



IBM Software

Managing Backup and Recovery of z/VM and Linux on System z

Backup and Restore Manager for z/VM

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Product Overview

▪ Backup

- Requested by administrators
- Full or incremental
- Flexible selection of disks and files to back up
- Review job before submitting for backup
- Catalog housed in Shared File System

▪ Restore

- Performed by users for their own data
- Extending to other users available via exit
- Performed by administrators for any data
- Selection of data to restore
 - Full screen interface or commands

▪ Integration with Tape Manager for z/VM

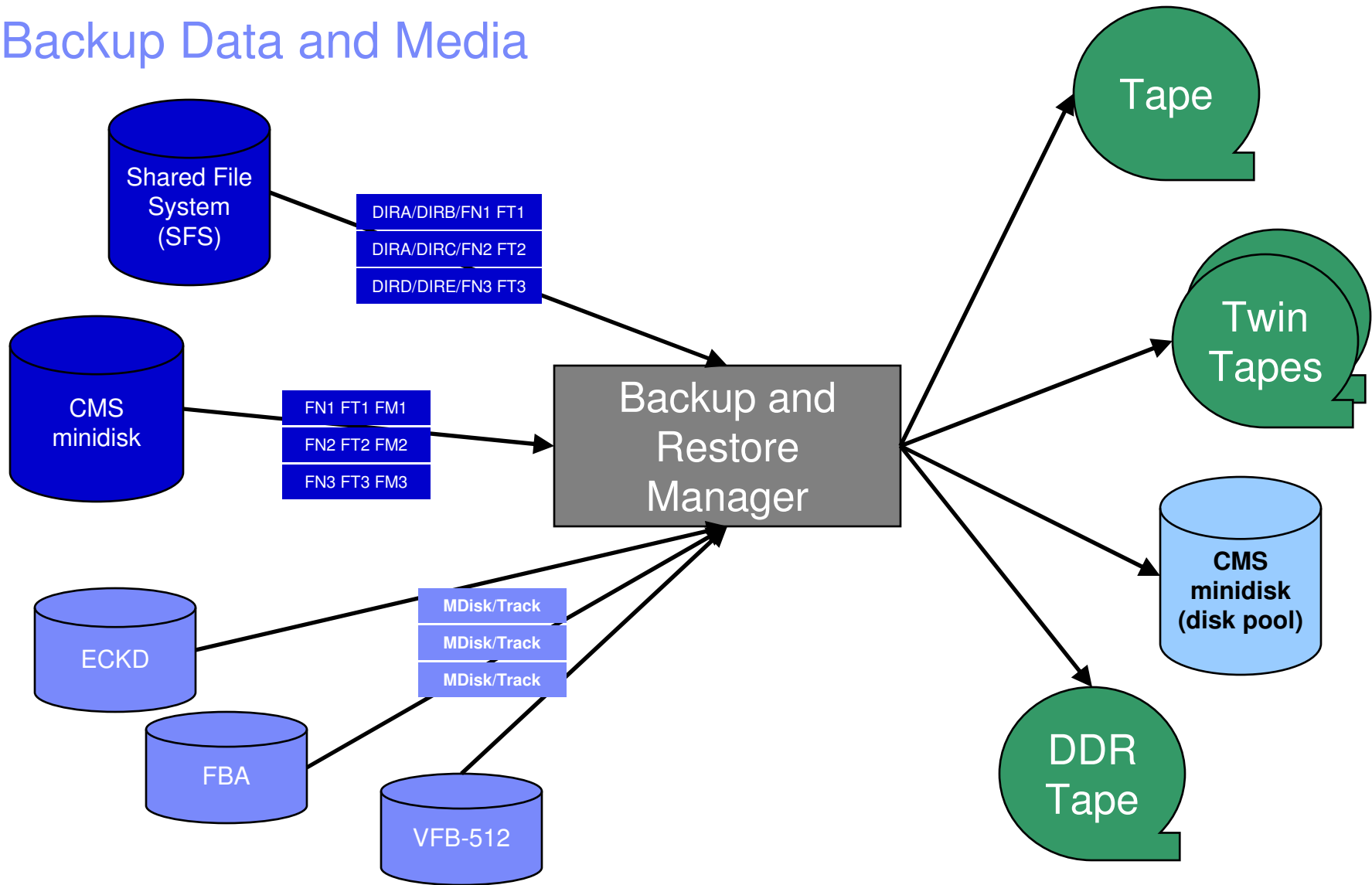
▪ Optional compression of data during backup

- Call your own compression algorithm
- Use IBM provided routine

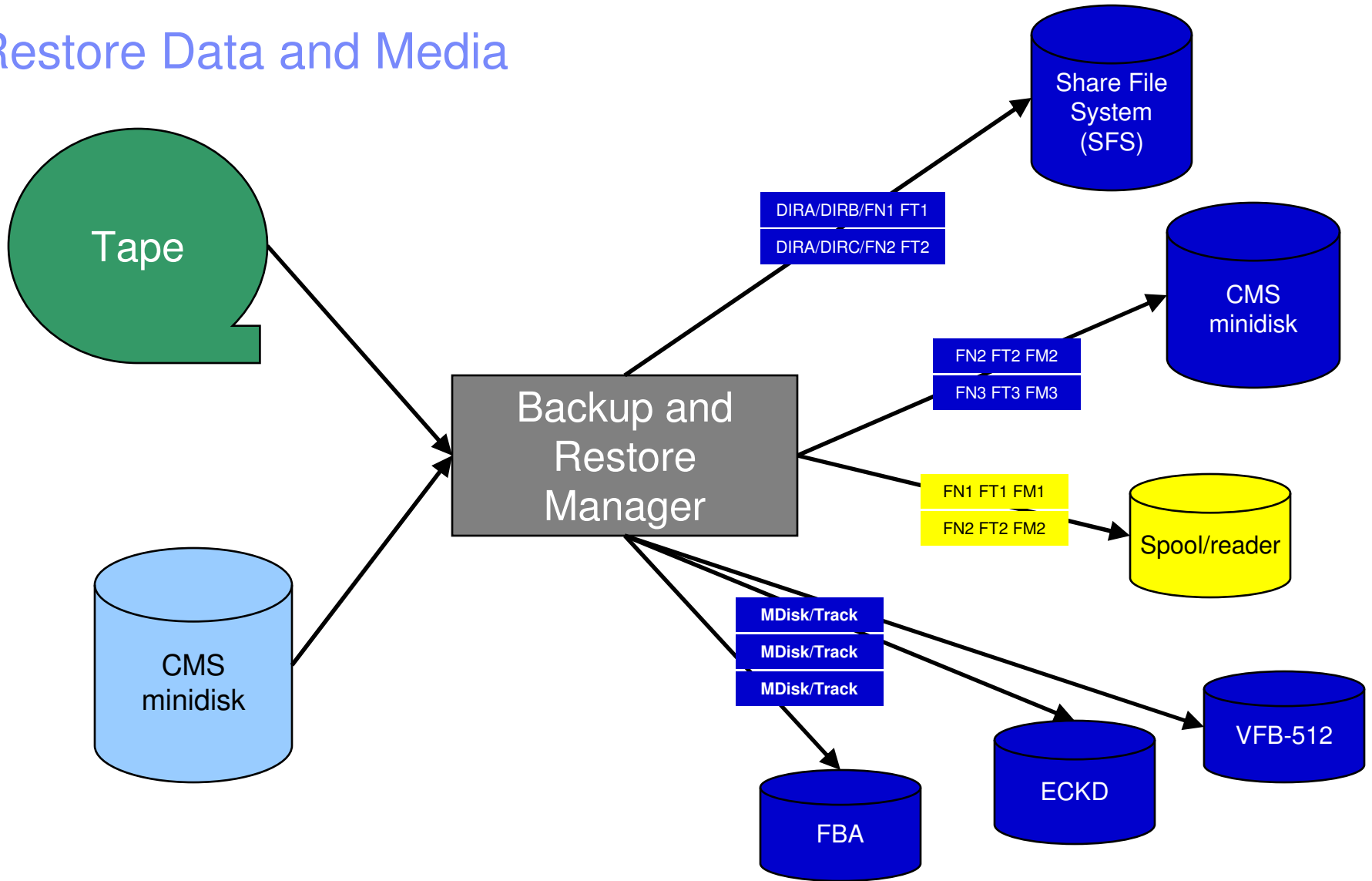
▪ Encryption exits available

- Call your own routine
- Use vendor-written routine, such as V/Soft Software's Encrypt/Backup for z/VM

Backup Data and Media



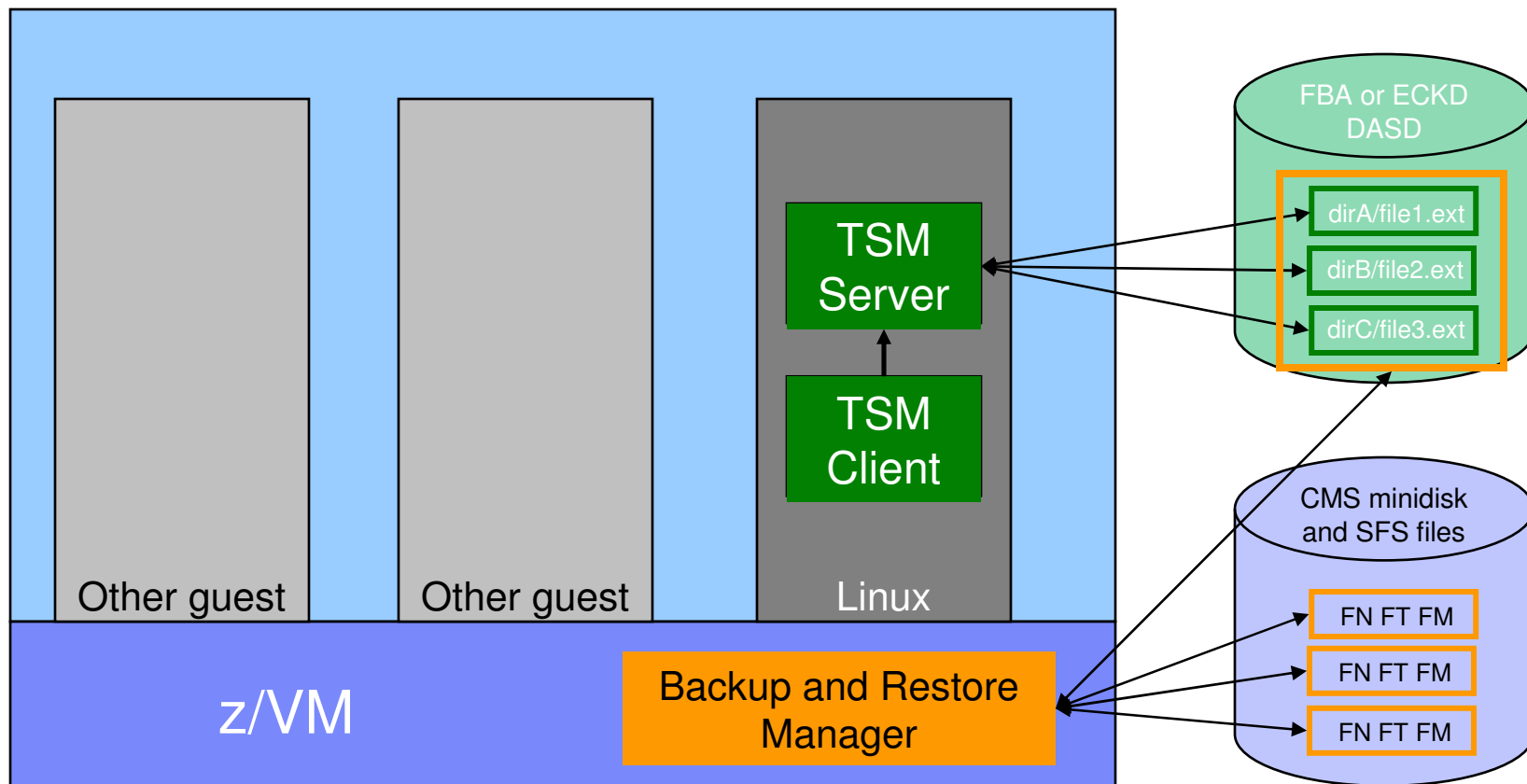
Restore Data and Media



Backup and Restore Manager and Linux Guests

Using Backup and Restore Manager with Tivoli Storage Manager

Choose the solution that meets your needs – or combine for file recovery and DR



Key Benefits

- **System backups available for Disaster Recovery**
 - Option to restore using DDR or Backup and Restore Manager
 - Manage retention of DR backups
 - Retrieve a list of tapes associated with a specific backup
 - Pull list for movement to off-site storage
- **Guest backups available for restoring to a previous state or level**
- **Backups of user data available for**
 - Restoring to a previous state or level
 - Replacing files accidentally erased or corrupted
- **Users restore their own data**
 - No administrator interaction required

Key Benefits Cont...

