IBM Software

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

VMSES/E Installation, SFS Setup, and Initial Configuration
on z/VM V6.2 or V6.3

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Agenda

- **Assumptions**

- **Preparing to install**

- **Installing using VMSES/E**

- **Configuring**

- **Verifying installation and configuration**

Assumptions

- **Installing on z/VM V6.2 or z/VM V6.3**
  - Standalone system, no SSI cluster
  - See separate presentation for z/VM V5.4 or V6.1
- **DIRMAINT is installed for directory management**
  - MAINT620 or MAINT630 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
  - Strongly suggest installing this on MAINT620 or MAINT630 19E to simplify access to it
- **Installing on minidisk (not SFS)**
- **Operations Manager is running on user ID OPMGRM1**
- **Tape Manager is installed and running, or tapes are mounted manually via messages to the OPERATOR console**
- **This is not the only way to perform the install**
  - Not all options are discussed
  - See product documentation for full details

Don't Forget

- **If you are also installing Operations Manager, install it first**

- **REXX must already be installed and available**
  - REXX Library (5695-014), **or**
  - REXX Alternate Library, free download at: http://www.ibm.com/software/awdtools/rexx/rexxzseries/altlibrary.html
  - Strongly suggest installing this on MAINT620 or MAINT630 19E to simplify access to it
    - If on MAINT620 or MAINT630 19E, make sure all files have filemode number of 2 (not the default of 1)
      - Required for loading into the CMS saved segment

- **More information about running Backup and Restore Manager in a z/VM V6.2 or later environment:**

  http://www.ibm.com/support/docview.wss?rs=0&context=SSMR4R&q1=SSI&uid=swg21615651

Define the Installation ID: 5697J06B

- **From MAINT620 or MAINT630**
  - 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 MAINT620 or MAINT630, issue

```
DIRM FOR 5697J06B AMD 191 3390 AUTOG 40 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 198 3390 AUTOG 2 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 199 3390 AUTOG 5 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 2A2 3390 AUTOG 1 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 2A6 3390 AUTOG 1 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 2B2 3390 AUTOG 5 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 2C2 3390 AUTOG 2 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 2D2 3390 AUTOG 50 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 491 3390 AUTOG 7 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 492 3390 AUTOG 7 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 49D 3390 AUTOG 5 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 591 3390 AUTOG 7 USER MR PW <readpw> <writepw> <multpw>
DIRM FOR 5697J06B AMD 592 3390 AUTOG 7 USER MR PW <readpw> <writepw> <multpw>
```
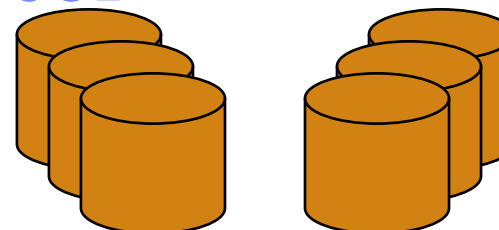
Resulting Minidisk Statements in Directory Entry for 5697J06B

```
MDISK 0191 3390 <start> 040 <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> 050 <vol> MR <readpw> <writepw> <multpw>

MDISK 0491 3390 <start> 007 <vol> MR <readpw> <writepw> <multpw>

MDISK 0492 3390 <start> 007 <vol> MR <readpw> <writepw> <multpw>

MDISK 049D 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>

MDISK 0591 3390 <start> 007 <vol> MR <readpw> <writepw> <multpw>

MDISK 0592 3390 <start> 007 <vol> MR <readpw> <writepw> <multpw>
```

Format All Minidisks

- **From MAINT620 or MAINT630, 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   99999
  - Need space for service machine work areas also
    - We'll use BKRSFS: for this also
  - Recommend putting Backup Manager TEMPLATE and DISKPOOL files in SFS 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 MAINT620 or MAINT630, 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                       Make Ops Mgr the secondary console

CONSOLE 009 3215 T OPMGRM1

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
```

- **Issue the command**
  ```
  DIRM ADD BKRSVSFS
  ```

BKRSVSFS Directory Entry (continued)

- ## From MAINT620 or MAINT630, issue

```
DIRM FOR BKRSVSFS AMD 191 3390 AUTOG 2 USER W PW <readpw> <writepw> <multpw>
```
Work disk

```
DIRM FOR BKRSVSFS AMD 250 3390 AUTOG 80 USER R PW <readpw> <writepw> <multpw>
DIRM FOR BKRSVSFS MINIOPT 250 NOMDC
```
Control disk

