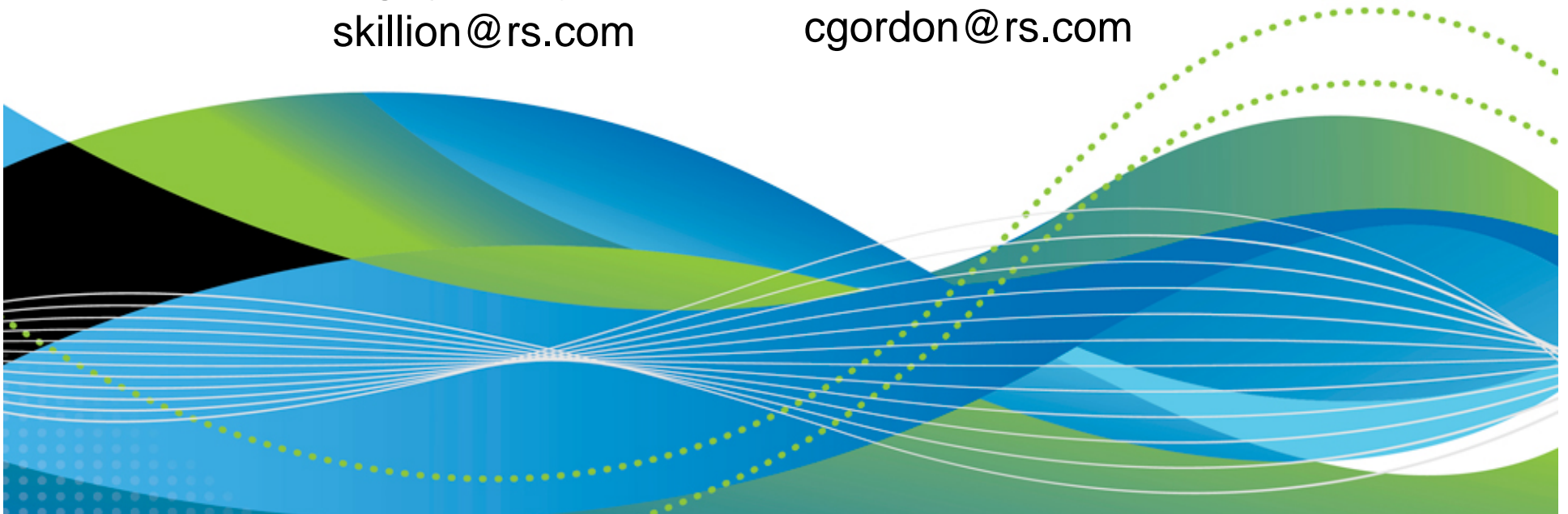


# How to Ensure You have all Your Mainframe Data Backed Up

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Session 10975

Shari Killion  
skillion@rs.com

Colleen Gordon  
cgordon@rs.com



# Agenda

- Application Outages
- Backup Technologies
- Data Identification and it's Challenges
- Automating Application Data Identification
- Application Data Backup Verification
- Automating DB2 and IMS Data Identification
- Summary

In the event of a disaster, either minor or catastrophic, you can't recover your data if you don't have it backed up!



# What Causes Application Outages

“Based on extensive feedback from clients, we estimate that, on average, unplanned application downtime is caused:

- 20 percent of the time by hardware (e.g., server and network), OSs, environmental factors (e.g., heating, cooling and power failures) and disasters;
- 40 percent of the time by application failures including "bugs," performance issues or changes to applications that cause problems (including the application code itself or layered software on which the application is dependent); and
- 40 percent of the time by operator errors, including not performing a required operations task or performing a task incorrectly (e.g., changes made to infrastructure components that result in problems and incur unexpected downtime).

