTEM *RESTORE.

Step 7: Recover your special OS/400 libraries by mounting VOL789 and typing STR...

Libs Completed: 6
Libs to go: 114
% Complete: 3%

---

**Backup Planning**

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  - Lib3
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**Recovery**

List of Tapes required
List of Steps to Recover
On-Line Progress Report
Location-specific Recovery Steps

---

**Option #1: Network**

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**Option #2: Advanced**

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Restore individual libraries or objects

- Work with Media Information for BRMS (WRKMEDIBRM)
  - Shows all objects tracked saved by BRMS
  - Starts at library/directory level
    - Tape media
    - File sequence on tape
    - Date saved
    - Type of save
  - Option to restore directly from screen
  - Drill down to see individual objects

<table>
<thead>
<tr>
<th>Saved</th>
<th>Date</th>
<th>Time</th>
<th>Save</th>
<th>Volume</th>
<th>Type</th>
<th>Serial</th>
<th>Sequence</th>
<th>Expiration</th>
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<tbody>
<tr>
<td>QUSRRDARS</td>
<td>5/01/02 16:41:57</td>
<td>*FULL</td>
<td>103673</td>
<td>66</td>
<td>6/05/02</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>QUSRSSYS</td>
<td>5/01/02 16:41:57</td>
<td>*FULL</td>
<td>103673</td>
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<td>6/05/02</td>
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<tr>
<td>TEAM01AU</td>
<td>5/01/02 16:41:57</td>
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<td>6/05/02</td>
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</table>

More...
Recovery

- Status display shown during restores
  - How many libraries remaining to restore
  - How many objects remaining to restore
  - The size of the object remaining to restore
- Lists the object being restored and the media being used
- Automatically mounts and dismounts media when using tape library
- Same screen shown for individual libraries or total system restores

<table>
<thead>
<tr>
<th>Item</th>
<th>Saved</th>
<th>Save</th>
<th>Vol</th>
<th>File</th>
<th>Expiration</th>
<th>Objects</th>
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<td>2/01/03</td>
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<td>FULL VOL3</td>
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<td>3/15/03</td>
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<td>08:23:00</td>
<td>FULL VOL3</td>
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<td>3/30/03</td>
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Press ATTN to cancel recovery.
Recovery

- List of volumes needed to recover system
  - Where they are
  - When they were created
- Generated by running BRMS Maintenance
- Should be created every day
- Store a copy somewhere offsite

### Recovery Volume Summary Report

<table>
<thead>
<tr>
<th>Volume Serial</th>
<th>Expired</th>
<th>Media Class</th>
<th>Creation Date</th>
<th>Expire Date</th>
<th>Location Date</th>
<th>Storage Location</th>
<th>System ID</th>
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<tr>
<td>ABC071</td>
<td>*ULTRIUM3</td>
<td>2/16/03</td>
<td>3/16/03</td>
<td>3/02/03</td>
<td>MLB3494</td>
<td>PID400V</td>
<td></td>
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<tr>
<td>ABC951</td>
<td>*ULTRIUM3</td>
<td>2/18/03</td>
<td>*Ver 002</td>
<td>3/04/03</td>
<td>MLB3494</td>
<td>PID400V</td>
<td></td>
</tr>
<tr>
<td>HIJ787</td>
<td>*ULTRIUM3</td>
<td>2/28/03</td>
<td>1/28/03</td>
<td>2/28/03</td>
<td>BLDGXYZ</td>
<td>PID400V</td>
<td></td>
</tr>
<tr>
<td>MNO843</td>
<td>*ULTRIUM3</td>
<td>3/05/03</td>
<td>4/05/03</td>
<td>3/05/03</td>
<td>BLDGXYZ</td>
<td>PID400V</td>
<td></td>
</tr>
<tr>
<td>NOP042</td>
<td>*ULTRIUM3</td>
<td>3/06/03</td>
<td>4/06/03</td>
<td>*Pending</td>
<td>OFFSITE</td>
<td>PID400V</td>
<td></td>
</tr>
<tr>
<td>VOL006</td>
<td>*ULTRIUM3</td>
<td>3/07/03</td>
<td>*Ver 002</td>
<td>*Pending</td>
<td>OFFSITE</td>
<td>PID400V</td>
<td></td>
</tr>
</tbody>
</table>

Total volumes needed for Recovery ...............: 6
Recover System Instructions

- Detailed instructions for rebuilding system from backup
  - Defines order of operations
  - Specifies detailed commands to execute
- Generated by running BRMS Maintenance
- Should be created every day
- Store a copy somewhere offsite
- Use for DR testing
- Continually being improved
- Example on next slide...
Recovering Your System

STEP: Recover Licensed Internal Code

Start time _____ Stop time _____

Use media as shown below and the procedure for "Recovering the Licensed Internal Code" in the "Backup and Recovery" book.