- **Flexible selection of data to back up**
 - Include/exclude
 - Minidisks, directories
 - Real device addresses or volsers
 - Extents
 - Mask by filename, filetype, or SFS path
 - Review a defined backup job before submission
- **Management of backup data**
 - Retention set as part of the backup job
 - Automatic aging and pruning of the backup catalog
 - Including associated tapes and disk pools
 - View/query the list of expired backups
- **Reduced backup window with concurrent processing**
 - Multiple worker service machines sharing the job
 - Suggest one worker service machine for each available tape drive

Defining a Backup Job

```

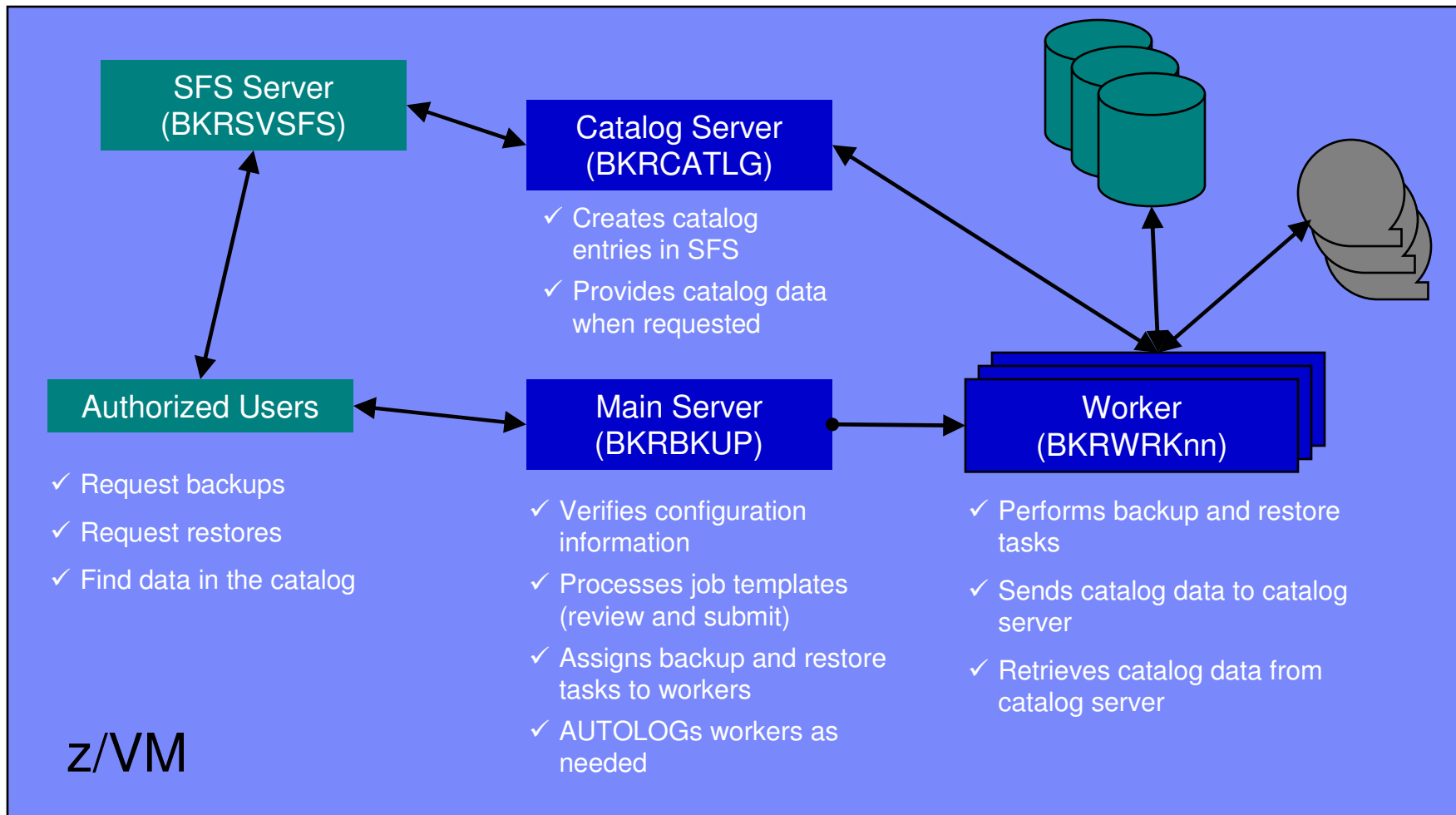
/* Include/Exclude definitions */
/*****/
FUNCTION MEDIATYPE OWNER VDEV VOLUME DEVTYPE START END SIZE
-----|-----|-----|---|-----|-----|-----|---|-----|---|-----|---|-----|
INCLUDE MINIDISK * = * * * = * = * = *
EXCLUDE MINIDISK *LNX* = * * * = * = * = *
EXCLUDE MINIDISK MAINT = 0123 * * = * = * = *
EXCLUDE MINIDISK MAINT = 0124 * * = * = * = *
EXCLUDE MINIDISK * = * * * = * = * = END = *
EXCLUDE MINIDISK * = * * * = * = * = * > 3300
INCLUDE MINIDISK MAINT = 012* * * = * = * = * = *
*SELECT MINIDISK MAINT 0123 0-0,1-20,391.45,436-480,3230.4,3238-end
*SELECT MINIDISK MAINT 0124 0-End

FUNCTION MEDIATYPE ADDRESS
-----|-----|-----|
INCLUDE RDEVICE A0*
INCLUDE RDEVICE 900-90F

FUNCTION MEDIATYPE VOLSER
-----|-----|-----|
INCLUDE RDEVVOL 530*

FUNCTION MEDIATYPE POOLNAME OWNER FS
-----|-----|-----|-----|----|
INCLUDE SFS VMSYSU: * SFS
EXCLUDE SFS VMSYSU: VMSERVU SFS
    
```


Backup and Restore Manager Service Machines



Summary

- **Use Backup and Restore Manager to**
 - Perform file-level backups of z/VM data
 - Perform image level backups on non-z/VM guest data
 - Perform disaster recovery backups of entire system
 - Easily find and restore data as needed
 - Manage retention of backup data



IBM Software

Backup and Recovery Scenarios *Including Automation*

Scenario 8: Performing an Incremental Backup

- **Administrator previously performed a full backup**
- **Incremental job defined, using last full backup as its base**
- **Change a file on user's A-disk**
- **Submit incremental job for review**
- **Submit incremental job for backup processing**
- **Use Operations Manager to monitor backup servers**

Scenario 8: Detailed steps

- **From a z/VM user ID, change a file**

```
xedit b b a
```

- **From an authorized z/VM user ID, submit a backup job for review**

```
smsg bkrbkup review increm01
```

- **Review the resulting files in the reader (LINKFAIL and JOB files)**

- **From an authorized z/VM user ID, submit a backup job for backup processing**

```
smsg bkrbkup submit increm01
```

- **View the console of the backup servers to see the processing**

```
gomcmd opmgrml viewcon user(backup)
```

```

Session A - TSTUSER1 - [32 x 80]
File Edit View Communication Actions Window Help
B B A1 V 80 Trunc=80 Size=42 Line=29 Col=1 Alt=2
====>
00029 Change made at 15:53pm eastern time April 19, 2008
00030 Change made at 14:44 cet May 5, 2008
00031 Change made at 08:45 pt July 3, 2008
00032 Change made at 08:56am pt July 11, 2008
00033 Change made at 11:04am pt July 15, 2008
00034 Change made at 10:16am pt August 4, 2008
00035 Change made at 08:10am pt Sept 11, 2008
00036 Change made at 09:12am pt Sept 18, 2008
00037 Change made at 2:00pm pt Oct 23, 2008
00038 Change made at 16:27pm Brasil Nov 11, 2008
00039 Change made at 11:31am et Dec 9, 2008
00040 Change made at 11:00am et Dec 20, 2008
00041 Change made at 15:45 ct Jan 14, 2009
00042 Change made at 12:45 pt Mar 3, 2009
00043 * * * End of File * * *
MA a 02/007
Connected to remote server/host 9.39.68.141 using port 23
    
```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
smsg bkrbkup review increm01
Ready: T=0 01/0 01 14:48:54
BKRBAK8529I Processing REVIEW INCREM01 command for TSTADMN1.
RDR FILE 0050 SENT FROM BKRBAKUP PUN WAS 0007 RECS 0006 CPY 001 A NOHOLD NOKEEP
RDR FILE 0051 SENT FROM BKRBAKUP PUN WAS 0008 RECS 0081 CPY 001 A NOHOLD NOKEEP
RDR FILE 0052 SENT FROM BKRBAKUP PUN WAS 0009 RECS 0082 CPY 001 A NOHOLD NOKEEP
File INCREM01 LINKFAIL D1 sent to TSTADMN1 at DEM1ZVM on 03/03/09 14:48:58
BKRMAK9102W 2 minidisks were selected by INCLUDE/EXCLUDE processing but could
not be CP LINKed.
BKRMAK8559I INCLUDE / EXCLUDE processing for job INCREM01 selected 149 objects
BKRMAK8559I for backup processing.
BKRMAK8563I Worker count for job INCREM01 has been set to 2.
BKRMAK8568I CMS files will be filtered against file mask "* * *".
BKRMAK8566I SFS files will be filtered with path mask "*".
BKRMAK8583I Sending results to TSTADMN1 for review.
File INCREM00 JOB D1 sent to TSTADMN1 at DEM1ZVM on 03/03/09 14:48:58
File INCREM01 JOB D1 sent to TSTADMN1 at DEM1ZVM on 03/03/09 14:48:58
Return code "8" from command REVIEW INCREM01 at 03/03/09 14:48:58.

