Getting Started with
IBM Backup and Restore Manager for z/VM

VMSES/E Installation, SFS Setup, and Initial Configuration

Tracy Dean, IBM

tld1@us.ibm.com

August 2009

Important Disclaimer

THE INFORMATION CONTAINED IN THIS PRESENTATION IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

WHILE EFFORTS WERE MADE TO VERIFY THE COMPLETENESS AND ACCURACY OF THE INFORMATION CONTAINED IN THIS PRESENTATION, IT IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED.

IN ADDITION, THIS INFORMATION IS BASED ON IBM'S CURRENT PRODUCT PLANS AND STRATEGY, WHICH ARE SUBJECT TO CHANGE BY IBM WITHOUT NOTICE.

IBM SHALL NOT BE RESPONSIBLE FOR ANY DAMAGES ARISING OUT OF THE USE OF, OR OTHERWISE RELATED TO, THIS PRESENTATION OR ANY OTHER DOCUMENTATION.

NOTHING CONTAINED IN THIS PRESENTATION IS INTENDED TO, OR SHALL HAVE THE EFFECT OF:

- CREATING ANY WARRANTY OR REPRESENTATION FROM IBM (OR ITS AFFILIATES OR ITS OR THEIR SUPPLIERS AND/OR LICENSORS); OR

- ALTERING THE TERMS AND CONDITIONS OF THE APPLICABLE LICENSE AGREEMENT GOVERNING THE USE OF IBM SOFTWARE.

Agenda

- **Assumptions**

- **Preparing to install**

- **Installing using VMSES/E**

- **Configuring**

- **Verifying installation and configuration**

Assumptions

- **DIRMAINT is installed for directory management**
  - MAINT is authorized to issue AMDISK commands
  - AUTOG is available for group USER for minidisk definitions
- **Shared File System is available**
- **Installation ID is 5697J06B**

  - No PPF overrides
- **3390 DASD**
- **REXX Library (5695-014) is installed and available**
  - Alternatively use free download of REXX Alternate Library at: http://www.ibm.com/software/awdtools/rexx/rexxzseries/altlibrary.html
- **Installing from tape (not an envelope file)**
- **Installing on minidisk (not SFS)**
- **Operations Manager is running on user ID OPMGRM1**
- **This is not the only way to perform the install**

  - Not all options are discussed
  - See product documentation for full details

Where do I Start ???

- **In the Program Directory ??**

- **In the Installation Guide ??**

- **Because we require SFS, we recommend you start with this presentation**

Define the Installation ID: 5697J06B

- **From MAINT**
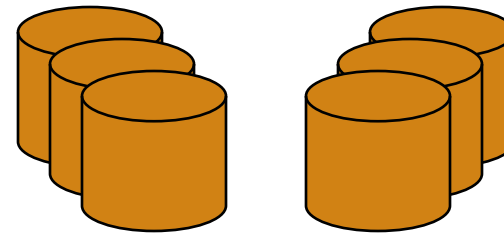 - Create a file called 5697J06B DIRECT

```
USER 5697J06B password 64M 256M BG
* 5697-J06 - SES install & admin for Backup Mgr V1.2
MACHINE ESA
IPL CMS
OPTION LNKNOPAS
CONSOLE 01F 3215
SPOOL 00C 2540 READER A
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403 A
LINK MAINT 190 190 RR
LINK MAINT 19D 19D R
LINK MAINT 19E 19E RR
LINK MAINT 51D 51D MR
LINK MAINT 5E5 5E5 RR
```