Thus, approximately **80 percent** of unplanned downtime is **caused by people and process issues**, while the remainder is caused by technology failures and disasters. Improving availability requires a different strategy and set of investment choices for each of the three unplanned downtime categories.” -- *Gartner Group*”

# Database Downtime Drives Up Costs

Most organizations spend an extra **\$1.5M USD** per year because of unplanned database downtime

Yearly Cost Metrics	Best-in-Class	Industry Average	Laggards
Business interruption events	.9	3	3.5
Time per business interruption event (hours)	1.3	4.7	8.4
Total disruption (hours)	1.2	14.1	29.4
Average cost per hour of disruption	\$60,000	\$110,000	\$98,000
Total cost of business interruption events	\$72,000	<b>\$1,550,000</b>	\$2,880,000

Source: Aberdeen Group, Month 2010

Very few organizations have perfect or near-perfect datacenter uptime

- ✓ Only 3% of organizations have uptimes of 100%
- ✓ Only 4% of organizations have uptimes of 99.9%

# Application Downtime Affects Your Business




**Business**




A photograph showing the lower legs and feet of a person in a dark suit and black shoes, carrying a black briefcase, walking on a light-colored floor.

- Average cost of database downtime \$1.5M USD/year
- Revenue at risk
- Customer satisfaction declines
- Missed service level agreements
- Brand damage and loss of goodwill



**IT**



A photograph of a server room with several computer monitors displaying data charts and graphs on a desk.

- Time consuming, rarely used, manual backup/recovery procedures don't scale as data volumes grow
- Inability to backup all data because of shrinking maintenance windows and growing data volumes
- Difficult to get complete database backup without production impact

# Various Backup Technologies

- Backup Types
  - Full volume dump
    - Requires manual identification of VOLSERS, setup and upkeep
  - Fast replication with subsequent volume dump to tape
    - Same as above except “instant” backup using fast replication
  - Logical data set backup
    - Manual identification of files by data set name or data set name mask
    - Various utilities including DFDSS, DFSMSHsm, IDCAMS, IEBGENER, etc.
    - Requires setup and upkeep
  - Image copy for DB2 and IMS
    - Requires manual identification, setup and upkeep

# Identifying the z/OS Environment for Local Backup

- Infrastructure
  - z/OS Operating System Volumes
    - System and application catalogs
      - *SMF data for forward recovery*
  - DFSMSHsm (or other) Control Data Set and journal backups
  - 3<sup>rd</sup> party software product files
- Applications
  - Application and adhoc batch files
  - DB2 and IMS Database data
    - And other database backups, ie: ADATABASE
  - Critical VSAM files



# Data Identification Challenges

- What are the challenges associated with identifying data for local backup?
  - Manual identification of critical files
    - Data used by application batch jobs needed for rerun or restart
    - Tendency to use data set masking (HLQ.\*\*)
      - *Includes large numbers of non-critical data and data that has been migrated*
    - Tendency to use volume-level identification
      - *Requires a backup synchronization point across all applications*
      - *Doesn't include tape or migrated data*
  - Missing data sets
    - No way to identify data that is missing a backup

# Data Identification Challenges

WK	Mon (DAILY)	Tues (DAILY)	Wed (DAILY)	Thu(DAILY)	Fri(WEEKLY)	MONTHLY
1	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(0) A.DAILY(-1) A.DAILY(-2) A.DAILY(-3) B.WKLY(+1)	
2	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(0) A.DAILY(-1) A.DAILY(-2) A.DAILY(-3) B.WKLY(+1)	
3	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(0) A.DAILY(-1) A.DAILY(-2) A.DAILY(-3) B.WKLY(+1)	
4	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(+1)	A.DAILY(0) A.DAILY(-1) A.DAILY(-2) A.DAILY(-3) B.WKLY(+1)	B.WKLY(0) B.WKLY(-1) B.WKLY(-2) B.WKLY(-3) C.MTHLY(+1)

# Automating Application Data Identification for Backup



# Identifying Production Application Batch Data with Automation

- Automation software identifies critical application files
  - Uses SMF data to determine:
    - What files were read in as input
    - Which files were created as output
  - Provides filtering logic to exclude data that applications should not backup
    - Database data
    - System and 3<sup>rd</sup> party software files, etc.
- Creates a list of critical files for input to your logical backup process
  - Various logical backup utilities
- Stores information about critical files in it's database
  - Information from SMF records

# Benefits of Using Automation Software

- Identifies all data used by the application's batch process
  - Including data sets that belong to other applications
  - Data sets used in condition coded steps or weekly, monthly, quarterly and annual cycles
- Keeps the list of critical files current
  - Lists are created each time the batch process is executed therefore, they are always up-to-date
- Identifies only the data sets used by the application
  - Greatly reduces non-critical data being included in the backup
- Provides reporting capabilities about data used by applications
  - Can be compared to backup inventory to identify missing backups