RUNNING DEM1ZVM
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

Session B - TSTADMN1 - [32 x 80]

File Edit View Communication Actions Window Help

Cmd	Filename	Filetype	Class	User	at Node	Hold	Records	Date	Time
-	INCREM01	LINKFAIL	PUN A	BKRBKUP	DEM1ZVM	NONE	6	3/03	14:48:58
-	INCREM00	JOB	PUN A	BKRBKUP	DEM1ZVM	NONE	81	3/03	14:48:58
-	INCREM01	JOB	PUN A	BKRBKUP	DEM1ZVM	NONE	82	3/03	14:48:58

TSTADMN1 RDRLIST A0 V 164 Trunc=164 Size=3 Line=1 Col=1 Alt=6

1= Help 2= Refresh 3= Quit 4= Sort(type) 5= Sort(date) 6= Sort(user)
 7= Backward 8= Forward 9= Receive 10= 11= Peek 12= Cursor

====>

X E D I T 1 File

MA b 03/001

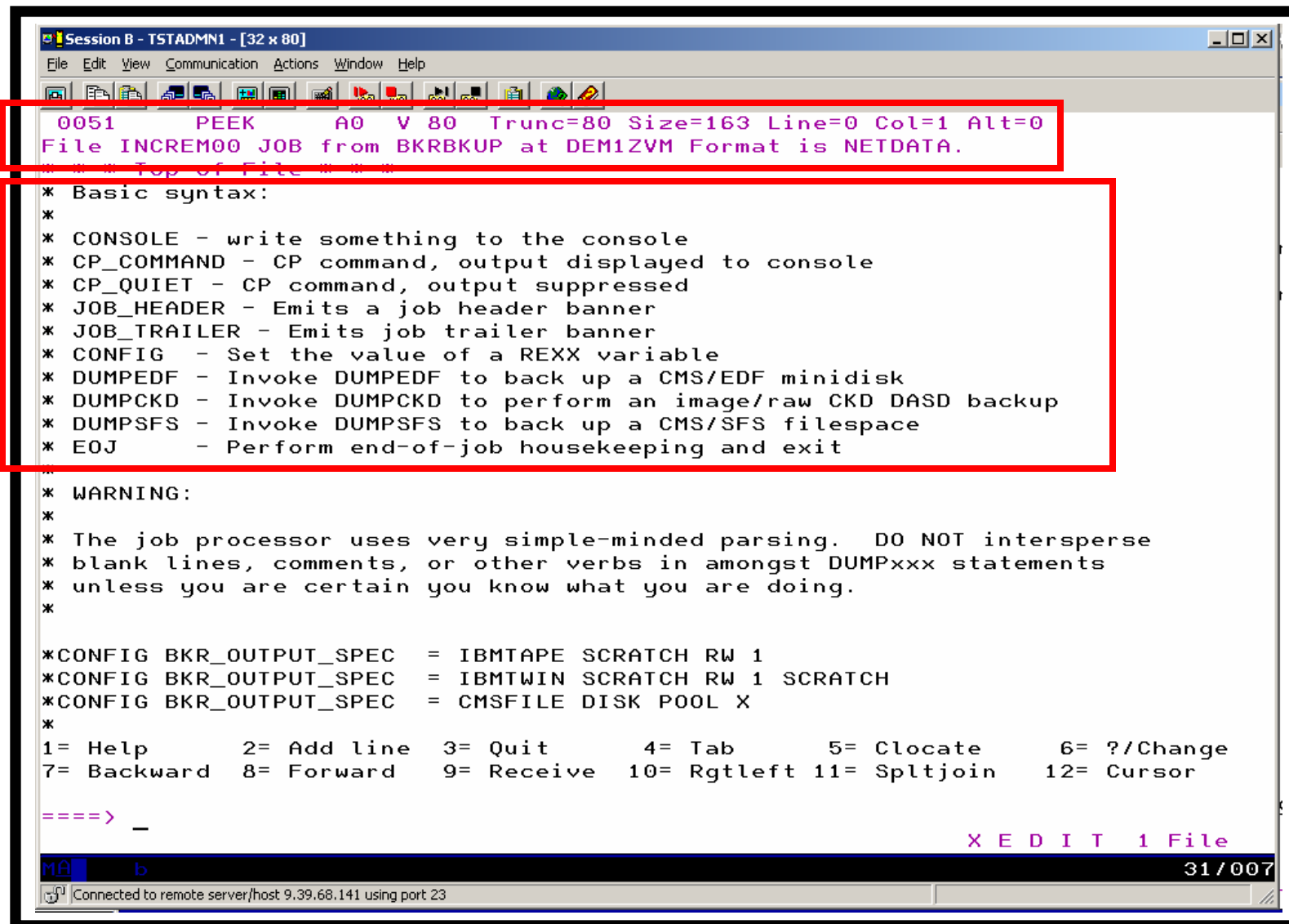
Connected to remote server/host 9.39.68.141 using port 23


```

Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0050      PEEK      A0  V 87  Trunc=87 Size=2 Line=0 Col=1 Alt=0
File INCREM01 LINKFAIL from BKRBKUP at DEM1ZVM Format is NETDATA.
*** Top of File ***
DATAMOVE 05F0      108 "HCPLNM108E DATAMOVE 05F0 not linked; void $$$$$$ not m
ounted"
DATAMOVE 05FF      108 "HCPLNM108E DATAMOVE 05FF not linked; void $$$$$$ not m
ounted"
*** End of File ***

1= Help      2= Add line  3= Quit    4= Tab     5= Clocate   6= ?/Change
7= Backward  8= Forward  9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _
X E D I T  1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23
    
```



```
Session B - TSTADMNI - [32 x 80]
File Edit View Communication Actions Window Help
0051 PEEK A0 V 80 Trunc=80 Size=163 Line=0 Col=1 Alt=0
File INCREM00 JOB from BKR BKUP at DEM1ZVM Format is NETDATA.
*** Top of File ***
* Basic syntax:
*
* CONSOLE - write something to the console
* CP_COMMAND - CP command, output displayed to console
* CP_QUIET - CP command, output suppressed
* JOB_HEADER - Emits a job header banner
* JOB_TRAILER - Emits job trailer banner
* CONFIG - Set the value of a REXX variable
* DUMPEDF - Invoke DUMPEDF to back up a CMS/EDF minidisk
* DUMPCKD - Invoke DUMPCKD to perform an image/raw CKD DASD backup
* DUMPSFS - Invoke DUMPSFS to back up a CMS/SFS filespace
* EOJ - Perform end-of-job housekeeping and exit
*
* WARNING:
*
* The job processor uses very simple-minded parsing. DO NOT intersperse
* blank lines, comments, or other verbs in amongst DUMPxxx statements
* unless you are certain you know what you are doing.
*
*CONFIG BKR_OUTPUT_SPEC = IBMTAPE SCRATCH RW 1
*CONFIG BKR_OUTPUT_SPEC = IBMTWIN SCRATCH RW 1 SCRATCH
*CONFIG BKR_OUTPUT_SPEC = CMSFILE DISK POOL X
*
1= Help 2= Add line 3= Quit 4= Tab 5= Clocate 6= ?/Change
7= Backward 8= Forward 9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _
X E D I T 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0051      PEEK      A0  V 80  Trunc=80 Size=163 Line=32 Col=1 Alt=0
File INCREM00 JOB from BKRBKUP at DEM1ZVM Format is NETDATA.
CONFIG BKR_OUTPUT_SPEC = CMSFILE INCREM01 DISKPOOL *
* Next two lines override default system tape pool set in BKRSYSTEM CONFIG
* CONFIG BKR_JOB_EUM_POOL_OWNER = xxxxxxxxx
* CONFIG BKR_JOB_EUM_POOL_NAME = xxxxxxxxx
CP_COMMAND TERM MORE 50 10
CP_COMMAND TERM HOLD ON
CP_COMMAND SPOOL CONSOLE TO BKRADMIN CLASS T TERM START NAME INCREM01 20090303
CP_COMMAND TERM LINES 255
CONFIG BKR_JOB_WORKERS = 2
CONFIG BKR_JOB_NAME     = INCREM01
CONFIG BKR_JOB_INSTANCE = $$INST$$
CONFIG BKR_JOB_OWNER    = BKRADMIN
CONFIG BKR_JOB_MASTER   = BKRBKUP
CONFIG BKR_JOB_TOKEN    = 20090303
CONFIG BKR_JOB_CMS_FILEMASK = * * *
CONFIG BKR_JOB_SFS_PATHMASK = *
CONFIG BKR_JOB_BACKUP_RESERVED_AS_IMAGE = NO
CONFIG BKR_JOB_SUPPRESS_IMAGE = YES
CONFIG BKR_JOB_CATALOG = Y
1= Help      2= Add line  3= Quit      4= Tab      5= Clocate  6= ?/Change
7= Backward  8= Forward  9= Receive 10= Rgtright 11= Spltjoin 12= Cursor
====> _
X E D I T 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23
```

```

Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0051      PEEK      A0  V 80  Trunc=80 Size=163 Line=76 Col=1 Alt=0
File INCREM00 JOB from BKR BKUP at DEM1ZVM Format is NETDATA.
JOB HEADER
DUMPCKD $ALLOC$ 0A02 $$$DRIVER$$
DUMPCKD $DIRECT$ 0A04 $$$DRIVER$$
DUMPCKD AMVADMIN 0191 $$$DRIVER$$
DUMPEDF AMVWRK01 0191 $$$FMASK$$ $$$DRIVER$$
DUMPCKD AMVWRK03 0191 $$$DRIVER$$
DUMPEDF ARCHLOGS 0191 $$$FMASK$$ $$$DRIVER$$
DUMPEDF AUTOLOG1 0191 $$$FMASK$$ $$$DRIVER$$
DUMPEDF AVSVM 0191 $$$FMASK$$ $$$DRIVER$$
DUMPEDF BKR BKUP 0191 $$$FMASK$$ $$$DRIVER$$
DUMPEDF BKRCATLG 0191 $$$FMASK$$ $$$DRIVER$$
DUMPEDF BKRWRK02 0191 $$$FMASK$$ $$$DRIVER$$
DUMPCKD BKRWRK04 0191 $$$DRIVER$$
DUMPEDF BLDNUC 0191 $$$FMASK$$ $$$DRIVER$$
DUMPEDF BLDSEG 0191 $$$FMASK$$ $$$DRIVER$$
DUMPEDF CFCONSOL 0191 $$$FMASK$$ $$$DRIVER$$
DUMPEDF CNTRLCON 0191 $$$FMASK$$ $$$DRIVER$$
DUMPEDF DATAMOVE 01AA $$$FMASK$$ $$$DRIVER$$
DUMPEDF DATAMOVE 02AA $$$FMASK$$ $$$DRIVER$$
DUMPEDF DIRMAINT 01AA $$$FMASK$$ $$$DRIVER$$
DUMPCKD DIRMAINT 01DE $$$DRIVER$$
DUMPEDF DIRMAINT 0155 $$$FMASK$$ $$$DRIVER$$
DUMPEDF DIRMAINT 01DB $$$FMASK$$ $$$DRIVER$$
DUMPEDF DIRMAINT 02DB $$$FMASK$$ $$$DRIVER$$
DUMPEDF DIRMSAT 0155 $$$FMASK$$ $$$DRIVER$$
1= Help 2= Add line 3= Quit 4= Tab 5= Clocate 6= ?/Change
7= Backward 8= Forward 9= Receive 10= Rgtright 11= Spltjoin 12= Cursor
====> _
X E D I T 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23
    
```

```

Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0051      PEEK      A0  V 80  Trunc=80 Size=163 Line=139 Col=1 Alt=0
File INCREM00 JOB from BKRBKUP at DEM1ZVM Format is NETDATA.
DUMPCKD TMTMM 0210 $$$DRIVER$$
DUMPEDF TSTADMIN1 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF TSTADMIN3 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF TSTUSER1 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF TSTUSER3 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF VMKERB 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF VMRMADMN 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF X25IPI 0191 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF 40SASF40 02B2 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF 40SASF40 02A6 $$$FMASK$$$ $$$DRIVER$$$
DUMPEDF 40SASF40 0100 $$$FMASK$$$ $$$DRIVER$$$
CONSOLE *** Could not LINK DATAMOVE 05F0 during INCLUDE/EXCLUDE; skipped.
JOB_TRAILER

* Retain catalog content for 30 days from date of job completion...
CONFIG BKR_CATALOG_RETENTION = 30
CP_COMMAND QUERY TIME
CONSOLE *
CONSOLE * INCREM01 INCREMENTAL BACKUP GENERATED 06/18/2007
CONSOLE * JOB IMAGE GENERATED 03/03/09 14:48:58
CONSOLE *

CP_QUIET SPOOL CONSOLE CLOSE NAME INCREM01 20090303
CP_QUIET SPOOL CONSOLE NAME WORKER OUTPUT
EOJ
1= Help      2= Add line  3= Quit    4= Tab      5= Locate   6= ?/Change
7= Backward  8= Forward  9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _
X E D I T 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23

```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
Ready; T=0.02/0.02 15:13:28
msg bkrbkup submit increm01
Ready; T=0.01/0.01 15:13:36
BKRBAK8532I Processing SUBMIT INCREM01 command for TSTADMN1 at 03/03/09 15:13:
36.
RDR FILE 0053 SENT FROM BKRBKUP PUN WAS 0011 RECS 0006 CPY 001 A NOHOLD NOKEEP
File INCREM01 LINKFAIL D1 sent to BKRADMIN at DEM1ZVM on 03/03/09 15:13:36
File INCREM01 LINKFAIL D1 sent to TSTADMN1 at DEM1ZVM on 03/03/09 15:13:37
BKRMAK9102W 2 minidisks were selected by INCLUDE/EXCLUDE processing but could
not be CP LINKed.
BKRMAK8559I INCLUDE / EXCLUDE processing for job INCREM01 selected 149 objects
BKRMAK8559I for backup processing.
BKRMAK8563I Worker count for job INCREM01 has been set to 2.
BKRMAK8570I Instance number 00000055 has been assigned for job INCREM01.
BKRMAK8568I CMS files will be filtered against file mask "* * *".
BKRMAK8566I SFS filespace will be filtered with path mask "*".
BKRMAK8584I Sending INCREM00 JOB D to worker task BKRWRK01.
File INCREM00 JOB D1 sent to BKRWRK01 at DEM1ZVM on 03/03/09 15:13:37
BKRMAK8584I Sending INCREM01 JOB D to worker task BKRWRK02.
File INCREM01 JOB D1 sent to BKRWRK02 at DEM1ZVM on 03/03/09 15:13:37
Return code "0" from command SUBMIT INCREM01 at 03/03/09 15:13:37.