  - Issue the command

```
DIRM ADD 5697J06B
```

Define the Installation ID: 5697J06B

- **Add required minidisks**
  - – From MAINT, issue

```
DIRM FOR 5697J06B AMD 191 3390 AUTOG 10 USER MR
DIRM FOR 5697J06B AMD 198 3390 AUTOG 2 USER MR
DIRM FOR 5697J06B AMD 199 3390 AUTOG 5 USER MR
DIRM FOR 5697J06B AMD 2A2 3390 AUTOG 1 USER MR
DIRM FOR 5697J06B AMD 2A6 3390 AUTOG 1 USER MR
DIRM FOR 5697J06B AMD 2B2 3390 AUTOG 5 USER MR
DIRM FOR 5697J06B AMD 2C2 3390 AUTOG 2 USER MR
DIRM FOR 5697J06B AMD 2D2 3390 AUTOG 20 USER MR
DIRM FOR 5697J06B AMD 491 3390 AUTOG 5 USER MR
DIRM FOR 5697J06B AMD 492 3390 AUTOG 5 USER MR
DIRM FOR 5697J06B AMD 49D 3390 AUTOG 5 USER MR
DIRM FOR 5697J06B AMD 591 3390 AUTOG 5 USER MR
DIRM FOR 5697J06B AMD 592 3390 AUTOG 5 USER MR
```

Resulting Minidisk Statements in Directory Entry for 5697J06B

```
MDISK 0191 3390 <start> 010 <vol> MR <readpw> <writepw> <multpw>
MDISK 0198 3390 <start> 002 <vol> MR <readpw> <writepw> <multpw>
MDISK 0199 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
MDISK 02A2 3390 <start> 001 <vol> MR <readpw> <writepw> <multpw>
MDISK 02A6 3390 <start> 001 <vol> MR <readpw> <writepw> <multpw>
MDISK 02B2 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
MDISK 02C2 3390 <start> 002 <vol> MR <readpw> <writepw> <multpw>
MDISK 02D2 3390 <start> 020 <vol> MR <readpw> <writepw> <multpw>
MDISK 0491 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
MDISK 0492 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
MDISK 049D 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
MDISK 0591 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
MDISK 0592 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
```

Format All Minidisks

- **From MAINT, issue**

  ```
  link 5697J06B 191 333 MR

  format 333 z

  release z (det
  ```

- **Repeat for each 5697J06B disk**

Create New SFS Server and File Pool

- **Background**

  - Backup catalog is stored in SFS

    - Separate file pool dedicated to Backup is recommended
      - Should not use VMSYS: or VMSYSU:
      - We'll use **BKRSFS:** here, with **BKRSVSFS** as the server

  - Recommend starting with at least 3000 cylinders

    - Large sites will need more
    - Your mileage may vary

  - Need space for service machine work areas also

    - We'll use BKRSFS: for this also

  - BKRSVSFS is a repository file pool server

    - Does not perform Coordinated Resource Recovery (CRR)

  - Reference: "CMS File Pool Planning, Administration, and Operation" (SC24-6074)

Create New SFS Server: BKRSVSFS

- **From MAINT, create and add directory entry for BKRSVSFS, using most of the sample values**
  - Same procedure used to create user ID 5679J06B
  - Do not format the disks after you've added them

BKRSVSFS DIRECT

```
USER BKRSVSFS password 64M 64M BG
OPTION MAXCONN 2000 NOMDCFS APPLMON QUICKDSP SVMSTAT
SHARE REL 1500
MACHINE XC                Required to use data spaces
IUCV ALLOW
IUCV *IDENT RESANY GLOBAL
IPL CMS
CONSOLE 009 3215 T OPMGRM1     Make Ops Mgr the secondary console
SPOOL 00C 2540 READER *
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403
LINK MAINT 190 190 RR
LINK MAINT 193 193 RR
LINK MAINT 19D 19D RR
LINK MAINT 19E 19E RR
```

BKRSVSFS Directory Entry (continued)

