

# DISASTER STRIKES

Are you ready?



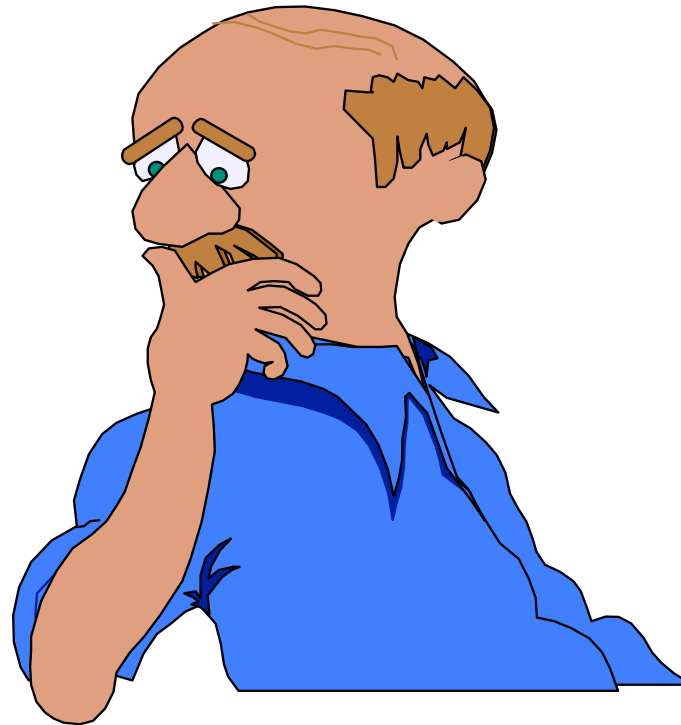
# Your Goal

- ⌚ Complete OS/400 restoration
- ⌚ Complete application restoration
- ⌚ Bring back the most current information
- ⌚ Protect your job

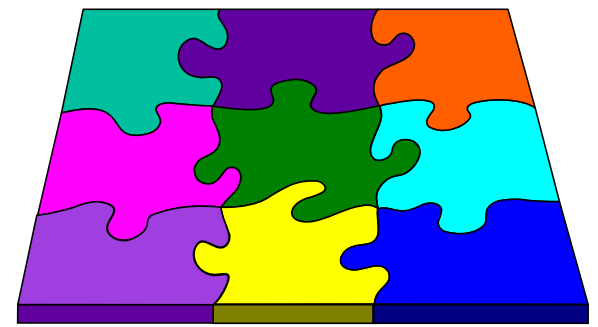


Your AS/400 just lost all of its data!

**Are you worried!**

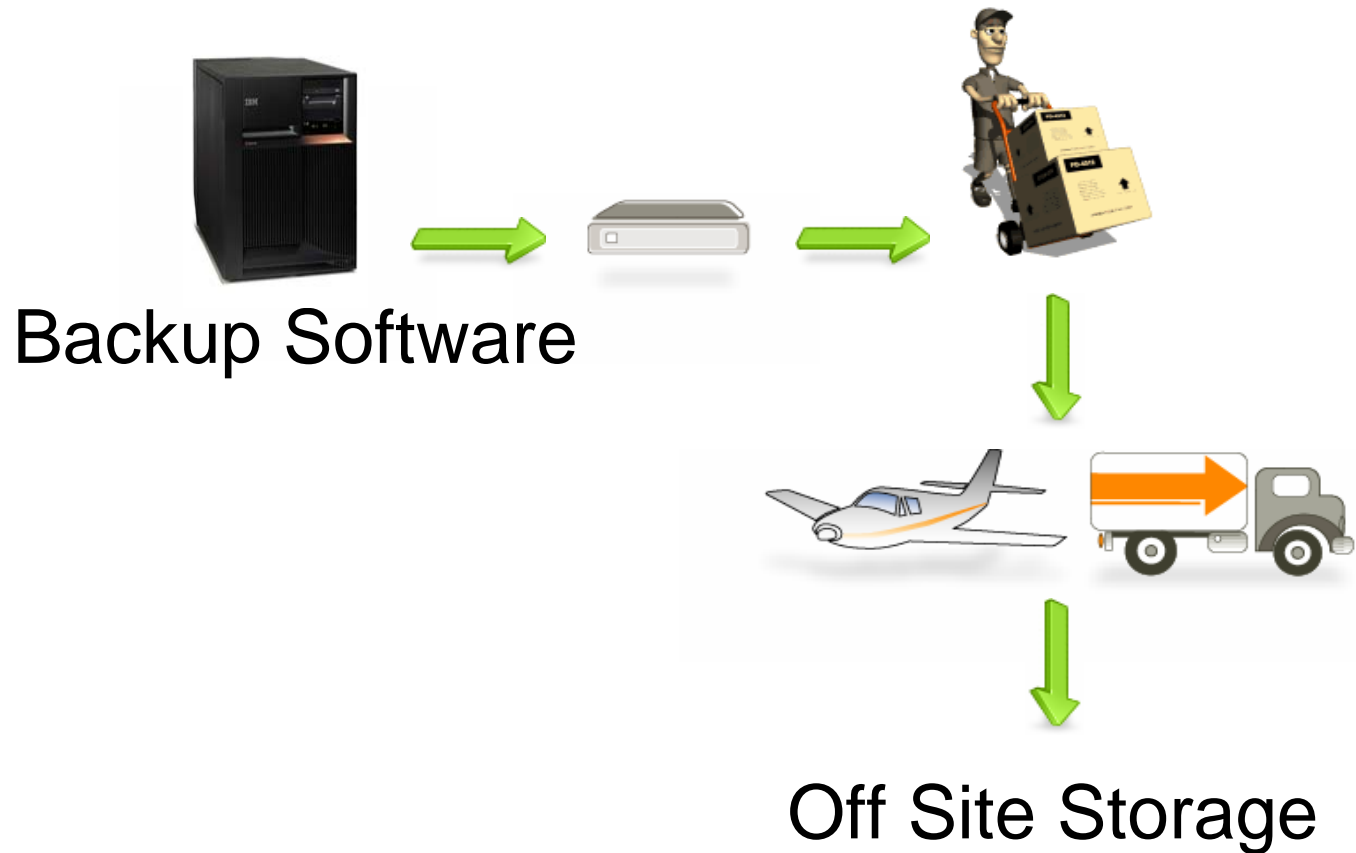


# Save Strategy



- ⌚ Monthly a full system save Option 21 is performed. SAVSYS, SAVLIB \*NONSYS, SAVDLO, SAV.
- ⌚ Daily SAVLIB of all production libraries using Save - While - Active
- ⌚ IFS save is performed daily
- ⌚ Configuration and Security information is saved daily.
- ⌚ Tapes sent offsite daily.