# Automated Critical Data Set List



```

S1 - DVLP - DVLP - BlueZone Mainframe Display
File Edit Session Options Transfer View Macro Script Help
Connections: DVLP Attention PA1 PA2 PA3 Reset PF01 PF02 PF03 PF04 PF05 PF06 PF07 PF08 PF12 System Request

Menu utilities compilers Help
BROWSE RR02.MYAPPL.SELECT Line 00000000 col 001 080
Command ==> Top of Data scroll ==> CSR
*****
/*
/* LAST UPDATE: ***** 02/04/2011 13:01:08
/* SELECTION DATASET UPDATE:
/* COPYRIGHT 1997-2007 MAINSTAR SOFTWARE CORPORATION
/*
/* APPL NAME: MYAPPL
/* DESC: APPLICATION CREATED BY: RR02 ON 02/02/2011
/*
/* DSN FORMAT: DSS
/* SYSID: ***
/* EXEC MODE: AUTO SELECT UPDATE (ASU)
/* RE-EVALUATE DATASET ENTRIES: YES
/* DATASETS EVALUATED FROM: SMF AND JCL
/* TAPE DATASET AS ACCOMPANY: NO
/* USE SIZE FOR INC/ACC TAPES: NO
/* CTLG CHK: ENABLED
/* PROCESS FILTERS: YES
/* NAME TYPE FOR GDSES: REL AND ABS
/* GDSES EVALUATED FROM: SMF AND JCL
/* EXPAND BASE GDG REFERENCES: NO
/* ADD MISSING GDSES: MINIMUM FOR RERUN
/* CATEGORY FOR MISSING GDSES: INCLUDE
/* CATEGORY FOR NEW GDSES: EXCLUDE
/*
/* DUMP DATASET(INCLUDE( -
RR02.BRM.APPLJ1.DC.G0005V00 /* DASD (TS0003) */ -
RR02.BRM.APPLJ1.DC(0) /* DASD (TS0003) */ -
RR02.BRM.APPLJ2.LISTC.G0005V00 /* DASD (TS0002) */ -
RR02.BRM.APPLJ2.LISTC(0) /* DASD (TS0002) */ -
RR02.BRM.APPLJ3.DC.SORTED.G0005V00 /* DASD (TS0004) */ -
RR02.BRM.APPLJ3.DC.SORTED(0) /* DASD (TS0004) */ -
RR02.BRM.APPLJ4.AUTODUMP.G0005V00 /* DASD (TS0003) */ -
RR02.BRM.APPLJ4.AUTODUMP(0) /* DASD (TS0003) */ -
)) -
OUTDD(TAPE) TOL(ENQF)
/*
/* UNCATALOGUED DATASET ENTRIES EXCLUDED:
/*
/*
S1 Ready (1) 192.168.55.72 SC0TCP09 13:02:37 2/4/2011 NUM 00:19:17 04.015
  
```

# Application Data Backup Verification



# Backup Inventory

- Your automated solution should include an inventory database of all backup types
  - Full volume dumps
  - Logical backups created in application batch jobs or by DFSMSdss, DFSMSHsm ABARS, etc.
  - Backups created by DFSMSHsm, FDR, CA-Disk, etc.
  - System and user generated backups
- Automated solutions should have feature to compare lists of critical files to what's backed up
  - Identify data that doesn't have a current backup
  - Identify data that has multiple redundant backups



# All/Star Tracked Backups



S2 - TST - TST - BlueZone Mainframe Display

File Edit Session Options Transfer View Macro Script Help

Connections: TST Attention PA1 PA2 PA3 Reset PF01 PF02 PF03 PF04 PF05 PF06 PF07 PF08 PF12 System Request

Menu Diagnostics Preferences

Command ==> BKM - Search for Dataset Row 1 to 20 of 20  
Scroll ==> CSR

Primary Commands: REFresh, RESet, R mask, X mask  
Line Commands: +, -, I, O, R, S

Sort by ==> N D, N  
Display DS LVL Bkups ==> Y Y or N  
Display overlaps only ==> Y Y or N  
Display HSM Incr ==> Y Y or N  
Display VOL LVL Dumps ==> Y Y or N  
Date Format ==> Y Y or D