- **From MAINT, issue**

```
DIRM FOR BKRSVSFS AMD 191 3390 AUTOG 2 USER W      Work disk

DIRM FOR BKRSVSFS AMD 250 3390 AUTOG 80 USER R PW readpw writepw    Control disk

DIRM FOR BKRSVSFS MINIOPT 250 NOMDC

DIRM FOR BKRSVSFS AMD 405 3390 AUTOG 10 USER R PW readpw writepw
                                                                   Repository log
DIRM FOR BKRSVSFS AMD 406 3390 AUTOG 10 USER R PW readpw writepw    disks

DIRM FOR BKRSVSFS MINIOPT 405 NOMDC

DIRM FOR BKRSVSFS MINIOPT 406 NOMDC

DIRM FOR BKRSVSFS AMD 260 3390 AUTOG 50 USER R PW readpw writepw   Initial catalog disk

DIRM FOR BKRSVSFS AMD 310 3390 AUTOG 750 USER R PW readpw writepw

DIRM FOR BKRSVSFS AMD 311 3390 AUTOG 750 USER R PW readpw writepw
                                                                   User data
DIRM FOR BKRSVSFS AMD 312 3390 AUTOG 750 USER R PW readpw writepw   disks

DIRM FOR BKRSVSFS AMD 313 3390 AUTOG 750 USER R PW readpw writepw
```

Initial SFS Server Setup: BKRSVSFS

- **Format 191 disk**

  – From BKRSVSFS, issue

  ```
  format 191 a
  ```

- **Create a PROFILE EXEC on the 191 disk, containing**

  ```
  /*  */
  'ACCESS 193 C'
  'CP SET EMSG ON'
  Exit 0
  ```

- **Run the PROFILE**

  ```
  profile
  ```

Define Startup Parameters for SFS Server: BKRSVSFS

- **On BKRSVSFS 191 disk, create a file called BKRSVSFS DMSPARMS**

```
ADMIN 5697J06B
ADMIN BKRADMIN
ADMIN BKRBKUP
ADMIN BKRCATLG
ADMIN BKRWRK01
ADMIN BKRWRK02
ADMIN BKRWRK03
ADMIN BKRWRK04
ADMIN xxxxxxxx        Any other user IDs that will be Backup Manager administrators
NOBACKUP
FILEPOOLID BKRSFS
NOCRR
NOLUNAME
SAVESEGID CMSFILES
USERS 700
```

Generate the File Pool BKRSFS

- **From BKRSVSFS, issue**

  ```
  fileserv generate
  ```

- **When prompted in $$TEMP $POOLDEF, enter**

  ```
  MAXUSERS=4000

  MAXDISKS=500

  DDNAME=CONTROL              VDEV=250

  DDNAME=LOG1                 VDEV=405

  DDNAME=LOG2                 VDEV=406

  DDNAME=MDK00001             VDEV=260 GROUP=1 BLOCKS=0

  DDNAME=MDK00002             VDEV=310 GROUP=2 BLOCKS=0

  DDNAME=MDK00003             VDEV=311 GROUP=2 BLOCKS=0

  DDNAME=MDK00004             VDEV=312 GROUP=2 BLOCKS=0

  DDNAME=MDK00005             VDEV=313 GROUP=2 BLOCKS=0
  ```

- **Then** `file`

Final SFS Server Tasks for BKRSVSFS

- **Start the server**

  – From BKRSVSFS,

    - Add the following at the end of PROFILE EXEC (before the Exit statement):

      `'EXEC FILESERV START'`

    - Save the changes and exit
      `file`

    - Run the PROFILE EXEC
      `profile`

    - Leave the server running disconnected
      `#cp disc`

Authorize Users and Create Directories in SFS

- **Authorize service machines to space in SFS**
  - From 5697J06B, issue

    ```
    enroll user bkradmin bkrsfs (blocks 4000 storgroup 2
    enroll user bkrbkup bkrsfs (blocks 4000 storgroup 2
    enroll user bkrcatlg bkrsfs (blocks 500000 storgroup 2
    enroll user bkrwrk01 bkrsfs (blocks 20000 storgroup 2
    enroll user bkrwrk02 bkrsfs (blocks 20000 storgroup 2
    enroll user bkrwrk03 bkrsfs (blocks 20000 storgroup 2
    enroll user bkrwrk04 bkrsfs (blocks 20000 storgroup 2
    ```

- **Create required directory entries**
  - From 5697J06B, issue

    ```
    create directory bkrsfs:bkradmin.workarea
    create directory bkrsfs:bkrcatlg.workarea
    create directory bkrsfs:bkrbkup.workarea
    create directory bkrsfs:bkrwrk01.workarea
    create directory bkrsfs:bkrwrk02.workarea
    create directory bkrsfs:bkrwrk03.workarea
    create directory bkrsfs:bkrwrk04.workarea
    ```