# Offsite Storage Policy - Daily



# Steps for Recovery

- ∞ Evaluate the situation
- ∞ Replace hardware
- ∞ Retrieve Tapes from off-site storage
- ∞ Restore software
- ∞ Review users' access



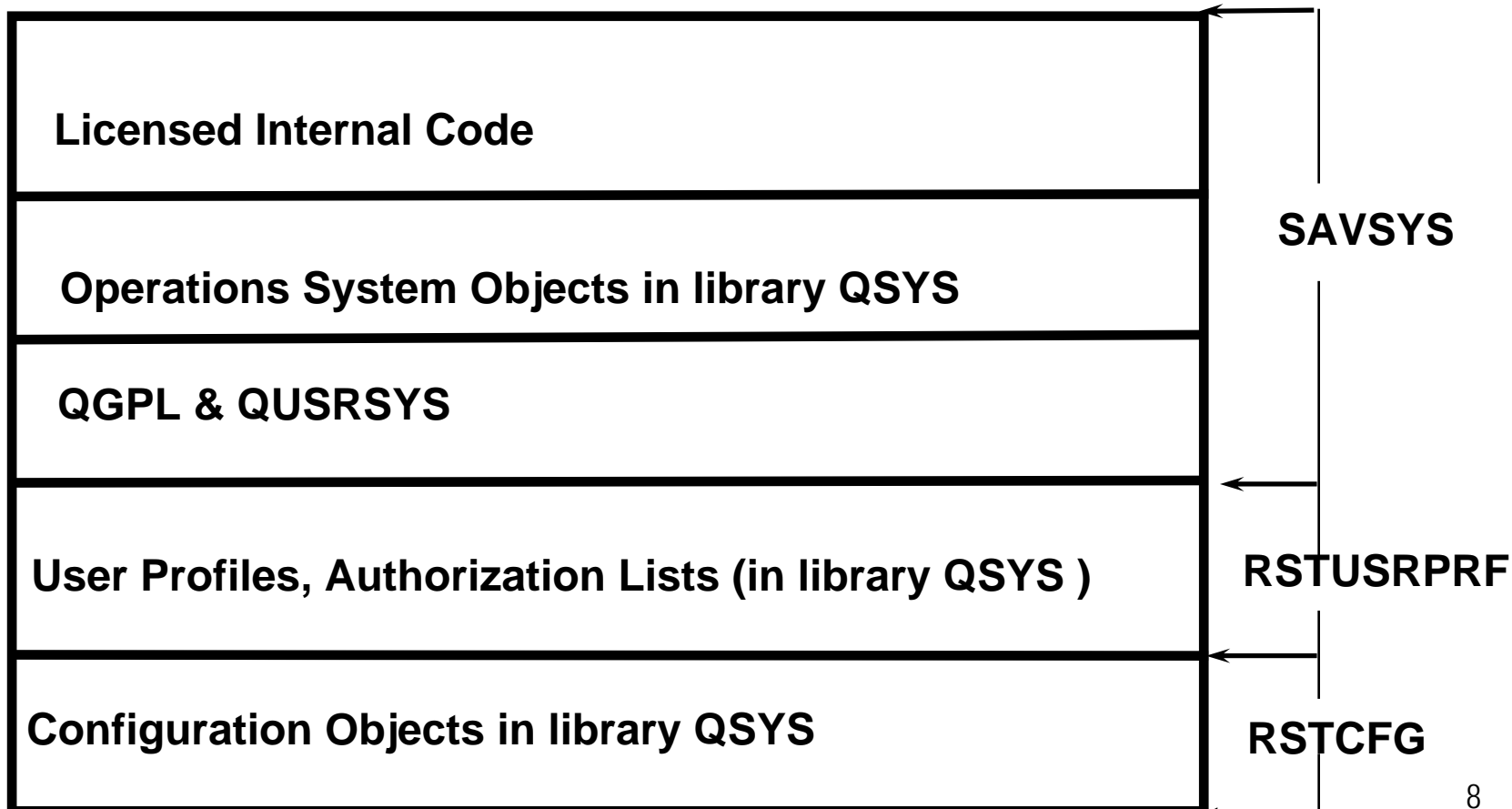


# Recovery Terminology

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- ⌚ **Licensed Internal Code** - The layer of the AS/400 architecture just above the hardware.
- ⌚ **Load Source Unit** - The first disk unit in the system ASP(1). It contains the Licensed Internal Code and disk configuration.
- ⌚ **ASP** - Contains OS/400, IBM libraries, user data.

# Restoring System Objects







# Install Licensed Internal Code

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- ⌚ Contained on the latest SAVSYS media
- ⌚ Load this media on your alternate IPL media drive
  - Make sure you have Licensed Internal Code CD-ROM
  - Review the procedures before attempting your restore



# IPL

- ⌚ Perform IPL from Alternate Device

# IPL from D Common Errors

<b>SRC CODE</b>	<b>Description</b>
A1xx 1933 A12x 1933	The tape unit for the alternate IPL is not ready
B1xx 1803 B1xx 1806 B1xx 1938	The tape unit for the alternate IPL was not found or was not ready.
B1xx 1934	The wrong tape is loaded.
2507 0001 2642 0001 2643 0001	A tape is not loaded in the tape unit for alternate IPL.
Any other SRC	The system has encountered a problem loading the LIC.

# Install Licensed Internal Code

After you have performed the IPL from alternate device

## Install Licensed Internal Code

Select one of the following:

1. Install Licensed Internal Code
2. Work with Dedicated Service Tools (DST)
3. Define alternate installation device

# Define Alternate IPL Device

System: WTS

Type Option, press Enter.  
1=Select

Option	Bus Number	Selected
—	2	
—	3	*
—	4	
—	5	
—	6	
—	7	
—	8	
—	9	
—	A	
—	B	
—	C	
—	D	

# Select Alternate IPL Device

Select Alternate Installation Device

System: WTS

Type option, press Enter.