C Dataset Name or Mask	+ -	Gen	PGM/Type	Date yy/mm/dd	Time	O
RR02.\$LAN1649.APPL*						
RR02.\$LAN1649.APPLJ1.DC.BKUP.G0002V00		0	HSM	12/02/14	01:15	
RR02.\$LAN1649.APPLJ1.DC.G0001V00	-	0	DSS LD	12/02/13	11:25	*
RR02.\$LAN1649.APPLJ1.DC.G0001V00	-	-1	IEBGENER	12/02/13	11:20	
RR02.\$LAN1649.APPLJ1.DC.G0001V00	-	0	HSM	12/02/08	01:14	
RR02.\$LAN1649.APPLJ1.DC.G0001V00	-	-2	IEBGENER	12/02/07	15:36	
RR02.\$LAN1649.APPLJ2.LISTC.BKUP.G0003V00		0	HSM	12/02/14	01:15	
RR02.\$LAN1649.APPLJ2.LISTC.G0001V00	-	0	DSS LD	12/02/13	11:25	*
RR02.\$LAN1649.APPLJ2.LISTC.G0001V00	-	-1	DSS LD	12/02/13	11:20	
RR02.\$LAN1649.APPLJ2.LISTC.G0001V00	-	0	HSM	12/02/08	01:14	
RR02.\$LAN1649.APPLJ2.LISTC.G0001V00	-	-2	DSS LD	12/02/07	15:44	
RR02.\$LAN1649.APPLJ2.LISTC.G0001V00	-	-3	DSS LD	12/02/07	15:36	
RR02.\$LAN1649.APPLJ3.DC.SORTED.B1.G0002V00		0	HSM	12/02/14	01:15	
RR02.\$LAN1649.APPLJ3.DC.SORTED.B2.G0002V00		0	HSM	12/02/14	01:15	
RR02.\$LAN1649.APPLJ3.DC.SORTED.G0001V00	-	0	DSS LD	12/02/13	11:25	*
RR02.\$LAN1649.APPLJ3.DC.SORTED.G0001V00	-	-1	SORT	12/02/13	11:20	
RR02.\$LAN1649.APPLJ3.DC.SORTED.G0001V00	-	0	HSM	12/02/07	15:42	
RR02.\$LAN1649.APPLJ3.DC.SORTED.G0001V00	-	-2	SORT	12/02/07	15:36	
RR02.\$LAN1649.APPLJ4.REPORT.G0001V00	-	0	DSS LD	12/02/13	11:25	
RR02.\$LAN1649.APPLJ4.REPORT.G0001V00	-	0	HSM	12/02/08	01:14	
RR02.\$LAN1649.APPLRR.SDS.BKUP.G0001V00		0	HSM	12/02/14	01:15	

\*\*\*\*\* Bottom of data \*\*\*\*\*

\*BKM510

S2 Ready (1) 192.168.55.74 SC0TCP07 13:43:43 2/17/2012 NUM 04:01:59 04.015

Start Docu... Offic... Inbo... AOL ... S2 - ... Shar... SHAR... Scree... BRM ... unttl... Desktop 99% 1:43 PM

# Backup Verification Automation

- Output from critical file identification automation tool is compared to the backup inventory
  - Reports on critical files and their associated backup(s)
  - Identifies data that doesn't have a backup
- When using volume-centric backup methodologies
  - Compares data in the backup inventory towards:
    - All DASD volumes in the environment
      - *Exclude capability to exclude test, system volumes*
- Ability to identify critical files without a backup
- Ensures all critical non database files are backed up

# Missing Backup Report



```

S2 - DVLP - DVLP - BlueZone Mainframe Display
File Edit Session Options Transfer View Macro Script Help
Connections: DVLP
Attention PA1 PA2 PA3 Reset PF01 PF02 PF03 PF04 PF05 PF06 PF07 PF08 PF12 System Request

Display Filter View Print Options Search Help
-----
SDSF OUTPUT DISPLAY APPLKEND J0072276 DSID 104 LINE 0 COLUMNS 02- 81
COMMAND INPUT ==> SCROLL ==> CSR
***** TOP OF DATA *****
1PAGE 1 AST - BKUPEND SUMMARY ( V0603 )
APPLICATION: APPL CYCLE: 0000004 2012/02/21 10:21:24
----- BKUPEND BACKUP ----- - MOS
DATASET NAME AGG/JOB DATE TIME RC AGG/J
-----
FRERTE.TST0110.LOADLIB * No backup found *
RR02.BRM.APPLJ1.DC.G0001V00 APPLB1 20120221 1019 000
RR02.BRM.APPLJ2.LISTC.G0001V00 APPLB2 20120221 1019 000
RR02.BRM.APPLJ3.DC.SORTED.G0001V00 APPLB3 20120221 1020 000
RR02.BRM.APPLJ4.AUTODUMP.G0001V00 * No backup found *
RR02.BRM.TOOLKIT * No backup found *

TOTAL DATASETS: 6
DATASETS WITH BACKUP: 3
DATASETS W/O BACKUP: 3
***** BOTTOM OF DATA *****
  