```
DIRM FOR BKRSVSFS AMD 405 3390 AUTOG 10 USER R PW <readpw> <writepw> <multpw>
DIRM FOR BKRSVSFS AMD 406 3390 AUTOG 10 USER R PW <readpw> <writepw> <multpw>
DIRM FOR BKRSVSFS MINIOPT 405 NOMDC
DIRM FOR BKRSVSFS MINIOPT 406 NOMDC
```
Repository log disks

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

```
DIRM FOR BKRSVSFS AMD 310 3390 AUTOG 750 USER R PW <readpw> <writepw> <multpw>
DIRM FOR BKRSVSFS AMD 311 3390 AUTOG 750 USER R PW <readpw> <writepw> <multpw>
DIRM FOR BKRSVSFS AMD 312 3390 AUTOG 750 USER R PW <readpw> <writepw> <multpw>
DIRM FOR BKRSVSFS AMD 313 3390 AUTOG 750 USER R PW <readpw> <writepw> <multpw>
```
User data disks

Resulting Minidisk Statements in Directory Entry for BKRSVSFS

```
MDISK 0191 3390 <start> 002 <vol> MR <readpw> <writepw> <multpw>
MDISK 0250 3390 <start> 080 <vol> MR <readpw> <writepw> <multpw>
MINIOPT NOMDC
MDISK 0405 3390 <start> 010 <vol> MR <readpw> <writepw> <multpw>
MINIOPT NOMDC
MDISK 0406 3390 <start> 010 <vol> MR <readpw> <writepw> <multpw>
MINIOPT NOMDC
MDISK 0260 3390 <start> 050 <vol> MR <readpw> <writepw> <multpw>
MDISK 0310 3390 <start> 750 <vol> MR <readpw> <writepw> <multpw>
MDISK 0311 3390 <start> 750 <vol> MR <readpw> <writepw> <multpw>
MDISK 0312 3390 <start> 750 <vol> MR <readpw> <writepw> <multpw>
MDISK 0313 3390 <start> 750 <vol> MR <readpw> <writepw> <multpw>
```

Initial SFS Server Setup: BKRSVSFS

- **Logoff MAINT620 or MAINT630**

- **Logon to BKRSVSFS**

- **Format 191 disk**
  - From BKRSVSFS, issue

  ```
  format 191 a
  ```

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

  ```
  /*   */
  'ACCESS 193 C'
  'CP SET EMSG ON'
  'CP SET PF11 RETRIEVE FORWARD'
  'CP SET PF12 RETRIEVE'
  Exit 0
  ```

- **Run the PROFILE**

  ```
  profile
  ```

Define Startup Parameters for SFS Server: BKRSVSFS

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

```
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, such as MAINT,
NOBACKUP              MAINT620, or MAINT630
FILEPOOLID BKRSFS
NOCRR
NOLUNAME
SSI        ◄──        Optional – SSI or REMOTE for SFS server supporting multiple z/VM
                      systems in an SSI cluster or ISFC collection
SAVESEGID CMSFILES
USERS 700
CATBUFFERS 5000       Optional – increases the working set size for the SFS server.
                      Exclude this if your LPAR is memory constrained.
```

Generate the File Pool BKRSFS

- **From BKRSVSFS, issue**

  `fileserv generate`

- **When prompted in $$TEMP $POOLDEF, delete the existing lines and enter the following lines instead**

```
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
```

- **Note: when you leave XEDIT in the next step, z/VM will format the minidisks listed above. This may take a long time, depending on their size. Please be patient.**

- **Enter** `file` **on the XEDIT command line**

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`

Set Up 5697J06B

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

  ```
  /*  */
  'CP SET PF11 RETRIEVE FORWARD'
  'CP SET PF12 RETRIEVE'
  Exit 0
  ```

- **Run the PROFILE**

  ```
  profile
  ```

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 SFS directory entries**
  - From 5697J06B, issue

```
create directory bkrsfs:bkradmin.workarea
create directory bkrsfs:bkradmin.jobdefs
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 additional users to create and update backup job templates (e.g. MAINT, MAINT620, MAINT630, and other admin user IDs)**

```
grant auth bkrsfs:bkradmin.jobdefs to <userid> (write newwrite
grant auth * * bkrsfs:bkradmin.jobdefs to <userid> (write
```

Don't worry if this command results in an error. It just means nothing is in the SFS directory yet.