RUNNING DEM1ZVM
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```

Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
15:15:55 BKRWRK02 BKRWRK8509I Invoking WAKEUP with parameters 03/03/09 15:15:55
15:15:55 BKRWRK02 BKRWRK9081I Idle timeout limit of +00:02:00 reached; logging
15:15:55 BKRWRK02 HCPHSG04SE BKRADMIN not logged on
15:15:55 BKRWRK02 CONNECT= 00:02:18 VIRTCPU= 000:00.43 TOTCPU= 000:00.57
15:15:55 BKRWRK02 LOGOFF AT 15:15:55 CST TUESDAY 03/03/09
15:15:55 BKRWBKUP USER DSC LOGOFF AS BKRWRK02 USERS = 20
15:15:55 BKRWBKUP BKRBAK8510I 03/03/09 15:15:55 WAKEUP exited on a VMCF interrupt
15:15:55 BKRWBKUP BKRBAK8512I The stack contains 1 entries. There are 0 lines o
15:15:55 BKRWBKUP BKRBAK8513I Program stack entry dump:
15:15:55 BKRWBKUP +++
15:15:55 BKRWBKUP *MSG BKRWRK02 WRKRSTAT TURNDOFF
15:15:55 BKRWBKUP +++
15:15:55 BKRWBKUP BKRBAK8515I Queued command #1: "*MSG BKRWRK02 WRKRSTAT TURND
15:15:55 BKRWBKUP BKRBAK8519I Processing WRKRSTAT command TURNDOFF from *MSG B
15:15:55 BKRWBKUP CON FILE 0070 SENT TO BKRADMIN RDR AS 0028 RECS 0025 CPY
15:15:55 BKRWRK01 BKRWRK8509I Invoking WAKEUP with parameters 03/03/09 15:15:55
15:15:55 BKRWRK01 BKRWRK9081I Idle timeout limit of +00:02:00 reached; logging
15:15:55 BKRWRK01 HCPHSG04SE BKRADMIN not logged on
15:15:55 BKRWRK01 CONNECT= 00:02:18 VIRTCPU= 000:00.40 TOTCPU= 000:00.54
15:15:55 BKRWRK01 LOGOFF AT 15:15:55 CST TUESDAY 03/03/09
15:15:55 BKRWBKUP USER DSC LOGOFF AS BKRWRK01 USERS = 19
15:15:55 BKRWBKUP BKRBAK8510I 03/03/09 15:15:55 WAKEUP exited on a VMCF interrupt
15:15:55 BKRWBKUP BKRBAK8512I The stack contains 1 entries. There are 0 lines o
15:15:55 BKRWBKUP BKRBAK8513I Program stack entry dump:
15:15:55 BKRWBKUP +++
15:15:55 BKRWBKUP *MSG BKRWRK01 WRKRSTAT TURNDOFF
15:15:55 BKRWBKUP +++
15:15:55 BKRWBKUP BKRBAK8515I Queued command #1: "*MSG BKRWRK01 WRKRSTAT TURND
15:15:55 BKRWBKUP BKRBAK8519I Processing WRKRSTAT command TURNDOFF from *MSG B
15:15:55 BKRWRK01 CON FILE 0068 SENT TO BKRADMIN RDR AS 0030 RECS 0025 CPY
-
BACKUP (Scroll)
31/00
MA b
Connected to remote server/host 9.39.68.141 using port 23

```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
15:13:54 BKRWRK02 -----
15:13:54 BKRWRK02 -----
15:13:54 BKRWRK02 -----
15:13:54 BKRWRK02 BKRRVB9014I Job completed at 15:13:55 on 03/03/09.
15:13:54 BKRWRK02 BKRRVB9005I Executing CP command "QUERY TIME"
15:13:54 BKRWRK02 TIME IS 15:13:55 CST TUESDAY 03/03/09
15:13:54 BKRWRK02 CONNECT= 00:00:17 VIRTCPU= 000:00.42 TOTCPU= 000:00.56
15:13:54 BKRWRK02 BKRRVB9006I CP return code 0
15:13:54 BKRWRK02 *
15:13:54 BKRWRK02 * INCREM01 INCREMENTAL BACKUP GENERATED 06/18/2007
15:13:54 BKRWRK02 * JOB IMAGE GENERATED 03/03/09 15:13:37
15:13:54 BKRCATLG RDR FILE 0134 SENT FROM BKRWRK01 PUN WAS 0066 RECS 0013 CPY
15:13:54 BKRWRK02 *
15:13:54 BKRWRK02 BKRRVB9005I Executing CP command "SPOOL CONSOLE CLOSE NAME IN
15:13:54 BKRWRK02 BKRRVB9006I CP return code 0
15:13:54 BKRWRK02 BKRRVB9005I Executing CP command "SPOOL CONSOLE NAME WORKER 0
15:13:54 BKRWRK02 BKRRVB9006I CP return code 0
15:13:54 BKRWRK02 ***
15:13:54 BKRWRK02 *** End-of-Job Summary:
15:13:54 BKRWRK02 ***
15:13:54 BKRWRK02 *** Start time: 03/03/09 15:13:41
15:13:54 BKRWRK02 *** Ended time: 03/03/09 15:13:55
15:13:54 BKRWRK02 ***
15:13:54 BKRWRK02 *** DUMPCKD tasks, Max RC: 0, 0
15:13:54 BKRWRK02 *** DUMPFBA tasks, Max RC: 0, 0
15:13:54 BKRWRK02 *** DUMPEDF tasks, Max RC: 67, 4
15:13:54 BKRWRK02 *** DUMPSFS tasks, Max RC: 0, 0
15:13:54 BKRWRK02 *** RESTORE tasks, Max RC: 0, 0
15:13:54 BKRWRK02 ***
15:13:54 BKRCATLG 0000001 FILE PURGED
-
BACKUP
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23
```


Scenario 9: Restoring Files from Backup

- **Full and incremental backups performed previously**
- **User accidentally erases or corrupts a file**
- **User restores the file from backup**
 - Full screen interface to see all files available in backup
 - Including multiple “versions” of the same file
 - Filters and sorting available to easily find the needed file
 - Request restore directly to disk or to reader
- **No administrator intervention required**

Scenario 9: Detailed steps

- **From a z/VM user ID, view all catalog data you own**
`bkrlist`
- **Use the filters to find the file you want to restore**
- **Put the cursor on the file and hit F10**
- **Specify the user ID to whom the file should be sent and hit F10**
- **Look at the reader of that user ID to see the restored file and a copy of the console during the restore processing**

`rdrlist`

- **View the contents of the file to verify it's the correct version**

`peek`


```
Session A - TSTUSER1 - [32 x 80]
File Edit View Communication Actions Window Help
CMS EDF Minidisk Restore Specifications
From TSTUSER1 0191 date 09/01/14 time 15:45:10 (job INCREM01 00000054 ).
To EDF minidisk, userid:          and virtual address:
Or to RDR of userid: tstuser1_node:          (defaults to this node).
Or to SFS filepool:          and filespace:
and path:

File filters:  Filename: B          Filetype: B          mode number: 1

Master backup userid: BKRKBUP

3= Quit          4= Return          10= Restore

MA a 07/030
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session A - TSTUSER1 - [32 x 80]
File Edit View Communication Actions Window Help

Your command "RESTORE INCREM01 00000054 TSTUSER1 EDF $DEV0191 TO RDR TSTUSER1
- B B 1" is being processed at 03/03/09 15:57:55.
BKREST190291 Sending RESTORE request 00000052 to worker task BKRWRK03...
File RESTORE JOB D1 sent to BKRWRK03 at DEM1ZVM on 03/03/09 15:57:55
*** Request: Request 00000052 submitted to worker BKRWRK03 for processing

Return code "0" from command RESTORE INCREM01 00000054 TSTUSER1 EDF $DEV0191 T
O RDR TSTUSER1 - B B 1 at 03/03/09 15:57:55.
RDR FILE 0007 SENT FROM BKRWRK03 PUN WAS 0003 RECS 0026 CPY 001 R NOHOLD NOKEEP
RDR FILE 0008 SENT FROM BKRWRK03 CON WAS 0002 RECS 0080 CPY 001 R NOHOLD NOKEEP
Ready; T=0.0270.02 15:57:57

RUNNING DEM1ZVM
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```

Session A - TSTUSER1 - [32 x 80]
File Edit View Communication Actions Window Help
TSTUSER1_RBP.LIST 00 V 164 Trans=164 Size=0 Line=1 Col=1 Alt=28
Cmd  Filename  Filetype  Class  User  at Node  Hold  Records  Date  Time
-   RESTORE  00000052  CON R  BKRWRK03  DEM1ZVM  NONE  80  3/03  15:57:55
   B        B        PUN R  BKRWRK03  DEM1ZVM  NONE  26  3/03  15:57:56

1= Help      2= Refresh  3= Quit      4= Sort(type) 5= Sort(date) 6= Sort(user)
7= Backward  8= Forward  9= Receive   10=           11= Peek      12= Cursor

====>

X E D I T  1 File
MA a 03/001
Connected to remote server/host 9.39.68.141 using port 23
    
```

```
0007 PEEK A0 V 80 Trunc=80 Size=41 Line=24 Col=1 Alt=0
File B B from *BACKUP* at DEM1ZVM Format is NETDATA.
Change made at 11:37am central time Sept 17, 2007
Change made at 12:31am eastern time Sept 25, 2007
Change made at 2:06pm mountain standard time Oct 9, 2007
Change made at 11:14am pacific time March 3, 2008
Change made at 9:20am central time March 4, 2008
Change made at 15:53pm eastern time April 19, 2008
Change made at 14:44 cet May 5, 2008
Change made at 08:45 pt July 3, 2008
Change made at 08:56am pt July 11, 2008
Change made at 11:04am pt July 15, 2008
Change made at 10:16am pt August 4, 2008
Change made at 08:10am pt Sept 11, 2008
Change made at 09:12am pt Sept 18, 2008
Change made at 2:00pm pt Oct 23, 2008
Change made at 16:27pm Brasil Nov 11, 2008
Change made at 11:01am ct Dec 9, 2008
Change made at 11:09am ct Dec 30, 2008
Change made at 15:45 ct Jan 14, 2009
*** End of File ***

1= Help 2= Add line 3= Quit 4= Tab 5= Clocate 6= ?/Change
7= Backward 8= Forward 9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _

XEDIT 1 File
31/007
Connected to remote server/host 9.39.68.141 using port 23
```


Scenario 10: Scheduling Image Backups of Linux Guests

- **Initiated or scheduled by Operations Manager**
 - Schedule defined in Operations Manager to initiate backups at specific times/intervals
 - May include multiple schedules to allow quiescing/backing up one guest at a time
 - Action associated with each schedule
 - Linux guest is shut down
 - Operations Manager watches for shutdown complete
 - Sends request to Backup and Restore Manager to back up the specific DASD/minidisks associated with the guest
 - Operations Manager watches for backup complete message
 - Restarts Linux guest
 - Guest is down for minimum time required for backup

Scenario 10: Detailed steps

- **Define a schedule to start the automated backup process**

```
gomcmd opmgrm1 defschd name(demo),action(stoplxx),when(now)
```