```

# Redundant Backup Identification

- Many customers report backing up production non-database data
  - By applications and...
  - By DFSMSHsm (or other) and...
  - By Full Volume Dumps!
- Complete inventory of all backups identifies files that are redundantly backed up
  - Report on data with multiple backups
  - Reduce redundant backups to save resources

# Redundant Backup Report



S1 - TST - TST - BlueZone Mainframe Display

File Edit Session Options Transfer View Macro Script Help

Connections: TST Attention PA1 PA2 PA3 Reset PF01 PF02 PF03 PF04 PF05 PF06 PF07 PF08 PF12 System Request

Menu Utilities Compilers Help

BROWSE SYS12052.T100937.RA000.RR02.TEMP1.H03 Line 0000000 Col 001 080  
 Command ==> Top of Data \*\*\*\*\*  
 \*\*\*\*\* Top of Data \*\*\*\*\*

SEARCH CRITERIA:  
 DATASET => RR02.\*\*.\*\*

PAGE 1 ALL/STAR - OVERLAP BY DATASET (V06.0)

DATASET NAME	EVENT	DATE	TIME
RR02.\$DEMO.ABRV22.CNTL	RONRTST4 APPLRR	2011/11/11 2011/03/22	07:33:4 12:14:3
RR02.\$DEMO.BRM.CNTL	RONRTST4 RONRBKJ2 P390BKP6	2011/11/11 2009/08/27 2007/07/12	07:33:4 17:13:1 22:00:0
RR02.\$JCL	ADTSO001 P390BKP6 P390BKP8	2011/04/29 2007/07/12 2006/12/08	22:10:0 22:00:0 16:00:0
RR02.\$LAN1649.APPLJ1.DC.G0001V00	LANBKPSD LANBKP1	2012/02/13 2012/02/13	11:25:1 11:20:1
RR02.\$LAN1649.APPLJ2.LISTC.G0001V00	LANBKPSD LANBKP2	2012/02/13 2012/02/13	11:25:1 11:20:2
RR02.\$LAN1649.APPLJ3.DC.SORTED.G0001V00	LANBKPSD LANBKP3	2012/02/13 2012/02/13	11:25:1 11:20:3
RR02.\$TEST.LOAD	RONRBKJ2 P390BKP6	2009/08/27 2007/07/12	17:13:1 22:00:0
RR02.ALB22.REXXSAMP	RONRTST1 BK000001	2010/10/04 2010/10/04	18:13:4 13:50:0
RR02.ALB62.REXXSAMP	BK000001 RONRTST1	2010/10/04 2010/10/04	13:50:0 13:32:1

\*ISRBROB

S1 Ready (1) 192.168.55.74 SC0TCP27 10:10:58 2/21/2012 NUM 00:07:20 04.015

Start Yammer Office Co... Inbox - M... AOL Mail -... SHARE 2012 SHARE\_A... S1 - TST ... untitle - ... Desktop 89% 10:10 AM

# Data Identification for Databases



# Database Data

- DB2
  - Data is known as Table Spaces and Index Spaces
  - One or more sets of Table Spaces and Index Spaces make up a database
  - Each Table Space and Index Space has a unique data set name
- IMS
  - Data is known as databases
  - A database is one or more VSAM Clusters
    - Data component, index component, secondary (alternate) index component
  - Each component of a VSAM Cluster has a unique data set name