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 bk                    roup 2
    enroll user bkrwrk01 bk                    oup 2
    enroll user bkrwrk02 bk                    oup 2
    enroll user bkrwrk03 bk                    oup 2
    enroll user bkrwrk04 bk                    oup 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 MAINT620 or MAINT630**
  - Mount installation tape at virtual address 181
    Or
  - Have SERVLINK envelope available on the MAINT620 or MAINT630 500 disk
        ```
        acc 500 f
        ```
    - Unpack the VMARC file
      ```
      vmarc unpk <envfilename> vmarc f = = f
      ```
      Or
    - Unpack the SERVLINK file
      ```
      deterse <envfilename> servlink f 5697J06B = f
      ```

  - Access VMSES/E disks
    ```
    access 5e5 b
    access 51d d
    ```
  - Load product control files
    ```
    vmfins install info (nomemo
    or
    vmfins install info (nomemo env <envfilename>
    ```
  - Obtain planning info
    ```
    vmfins install ppf 5697J06B BKUPMGR (plan nomemo
    or
    vmfins install ppf 5697J06B BKUPMGR (plan nomemo env <envfilename>
    ```
  - Review for errors
    ```
    vmfview install
    ```

Create Directory Entries for All Required Users

- **Use directory entry samples specifically for z/VM V6.2 and V6.3 provided here:**

  http://www.ibm.com/support/docview.wss?rs=0&context=SSMR4R&q1=SSI&uid=swg21613686

- **Note that list of basic steps to create directory entries and add minidisks is on next 2 pages**

- **From MAINT620 or MAINT630, follow steps outlined earlier for creating 5697J06B user ID to create directory entries for**

  - BKRADMIN   BKRWRK01
  - BKRBKUP   BKRWRK02
  - BKRCATLG   BKRWRK03
  -              BKRWRK04

- **Add minidisks based on data in table in topic 5.3 of the Program Directory**

Create Directory Entry for Single Configuration User

- **Create directory entry for BKRADMIN**

  - From MAINT620 or MAINT630

    - Create file: BKRADMIN DIRECT

      - Based on sample, but remove the MDISK statement

    - Create directory entry

```
DIRM ADD BKRADMIN

DIRM FOR BKRADMIN AMD 191 3390 AUTOG 5 USER MR PW <readpw> <writepw> <multpw>
```

Create Directory Entries for Multiconfiguration Users

- **Create directory entries for BKRBKUP, BKRCATLG, BKRWRKnn**

    - From MAINT620 or MAINT630, define the multiconfiguration user ID:

        • Create the file: <userid> DIRECT
          - Based on sample, but remove the BUILD ON, SUBCONFIG and MDISK statements
        • Create directory entry

```
DIRM ADD <userid>
```

    - From MAINT620 or MAINT630, define the subconfig entry:

        • Create file: <userid-1> DIRECT
          - Add only the SUBCONFIG statement from the sample <userid> DIRECT file
          - Note that the length of "userid-1" can only be 8 chars, so you will have to shorten the user ID name to make room for "-1".
            > E.g. use BKRBKP-1 instead of BKRBKUP-1

```
DIRM ADD <userid-1> BUILD ON <nodeid> IN <userid>
```

          - For example:

```
DIRM ADD BKRBKP-1 BUILD ON SYSTEM1 IN BKRBKUP
```

    - Repeat for each user ID: BKRBKUP, BKRCATLG, BKRWRKnn

Add Minidisks to Multiconfiguration Users

- **Add a minidisk**

  - From MAINT620 or MAINT630

    ```
    DIRM FOR <userid-1> AMD <vaddr> 3390 AUTOG <size> USER MR PW <readpw> <writepw> <multpw>
    ```

    - Note that <userid-1> is the name of the subconfig entry (such as BKRBKP-1), not the actual userid name (BKRBKUP)

  - Repeat for each BKRBKUP, BKRCATLG, and BKRWRKnn minidisk defined in the table in topic 5.3 of the Program Directory

Format All Minidisks

- **From MAINT620 or MAINT630, issue**

  ```
  link BKRADMIN 191 333 MR

  format 333 z

  release z (det
  ```