Authorize Users and Create Directories in SFS

- **Authorize service machines to space in SFS**

  - From 5697J06B, issue

```
enroll user bkradmin bkrsfs (blocks 4000 storgroup 2
enroll user bkrbkup bkrsfs (blocks 4000 storgroup 2
enroll user bkrcatlg   ok               roup 2
enroll user bkrwrk01   k                 up 2
enroll user bkrwrk02   k                 up 2
enroll user bkrwrk03   k                 up 2
enroll user bkrwrk04   k                 up 2
```

It's okay if these user IDs don't actually exist yet

- **Create required directory entries**

  - From 5697J06B, issue

```
create directory bkrsfs:bkradmin.workarea
create directory bkrsfs:bkrcatlg.workarea
create directory bkrsfs:bkrbkup.workarea
create directory bkrsfs:bkrwrk01.workarea
create directory bkrsfs:bkrwrk02.workarea
create directory bkrsfs:bkrwrk03.workarea
create directory bkrsfs:bkrwrk04.workarea
```

Take a Breath – New SFS Server is Set Up

If you've never set up SFS before,

this is the hardest part of the product install

Prepare for VMSES/E Installation

- **From 5697J06B**

  - Mount installation tape at virtual address 181

  - Link and access MAINT disks

    ```
    link MAINT 5e5 5e5 rr
    access 5e5 b
    link MAINT 51d 51d mr
    access 51d d
    ```

  - Load product control files

    ```
    vmfins install info (nomemo
    ```

  - Obtain planning info

    ```
    vmfins install ppf 5697J06B BKUPMGR (plan nomemo
    ```

  - Review for errors

    ```
    vmfview install
    ```

Create Directory Entries for All Required Users

- **Use directory entry samples in 5697J06B PLANINFO**
  - Located on 5697J06B 191 disk
- **Follow steps outlined earlier for creating 5697J06B user ID to create directory entries for**
  - BKRADMIN
  - BKRCATLG
  - BKRBKUP
  - BKRWRK01
  - BKRWRK02
  - BKRWRK03
  - BKRWRK04
- **For all above user IDs, add T OPMGRM1 to the end of the CONSOLE statement**
  - This allows Operations Manager to monitor these consoles
- **For all BKRWRKxx user ID's add to the directory entry:**
  - LINK 5697J06B 199 199 RR
- **If you plan to back up full volumes (INCLUDE RDEVICE or INCLUDE REDEVVOL), also add the following to the BKRWRKxx directory entries:**
  - OPTION DEVMAINT
  - Privilege class A

Format All Minidisks

- **From 5697J06B, issue**

```
link BKRADMIN 191 333 MR

format 333 z

release z (det
```

- **Repeat for each disk**

Installing using VMSES/E

Initial VMSES/E Install

- **From 5697J06B**

  - Create and run a PROFILE EXEC
    ```
    xedit profile exec a
    ===> input /**/
    ===> input 'ACC 5E5 B'
    ===> input 'ACCESS 51D D'
    ===> input 'CP SET PF12 RETRIEVE'
    ===> file
    profile
    ```

  - Installing from tape
    - Mount product tape at virtual address 181
    - Load the product code to disk and install
    ```
    vmfins install ppf 5697J06B BKUPMGR (nomemo nolink
    ```

  - Installing from an envelope
    - Unpack the VMARC file
    ```
    vmarc unpk <envfilename> VMARC <envfilemode>
    ```
    - Load the product code to disk and install
    ```
    vmfins install ppf 5697J06B BKUPMGR (nomemo nolink env <envfilename>
    ```

Initial VMSES/E Install (continued)

– **Review for errors**

`vmfview install`

– **Update Build Status Table**

`vmfins build ppf 5697J06B BKUPMGR (serviced nolink`

– **Review for errors**

`vmfview install`

Initial VMSES/E Install (continued)