__ Use "Option 2" if you are recovering to a different system or if you are recovering to a system with user ASP(s) or if you are recovering to the same system with a different release.

__ Use "Option 3" if you are recovering to the same release and same system or you are recovering a logical partition to another logical partition.

<table>
<thead>
<tr>
<th>Saved Item</th>
<th>Type</th>
<th>ASP</th>
<th>Date</th>
<th>Time</th>
<th>Objects</th>
<th>Omit</th>
<th>Sequence Number</th>
<th>Control Group</th>
<th>Volume Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>*SAVSYS</td>
<td>*FULL</td>
<td>01</td>
<td>3/25/02</td>
<td>11:00:49</td>
<td>0</td>
<td>-----</td>
<td>1</td>
<td>*SYSTEM</td>
<td>AA111</td>
</tr>
</tbody>
</table>

STEP: Recover operating system

Start time _____ Stop time _____

Use the media shown below and the procedure for "Restoring the Operating System using the Complete Restore Method", as detailed in the "Backup and Recovery" book.

<table>
<thead>
<tr>
<th>Saved Item</th>
<th>Type</th>
<th>ASP</th>
<th>Date</th>
<th>Time</th>
<th>Objects</th>
<th>Omit</th>
<th>Sequence Number</th>
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<td>*SAVSYS</td>
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<td>0</td>
<td>-----</td>
<td>1</td>
<td>*SYSTEM</td>
<td>AA111</td>
</tr>
</tbody>
</table>

STEP: Recover the BRMS/400 product and associated libraries

Start time _____ Stop time _____

The BRMS/400 product and associated libraries must be recovered before you can use the product to perform other recovery operations. To prevent messages that are not related to the recovery from interrupting the recovery process, run the following command:

CHGMSGQ MSGQ(QSYSOPR) DLVRY(*NOTIFY) SEV(99)

ETC........
Recovery Volume Summary Report

Vol123  Offsite        3/01/03
Vol456  Comproom 3/01/03
Vol789  MLD01       3/01/03

Recovery Analysis Report

Step 5: Recover your BRMS database by mounting VOL123 and typing RSTLIB QUSRBRM.
Step 6: Recover your user profiles by mounting VOL456 and typing STRRCYBRM *SYSTEM *RESTORE.
Step 7: Recover your special OS/400 libraries by mounting VOL789 and typing STR ...

Libs Completed: 6
Libs to go: 114
% Complete: 3%

Paylib1    Vol123
Paylib2    Vol 456
Paylib3    Vol 789

• List of Tapes required
• List of Steps to Recover
• On-Line Progress Report
• Location-specific Recovery Steps
Tape Library Support

BRMS will ....
- Select Scratch Tapes
- Mount/Demount from drives
- Eject Tapes from Library after the save
- Have tested with Virtual Tape Libraries
*BASE Function

Tape Library Support

3494  LTO  3590/2  3570/3575

BRMS GUI

Option #1: Network

Option #2: Advanced
BRMS Navigator Interface

- Initial Implementation - Navigator Plug-In
  - Created Separately
  - Looks and Behaves like Navigator GUI
- Simplifies Setup and Management of Backup/Recovery Strategy
- Easy to Use Wizards
  - Create a Backup Policy
  - Add Tape Media to BRMS
  - Prepare Tapes for Use
  - Add Items to Backup Policy
  - Restore Backed Up Items
- V6R1 provides web browser interface via new Systems Director
**BASE Function**

**Backup Planning**
- Critical Application
  - Lib1
  - Lib2
- Non-Critical Application
  - Lib3
  - Lib4

- What Objects should be backed up?
- What media? Tape, savefile, or TSM?
- Full, Incremental, or Cumulative Backups?
- Save-while-active, Parallel saves
- Spoolfile and Object Level saves
- Duplicate Backup Tapes
- Did last night's backup run OK?
- Virtual Tape Support

**Tape Library Support**
- 3494
- LTO
- 3590/2
- 3570/3575

**Media Management**
- What is on Tape XYZ?
- What tapes should be in location DEF?
- What tapes are old or have a lot of errors?
- What tapes should move offsite today?
- What tape has the latest copy of Object ABC?