- **Repeat for each disk you have added for**

  - BKRADMIN
  - BKRBKUP
  - BKRCATLG
  - BKRWRKnn

Installing using VMSES/E

Initial VMSES/E Install

- **From 5697J06B**
  - – Create and run a PROFILE EXEC

    ```
    xedit profile exec a
    ```

    - • Add the following lines
      ```
      /**/
      'ACCESS 5E5 B'
      'ACCESS 51D D'
      'CP SET PF11 RETRIEVE FORWARD'
      'CP SET PF12 RETRIEVE'
      ```
    - • Save and run
      ```
      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
    - • Access the product code on the MAINT620 or MAINT630 500 disk
    ```
    link maint6n0 500 500 rr
    acc 500 c
    ```
    - • 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 (MAINT620 or MAINT630 19E) – <u>strongly suggested</u> to simplify access to code

- Logon to MAINT620 or MAINT630

```
link 5697j06b 492 492 rr
acc 492 e
link maint620 19e 19e mr
```
<u>or</u>
```
link maint630 19e 19e mr
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 (MAINT620 or MAINT630 19D)

```
link 5697j06b 49d 949d rr
acc 949d e
link maint620 19d 19d mr
```
<u>or</u>
```
link maint630 19d 19d mr
acc 19d f
vmfcopy * helpabkr e = = f2 (prodid 5697J06B%BKUPMGR olddate replace
vmfcopy abkr helpmenu e = = f2 (prodid 5697J06B%BKUPMGR olddate replace
```

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, MAINT620, or MAINT630 19E	**End user and administrator executables**
198	**Configuration files**
SFS directory	**Backup job templates and DISKPOOL files (not used during installation so still considered "installing on minidisks"**
49D, MAINT, MAINT620, or MAINT630 19D	**Help files**

VMSES/E Installation is Complete

- **All code is installed from tape or envelope**

- **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**
- **Place them on MAINT620 or MAINT630 500 disk**
- **From MAINT620**

`ACC 500 F`

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

`DETERSE <fn> <ft> F <fn> SERVLINK F`

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

`VMARC UNPK <fn> <ft> F <fn> SERVLINK F`

- **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
  - – If installing more then one PTF
    - • Using Appendix B, in section B.1.1.2, you can repeat the VMFREC command for each PTF before continuing to section B.1.1.3
    - • If you are using the SERVICE EXEC, repeat ACC 500 F from above before installing each PTF (the service process releases this disk)
  - – **Do not** reload CMS saved system or help segments. We'll do this later.

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 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) or if you have minidisks defined with DEVNO or &SYSRES options))*

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
    ```
  - Take out /* and */ before and after section for MINIDISK-based installations
    - Change
      ```
      Job_Templates = '199'
      ```
      to
      ```
      Job_Templates = 'BKRSFS:BKRADMIN.JOBDEFS'
      ```

  - Take out /* and */ before and after the statement for work area in SFS (line 79)
    - Change
      ```
      Work_Area = 'VMSYS:'USERID()'.WORKAREA'
      ```
      to
      ```
      Work_Area = 'BKRSFS:'USERID()'.WORKAREA'
      ```

      ```
      file
      rel z (det
      ```

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
```

- Take out /* and */ before and after section for MINIDISK-based installations
  - Change
    ```
    Job_Templates = '199'
    to
    Job_Templates = 'BKRSFS:BKRADMIN.JOBDEFS'
    ```

- Take out /* and */ before and after statement for work area in SFS (line 79)
  - Change
    ```
    Work_Area = 'VMSYS:'USERID()'.WORKAREA'
    to
    Work_Area = 'BKRSFS:'USERID()'.WORKAREA'
    ```
```
file
rel z (det
```

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRBKUP**

  - ## From 5697J06B

    ```
    link bkrbkup 191 292 mr
    acc 292 z
    acc 2c2 e
    copy mastprof sampexec e profile exec z
    xedit profile exec z
    ```
    - Take out /* and */ before and after section for MINIDISK-based installations
      - Change
        ```
        Job_Templates = '199'
        ```
        to
        ```
        Job_Templates = 'BKRSFS:BKRADMIN.JOBDEFS'
        ```

    - Take out /* and */ before and after statement for work area in SFS (line 79)
      - Change
        ```
        Work_Area = 'VMSYS:'USERID()'.WORKAREA'
        ```
        to
        ```
        Work_Area = 'BKRSFS:'USERID()'.WORKAREA'
        ```
    ```
    file
    rel z (det
    ```