1=Select 5=Details

Option	Resource Name	Type	Model	Serial Number	Selected
-	TAP01	6380	001	00-1017187	
-	TAP03	3590	011	32-234333	*
-	TAP02	6380	001	00-2017187	

# Licensed Internal Code Restore

## Install Licensed Internal Code ( LIC )

Disk selected to write the Licensed Internal Code ( LIC )

Serial Number	Type	Model	I/O Bus	Controller	Device
xx - xxxxxx	xxxx	xxxx	x	x	x

**Select one of the following:**

1. Restore Licensed Internal Code
2. Install Licensed Internal Code & Initialize system
3. Install Licensed Internal Code & Recover configuration
4. Install Licensed Internal Code & Restore Disk Unit
5. Install Licensed Internal Code & upgrade load source

# If You Take Option 2, 3, 4 or 5

Install LIC and Initialize System - Confirmation

Warning:

All data on this system will be destroyed and Licensed Internal Code will be written to the selected disk if you choose to continue the initialize and install

Return to the install selection screen and choose one of the other options if you want to perform some type of recovery after the install of the Licensed Internal Code is complete.

Press F10 to continue the install

Press F12 (Cancel) to return to the previous screen.

Press F3(Exit)to return to the install selection screen.



# Licensed Internal Code Restore

Initialize the Disk - Status

The load source disk is being initialized.

Estimated time to initialize in minutes:	12
Elapsed time in minutes .....	0.00
Percent Complete .....	0.00

The screen will auto update.

# Licensed Internal Code Restore

Licensed Internal Code Installation Status

Installation of the Licensed Internal Code in progress.

```
Percent complete      +-----+
                      XXXXXXXXXXXXX
                      +-----+
0      20     40     60     100
```

```
Elapsed time in minutes . . . . : x.x
```

# Disk Report Status

Disk Configuration Error Report

OPT                    Error

—                    New disk configuration

Press F10 To accept the following problems  
and continue

# ASP Disk Management

IPL or Install the System

Select one of the Following:

1. Perform an IPL
2. Install the operating system
3. Use Dedicated Service Tools ( DST )
4. Perform automatic installation
5. Save Licensed Internal Code

Select option **3** to get into DST.

# ASP Disk Management

Dedicated Service Tools ( DST ) Sign On

DST user ..... QSECOFR

DST password..... \_\_\_\_\_

Sign on all “UPPER CASE” as QSECOFR DST user.

# ASP Disk Management

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- The DST tools profile QSECOFR password is shipped **expired** and must be changed before first use.
  - At the Change Service tools User password screen enter in a new Password twice (once on each input field).
  - Document your new QSECOFR DST password.

# ASP Disk Management

- ∞ At the Use Dedicated Service Tools Screen:
- ∞ Select option **4** ( Work with disk units )
- ∞ Select option **1** ( Work with disk unit Configuration )
- ∞ Select option **3** ( Work with ASP Configuration )
- ∞ Select option **3** ( Add disk units to ASPs )

# ASP Disk Management

## Specify ASPs to Add Units to

ASP	Serial Number	Type	Model	Capacity
1	44-12345	6717	074	6442
1	12-34567	6717	074	6442
1	12-89012	6717	074	6442
1	12-34555	6717	070	8589
2	12-45505	6718	070	17548
2	12-55930	6718	070	17548

⌘ Press enter to accept



# ASP Disk Management

## Confirm Add Units

Press **Enter** to Confirm your Choice for Add units

ASP

1	Unit	Serial Number	Type	Model	Resource
	1	44-12345	6717	074	DD001
	1	12-34567	6717	074	DD002
	1	12-89012	6717	074	DD003
	1	12-34555	6717	070	DD004

ASP

2	Unit	Serial Number	Type	Model	Resource
	2	12-45505	6718	070	DD005
	2	12-55930	6718	070	DD006

# Restore OS/400

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- ⌚ Read the panels as they display
  - Make sure you have QSECOFR and DST passwords that go with the SAVSYS tape
  - You will want to install the operating system
  - You will want to install the system values, system reply lists, and edit descriptions
- ⌚ Finally, a message will state that OS/400 is installed

# Operating System Restore

IPL or Install the System

Select one of the Following:

1. Perform an IPL
2. Install the operating system
3. Use Dedicated Service Tools ( DST )
4. Perform automatic installation
5. Save Licensed Internal Code

Select option **2** Install the operating system and press **Enter**.

# Operating System Restore

Select a language Group

Type Choice, press Enter.

Language feature ..... **2924**

Press Enter to Confirm Language Feature

# Install the Operating System

## Install the Operating System

Type options, press Enter.

Install

options - - - - 2

1=Take defaults (No other options are displayed)

2=Change install options

Date:

Year - - - -      —      00-99

Month - - -      —      01-12

Day - - - - -      —      01-31

Time:

Hour - - - -      —      00-23

Minute - - -      —      00-59

Second - - -      —      00-59

# Specify Install Options

## Specify Install Options

Type choices, press Enter.

```
Restore options - -- __1=Restore programs and language
                  objects from current media set
                  2=Do not restore programs or
                  language objects
                  3=Restore only language
                  objects from current media set
                  4=Restore only language
                  objects from a different
                  media set using the current
                  install device
```

Job and output

```
queues option - - - - __ 1=Clear, 2=Keep
```

# Specify Restore Options

## Specify Restore Options

Type choices, press Enter.