# Backing up DB2 and IMS with Image Copy

- Image Copy Backup
  - DB2 & IMS
    - Requires individual Table Space, Index Space, database names to be specified in the Image Copy backup job's JCL
    - Requires manual upkeep
      - *Whenever Table Spaces, Index Spaces and databases are added or deleted*
      - *Creates exposure*
        - *Manual nature of upkeep can cause data to be accidentally omitted*



# Identifying Database Data using Automation

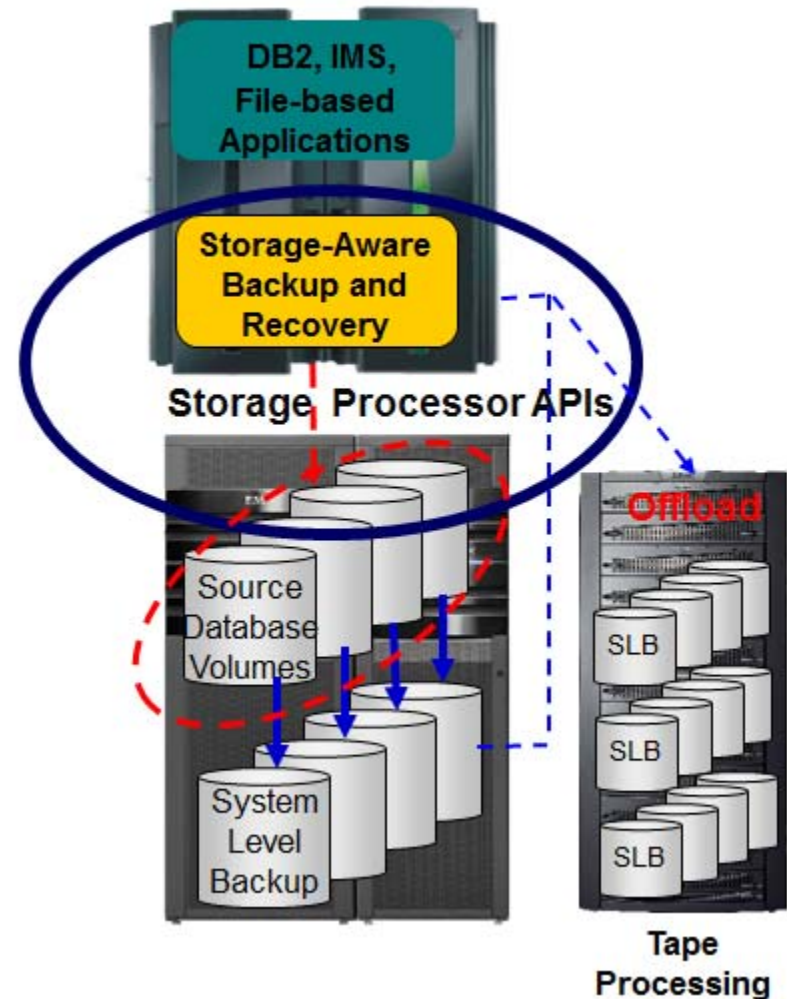
- Storage-aware data management software such as Rocket Database Backup and Recovery (DBR)
  - Interrogates DB2 or IMS to discover all system and application data sets and maps to corresponding storage volumes
- Eliminates the need to:
  - Manually identify individual DB2 Table Spaces/Index Spaces and IMS databases for backup
  - Maintain Image Copy batch jobs over time
  - Execute Image Copy backup jobs for recovery purposes

# System-level Backup

- Backup complete database systems (IMS or DB2) as a unit without affecting applications
  - Backup components include:
    - Active and archive logs
    - Recovery metadata (IMS RECONs, DB2 BSDS)
    - All database data sets
    - Appropriate libraries, and system data sets
    - IMS system data sets including ACBLIBs, DBDLIBs, PGMLIBs, etc.
    - All associated ICF User catalogs
  - Backups performed instantly using storage-based fast replication
  - Does not require DB2 BACKUP SYSTEM, DFSMSHsm, or FlashCopy

# Storage-aware Backup Process Overview

- Fast replication is used to backup applications and database systems
  - Full system backups complete in seconds
  - Backup performed without host CPU or I/O
  - Supports all storage vendor products
- Back up large groups of databases with no application affect or down time
  - Backup windows are reduced or eliminated
  - Extend online or batch processing windows
- Data consistency ensured
  - Database suspend process (DB2 or IMS)
  - Storage-based consistency functions
  - Application quiesce
- Automated backup offload management