**Recovery**
- List of Tapes required
- List of Steps to Recover
- On-Line Progress Report
- Location-specific Recovery Steps

**Hierarchical Storage Management**
- Migrate libraries, root folders, and spoolfiles among disk ASPs based on age, size, and last use criteria
- Archive objects to tape based on age, size, frequency of use, and ASP storage criteria
- Dynamically recall database files, DLO's and streamfiles when needed

**Option #1: Network**

**Network**
- BRMS Media Database
- BRMS Media View
- BRMS Media Library

**Option #2: Advanced**

**BRMS GUI**
- New in 6.1

- Software Data Encryption
- Media Library Mgmt
- User Defined System Name
- Tape Library Status Tool
Agenda

What is BRMS and what does it do?
Are you ready for recovery?
What will BRMS do for my Business?

Installing BRMS and implementing BRMS
Main BRMS functions
  5.4 Enhancements
  6.1 Enhancements
What are the various BRMS entities?
What order should I create the BRMS entities?
What BRMS reports should I review each day?
What resources are available to help me?
BRMS Enhancements for 5.4

- BRMS Client System i Navigator
  - Archive: Policy, Lists, and Reports
  - Email Policy
  - Containers Support
  - User Filter of Logged Messages
  - User MLB (Media Library) support
  - ASP (Auxiliary Storage Pool) Classes

- Backup Enhancements
  - Control Group ERP (Error Recovery Process)
  - New Missed Library/Object Control Group
  - *CUML - Force Full Reference Data Control
  - SAVSYSINF Support
  - Save/Restore of Spooled Files
  - *LINK – User Defined Omit QLNKOMT
  - STRBKUBRM
  - FLASHCOPY Support
  - Parallel Save/Restore Enhancements Including Support for IFS
BRMS Enhancements for 5.4

• Recovery and Retrieval Enhancements
  – Restore/Retrieve from Any Volume
  – STRRCYBRM – Multiple Enhancements
  – RSTOBJBRM / RSTLIBBRM – Multiple Enhancements
  – Auto Create of Parent Directories
• Devices/Media Management Enhancements
  – Virtual Tape Support
  – DUPMEDBRM Multiple Enhancements
• Network Enhancements
  – Support Available/Unavailable Status (GUI)
  – Support User Control of Sending Messages
  – Restricted State Network Interface (GUI)
• Archive
  – Support Save Media Information on STRARCBRM
• Miscellaneous Enhancements
  – WRKOBJBRM - ASP Parameter
BRMS Enhancements for 6.1

- BRMS Client Navigator Enhancements
  - Web Browser Support via Systems Director Navigator
  - Media Policies Externalized
  - DVD/Optical Support
- BRMS Software Encryption
- Multiple Save Synchronization for Save While Active
- Missed Object Control Group Support for IFS
- Save/Restore Private Authorities with Objects
- Parallel Save Type Selection
- Save Generic Libraries
- Omit *SYSDTA on SAVSYSBRM
- Reference Date/Time on SAVOBJBRM
- Save Journal Receivers Support
- New Overrides on STRBKUBRM
- Auditing and Performance Backup Report
- Better IFS Messaging in BRMS Log
- Flashcopy Support
BRMS Enhancements for 6.1

- Media Management Enhancements
  - Media Balancing
  - Automatic Duplication
  - Move Media Retention Capability
  - Movement/Container Auto Open/Close
- Networking – Stop SNA Attempt if No TCP
- New BRMS Advanced Features (Option 2)
- Recovery Enhancements
  - Restore Private Authorities Saved with Objects
  - STRRCYBRM
    - Priority Recovery Sequencing
    - Location Omit
    - Report Enhancements for Optical and Encryption
  - Recovery for Logical/Physical Files
Software Encryption (New for 6.1)

• Encryption for Any Tape Device, Tape Library or Virtual Tape
  – AES Encryption
  – Data Encrypted – Not Tape Labels
  – Capability to Encrypt Each File Via Different Key
• Requires i5/OS option 44 (Encrypted Backup Enablement)
  – Requires Tape Management Application to Enable Encryption
  – Recommend BRMS
    • BRMS Advanced Feature Required
  – Not Compatible with Hardware Encrypting Tape Devices
Software Encryption Considerations *(New for 6.1)*