- Copy code from installation/test disk to production disk

```
acc 491 e

acc 591 f

vmfcopy * * e = = f (prodid 5697J06B%BKUPMGR olddate replace

acc 492 e

acc 592 f

vmfcopy * * e = = f (prodid 5697J06B%BKUPMGR olddate replace
```

Initial VMSES/E Install (continued)

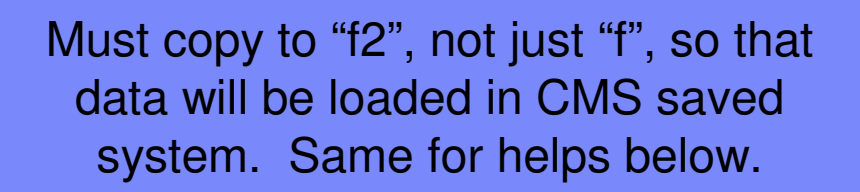– Copy user code from installation disk to Y disk (MAINT 19E)

    • Logon to MAINT

```
link 5697j06b 492 492 rr

acc 492 e

acc 19e f

vmfcopy * * e = = f2 (prodid 5697J06B%BKUPMGR olddate replace
```

Must copy to "f2", not just "f", so that data will be loaded in CMS saved system. Same for helps below.

– Copy help files from installation disk to system HELP disk (MAINT 19D)

```
link 5697j06b 49d 49d rr

acc 49d e

acc 19d f

vmfcopy * helpabkr e = = f2 (prodid 5697J06B%BKUPMGR olddate replace

vmfcopy abkr helpmenu e = = f2 (prodid 5697J06B%BKUPMGR olddate replace
```

Initial VMSES/E Install (continued)

– Rebuild CMS saved system (from code on 19E disk)

• From MAINT

```
acc 193 m

sampnss cms

ipl 190 clear parm savesys cms

<hit ENTER>
```

– Rebuild CMS HELP logical saved segment (from files on MAINT 19D)

```
vmfbld ppf segbld esasegs segblist helpseg (all
```

Where Code is Installed for Configuration and Testing

Disk on 5697J06B	Description
2C2	Sample files
491, 591	**Service machine executables for** –BKRBKUP –BKRCATLG –BKRWRKxx
492, 592, MAINT 19E	End user and administrator executables
198	Configuration files
199	Backup job templates and DISKPOOL files
49D, MAINT 19D	Help files

VMSES/E Installation is Complete

- **All code is installed from tape**

- **Standard install commands used by most z/VM products**

- **This was the easy part**

Install All Available Service

Install All Available PTFs (COR Service)

- **Order/obtain all PTFs available for Backup Manager V1.2**

- **If each PTF is in tersed format (from IBMLINK), issue:**

  ```
  DETERSE <fn> <ft> <fm> <fn> SERVLINK A
  ```

- **If each PTF is in VMARC format, issue:**

  ```
  VMARC UNPK <fn> <ft> <fm> <fn> SERVLINK A
  ```

- **Follow instructions in Chapter 7 of the Program Directory to install each PTF**

  - In 7.2, suggest following steps in Appendix B for installation of all initial service, in case of errors

    - SERVICE EXEC can be used in future when installing just 1 PTF

IBM Software

Configuring

Verify System Access Privileges for Backup Servers

User ID	Privileges Required and *Recommended*
BKRADMIN	➢ **OPTION LNKNOPAS** (or equivalent, such as **RACF OPERATIONS**) ➢ **Privilege Class G** ➢ *Privilege Class B (for CP MSGNOH)*
BKRBKUP	➢ **OPTION LNKNOPAS** (or equivalent, such as **RACF OPERATIONS**) ➢ **Privilege Class G** ➢ **Privilege Class A** (for CP FORCE) ➢ **Privilege Class B** (CP MSGNOH) ➢ **Privilege Class D** (CP PURGE)
BKRCATLG	➢ **Privilege Class G** ➢ **Privilege Class B** (CP MSGNOH) ➢ *OPTION LNKNOPAS (or equivalent, such as RACF OPERATIONS) if backing up to disk*
BKRWRKxx	➢ **OPTION LNKNOPAS** (or equivalent, such as **RACF OPERATIONS**) ➢ **Privilege Class G** ➢ **Privilege Class B** (for CP MSGNOH) ➢ *Privilege Class A (if you plan to back up DASD volumes (vs minidisks))* ➢ *OPTION DEVINFO (if you have minidisks defined with DEVNO or &SYSRES options)* ➢ *OPTION LNKSTABL (if you want to link disks in STABLE mode during a backup)* ➢ *OPTION DEVMAINT (if you plan to back up DASD volumes (vs minidisks))*