- **View the Operations Manager log to see the schedule trigger**

```
gomcmd opmgrm1 viewlog
```

- **View the console of the Linux guest to see it shut down**

```
gomcmd opmgrm1 viewcon user name(omeglxx1)
```

- **View the console of the backup server to see the backup start**

```
gomcmd opmgrm1 viewcon user name(bkrbkup)
```

- **Find the worker that has been assigned and view its console**

```
gomcmd opmgrm1 viewcon user name(bkrwrkxx)
```

- **View the console of the Linux guest to see it restart**

```
gomcmd opmgrm1 viewcon user name(omeglxx1)
```

- **View the backup catalog to see the completed job**

```
bkrjob
```

```

Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
03/03/2009 16:10:31 GOMCMD0201L "TSTADMN1 DEFSCHD NAME(DEMO),ACTION(STOPLNX),W
03/03/2009 16:10:44 GOMCMD0201L "TSTADMN1 VIEWLOG" VID=TSTADMN1 SRC=MASIUCV C
03/03/2009 16:10:53 GOMACT0260I SCHEDULE DEMO ACTION STOPLNX TRIGGERED BY
03/03/2009 16:10:53 GOMACT0262I ACTION STOPLNX BEGIN FOR SCHEDULE SERVER OPMG
03/03/2009 16:10:53 GOMACT0269L COMMAND "RESUME RULE(LNXDOWN)"
03/03/2009 16:10:53 GOMCMD0201L "OPMGRM1 RESUME RULE(LNXDOWN)" VID=OPMGRM1 S
03/03/2009 16:10:53 GOMACT0267I ACTION STOPLNX END RC=0 SERVER OPMGRM1
03/03/2009 16:10:53 GOMACT0260I SCHEDULE DEMO ACTION STOPLNXA TRIGGERED BY
03/03/2009 16:10:53 GOMACT0262I ACTION STOPLNXA BEGIN FOR SCHEDULE SERVER OPMG
03/03/2009 16:10:53 GOMACT0269L COMMAND "CP SET SECUSER OMEGLNX1 OPMGRM1"
03/03/2009 16:10:53 GOMACT0270L HCPCFX6768I SECUSER of OMEGLNX1 initiated.
03/03/2009 16:10:53 GOMACT0267I ACTION STOPLNXA END RC=0 SERVER OPMGRM1
03/03/2009 16:10:53 GOMACT0260I SCHEDULE DEMO ACTION STOPLNXB TRIGGERED BY
03/03/2009 16:10:53 GOMACT0262I ACTION STOPLNXB BEGIN FOR SCHEDULE SERVER OPMG
03/03/2009 16:10:53 GOMACT0269L COMMAND "CP SIGNAL SHUTDOWN OMEGLNX1 WITHIN 90
03/03/2009 16:10:53 GOMACT0267I ACTION STOPLNXB END RC=0 SERVER OPMGRM1
03/03/2009 16:10:53 GOMCMD0216L "OMEGLNX1 Broadcast message from root (console
03/03/2009 16:10:53 GOMCMD0216L "OMEGLNX1 The system is going down for system
03/03/2009 16:10:54 GOMCMD0216L "OMEGLNX1 INIT: Switching to runlevel: 0" VID=
03/03/2009 16:10:54 GOMCMD0216L "OMEGLNX1 INIT: Sending processes the TERM sig
03/03/2009 16:10:58 GOMCMD0216L "OMEGLNX1 INIT: Sending processes the KILL sig
03/03/2009 16:11:00 GOMCMD0216L "OMEGLNX1 Boot logging started on /dev/ttyS0(/
03/03/2009 16:11:00 GOMCMD0216L "OMEGLNX1 Master Resource Control: previous ru
03/03/2009 16:11:00 GOMCMD0216L "OMEGLNX1 Shutting down CRON daemon" VID=*MSG
03/03/2009 16:11:00 GOMCMD0216L "OMEGLNX1 ..done" VID=*MSG SRC=MASIUCV CL
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 Shutting down service kdm..done" VID
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 Shutting down mail service (Postfix)
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 Shutting down Name Service Cache Dae
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 ..done" VID=*MSG SRC=MASIUCV CL
03/03/2009 16:11:01 GOMCMD0216L "OMEGLNX1 Shutting down cupsd" VID=*MSG SR
MASALOG
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23

```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
16:10:53 Broadcast message from root (console) (Tue Mar 3 16:10:53 2009):
16:10:53 The system is going down for system halt NOW!
16:10:53 INIT: Switching to runlevel: 0
16:10:53 INIT: Sending processes the TERM signal
16:10:57 INIT: Sending processes the KILL signal
16:10:59 Boot logging started on /dev/ttyS0(/dev/console) at Tue Mar 3 16:11:0
16:10:59 Master Resource Control: previous runlevel: 5, switching to runlevel:
16:11:00 Shutting down CRON daemon
16:11:00 ..done
16:11:00 Shutting down service kdm..done
16:11:00 Shutting down mail service (Postfix)..done
16:11:01 Shutting down Name Service Cache Daemon
16:11:01 ..done
16:11:01 Shutting down cupsd
16:11:01 ..done
16:11:02 Shutting down slpd ..done
16:11:02 Shutting down sound driver..done
16:11:02 Shutting down SSH daemon..done
16:11:03 Remove Net File System (NFS)..unused
16:11:03 Umount SMB/ CIFS File Systems ..done
16:11:03 Shutting down resource manager..done
16:11:03 Shutting down RPC portmap daemon..done
16:11:03 Shutting down syslog servicesMar 3 16:11:04 sles9 kernel: Kernel logg
16:11:03 Mar 3 16:11:04 sles9 kernel: Kernel log daemon terminating.
16:11:04 ..done
16:11:06 Shutting down network interfaces:
16:11:06 eth0
16:11:06 eth0 configuration: qeth-bus-ccw-0.0.0600
16:11:07 Y1A..done
16:11:07 Shutting down service network . . . . .
-
MA b
OMEGLNX1
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
16:11:09 ..done
16:11:09 disabling Hotplug ..done
16:11:09 Saving random seed..done
16:11:09 Running /etc/init.d/halt.local
16:11:09 Ý1A..doneSending all processes the TERM signal...
16:11:09 ..done
16:11:16 Sending all processes the KILL signal...
16:11:16 ..done
16:11:16 ..missing
16:11:16 Turning off swap
16:11:17 Ý1A..done
16:11:17 Restore device permissions..done
16:11:17 Unmounting file systems
16:11:17 /dev/dasdc1 umounted
16:11:17 devpts umounted
16:11:17 tmpfs umounted
16:11:17 /dev/dasda1 umounted
16:11:17 Ý1A..done..done
16:11:18 proc umounted
16:11:19 Ý10;440"
16:11:19 The system will be halted immediately.
16:11:19
16:11:21 md: stopping all md devices.
16:11:21 md: md0 switched to read-only mode.
16:11:22 Power down.
16:11:22 HCPGIR450W CP entered; disabled wait PSW 00020001 80000000 00000000 00
16:11:34 dasd(eckd): 0.0.0102: (4KB BTKS): 1211520KB at 48KB/TKR compatible dis
16:11:34 dasdc:VOL1/ 0X0102: dasdc1
16:11:34 : done
16:11:34 Waiting for device /dev/dasda1 to appear: ok

OMEGLNx1
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
16:11:22 ***
16:11:22 *SMSG OPMGRM1 SUBMIT BKUPLNX1
16:11:22 BKRBAK8515I Queued command #1: "*SMSG OPMGRM1 SUBMIT BKUPLNX1"
16:11:22 BKRBAK8532I Processing SUBMIT BKUPLNX1 command for OPMGRM1 at 03/03/09
16:11:22 BKRBAK8532I Processing SUBMIT BKUPLNX1 command for OPMGRM1 at 03/03/09
16:11:22 AUTO LOGON *** BKRWRK01 USERS = 18
16:11:22 HCPCLS6056I XAUTOLOG information for BKRWRK01: The IPL command is veri
16:11:22 Output line 1 : BKRMAK8559I INCLUDE / EXCLUDE processing for job BKUPL
16:11:22 ed 1 objects
16:11:22 BKRMAK8559I INCLUDE / EXCLUDE processing for job BKUPLNX1 selected 1 o
16:11:22 Output line 2 : BKRMAK8559I for backup processing.
16:11:22 BKRMAK8559I for backup processing.
16:11:22 Output line 3 : BKRMAK8563I Worker count for job BKUPLNX1 has been set
16:11:22 BKRMAK8563I Worker count for job BKUPLNX1 has been set to 1.
16:11:22 Output line 4 : BKRMAK8570I Instance number 00000073 has been assigned
16:11:22 KUPLNX1.
16:11:22 BKRMAK8570I Instance number 00000073 has been assigned for job BKUPLNX
16:11:22 Output line 5 : BKRMAK8568I CMS files will be filtered against file ma
16:11:22 .
16:11:22 BKRMAK8568I CMS files will be filtered against file mask "* * *".
16:11:22 Output line 6 : BKRMAK8566I SFS filespaces will be filtered with path
16:11:22 BKRMAK8566I SFS filespaces will be filtered with path mask "*".
16:11:22 Output line 7 : BKRMAK8584I Sending BKUPLNX1 JOB D to worker task BKR
16:11:22 BKRMAK8584I Sending BKUPLNX1 JOB D to worker task BKRWRK01.
16:11:22 Output line 8 : File BKUPLNX1 JOB D1 sent to BKRWRK01 at DEM1ZVM on 03
16:11:22 11:23
16:11:22 File BKUPLNX1 JOB D1 sent to BKRWRK01 at DEM1ZVM on 03/03/09 16:11:23
16:11:22 Return code "0" from command SUBMIT BKUPLNX1 at 03/03/09 16:11:23.
16:11:23 BKRBAK8510I 03/03/09 16:11:23 WAKEUP exited on a VMCF interrupt.
-
BKRBAKUP
31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```

Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
16:11:23 -----
16:11:23
16:11:23 BKRRVB9011I Job name: BKUPLNX1, instance identifier 00000073 starting
16:11:23 BKRRVB9011I Job owner: BKRADMIN
16:11:23 BKRRVB9011I Master backup server: BKPBKUP; worker virtual machine BKPU
16:11:23 BKRRVB9011I Job token value is 20090303.
16:11:23 BKRRVB9012I Catalog content creation is ENABLED.
16:11:23 BKRRVB9012I Catalog content will be delivered to backup catalog server
16:11:23 BKRRVB9012I Temporary catalog granule data will be generated in CMS fi
16:11:23 -----
16:11:23 -----
16:11:23
16:11:23 BKRRVB9161I Scanning DISKPOOL "LNXBKUP DISKPOOL" for a volume with at
16:11:23 BKRRVB9162I DISKPOOL volume AMVCATLG 333 has 23968 4K blocks free.
16:11:23 BKRRVB9163I Continuing backup with output to AMVCATLG 333
16:11:31 OMEGLNX1 0191 RR EDF 4096 0X1191 00009000 00003977 00000050 00000050
16:11:31 -----
16:11:31 -----
16:11:31
16:11:31 BKRRVB9014I Job completed at 16:11:31 on 03/03/09.
16:11:31 BKRRVB9005I Executing CP command "QUERY TIME"
16:11:31 TIME IS 16:11:31 CST TUESDAY 03/03/09
16:11:31 CONNECT= 00:00:08 VIRTCPU= 000:00.05 TOTCPU= 000:00.10
16:11:31 BKRRVB9006I CP return code 0
16:11:31 *
16:11:31 * BACKUP COMPLETE - OMEGLNX1 LINUX GUEST
16:11:31 * -- Operations Manager Action STRTLNXB scheduled for execution -- *
16:11:31 * -- Operations Manager Action STRTLNXC scheduled for execution -- *
-----
BKRWRK01
31/001
Connected to remote server/host 9.39.68.141 using port 23

```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
16:11:22 Power down
16:11:22 HCPGIR450W CP entered; disabled wait PSW 00020001 80000000 00000000 00
16:11:34 dasd(eckd): 0.0.0102: (4kB blks): 7211520kB at 48kB/trk compatible dis
16:11:34 dasdc:VOL1/ 0X0102: dasdc1
16:11:34 : done
16:11:34 Waiting for device /dev/dasda1 to appear: ok
16:11:34 rootfs: major=94 minor=1 devn=24065
16:11:34 umount: invalid option -n
16:11:34 umount: invalid option -n
16:11:34 kjournald starting. Commit interval 5 seconds
16:11:34 EXT3-fs: mounted filesystem with ordered data mode.
16:11:34 VFS: Mounted root (ext3 filesystem) readonly.
16:11:34 Trying to move old root to /initrd ... failed
16:11:34 Unmounting old root
16:11:34 Trying to free ramdisk memory ... failed
16:11:34 Freeing unused kernel memory: 108k freed
16:11:34 INIT: version 2.85 booting
16:11:36 System Boot Control: Running /etc/init.d/boot
16:11:36 Mounting /proc filesystem
16:11:36 ..done
16:11:36 Mounting sysfs on /sys..done
16:11:36 Mounting /dev/pts..done
16:11:37 Boot logging started on /dev/ttyS0(/dev/console) at Tue Mar 3 16:11:3
16:11:37 Mounting shared memory FS on /dev/shm..done
16:11:37 Checking root file system...
16:11:37 fsck 1.34 (25-Jul-2003)
16:11:37 Ý/sbin/fsck.ext3 (1) -- /" fsck.ext3 -a /dev/dasda1
16:11:37 /dev/dasda1: clean, 148182/903168 files, 1162186/1802856 blocks
16:11:37 Ý1A..doneEXT3 FS on dasda1, internal journal
16:11:37 md: Autodetecting RAID arrays.
-
ME b 31/001
Connected to remote server/host 9.39.68.141 using port 23
```