Tape Backup Performance - Saves

- 9406-MMA-4 way Encrypted ASP SAVLIBBRM NO Software Encryption
- 9406-MMA-4 way Encrypted ASP SAVLIBBRM With Software Encryption
- 9406-MMA-4 way NON Encrypted ASP SAVLIBBRM NO Software Encryption
- 9406-MMA-4 way NON Encrypted ASP SAVLIBBRM With Software Encryption
- 9406-570-4 way NON Encrypted ASP SAVLIBBRM NO Software Encryption
- 9406-570-4 way NON Encrypted ASP SAVLIBBRM With Software Encryption

**GB/HR**

<table>
<thead>
<tr>
<th>Source File Type</th>
<th>9406-MMA-4 way Encrypted</th>
<th>9406-MMA-4 way NON Encrypted</th>
<th>9406-570-4 way NON Encrypted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 GB Source File</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 GB User Mix</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64 GB Large File</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>320 GB Large File</td>
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</tbody>
</table>
Software Encryption Considerations *(New for 6.1)*

- **Capacity**
  - Loss of Compaction May Result in More Tape Cartridges
- **CANNOT Encrypt**
  - QBRM, QUSRBRM, QSYS2, QGPL and QUSRsys
  - BRMS Will Not Encrypt “Q” Libraries
- **Standard Labeled Tapes Only**
- **Cannot Use with Tape Write Error Recovery Enabled**
- **If Key Store File Lost – Data is Unrecoverable**
Agenda

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What Resources are Available to help me?
BRMS Implementation Summary

- Identify/Review/Design Recovery/Backup Strategy
- Add and Update Storage Locations
- Review/Update Media Classes
- Review/Update Media Device Entries and/or Media Library Entries
- Add and Modify Move and Media Policies
- Review/Update System, Backup and Recovery Policies
- Create Backup Control Groups
- Enroll Tapes, Specifying Media Class and Storage Location
- Perform Initial Full Save of System (Recovery Starting Point)
- Establish BRMS Maintenance and Media Movement Procedures
- Review Reports & Address Any Problems
- Plan a Recovery Test
Monitoring BRMS

- Find the Recovering Your Entire System Report, Recovery Volume Summary Report, ASP Information Report, and Recovery Activities Report (if it exists). Make sure you keep these reports safe since they tell you how to reconfigure your disks and recover your system to today's backup. Consider one copy on-site and one copy off-site.

- BRMS network: find the Centralized Media Audit Report that compares the BRMS database across systems and correct any errors.

- Check the Volume Movement Report for error messages in the right-hand column and resolve. Gather the volumes that need to move off-site and watch for the volumes returning.

- Check the Media Report by Expiration Date to ensure you have enough scratch tapes of each class for tonight's backups.

- Review the Media Information Report to ensure zeroes in the "not-saved" column and investigate any problems (it is VERY important to resolve any problems).

- Review the Media Movement Report--Next Scheduled Volume Movement and contact your off-site storage company to arrange to have the tapes returned on the dates indicated.

- Review the BRMS Services Log (DSPLOGBRM) for error messages.

- Check whether a Media Threshold Information Report was printed. If there are any exceptions, replace those tapes.
Summary

- Priority Applications up first
- Avoid human error: writing over critical data
- Confidence in backup
- Recovery steps outlined
- How much longer for the restore?
- Ability to save spooled files

Backup Recovery & Media Services
Reference Material

Backup and Recovery; SC41-5304-08 (V5R4)
Backup and Recovery; SC41-5304-09 (V6R1)
Backup, Recovery and Media Services; SC41-5345-05 (V5R4)
Backup, Recovery and Media Services; SC41-5345-06 (V6R1)

Virtual Tape Redbook; SQ24-7164
http://www.redbooks.ibm.com/abstracts/sg247164.html

Backup, Recovery and Media Service for OS/400: A Practical Approach Redbook; SG24-4840
http://www.redbooks.ibm.com/abstracts/sg244840.html

Performance Management on System i
http://www-03.ibm.com/servers/eserver/iseries/perfmgmt/resource.html

BRMS Web Page:
http://www-03.ibm.com/servers/eserver/iseries/service/brms/
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