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRADMIN**
  - From 5697J06B

```
link bkradmin 191 291 mr
acc 291 z
acc 2c2 e
copy admprof sampexec e profile exec z
xedit profile exec z
```

  - **Change**
    ```
    SFS_Pool = 'ROCKSFS1'
    ```
  - **To**
    ```
    SFS_Pool = 'BKRSFS'
    ```
  - **Change**
    ```
    'ACCESS' SFS_Pool':BKRADMIN.CONFIGURATION B/B'
    'ACCESS' SFS_Pool':BKRADMIN.RUNTIME C/C'
    … and …
    'ACCESS' SFS_Pool':BKRADMIN.JOBDEFS E'
    ```
  - **To**
    ```
    'ACCESS 198 B/B'
    'ACCESS 591 C/C'
    'ACCESS 199 E'
    ```

```
file
```

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRCATLG**
  - From 5697J06B

```
link bkrcatlg 191 292 mr
acc 292 z
acc 2c2 e
copy catprof sampexec e profile exec z
xedit profile exec z
```
  - **Change**
    ```
    SFS_Pool = 'ROCKSFS1'
    ```
  - **To**
    ```
    SFS_Pool = 'BKRSFS'
    ```
  - **Change**
    ```
    'ACCESS' SFS_Pool':BKRADMIN.CONFIGURATION B/B'
    'ACCESS' SFS_Pool':BKRADMIN.RUNTIME C/C'
    ```
  - **To**
    ```
    'ACCESS 198 B/B'
    'ACCESS 591 C/C'
    ```
  - **Change**
    ```
    'ACCESS ROCKSFS2:RVBCATLG.WORKAREA D (FORCERW'
    ```
  - **To**
    ```
    'ACCESS .WORKAREA D (FORCERW'
    ```
```
file
```

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRBKUP**
  - From 5697J06B

    ```
    link bkrbkup 191 293 mr
    acc 293 z
    acc 2c2 e
    copy mastprof sampexec e profile exec z
    xedit profile exec z
    ```
      - **Change**
        ```
        SFS_Pool = 'ROCKSFS1'
        ```
      - **To**
        ```
        SFS_Pool = 'BKRSFS'
        ```
      - **Change**
        ```
        'ACCESS' SFS_Pool':BKRADMIN.CONFIGURATION B/B'
        'ACCESS' SFS_Pool':BKRADMIN.RUNTIME C/C'
        … and …
        'ACCESS' SFS_Pool':BKRADMIN.JOBDEFS E/E'
        ```
      - **To**
        ```
        'ACCESS 198 B/B'
        'ACCESS 591 C/C'
        'ACCESS 199 E/E'
        ```
    ```
    file
    ```

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRWRK01**
  - From 5697J06B

    ```
    link bkrwrk01 191 294 mr
    acc 294 z
    acc 2c2 e
    copy wrkprof sampexec e profile exec z
    xedit profile exec z
    ```
    - **Change**
      ```
      SFS_Pool = 'ROCKSFS1'
      ```
    - **To**
      ```
      SFS_Pool = 'BKRSFS'
      ```
    - **Change**
      ```
      'ACCESS' SFS_Pool':BKRADMIN.CONFIGURATION B/B'
      'ACCESS' SFS_Pool':BKRADMIN.RUNTIME C/C'
      ```
    - **To**
      ```
      'ACCESS 198 B/B'
      'ACCESS 591 C/C'
      'ACCESS 199 E/E'
      ```
    ```
    File
    ```