OMEGLNX1


```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
16:11:57 Mar  3 16:11:57 sles9 kernel: eth0: no IPv6 routers present
16:11:57 JBD: barrier-based sync failed on dasdc1 - disabling barriers
16:11:57 Mar  3 16:11:57 sles9 kernel: JBD: barrier-based sync failed on dasdc1
16:11:58 Master Resource Control: runlevel 5 has been reached
16:11:58 Failed services in runlevel 5: Ý80CÝ10Dkbd
16:11:58 Skipped services in runlevel 5: Ý80CÝ23Dsmbfs nfs splash
16:11:59 sles9 login:
16:11:59 * -- Operations Manager Action LOGINLNX scheduled for execution -- *
16:12:02 root
16:12:02 Password:
16:12:02
16:12:02 You have new mail in /var/mail/root.
16:12:02 Last login: Thu Feb 26 19:08:10 on ttyS0
16:12:02 * -- Operations Manager Action SECLINUX scheduled for execution -- *
16:12:02 * -- Operations Manager Action DELBKUP scheduled for execution -- *
16:12:02 sles9:~ #
16:12:02 HCPCFX6768I Your SECUSER set to OMEGACMD by OPMGRM1.

OMEGA b A OMEGLNX1 31/001
Connected to remote server/host 9.39.68.141 using port 23
```

Scenario 10: How Do You Do That?

Console rule in Operations Manager:

*

* Watch for shutdown complete message on Linux guest

```
DEFRULE NAME(LNXDOWN),+
```

```
  MATCH(*HCPSIG211%I User OMEGLNX1*),+
```

```
  ACTION(LNXBKUP)
```

* Turn off the rule in general

```
SUSPEND RULE(LNXDOWN)
```

Scenario 10: How Do You Do That?

Chain of actions in Operations Manager, triggered by schedule

*

* Start of guest backup scenario, resume rule for guest shutdown msg

```
DEFACTN NAME(STOPLNX),+  
  COMMAND('RESUME RULE(LNXDOWN)'),+  
  ENV(GOM),+  
  NEXTACTN(STOPLNXA)
```

*

* Change SECUSER to Operations Manager before shutting it down

```
DEFACTN NAME(STOPLNXA),+  
  COMMAND(CP SET SECUSER OMEGLNX1 OPMGRM1),+  
  ENV(LVM),+  
  NEXTACTN(STOPLNXB)
```

*

* Action to shut down Linux guest in prep for backup

```
DEFACTN NAME(STOPLNXB),+  
  COMMAND(CP SIGNAL SHUTDOWN OMEGLNX1 WITHIN 90),+  
  ENV(LVM)
```

Scenario 10: How Do You Do That?

Chain of actions and rules in Operations Manager:

* Highlight message and submit backup job for a specific Linux guest

```
DEFACTN NAME(LNXBKUP), +  
  INPUT(AHI), +  
  NEXTACTN(LNXBKUPB)
```

*

```
DEFACTN NAME(LNXBKUPB), +  
  COMMAND(CP SMSG BKRBKUP SUBMIT BKUPLNX1), +  
  ENV(LVM)
```

*

* Define all Backup Manager workers as a group

```
DEFGROUP NAME(BKRWRKRS), +  
  USER(BKRWRK0*)
```

*

* Restart Linux guest when Backup is complete

```
DEFRULE NAME(BKUPDONE), +  
  MATCH(*BACKUP COMPLETE - OMEGLNX1*), +  
  GROUP(BKRWRKRS), +  
  ACTION(STRTLNX)
```

Scenario 10: How Do You Do That?

Suspend rule in Operations Manager (don't back up the guest every time it is shut down)

* Suspend rule for backing up Linux guest

```
DEFACTN NAME (DELBKUP) , +  
    COMMAND (SUSPEND RULE (LNXDOWN) ) , +  
    ENV (GOM)
```

Scenario 11: Reviewing a Disaster Recovery Backup

- **Create a backup job based on sample provided**
- **Perform image backup of DASD volumes for Disaster Recovery (DR) purposes**
 - Can include z/VM and Linux guests
- **Output of backup is a DDR tape**
 - Compatible with DDR for restore at recovery site
- **Submit DR job for review**
- **Review output of review processing**

Scenario 11: Detailed steps

- **From an authorized z/VM user ID, copy the sample DDR template from the sample disk to a new backup job**
- **Edit the new job and make necessary changes**

```
xedit ddrdemo template c
```

- **If not using SFS for templates disk, tell Backup Manager to reaccess the disk**

```
smsg bkrbkup cms acc 199 e/e
```

- **From an authorized z/VM user ID, submit the backup job for review processing**

```
smsg bkrbkup review ddrdemo
```

- **View the file(s) returned to you by Backup Manager**

```
peek <rdrfile>
```

Session B - TSTADMN1 - [32 x 80]

File Edit View Communication Actions Window Help

```

q disk
LABEL  VDEV M  STAT   CYL TYPE  BLKSZ   FILES  BLKS USED-(%)  BLKS LEFT  BLK TOTAL
ADM191 191  A   R/W    10 3390 4096    53      245-14    1555    1800
ADM192 192  B   R/W    50 3390 4096     3      7927-88    1073    9000
06B199 199  C   R/W     5 3390 4096     9       31-03     869     900
06B202 202  D   R/O     2 3390 4096    37      113-31     247     360
06B592 592  G   R/O     5 3390 4096    24      145-16     755     900
J05592 593  H   R/O     5 3390 4096    15       82-09     818     900
06B198 198  I   R/O     2 3390 4096     5       14-04     346     360
10C400 400  J   R/W     5 3390 4096    20      124-14     776     900
J05198 197  K   R/W     2 3390 4096     6       16-04     344     360
J10401 401  L   R/W     3 3390 4096     7       18-03     522     540
TCM592 692  M   R/O    67 3390 4096   885     8526-71   3534   12060
MNT190 190  S   R/O   100 3390 4096   687    14513-81  3487   18000
MNT19E 19E  Y/S R/O   250 3390 4096  1102   28088-62 16912  45000
MNT19D 19D  Z/Z R/O   146 3390 1024 14855  53765-74 18505  72270
Ready; T=0.01/0.01 19:36:52

x ddrdemo template c_

```

RUNNING DEM1ZVM

MA b 31/021

Connected to remote server/host 9.39.68.141 using port 23

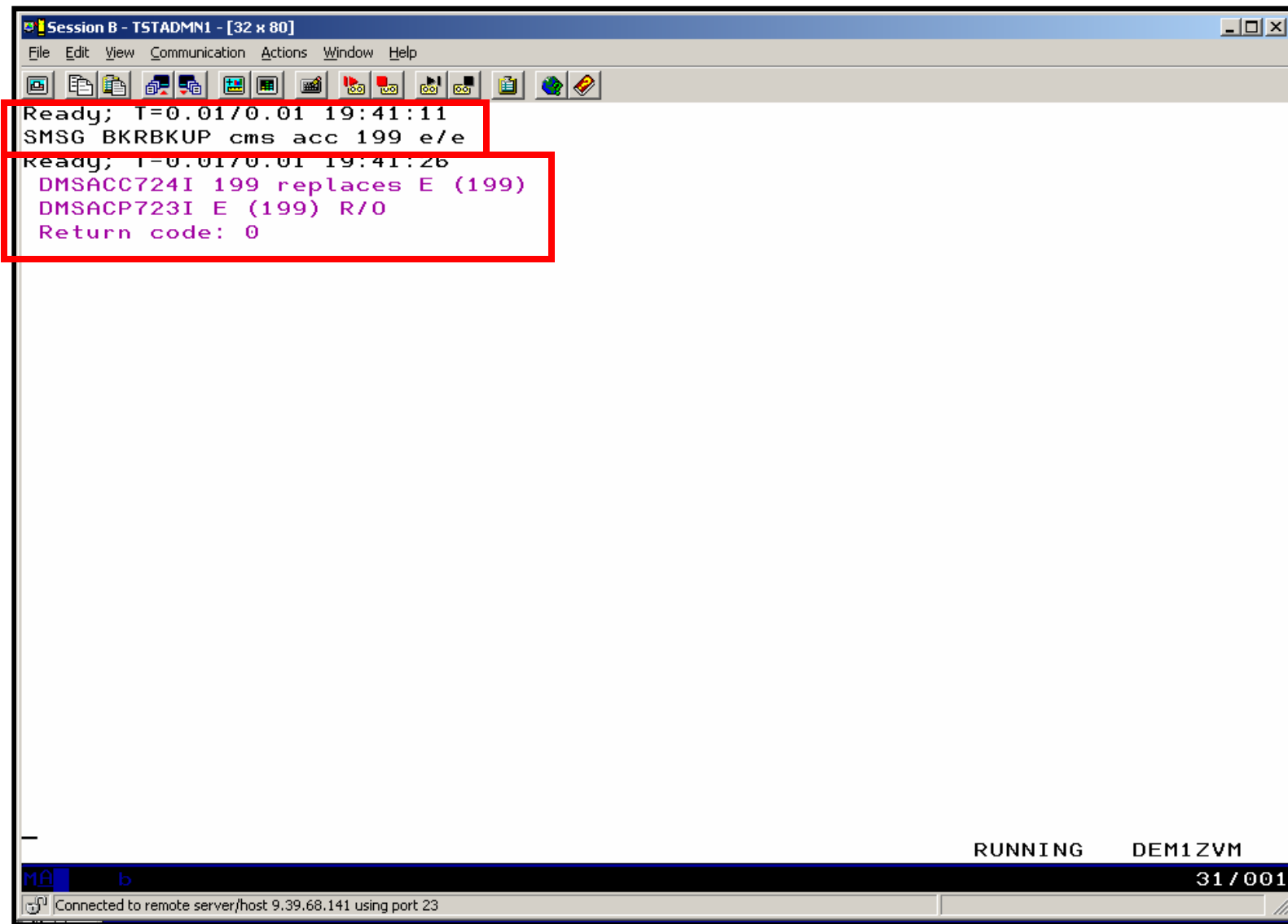

```

Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
-----
DDRDEMO TEMPLATE C2 V 112 Trunc=112 Size=156 Line=0 Col=1 Alt=0
----->
|.....1.....2.....3.....4.....5.....6.....7...
00000 * * * Top of File * * *
00001 * IBM Backup and Restore Manager for z/VM - 5697-J06 - 1.2.0
00002 *
00003 * Sample backup job template - DDRSAMP
00004 *
00005 * This file includes records longer than 80 characters. A screen width o
00006 * (327x model 5 or equivalent) is recommended when viewing or customizing
00007 * sample file for local use.
00008 *
00009 * SAMPDDR is an example of a full backup job definition. Output is direc
00010 * to single-copy tape via the IBMTAPE output handler.
00011 *
00012 * Backup type : Full backup; no incremental backup processing will
00013 * (See SAMPINCR TEMPLATE for an incremental backup j
00014 *
00015 * Output destination: Single-copy tape, DASD Dump Restore (DDR) format,
00016 * (BKR_Output_Spec)
00017 *
00018 * Number of workers : 1; to increase bandwidth on larger systems, add ad
00019 * (BKR_Job_Workers)
00020 *
00021 * Instance tracking : Automatic; this is the recommended setting.
00022 * (BKR_Job_Instance = $$INST$$)
00023 *
00024 * Catalog content : Enabled; results of this job will be transmitted t
00025 * (BKR_Job_Catalog)
00026 *
00027 * CMS file filtering: None; all files and SFS directories will be includ
00028 * (BKR_Job_CMS_FileMask, BKR_Job_SFS_PathMask)
MA b 02/007
Connected to remote server/host 9.39.68.141 using port 23