# DB2 System Identification



```
© S1 - RS25 - RS25 - BlueZone Mainframe Display
File Edit Session Options Transfer View Macro Script Help
MAINSTAR V2R2 ----- Register DB2 Subsystems ----- 2009/06/10 17:20:55
Option ==>

Control File Information
Current User Ind      ==> DBR      (From startup clist)
DB2 Control Dataset  ==> RBR.WRK0220.DB2.CONTROL
  (Pre-allocated)

Enter DB2 Subsystem Info:
DB2 Subsystem ID      ==> E81B    (1-4 char subsystem ID)
                                     ( ? For subsystem list)

Valid command selection values are
  1. ZPARM, BSDS, and Load Library Information
  2. DB2 Plans

S1 | Ready (1) | 192.168.55.25 | S25TCP45 | 16:21:05 6/10/2009 | NUM | 00:04:44 | 02.014
```

# DB2 System Identification



```
S1 - R525 - R525 - BlueZone Mainframe Display
File Edit Session Options Transfer View Macro Script Help
MAINSTAR V2R2 ---- Parameters for DB2 subsystem E81B ---- 2009/06/10 17:21:53
option ==>

Enter or Update Specific DB2 Parameters :

DB2 ZPARMs Member      ==> E81BPARM
DB2 Bootstrap DSN #01  ==> E81BLOG.BSDS01
DB2 Bootstrap DSN #02  ==> E81BLOG.BSDS02
DB2 Loadlib1           ==> DSN.E81B.SDSNEXIT
DB2 Loadlib2           ==> DSN.V810.SDSNLOAD
DB2 Loadlib3           ==> _____
DB2 Loadlib4           ==> _____
DB2 Loadlib5           ==> _____

S1 | Ready (1) | 192.168.55.25 | S25TCP45 | 16:22:02 6/10/2009 | NUM | 00:05:41 | 02, 014
```

## DBR for DB2 or IMS

- Discovers and analyzes DB2 or IMS subsystem
  - Displays an interactive report showing DASD volume usage
  - Identifies non-DB2 or IMS data also on those volumes
    - Can include ADATABASE, CICS VSAM Files and other database data on these volumes for backup
- Segregates DB2 log and object data to support a system backup methodology
  - Generates JCL to move DB2 data sets to appropriate segregated volumes
  - Automates separating DB2 data and log data sets into their own ICF catalogs

# DB2 User Catalogs Support



```
S1 - R525 - RS25 - BlueZone Mainframe Display
File Edit Session Options Transfer View Macro Script Help
MAINSTAR V2R2 --- Subsystem Analysis and Configuration ---2009/06/10 17:36:32
option ==> _____ scroll ==> PAGE

Commands: ANALYZE REANALYZE

-----
Subsystem: B71D      Active: No      Datasharing: No
Date of Last Analysis: 01/26/2009  Analysis Recommended: Y
Message: Other non-DB2 data will be backed up and restored.
-----
New MVS User Catalogs to be used by this subsystem
Log/BSDS Cat1  CATALOG.RSPLEX01.B71D.CAT1      Volume RBR092
DB2 Data Cat1  CATALOG.RSPLEX01.B71D.CAT2      Volume RBR090
Line Cmds: (C-Creat, A-Add Alias, D-Dataset Disp, U-Update, V-View Alias)

Existing MVS User Catalogs used by this subsystem
Log Other      CATALOG.RSPLEX01.B71D.CAT1      Volume RBR092
Data Other     CATALOG.RSPLEX01.B71D.CAT2      Volume RBR090
Line Cmds: (D-Dataset Display, V-View Aliases)

Boot Strap Datasets
B71D - BSDS 1  B71DLOG.BSDS01      Volume RBR092
B71D - BSDS 2  B71DLOG.BSDS02      Volume RBR092

-----
S1 | Ready (1) | 192.168.55.25 | S25TCP45 | 16:36:42 6/10/2009 | NUM | 00:20:21 | 02.015
```