- **Repeat for BKRWRK02, BKRWRK03, and BKRWRK04**
  - Or send the PROFILE EXEC to the other workers
  - No changes needed for each worker

Define Special Users to Backup Manager

- **From 5697J06B**

  ```
  access 198 z

  access 2c2 e

  copy bkrusers namesamp e = names z

  xedit bkrusers names z
  ```

  – Authorize additional users as Administrators:
    - BKRBKUP
    - Others as required by your site
  – Remove extra workers BKRWRK05 and BKRWRK06
    - Scroll to the right to make sure you removed all of BKRWRK06
  – Copy BKRUSERS NAMES to a shared disk for user and server access
    - E.g. MAINT 19E (Y disk) or 5697J06B 592
      – Note: If you copy to MAINT 19E, copy as filemode number 2 and make a note to reload the CMS saved system again once all configuration is complete

Update the Configuration File: BKRSYSTM CONFIG

- **From 5697J06B**

```
access 198 z

access 2c2 e

copy bkrsystm confsamp e = config z

xedit bkrsystm config z
```

Update the Configuration File: BKRSYSTM CONFIG

- **Choose local options for**

```
Local_SVM_Contact = System Administrator – sysadmin@some.corp.com
```

- Contact name displayed on service machines
- Not used for automated e-mails or messages

```
Template_MDISK_Buffer_Pages = 768
```

- Increase this value if you have more than 30,000 minidisks on the system

```
BKR_Allow_EDF_Target_Format = 0
```

- Change to 1 if you want Backup Manager to format unformatted minidisks on restore

```
CatalogPool = RS54QA02
```

- Change to BKRSFS

```
Workers_Reserved_For_Backup = 2
Workers_Reserved_For_Restore = 2
```

- Change both values to 0 (all workers can do backups and restores)

Update the Configuration File: BKRSYSTM CONFIG

- ## Copy BKRSYSTM CONFIG to a shared disk

  - E.g. MAINT 19E (Y disk) or 5697J06B 592

    - Note: If you copy to MAINT 19E, copy as filemode number 2 and make a note to reload the CMS saved system again once all configuration is complete

Complete SFS Configuration and Authorization

- **Create backup catalog structure in SFS**

  - From 5697J06B, issue

    ```
    acc 591 c
    setupcat
    ```

  - Issue all SFS CREATE DIRECTORY commands displayed by SETUPCAT

    - **Note: SETUPCAT will not issue the commands it displays. You must type in (cut 'n paste) each one and issue it. These are in addition to those you entered on Page 18.**

- **Give all users access to the catalog for restore requests**

  - User access is limited to catalog directories for their own data

  - From 5697J06B, issue

    ```
    enroll public bkrsfs:
    ```

Reload CMS Saved System if Needed

- **If you added code to MAINT 19E disk**

  – Verify the filemode number is 2 for each file

  – Rebuild CMS saved system

    • From MAINT

```
acc 193 m

sampnss cms

ipl 190 clear parm savesys cms

<hit ENTER>
```

Create Backup Job to Test

- **Use a shipped sample template as a model**
  - From 5697J06B, issue

```
access 2c2 e
access 199 z
copy sampfull tempsamp e testfull template z
xedit testfull template z
```

Customize the Backup Job: TESTFULL

- **Choose local options for**

  ```
  CONFIG BKR_JOB_WORKERS = 1
  ```

  - Increase the number of workers based on the number of items to back up

  ```
  CONFIG BKR_JOB_NAME = SAMPFULL
  ```

  - Change to TESTFULL

  ```
  CONSOLE * Sample full backup generated
  ```

  - Change "Sample full" to indicate name of backup job TESTFULL

  ```
  CP_QUIET SPOOL CONSOLE CLOSE NAME SAMPFULL $$SDATE$$
  ```