```

```

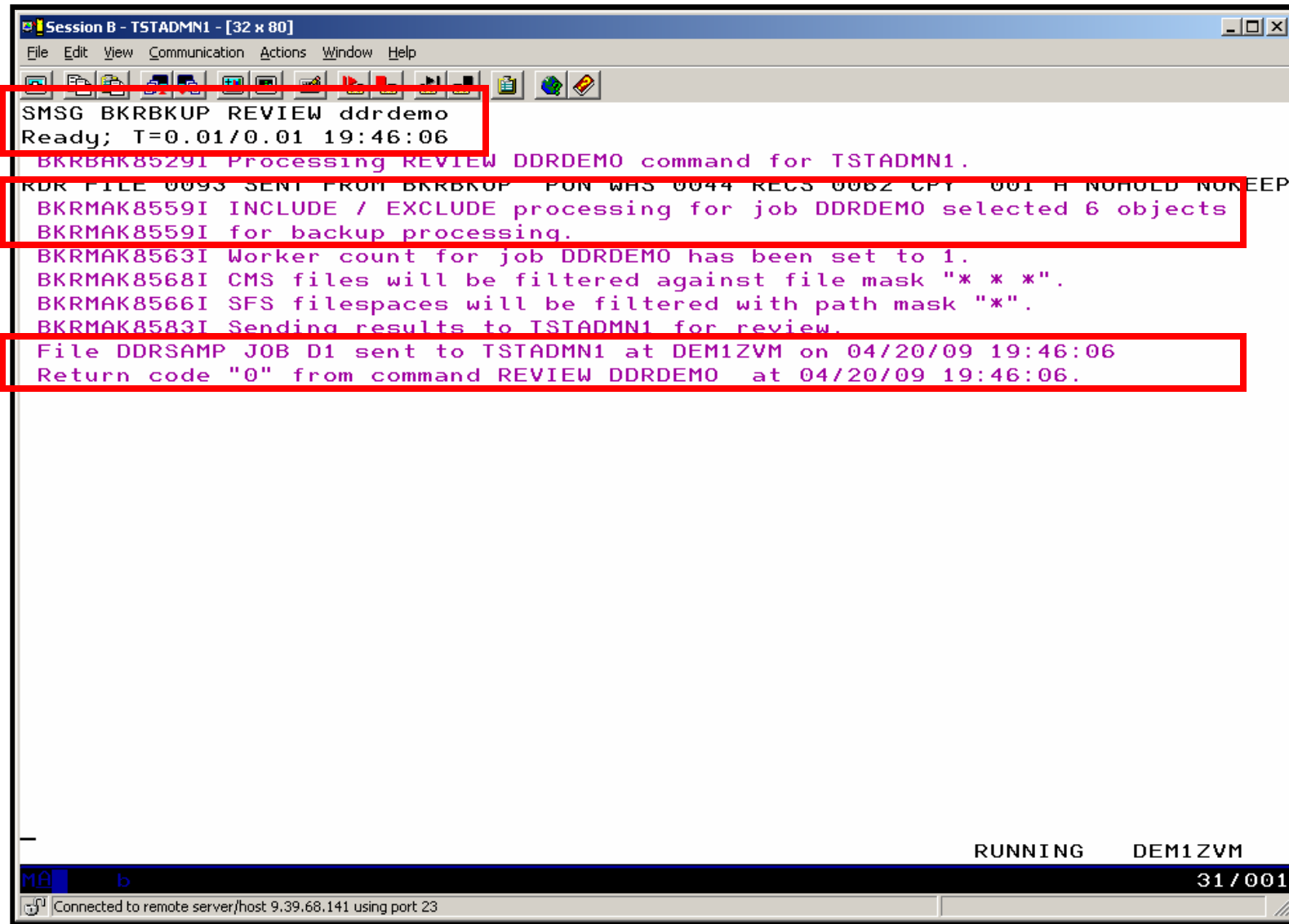
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
=====> file_
.....2.....+.....3.....+.....4.....+.....5.....+.....6.....+.....7...
00117 /*****
00118
00119
00120 |-----|-----|-----|---|-----|-----|-----|---|-----|---|
00121 |EXCLUDE  |MINIDISK  |*         |  =  *   |*       |*       |*       |  =  *   |  =  |
00122 |INCLUDE  |RDEVVOL  |520*      |         |         |         |         |         |         |
00123 |INCLUDE  |RDEVICE  |0128      |         |         |         |         |         |         |
00124
00125
00126 * Job_Trailer terminates the INCLUDE / EXCLUDE / SELECT definition sectio
00127 * post-backup processing specifications.
00128
00129 Job_Trailer
00130
00131 * Tell the catalog service virtual machine to retain catalog contents and
00132 * for a period of 30 days. The output from CP QUERY TIME provides a reco
00133 * to process this backup. Output from INDICATE USER provides additional
00134 * worker virtual machine resource consumption.
00135
00136 Config BKR_Catalog_Retention = 30
00137 CP_Command QUERY TIME
00138 CP_Command INDICATE USER
00139
00140 Console *
00141 Console * Sample DDRTAPE backup template created 5/10/2007.
00142 Console * Job image generated $$UPDATE$$ $$TIME$$
00143 Console *
00144
00145 * Close the console log; this will deliver the job history to the backup
MA b
02/011
Connected to remote server/host 9.39.68.141 using port 23
    
```



The screenshot shows a terminal window titled "Session B - TSTADMIN1 - [32 x 80]". The window has a menu bar with "File", "Edit", "View", "Communication", "Actions", "Window", and "Help". Below the menu bar is a toolbar with various icons. The terminal content is as follows:

```
Ready; T=0.01/0.01 19:41:11  
MSG BKRBACKUP cms acc 199 e/e  
Ready; T=0.01/0.01 19:41:26  
DMSACC724I 199 replaces E (199)  
DMSACP723I E (199) R/O  
Return code: 0
```

At the bottom of the terminal, the status "RUNNING DEM1ZVM" is displayed. The bottom status bar shows "MA b" on the left and "31/001" on the right. A connection bar at the very bottom indicates "Connected to remote server/host 9.39.68.141 using port 23".



The screenshot shows a terminal window titled "Session B - TSTADMN1 - [32 x 80]". The window contains several lines of text, with four lines highlighted by red boxes:

```
SMMSG BKRBKUP REVIEW ddrdemo  
Ready; T=0.01/0.01 19:46:06  
BKRBK8529I Processing REVIEW DDRDEMO command for TSTADMN1.  
RDR FILE 0093 SENT FROM BKRBKUP PUN WAS 0044 RECS 0062 CPT 001 H NOHOLD NOKEEP  
BKRM8559I INCLUDE / EXCLUDE processing for job DDRDEMO selected 6 objects  
BKRM8559I for backup processing.  
BKRM8563I Worker count for job DDRDEMO has been set to 1.  
BKRM8568I CMS files will be filtered against file mask "* * *".  
BKRM8566I SFS filespace will be filtered with path mask "*".  
BKRM8583I Sending results to TSTADMN1 for review.  
File DDRSAMP JOB D1 sent to TSTADMN1 at DEM1ZVM on 04/20/09 19:46:06  
Return code "0" from command REVIEW DDRDEMO at 04/20/09 19:46:06.
```

At the bottom of the terminal window, the status "RUNNING DEM1ZVM" is displayed, along with a cursor and the text "31/001". The status bar at the very bottom indicates "Connected to remote server/host 9.39.68.141 using port 23".

```

Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0093 PEEK A0 V 112 Trunc=112 Size=113 Line=0 Col=1 Alt=0
File DDRSAMP JOB from BKRBKUP at DEM1ZVM Format is NETDATA.
*** Top of File ***
* IBM Backup and Restore Manager for z/VM - 5697-J06 - 1.2.0
*
* Sample backup job template - DDRSAMP
*
* This file includes records longer than 80 characters. A screen width
* (327x model 5 or equivalent) is recommended when viewing or customizin
* sample file for local use.
*
* SAMPDDR is an example of a full backup job definition. Output is dire
* to single-copy tape via the IBMTAPE output handler.
*
* Backup type : Full backup; no incremental backup processing wil
* (See SAMPINCR TEMPLATE for an incremental backup
*
* Output destination: Single-copy tape, DASD Dump Restore (DDR) format,
* (BKR_Output_Spec)
*
* Number of workers : 1; to increase bandwidth on larger systems, add a
* (BKR_Job_Workers)
*
* Instance tracking : Automatic; this is the recommended setting.
* (BKR_Job_Instance = $$INST$$)
*
* Catalog content : Enabled; results of this job will be transmitted
1= Help 2= Add line 3= Quit 4= Tab 5= Clocate 6= ?/Change
7= Backward 8= Forward 9= Receive 10= Rgtright 11= Spltjoin 12= Cursor

====> _
X E D I T 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23

```

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
0093 PEEK A0 V 112 Trunc=112 Size=113 Line=78 Col=1 Alt=0
File DDRSAMP JOB from BKRKBKUP at DEM1ZVM Format is NETDATA.
JOB_HEADER
DUMPRDV 520RES 0123 $$$DRIVER$$
DUMPRDV 520SPL 0124 $$$DRIVER$$
DUMPRDV 520PAG 0125 $$$DRIVER$$
DUMPRDV 520W01 0126 $$$DRIVER$$
DUMPRDV 520W02 0127 $$$DRIVER$$
DUMPRDV DMZU00 0128 $$$DRIVER$$
JOB_TRAILER

* Tell the catalog service virtual machine to retain catalog contents an
* for a period of 30 days. The output from CP QUERY TIME provides a rec
* to process this backup. Output from INDICATE USER provides additional
* worker virtual machine resource consumption.