Restore from the installation media:

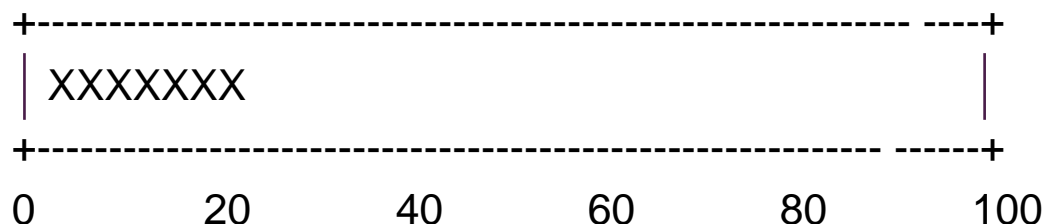
```
System information - - - __1=Restore, 2=Do not restore
Edit descriptions - - - __1=Restore, 2=Do not restore
Message reply list - - - __1=Restore, 2=Do not restore
Job description - - - -__1=Restore, 3=Keep customization
Subsystem description - __1=Restore, 3=Keep customization
```

# OS/400 Installation Status

Message ID . . . :CPI2070

OS/400 Installation Status

Stage 2



Installation

Stage

Completed

Objects

Restored

1	Creating needed profiles and libraries:	x	
>> 2	Restoring programs to library QSYS:		XXXX
3	Restoring language objects to library QSYS:		
4	Updating program table:		
5	Installing database files:		
6	Completing AS/400 installation		



# IPL Options Panel

## IPL Options

Type choices, press Enter.

System date.....:	08/26/06
System time..... :	12:00:00
Clear job queues.....:	N
Clear output queues.....:	N
Clear incomplete job logs.....:	N
Start print writers.....:	Y
Start system to restricted state:	Y
Set major system options.....:	Y
Define or change system at IPL.....:	Y

Set this flag to  
'Y'-Keep users  
off the system

You should always choose the option to set system options.

# Set Major Systems Options

Type choices, press Enter.

```
Enable automatic configuration .....  Y
Device configuration naming .....    *NORMAL
Default special Environment .....    *NONE
```

# Systems Values to Modify

QALWOBJRST	to	*ALL
QJOBMSGQFL	to	*PRTWRAP
QJOBMSGQMX	to	64
QMAXSIGN	to	*NOMAX
QPWDEXPITV	to	*NOMAX
QMCHPOOL	to	Current system value
QPFRADJ	to	2
<b>QVFYOBJRST</b>	to	<b>1</b>
QFRCVNRST	to	0
QALWUSRDMN	to	*ALL



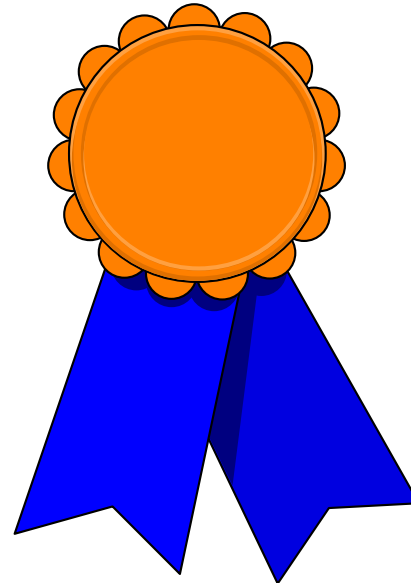
# Network Attribute Requirements

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System Name  
Local network ID  
Local control point name  
Default local location name  
Default node  
Default type  
Maximum number of sessions  
Network node servers

# OS/400 Is Restored

- ⌘ When the AS/400 main menu is displayed, you have completed restoring the operating system.



# Restore User Profiles

- ⌚ SAVSYS or SAVSECDTA, whichever media contains current information
- ⌚ CHGMSGQ MSGQ(QSYSOPR)  
DLVRY(\*NOTIFY) SEV(99)
- ⌚ ENDSBS \*ALL \*IMMED

# Restore User Profiles

## Restore User Profiles (RSTUSRPRF)

Type choices, press Enter.

Device	<u>tap01</u>	Name, *SAVF
+for more values	_____	
User profile	<u>*all</u>	Name, generic*, *ALL
+for more values	_____	
Volume identifier	<u>*MOUNTED</u>	Character value, *MOUNTED
+for more values	_____	
Sequence number	<u>*SEARCH</u>	1-16777215, *SEARCH
End of tape option	<u>*LEAVE</u>	*REWIND, *LEAVE, *UNLOAD
Save file	_____	Name
Library	<u>*LIBL</u>	Name, *LIBL, *CURLIB

### Additional Parameters

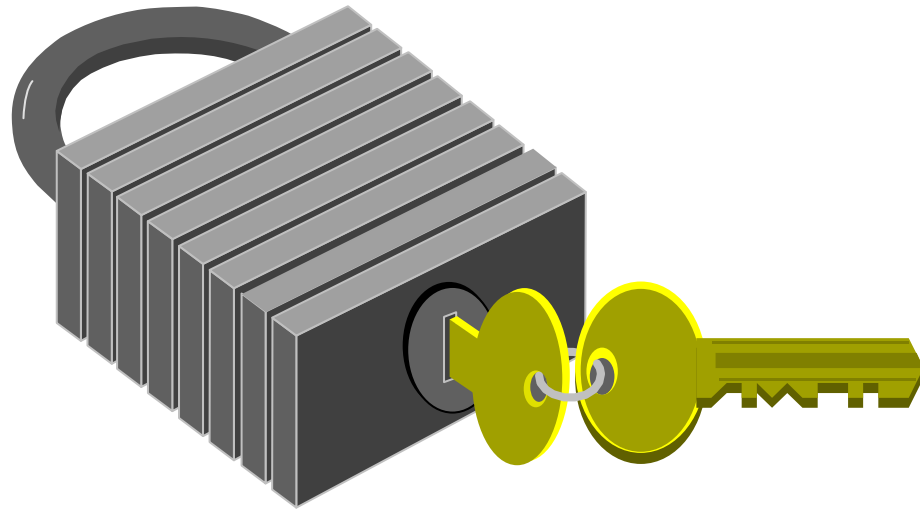
Mail	<u>*NO</u>	*NO, *YES
Allow objects differences	<u>*ALL</u>	*NONE, *ALL
Output	<u>*NONE</u>	*NONE, *OUTFILE

More...

F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display  
F24=More keys

# QSECOFR Password

⌚ Ensure you change the QSECOFR Password







# Restore Configuration Objects

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- ∞ SAVSYS or SAVCFG media
- ∞ RSTCFG command

# Restore Configuration

Type choices, press Enter.