# DB2 Log Files and Associated Catalogs



```

S1 - RS25 - RS25 - BlueZone Mainframe Display
File Edit Session Options Transfer View Macro Script Help
MAINSTAR V2R2 --- Subsystem Analysis and Configuration ---2009/06/10 17:41:17
Option ==> [ ] Scroll ==> PAGE

Commands: ANALYZE REANALYZE

-----
Subsystem: B71D Active: No Datasharing: No
Date of Last Analysis: 01/26/2009 Analysis Recommended: Y
Message: Other non-DB2 data will be backed up and restored.
-----
Row 17 of 43 +-
- B71D - Log 1 B71DLOG.LOGCOPY1.DS01 Volume RBR092
- B71D - Log 1 B71DLOG.LOGCOPY1.DS02 Volume RBR092
- B71D - Log 1 B71DLOG.LOGCOPY1.DS03 Volume RBR092
- B71D - Log 2 B71DLOG.LOGCOPY2.DS01 Volume RBR092
- B71D - Log 2 B71DLOG.LOGCOPY2.DS02 Volume RBR092
- B71D - Log 2 B71DLOG.LOGCOPY2.DS03 Volume RBR092
Line Cmds: (R-Rename Log, M-Move Log)

Alias used with associated MVS User Catalogs
- B71D CATALOG.RSPLEX01.B71D.CAT2 Data other
- B71DLOG CATALOG.RSPLEX01.B71D.CAT1 Log other
Line Cmds: (D-Dataset Display, M-Merge catalog entries, R-Rename Alias)

S1 Ready (1) 192.168.55.25 S25TCP45 16:41:58 6/10/2009 NUM 00:25:36 02.015
  
```



# Identification of Non-DB2 Data on Volumes



```

S1 - RS25 - RS25 - BlueZone Mainframe Display
File Edit Session Options Transfer View Macro Script Help
MAINSTAR V2R2 --- Subsystem Analysis and Configuration ---2009/06/10 17:40:06
Option ==> [ ] scroll ==> PAGE

Commands: ANALYZE REANALYZE

-----
Subsystem: B71D Active: No Datasharing: No
Date of Last Analysis: 01/26/2009 Analysis Recommended: Y
Message: Other non-DB2 data will be backed up and restored.
-----
Row 30 of 43 +-

Volumes used by this subsystem
Volume Data DataCat ActLog ActCat ArcLog ArcCat Other Flash
- - - - -
-NONE- No No No No Yes No No N/A
- - - - -
DIP105 No No No No Yes No Yes Yes
- - - - -
DIP107 No No No No Yes No Yes Yes
- - - - -
DIP108 No No No No Yes No Yes Yes
- - - - -
DIP10B No No No No Yes No Yes Yes
- - - - -
DIP10C No No No No Yes No Yes Yes
- - - - -
DIP10F No No No No Yes No Yes Yes
- - - - -
RBR090 Yes Yes No No No No No Yes
- - - - -
RBR091 Yes No No No No No No Yes
- - - - -
RBR092 No No Yes Yes No Yes Yes Yes
- - - - -
Line Cmds: (D-Dataset Display, M-Move all Datasets on Volume)
    
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## DB2 and IMS Database Backup

- Using automation to identify DB2 and IMS data ensures all database data is included in the backup
- Using System-Level backup for DB2 and IMS systems ensures a synchronized point-in-time backup
  - Either individually or across DB2 and IMS
- System-Level backup uses fast replication technologies
  - No application downtime or “read-only” mode
  - Backup to disk is instantaneous
  - I/O is done by the storage controller not on your business class machine

# Summary

- Software automation enables customers to easily identify data and manage backups required for local recovery
  - Critical data set identification and backup inventory
- Reporting that identifies:
  - Critical application data by data set name
  - DB2, IMS and other database data
    - All volumes to be included in the backup
  - Data that doesn't have a backup
    - To be corrected by the application
  - Data backed up multiple times
    - By multiple applications, multiple data movers
- Software automation helps customers ensure all their mainframe data is backed up

## Abstract for Session 10975

- In the event of a disaster, either minor or catastrophic, you can't recover your data if you don't have it backed up! Whether your group is responsible for ensuring your company's data assets are backed up or not; it is important for you to attend this session to understand how your business can ensure all critical data is identified, backed up and a backup copy is vaulted for recovery. Mirroring your data to a remote site? Local recovery for applications, DB2, IMS, CICS and user data still needs to be addressed. The speakers will discuss using solutions from Rocket Mainstar to ensure all of your data is identified, backed up and recoverable in the event of a disaster.