CONFIG BKR_CATALOG_RETENTION = 30
CP_COMMAND QUERY TIME
CP_COMMAND INDICATE USER

CONSOLE *
CONSOLE * SAMPLE DDRTAPE BACKUP TEMPLATE CREATED 5/10/2007.
CONSOLE * JOB IMAGE GENERATED 04/20/09 19:46:06
CONSOLE *

* Close the console log; this will deliver the job history to the backup
1= Help      2= Add line  3= Quit      4= Tab      5= Clocate    6= ?/Change
7= Backward  8= Forward   9= Receive  10= Rgtright 11= Spltjoin  12= Cursor

====> _
X E D I T 1 File
MA b 31/007
Connected to remote server/host 9.39.68.141 using port 23
```

Scenario 12: Reviewing data in the Backup catalog for recovery

- **Various backup jobs have previously been submitted and completed**
- **Full screen interfaces available for searching the backup catalog and finding data available for recovery**
 - BKRLIST
 - Useful when looking for a specific file or set of files owned by a specific user ID
 - Users with ADMIN authority beware of size
 - Use parameters to narrow the search
 - BKRUSER
 - Useful when looking for backup jobs associated with a specific user ID
 - BKRJOB
 - Useful when looking for backup jobs by job name
 - BKRVOL
 - Useful when looking for backup jobs associated with a specific DASD volume

Scenario 12: Detailed steps

- **From an authorized z/VM user ID, issue one of the following commands to browse the catalog**

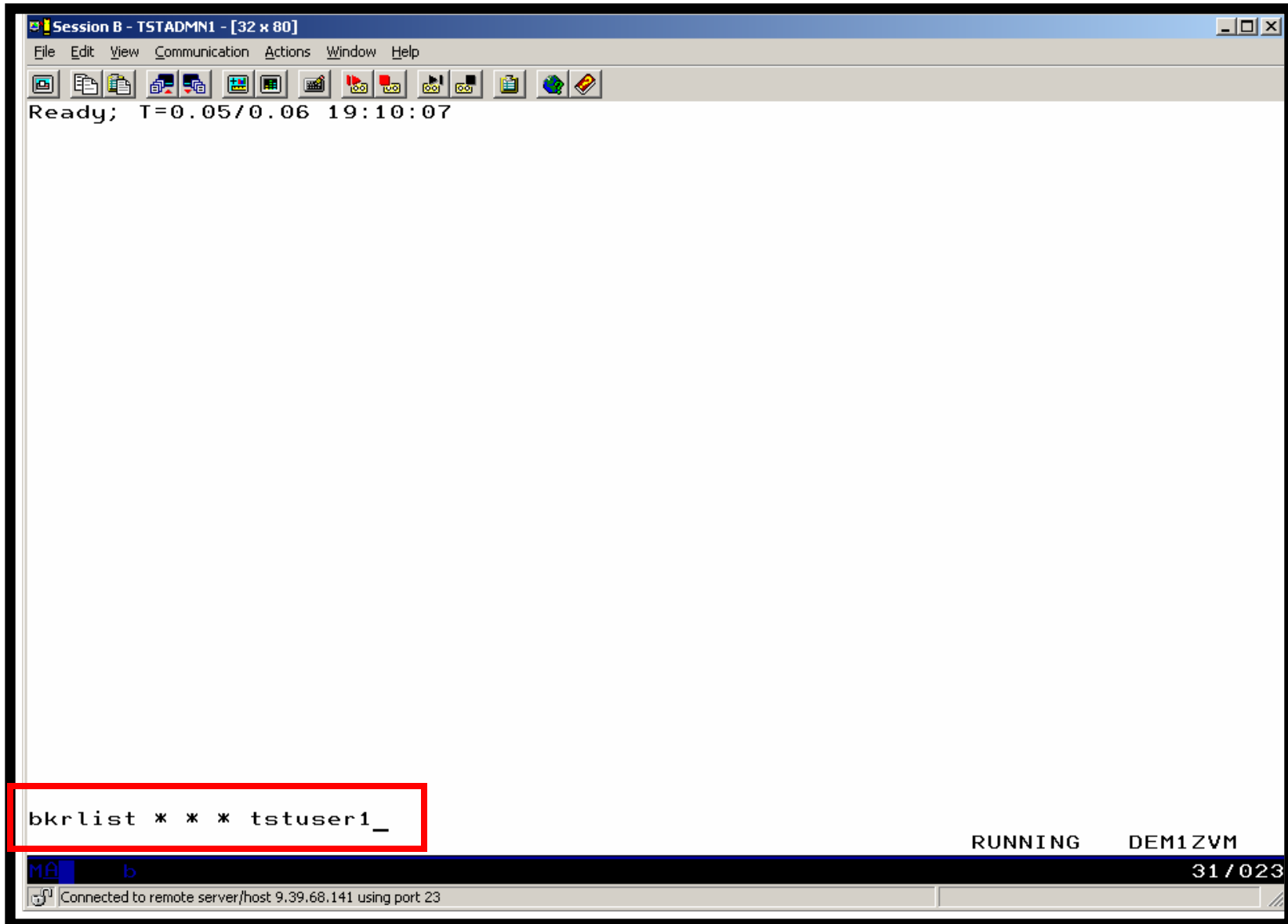
`bkrlist`

`bkruser`

`bkrjob`

`bkrvol`

- **Use F11 to drill down through details**
- **Use F10 to restore data**



```

Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
Files for owner(s): TSTUSER1
Selection: Name: * Type: * Mode: * 60 of 60 shown
Current filters: Name: * Type: * Mode: * Owner: *
Owner Filename Filetype Fm Date Time Device or Path
TSTUSER1 A A 1 08/11/07 12:18:04 0191
TSTUSER1 A AX 1 06/09/20 18:21:58 0191
TSTUSER1 ABC XEDIT 1 06/09/19 02:24:28 0191
TSTUSER1 AMV1004 VMARC 1 06/09/16 03:29:28 0191
TSTUSER1 B B 1 08/11/07 18:52:40 0191
TSTUSER1 BAAAAA XEDIT 1 06/09/16 03:40:47 0191
TSTUSER1 BBBBBB XEDIT 1 06/09/16 03:40:37 0191
TSTUSER1 BCCCCC XEDIT 1 06/09/16 03:41:01 0191
TSTUSER1 BDDDDD XEDIT 1 06/09/16 03:41:34 0191
TSTUSER1 BEEEEEE XEDIT 1 06/09/16 03:41:38 0191
TSTUSER1 BFFFFFF XEDIT 1 06/09/16 03:41:43 0191
TSTUSER1 BGGGGG XEDIT 1 06/09/16 03:41:49 0191
TSTUSER1 BHHHHH XEDIT 1 06/09/16 03:41:59 0191
TSTUSER1 BIIIII XEDIT 1 06/09/16 03:42:03 0191
TSTUSER1 BJJJJJ XEDIT 1 06/09/16 03:42:10 0191
TSTUSER1 BKKKKK XEDIT 1 06/09/16 03:42:25 0191
TSTUSER1 BLLLLL XEDIT 1 06/09/16 03:42:30 0191
TSTUSER1 C C 1 08/04/19 17:24:35 0191
TSTUSER1 CLAUDE CLAUDE 1 08/11/07 18:26:04 0191
TSTUSER1 CLAUDE1 CLAUDE1 1 07/01/04 14:55:00 0191
TSTUSER1 D D 1 06/09/16 03:50:32 0191
TSTUSER1 DCREQS HTML 1 06/09/16 03:39:26 0191
TSTUSER1 DEF XEDIT 1 06/09/19 02:24:28 0191
1= Help 3= Quit 4= Return 5= Sort Up
6= Sort Down 7= Backward 8= Forward 10= Restore 11= Details
MA b 03/025
Connected to remote server/host 9.39.68.141 using port 23

```

Session B - TSTADMN1 - [32 x 80]

File Edit View Communication Actions Window Help

Files for owner(s): TSTUSER1

Selection: Name: * Type: * Mode: * 17 of 60 shown

Current filters: Name: * Type: XEDIT_ Mode: * Owner: *

Owner	Filename	Filetype	Fm	Date	Time	Device or Path
TSTUSER1	ABC	XEDIT	1	06/09/19	02:24:28	0191
TSTUSER1	BAAAAA	XEDIT	1	06/09/16	03:40:47	0191
TSTUSER1	BBBBBB	XEDIT	1	06/09/16	03:40:37	0191
TSTUSER1	BCCCCC	XEDIT	1	06/09/16	03:41:01	0191
TSTUSER1	BDDDDD	XEDIT	1	06/09/16	03:41:34	0191
TSTUSER1	BEEEEEE	XEDIT	1	06/09/16	03:41:38	0191
TSTUSER1	BFFFFFF	XEDIT	1	06/09/16	03:41:43	0191
TSTUSER1	BGGGGG	XEDIT	1	06/09/16	03:41:49	0191
TSTUSER1	BHHHHH	XEDIT	1	06/09/16	03:41:59	0191
TSTUSER1	BIIIII	XEDIT	1	06/09/16	03:42:03	0191
TSTUSER1	BJJJJJ	XEDIT	1	06/09/16	03:42:10	0191
TSTUSER1	BKKKKK	XEDIT	1	06/09/16	03:42:25	0191
TSTUSER1	BLLLLL	XEDIT	1	06/09/16	03:42:30	0191
TSTUSER1	DEF	XEDIT	1	06/09/19	02:24:28	0191
TSTUSER1	BJJJJJ	XEDIT	1	09/02/18	10:40:42	0191
TSTUSER1	BJJJJJ	XEDIT	1	09/02/18	10:40:42	0191
TSTUSER1	BJJJJJ	XEDIT	1	09/02/18	10:40:42	0191

1= Help 3= Quit 4= Return 5= Sort Up
 6= Sort Down 7= Backward 8= Forward 10= Restore 11= Details

MA b

03/045

Connected to remote server/host 9.39.68.141 using port 23

```
Session B - TSTADMIN1 - [32 x 80]
File Edit View Communication Actions Window Help
CMS EDF Minidisk Restore Specifications

From TSTUSER1 0191 date 06/09/16 time 03:40:47 (job FULL01 00000033 ).

To EDF minidisk, userid:          and virtual address:
  FORMAT: OK if needed? YES  FORMAT regardless? NO

Or to RDR of userid: tstadmin1 node: _      (defaults to this node).

Or to SFS filepool:          and fileSPACE:
and path:

File filters:  Filename: BAAAAA  Filetype: XEDIT  mode number: 1

Master backup userid: BKRBKUP  Options:

3= Quit          4= Return          10= Restore

MA b 08/038
Connected to remote server/host 9.39.68.141 using port 23
```

```
Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
Your command "RESTORE FULL01 00000033 TSTUSER1 EDF $DEV0191 TO RDR TSTADMN1 -
BAAAAA XEDIT 1 " is being processed at 04/20/09 19:17:22.
BKREST9029I Sending RESTORE request 00000058 to worker task BKRWRK03...
File RESTORE JOB D1 sent to BKRWRK03 at DEM1ZVM on 04/20/09 19:17:22
##### Restore: Request 00000058 submitted to worker BKRWRK03 for processing.
Return code "0" from command RESTORE FULL01 00000033 TSTUSER1 EDF $DEV0191 TO
RDR TSTADMN1 - BAAAAA XEDIT 1 - at 04/20/09 19:17:22
RDR FILE 0088 SENT FROM BKRWRK03 PUN WAS 0021 RECS 0004 CPY 001 R NOHOLD NOKEEP
RDR FILE 0089 SENT FROM BKRWRK03 CON WAS 0020 RECS 0080 CPY 001 R NOHOLD NOKEEP
Ready, T=0.0878.08 19.17.24
RUNNING DEM1ZVM
MA b 31/001
Connected to remote server/host 9.39.68.141 using port 23
```

```

Session B - TSTADMN1 - [32 x 80]
File Edit View Communication Actions Window Help
TSTADMN1 RDRLIST A0 164 Trunc=164 Size=2 Line=1 Col=1 Alt=0
Cmd  Filename  Filetype  Class  User  at  Node  Held  Records  Date  Time
-----
BAAAAA  XEDIT    PUN R  BKRWRK03  DEM1ZVM  NONE  4  4/20  19:17:22
RESTORE  00000058  CON R  BKRWRK03  DEM1ZVM  NONE  80  4/20  19:17:22

1= Help      2= Refresh  3= Quit      4= Sort(type) 5= Sort(date) 6= Sort(user)
7= Backward  8= Forward  9= Receive   10=           11= Peek      12= Cursor

====>

X E D I T 1 File
MA b 03/001
Connected to remote server/host 9.39.68.141 using port 23
    
```

Reference Information

- **Product Web sites**

- Start at
<http://www.ibm.com/software/stormgmt/zvm/backup/index.html>
- Product pages include
 - Publications
 - Pre-requisites
 - Announcements
 - Presentations
 - Support

- **e-mail**

- Mike Sine, sine@us.ibm.com, Technical Marketing
- Tracy Dean, tld1@us.ibm.com, Product Manager

धन्यवाद

Hindi

多謝

Traditional Chinese

감사합니다

Korean

Спасибо

Russian

Gracias

Spanish

شكراً

Arabic

Thank You

English

Obrigado

Brazilian Portuguese

Grazie

Italian

Danke

German

多谢

Simplified Chinese

Merci

French

நன்றி

Tamil

ありがとうございました

Japanese

ขอบคุน

Thai