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRWRK01**

  – From 5697J06B

  ```
  link bkrwrk01 191 292 mr
  acc 292 z
  acc 2c2 e
  copy wrkprof sampexec e profile exec z
  xedit profile exec z
  ```

  - Take out /* and */ before and after section for MINIDISK-based installations
    - Change
      ```
      Job_Templates = '199'
      to
      Job_Templates = 'BKRSFS:BKRADMIN.JOBDEFS'
      ```

  - Take out /* and */ before and after statement for work area in SFS (line 76)
    - Change
      ```
      Work_Area = 'VMSYS:'USERID()'.WORKAREA'
      to
      Work_Area = 'BKRSFS:'USERID()'.WORKAREA'
      ```

  ```
  file
  rel z (det
  ```

- **Repeat for BKRWRK02, BKRWRK03, and BKRWRK04**

  – Or send or copy 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
    – System programmer user IDs
    – MAINT
    – MAINT620
    – MAINT630
    – Operations Manager servers if you plan to have Operations Manager submitting backup jobs as part of automation
      > OPMGRM1
      > OPMGRS1
      > OPMGRS2
      > OPMGRS3
      > OPMGRS4

  – Remove extra workers BKRWRK05 and BKRWRK06
  - Scroll to the right to make sure you removed all of BKRWRK06

  – File to save changes and exit

Define Special Users to Backup Manager

- **Copy BKRUSERS NAMES to a shared disk for user and server access**
  - Recommended
    - From MAINT620 or MAINT630
      ```
      link 5697j06b 198 333 rr
      acc 333 e
      link maint620 19e 19e mr
      ```
      or
      ```
      link maint630 19e 19e mr
      acc 19e f
      copyfile bkrusers names e = = f2
      ```
    - Note: Copy as filemode number 2.
    - <u>Do not</u> reload the CMS saved system. (We'll be putting other things on MAINT620 or MAINT630 19E so we'll reload CMS saved system later.)
  - Alternative
    - From 5697J06B
      ```
      acc 198 e
      acc 592 f
      copyfile bkrusers names e = = f
      ```

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 = BKRSFS
```

- Leave this as BKRSFS

```
Tape_Enable_EOF1HDR1 = 1
```

- Change to 0

```
Workers_Reserved_For_Backup = 2
Workers_Reserved_For_Restore = 2
```
- Change both values to 0 (all workers can do backups and restores)

Update Backup Manager to Work with Tape Manager

- **If you are using Tape Manager to manage tapes and tape mounts:**
  - Verifty you have done the Tape Manager installation verification steps
    - Chapter 4 of Tape Manager Installation and Administration Guide
      - Note the tape pool defined in Tape Manager for use by Backup Manager is BKRADMIN BKRPOOL
  - Perform configuration steps for Backup Manager to work with Tape Manager
    - See the last section of Chapter 2 of the Backup Manager Administration Guide
    - No need to copy BKRSYSTM CONFIG to MAINT620 or MAINT630 19E
      - Will do that on next page

Make the Configuration File Available

- **Copy BKRSYSTM CONFIG to a shared disk**
  - Recommended
    - From MAINT620 or MAINT630
      ```
      link 5697j06b 198 333 rr
      access 333 e
      link maint620 19e 19e mr
      ```
      or
      ```
      link maint630 19e 19e mr
      access 19e f
      copy bkrsystm config e = = f2
      ```
      - Note: Copy as filemode number 2.
      - Do not reload the CMS saved system. (We'll be putting other things on MAINT620 or MAINT630 19E so we'll reload CMS saved system later.)
  - Alternative
    - From 5697J06B
      ```
      access 198 z
      access 592 f
      copy bkrsystm config z = = f
      ```

Complete SFS Configuration and Authorization

- **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 MAINT620 or MAINT630 19E disk (during installation, service, and/or configuration)**
  - Verify the filemode number is 2 for each file
    - Already done for any Backup Manager code copied during installation and service
    - Need to verify this for any configuration files you put on 19E
  - Rebuild CMS saved system
    - From MAINT620 or MAINT630
      ```
      put2prod savecms
      ```
  - If you added help files to MAINT620 or MAINT630 19D disk (during installation and/or service)
  - Rebuild CMS HELP logical saved segment (from files on 19D)
    - From MAINT620 or MAINT630
      ```
      put2prod segments helpseg
      ```

Create Backup Job to Test

- **Use a shipped sample template as a model**
  - From your system programmer ID or BKRADMIN, issue