Objects \_\_\_\_\_  
+ for more values

Device \_\_\_\_\_  
+ for more values

Object types \_\_\_\_\_  
+ for more values

Volume identifier \_\_\_\_\_  
+ for more values

Sequence number \_\_\_\_\_ \*SEARCH \_\_\_\_\_ 1-16777215, \*SEARCH

End of tape options \_\_\_\_\_ \*REWIND \_\_\_\_\_ \*REWIND, \*LEAVE, \*UNLOAD

Save file \_\_\_\_\_ Name

Library \_\_\_\_\_ \*LIBL \_\_\_\_\_ Name, \*LIBL, \*CURLIB

System Resource Management > \*NONE \_\_\_\_\_ \*ALL, \*NONE, \*HDW, \*TRA

F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this display  
F24=More keys

## Restore Configuration (RSTCFG)

> \*SRM \_\_\_\_\_ Name, generic\*, \*ALL, \*SRM

> TAP01 \_\_\_\_\_ Name, \*SAVF

\*ALL \_\_\_\_\_ \*ALL, \*CFGL, CNNL, COSD

\*MOUNTED

\*SEARCH \_\_\_\_\_ 1-16777215, \*SEARCH

\*REWIND \_\_\_\_\_ \*REWIND, \*LEAVE, \*UNLOAD

\_\_\_\_\_ Name

\*LIBL \_\_\_\_\_ Name, \*LIBL, \*CURLIB

> \*NONE \_\_\_\_\_ \*ALL, \*NONE, \*HDW, \*TRA

More...

**Critical**

Allow object differences \_\_\_\_\_ > \*ALL \_\_\_\_\_ \*NONE, \*ALL

Output \_\_\_\_\_ \*NONE \_\_\_\_\_ \*NONE, \*PRINT, \*OUTFILE

File to receive output \_\_\_\_\_ Name

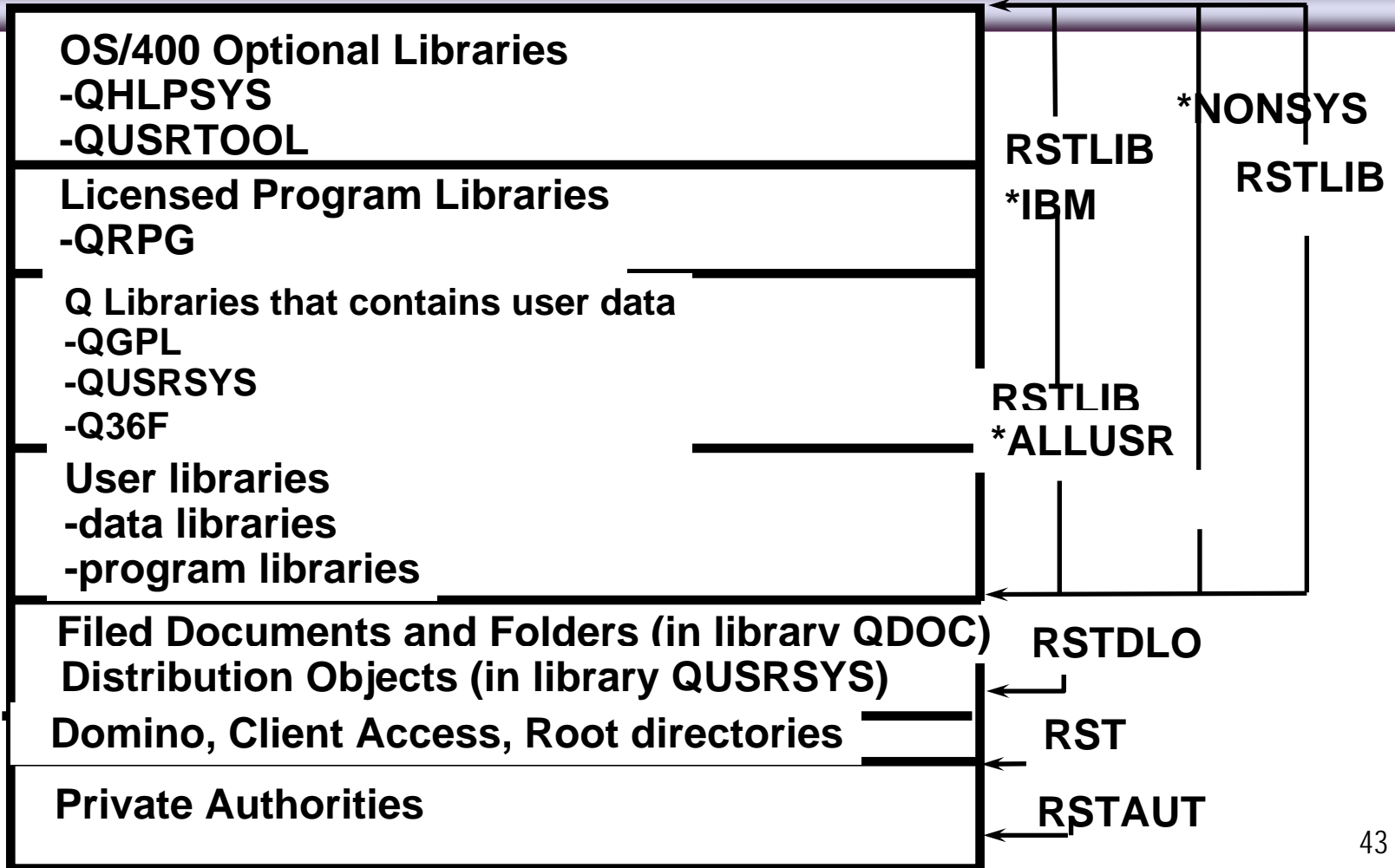
Library \_\_\_\_\_ \*LIBL \_\_\_\_\_ Name, \*LIBL, CURLIB

Output memory options:

Member to receive output \_\_\_\_\_ \*FIRST \_\_\_\_\_ Name, \*FIRST

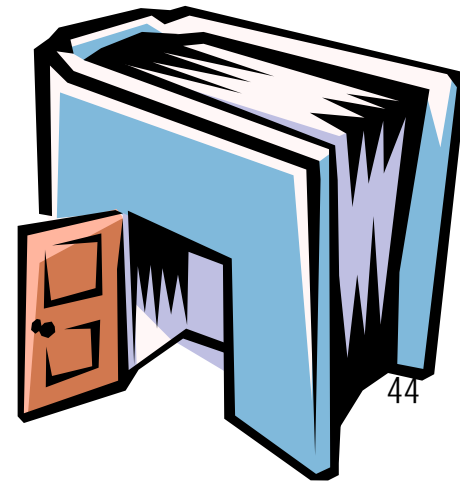
Replace or add records \_\_\_\_\_ \*REPLACE \_\_\_\_\_ \*REPLACE, \*ADD

# Restoring User Objects



# Restore User Libraries

- RSTLIB \*NONSYS ( Monthly Tapes )
- Omit daily libraries
  - Allow object difference and member option parameter = \*ALL



# RSTLIB \*NONSYS

## Restore Library (RSTLIB)s

Type choices, press Enter.