  - Change SAMPFULL to TESTFULL

  ```
  CONFIG BKR_CATALOG_GRANULE_FN = SAMPFULL
  ```

  - Change GRANULE filename: TESTFULL

- **Many other options available**

  - See job statements and comments in SAMPFULL TEMPSAMP

Customize the Backup Job: TESTFULL

- **Update INCLUDE and EXCLUDE statements**
  - Delete or replace the following entries for Linux guests

    ```
    EXCLUDE MINIDISK MACK0* = *
    INCLUDE MINIDISK MACK0* = 019*
    EXCLUDE MINIDISK R54TUX* = *
    INCLUDE MINIDISK R54TUX* = 019*
    ```

  - Delete the following entries

    ```
    EXCLUDE MINIDISK MAINT = 0123
    EXCLUDE MINIDISK MAINT = 0124
    INCLUDE MINIDISK MAINT = 012*
    EXCLUDE MINIDISK RS54QA* = *
    INCLUDE MINIDISK RS54QA* = 019*
    INCLUDE SFS VMDEVU: * *
    ```

  - Change the following to reflect BKRSVSFS instead of ROCKSFS

    ```
    EXCLUDE MINIDISK ROCKSFS* = *
    INCLUDE MINIDISK ROCKSFS* = 019*
    ```

  - Modify the following to exclude large minidisks

    ```
    EXCLUDE MINIDISK * = * * * = * = * > 3300
    ```

- **FILE to save changes**

Configuration is Complete

- **Now let's see if it actually works!**

Verifying

Start Backup Manager Service Machines

- **Start required Backup Manager servers**
  - From MAINT, issue

    ```
    cp xautolog bkrcatlg
    cp xautolog bkrbkup
    ```

- **Starting workers is recommended when product is first installed to verify configuration**
  - From MAINT, issue

    ```
    cp xautolog bkrwrk01
    ```
  - Repeat for other workers

- **Starting workers (BKRWRKxx) is not required in general**
  - BKRBKUP will start them when needed

- **Verify servers are up and running**
  - From MAINT, issue

    ```
    cp smsg bkrbkup status
    cp smsg bkrwrk01 status
    ```
  - Repeat for other workers

- **Workers automatically logged off when idle timeout expires**

Submit a Backup Job

- **Submit a job for review**

  - From BKRADMIN, issue

    `smsg bkrbkup review testfull`

  - Review files returned to BKRADMIN's reader

    - `TESTFULL LINKFAIL`

      - All errors linking to disks included in backup job

    - `TESTFULn JOB`

      - One file for each backup worker assigned

      - All configuration statements with (most) variables resolved

      - All DUMPxxx statements for data that would be backed up

        > xxx = CKD, EDF, SFS, FBA

Submit a Backup Job

- **Submit a job and perform real backup**
  - From BKRADMIN, issue

    `smsg bkrbkup submit testfull`

  - Review files returned to BKRADMIN's reader
  - Review consoles of BKRWRKxx servers
    - Authorize BKRADMIN to view backup server consoles in Operations Manager
      - Use AUTH statement
      - See Chapter 5 of Operations Manager Administration Guide
    - From BKRADMIN, issue

      `GOMCMD OPMGRM1 VIEWCON USER(BKRWRKxx)`

Backup and Restore Manager is Up and Running

- **Major task is SFS setup**

  - Especially if you aren't familiar with SFS

- **VMSES/E install is straightforward**

- **Configuration is quick for initial testing**

  - Use the defaults for most things

  - Give all options some thought before production use

- **Use your in-house procedures to move it to production**

References and More Information

- **Backup and Restore Manager for z/VM Web site**
  - http://www.ibm.com/software/stormgmt/zvm/backup
    - Publications
    - Pre-requisites
    - Announcements
    - Support
- **e-mail: Tracy Dean, tld1@us.ibm.com**
- **Publications**
  - CMS File Pool Planning, Administration, and Operation (SC24-6074)
  - Directory Maintenance Facility Commands Reference (SC24-6133)
  - Backup and Restore Manager for z/VM Program Directory (GI10-8662)
  - Backup and Restore Manager for z/VM Administration Guide (SC18-9346)
  - Backup and Restore Manager for z/VM User Guide (SC18-9523)