```
link 5697J06b 2c2 2c2 rr
access 2c2 e
access bkrsfs:bkradmin.jobdefs z (forcerw
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
  - Search for other occurrences of "Sample" or "SAMPFULL" and updated

- **Many other options available**

  – See job statements and comments in SAMPFULL TEMPSAMP

Customize the Backup Job: TESTFULL

- **Determine target location for backup**
  - Update or replace the following line to specify target location for backup data

  ```
  Config BKR_Output_Spec  = IBMTAPE SCRATCH RW 1
  ```

    - If writing to tape, leave the line as-is
    - To write backup data to disk (instead of tape)
      - Specify

      ```
      Config BKR_Output_Spec  = CMSFILE TESTFULL DISKPOOL *
      ```

      - And add this statement

      ```
      Config BKR_Job_Tolerate_Diskpool_Depletion = Yes
      ```

      - Create a new file TESTFULL DISKPOOL on the job templates disk, currently accessed as Z (BKRSFS:BKRADMIN.JOBDEFS), containing the following:

      ```
      BKUPDISK 300
      BKUPDISK 310
      BKUPDISK 320
      ```

        > Create a CP directory entry for the new user ID BKUPDISK
        > Add the minidisks as specified above. Add more minidisks as desired. (Minidisks must contain enough room for multiple copies of backup data)
        > Format each minidisk
        > This user should never logon

Customize the Backup Job: TESTFULL

- **Update INCLUDE and EXCLUDE statements**
  - Change the following entry from INCLUDE to EXCLUDE

```
Include Minidisk *  =  *  *  *  =  *  =  *  =  END  *
```

  - Delete following entries for Linux guests

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

  - <u>Do not</u> delete the entry that excludes all minidisks with an end extend of END

```
Exclude Minidisk *  =  *  *  *  =  *  =  *  =  END  *
```

  - Delete or comment out the following entries

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

Customize the Backup Job: TESTFULL

- **Update INCLUDE and EXCLUDE statements**
  - Delete the SFS entries for VMSYSU

```
Include    SFS         VMSYSU:  *         SFS
Exclude    SFS         VMSYSU:  DFSMS*    SFS
Include    SFS         VMDEVU:  *         SFS
```

  - Change the following to reflect BKRSVSFS instead of ROCKSFS

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

  - Add a new entry to back up just your 191 disk or BKRADMIN's 191 disk

```
Include MINIDISK BKRADMIN = 191 * * = * = * = * *
```

  - 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!**

Start Backup Manager Service Machines

- **Start and verify BKRCATLG startup**
  - From MAINT620 or MAINT630, issue

    ```
    cp xautolog bkrcatlg
    cp smsg bkrcatlg status
    ```

  - If no response to status command, then view BKRCATLG console using Operations Manager
    - Find and fix the error
    - Force BKRCATLG off the system and repeat above steps

- **Start and verify BKRBKUP startup**
  - From MAINT620 or MAINT630, issue

    ```
    cp xautolog bkrbkup
    cp smsg bkrbkup status
    ```

  - If no response to status command, then view BKRBKUP console using Operations Manager
    - Find and fix the error
    - Force BKRBKUP off the system and repeat above steps

Start Backup Manager Service Machines

- **Starting workers is recommended when product is first installed to verify configuration**
  - In normal operations, BKRBKUP will start workers when needed
    - Workers then automatically logged off when idle for 2 minutes
  - From MAINT620 or MAINT630, issue

    ```
    cp xautolog bkrwrk01
    cp smsg bkrwrk01 status
    ```

  - If no response to status command, then view BKRWRK01 console using Operations Manager
    - Find and fix the error
    - Force BKRWRK01 off the system and repeat above steps
  - Repeat for BKRWRK02, BKRWRK03, BKRWRK04

Submit a Backup Job

- **Submit a job for review**

    - From BKRADMIN, issue

        `smsg bkrbkup review testfull`

    - Review files returned to BKRADMIN's reader

        - `TESTFULn JOB`

            - One file for each backup worker assigned
            - All configuration statements with (most) variables resolved
            - All DUMPDYN statements for data that would be backed up

Submit a Backup Job

- **Submit a job and perform real backup**

  - From BKRADMIN (or other user authorized as a Backup Manager admin), issue

    `smsg bkrbkup submit testfull`

  - Note the message(s) indicating which worker(s) the job went to

  - 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)