Saved library \*NONSYS Name, \*NONSYS, \*ALLUSR,  
\*IBM

Device TAP01 Name, \*SAVF

+ for more values \_\_\_\_\_

Volume identifier \*MOUNTED

\_\_\_\_\_ + for more values \_\_\_\_\_

Sequence number \*SEARCH 1-1677215, \*SEARCH

Label \*SAVLIB

End of tape option \*UNLOAD \*REIND, \*LEAVE, \*UNLOAD

Starting library \*FIRST Name, \*FIRST

Libraries to omit **LIBX** \_\_\_\_\_ Name, \*NONE

+ for more values LIBY \_\_\_\_\_

Save file \_\_\_\_\_ Name

Library \*LIBL Name, \*LIBL, \*CURLIB

Optical file \_\_\_\_\_

More...

F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this  
display F24=More keys

# RSTLIB \*NONSYS

## Restore Library (RSTLIB)

Type choices, press Enter.

### Additional Parameters

Options	<u>*ALL</u>	*ALL, *NEW, *OLD, *FREE
Data base member option	<u>*ALL</u>	*MATCH, *ALL, *NEW, *OLD
Date when saved	_____	Date
Time when saved	_____	Time
Allow object differences	<u>*ALL</u>	*NONE, *ALL
Force object conversion:		
Convert during restore	<u>*SYSVAL</u>	*SYSVAL, *NO, *YES
Object to convert	_____	*RQD, *ALL
Restore to library	<u>*SAVLIB</u>	Name, *SAVLIB
Auxiliary storage pool ID	<u>*SAVASP</u>	1-16, *SAVASP
Output	<u>*PRINT</u>	*NONE, *PRINT, *CURLIB
File to receive output	_____	Name
Library	<u>*LIBL</u>	Name, *LIBL, *CURLIB

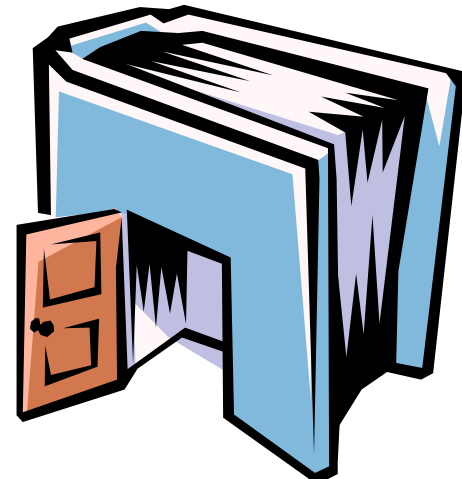
More...

F3=Exit    F4=Prompt    F5=Refresh    F12=Cancel

F13=How to use this display    F24=More keys

# Restore User Libraries

- ∞ RSTLIB User Libraries from Daily save tapes
- ∞ Separate RSTLIB for each library
- ∞ Omit Development ?????
  - Allow object difference and member option parameter = \*ALL



# RSTLIB Libraries

## Restore Library (RSTLIB)s

Type choices, press Enter.

Saved library	<u>LIBX</u>	Name, *NONSYS, *ALLUSR,
	*IBM	
Device	<u>TAP01</u>	Name, *SAVF
	+ for more values _____	
Volume identifier	<u>*MOUNTED</u>	
	_____ + for more values _____	
Sequence number	<u>*SEARCH</u>	1-1677215, *SEARCH
Label	<u>*SAVLIB</u>	
	_____	
End of tape option	<b>*LEAVE</b> _____	*REWIND, *LEAVE, *UNLOAD
Starting library	<u>*FIRST</u>	Name, *FIRST
Libraries to omit	<u>*NONE</u>	Name, *NONE
	+ for more values _____	
Save file	_____	Name
Library	<u>*LIBL</u>	Name, *LIBL, *CURLIB
Optical file	_____	

More...

F3=Exit F4=Prompt F5=Refresh F12=Cancel F13=How to use this  
display F24=More keys



# RSTLIB Libraries

## Restore Library (RSTLIB)

Type choices, press Enter.

### Additional Parameters

Options	<u>*ALL</u>	*ALL, *NEW, *OLD, *FREE
Data base member option	<u>*ALL</u>	*MATCH, *ALL, *NEW, *OLD
Date when saved	_____	Date
Time when saved	_____	Time
Allow object differences	<u>*ALL</u>	*NONE, *ALL
Force object conversion:		
Convert during restore	<u>*SYSVAL</u>	*SYSVAL, *NO, *YES
Object to convert	_____	*RQD, *ALL
Restore to library	<u>*SAVLIB</u>	Name, *SAVLIB
Auxiliary storage pool ID	<u>*SAVASP</u> _____	1-16, *SAVASP
Output	<u>*NONE</u>	*NONE, *PRINT, *CURLIB
File to receive output	_____	Name
Library	<u>*LIBL</u>	Name, *LIBL, *CURLIB

More...

F3=Exit    F4=Prompt    F5=Refresh    F12=Cancel

F13=How to use this display    F24=More keys

# Restoring User Libraries

- ∞ Make sure all logical files have been restored.
- ∞ Separate RSTLIB command required for every library containing missed logical files.



# Restoring Document Library

- ⌚ Make sure QUSRSYS has been restored
- ⌚ RCLDLO
- ⌚ Full Save - RSTDLO DLO(\*ALL)  
SAVFLR(\*ANY)

# RSTDLO

## Restore Document Lib Object (RSTDLO)

Type choices, press Enter

Document library object > \*ALL \_\_\_\_\_ Name, \*ALL, \*SYSOBJNAM...  
+ for more values \_\_\_\_\_

Saved folder \*ANY \_\_\_\_\_  
\_\_\_\_\_ + for more values \_\_\_\_\_

New object name \*SAME \_\_\_\_\_ Name, \*SAME  
+ for more values \_\_\_\_\_

Restore into folder \*SAME \_\_\_\_\_

Device > TAP01 \_\_\_\_\_ Name, \*SAVF  
\_\_\_\_\_ + for more values \_\_\_\_\_

Volume identifiers \*MOUNTED  
\_\_\_\_\_ + for more values \_\_\_\_\_

More...

F3=Exit F4=Prompt F5=Refresh F12=Cancel  
F13=How to use this display F24=More keys

# RSTDLO

## Restore Document Lib Object (RSTDLO)

Type choices, press Enter

Sequence number:

Beginning sequence number	<u>*SEARCH</u>	1-1677215, *SEARCH
Ending sequence number	<u>                    </u>	1-1677215, *ONLY
End of tape option	<u>*LEAVE</u>	*REWIND *LEAVE *UNLOAD
Label	<u>*GEN</u>	

### Additional Parameters

Object name generation	<u>*SAME</u>	*SAME, *NEW
Date when saved	<u>                    </u>	Date
Time when saved	<u>                    </u>	Time
Allow object differences	<u>*ALL</u>	*NONE, *ALL
Saved from ASP	<u>*ANY</u>	1-16, *ANY
Restore to ASP	<u>*SAVASP</u>	1-16, *SAVASP
Output	<u>*NONE</u>	*NONE *PRINT *OUTFILE

More...

F3=Exit    F4=Prompt    F5=Refresh    F12=Cancel    F13=How to use this display  
F24=More keys

# Restore QLANsrv File System

- ∞ Make sure QUSRSYS has been restored
- ∞ Restore all user data from last full save
  - RST DEV('/qsys.lib/tap01.devd')  
OBJ('/QLANsrv/\*') SUBTREE(\*ALL)  
OPTION(\*ALL) ALWOBJDIF(\*ALL)



# RST - Restore Directories

## Restore Object (RST)

Type choices, press Enter.

```
Device >  '/qsys.lib/tap01.devd' _____
+for more values _____

Objects:
Name - '*' _____
Included or omit *INCLUDE _____ *INCLUDE, *OMIT
New object name *SAME _____
+ for more values _____

Directory subtree _____ *ALL _____ *ALL, *DIR, *NONE, *OBJ
Output *PRINT _____
Volume identifier *MOUNTED _____
+ for more values _____
```

More...

F3=Exit F4=Prompt F5=Refresh F12=Cancel  
F13=How to use this display F24=More keys

# Review the History Log

- ⌚ Examine all CPC3700/CPF3700 Messages





# Restore Authority



∞ ENDSBS \*ALL \*IMMED

- Does not have to be done in restricted state, but recommended

∞ RSTAUT Restore Authority

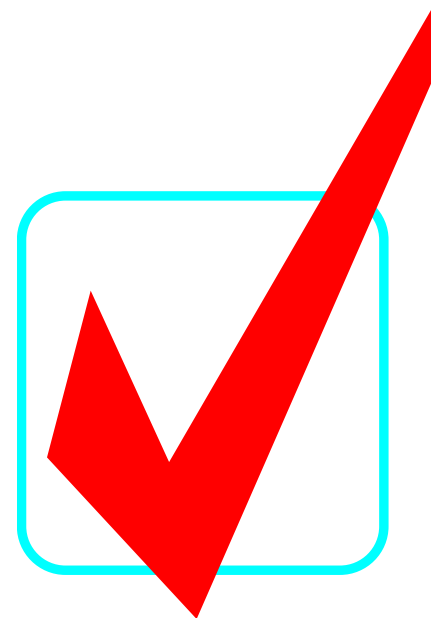
- This process will apply authority to all objects and directories
- It coincides with the RSTUSRPRF



## Final Step(s)

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- Return the Control panel to NORMAL
- IPL the System



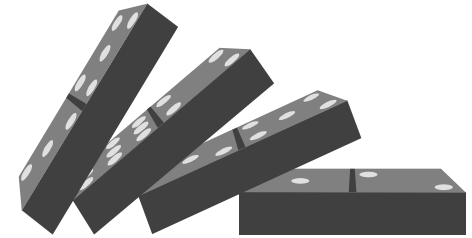


# General Tips for Recovery

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- ∞ Save Database Access Paths
- ∞ Save entire libraries
- ∞ Make sure SAVSYS is done on the Alternate IPL Device
- ∞ Make sure you have the CDRROM with the original configuration information
- ∞ Make sure you have the key for the keylock switch

# Plan Your Recovery



- ⌚ Depending on when the failure occurs, you may need to use different restoration approach
- ⌚ Build a timeline of what was saved, when it was saved, and then apply your recovery to this timeline.
- ⌚ Use the SAVLIB \*NONSYS as your starting point.



# General Tips For Recovery

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- ∞ Maintain a log of what is on each media
  - BRMS or 3<sup>rd</sup> party tools
- ∞ Audit your backups; review jobs logs
- ∞ Clean media drive before starting Recovery
- ∞ Practice your Recovery
- ∞ Read IBM Backup and Recovery Manuals  
( Only if you are having trouble sleeping )

# Save/Restore Strategy

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- ∞ System saves must be reviewed
- ∞ Ensure complete recovery is possible from mid week, mid day or weekend failure.
  - Electronic notification of exceptions
- ∞ Review Restoration Procedures
- ∞ Backup software BRMS

# When was the last Full Save

## Display Object Description - Full

Object . . . . . :	QSAVSYS	Attribute . . . . . :	
Library . . . . . :	QSYS	Owner . . . . . :	QSYS
Type . . . . . :	*DTAARA	Primary group . . . . . :	*NONE
Save/Restore information:			
Save date/time . . . . . :		07/05/00 10:15:11	
Restore date/time . . . . . :			
Save command . . . . . :		SAVSYS	
Device type . . . . . :		Tape	
Sequence number . . . . . :		1	
Volumes . . . . . :		IBMIRD	
File label ID . . . . . :		QFILEIML	
Save format . . . . . :		Serial	

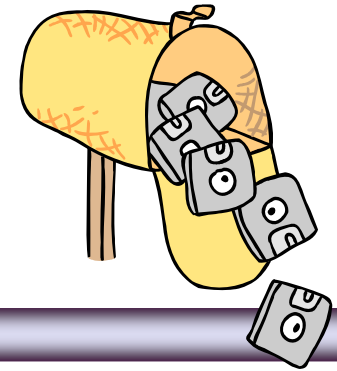


# Last Save Info

Following system data areas that contain last save information for save/restore commands:

<b>Data Area Name</b>	<b>Purpose</b>
• QSAVALLUSR	SAVLIB/RSTLIB LIB(*ALLUSR)
• QSAVCFG	SAVCFG/RSTCFG
• QSAVIBM	SAVLIB/RSTLIB LIB(*IBM)
• QSAVLIBALL	SAVLIB/RSTLIB LIB(*NONSYS)
• QSAVSYS	SAVSYS
• QSAVUSRPRF	SAVSECDTA/RSTUSRPRF

# Reliable Backups



- Backups are the backbone to any recovery situation
- In most recovery situations, the backups are not adequate
  - Excessive time is spent recreating parts of operating system
  - QUSRSYS not complete



# BRMS for OS/400

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## IBM's Strategic Backup Management Product

- Manages your media
- Automates your Backups
- Simplifies your Restores and Recoveries
- Provides Detailed Reporting

.....and more 67

# BRMS Log

- Ω **System not in restricted state, SAVSYS Processing completed with errors**
- Ω Starting SAVDLO of folder \*ANY to devices TAP01.
- Ω 2574 document library objects saved.
- Ω Starting save of list \*LINK to devices TAP01.
- Ω **43917 objects saved. 342 not saved.**
- Ω **Save of list \*LINK completed with errors.**
- Ω Starting save of media information at level \*OBJ to device TAP01.
- Ω 18 objects saved from library QUSRBRM.
- Ω Save of BRM media information at level \*OBJ complete.
- Ω DAILY \*BKU 0070 \*EXIT CALL PGM(BBSYSTEM/ENDDAYBU).
- Ω **Control group DAILY type \*BKU completed with errors.**



# BRMS Maintenance

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- ∞ Remove outdated save history records
- ∞ Clean up old BRMS log entries
- ∞ Collect and apply media usage & error statistics
- ∞ Reorganize BRMS Databases
- ∞ Reports
  - Media Expiration report (newly expired)
  - Media report of expired volumes
  - Media Information report



# BRMS Maintenance

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- Recovery Analysis report
- Recovery Volume Summary report
- ASP Information report
- Produce the Location Analysis report
- Recovery reports by system

**Send Recovery report offsite....Daily**

# Backup = Recovery

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- ⌚ How many people backup their system ?
- ⌚ Of these company's that perform regular backups...
  - **42 % are in-complete**
  - 21 % ( iSeries/400 ) are un-recoverable
  - 36 % ( Intel ) are un-recoverable

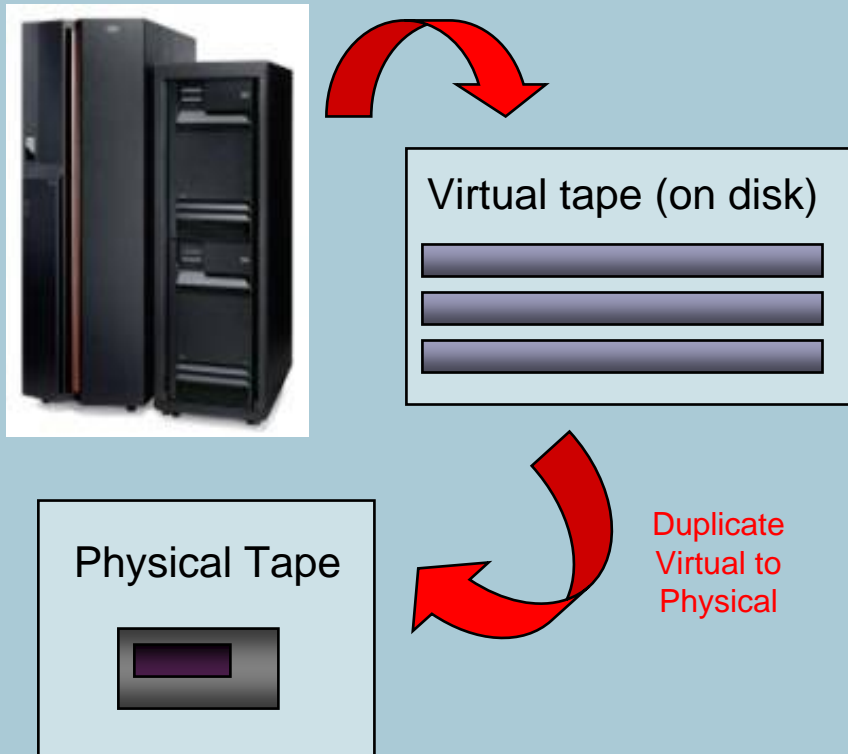
# Offsite Storage Considerations of major system areas

- ⌘ The PRTSYSINF command produces lists and reports:





# What is Virtual Tape?



## Benefits

- Run concurrent or parallel saves without buying extra drives
- Less impact from drive/media failures
- Overcome Savefile Restrictions
- Quick restores from virtual tape
- V5R4



# Virtual Tape Support

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- Supported on all Save/Restore Commands - No SAVSTG
- Can Be Faster than Saving Directly to Tape
  - Similar Performance as Save Files
  - Best Performance in Separate ASP
- Eliminates Save File Limitations
  - One Library Per Save File
- Onsite and Offsite Storage
  - Keep Virtual Volumes on Systems as Needed
  - Keep Duplicated Volumes Offsite



# Virtual Tape Support

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## Considerations

- Additional Disk Requirements
- No Install from SAVSYS Virtual Volume
  - D-IPL Only from Media

# Spooled File Support

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## Ω Save /Restore of Spooled Files Supported

- Preserves Spooled File Data, Spooled File Identity and Attributes
  - Spooled File Name
  - Spooled File Number
  - Creation Date/Time
  - Fully Qualified Job Name
  - Job System Name

# Backup and Recovery Can Be a Good Experience

- ∞ If you plan
- ∞ If you test

