IBM Software

Getting Started with IBM Backup and Restore Manager for z/VM **V1.3**

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

Tracy Dean, IBM
tld1@us.ibm.com
September 2015

If you are installing V1.2 of Backup and Restore Manager, email Tracy Dean for that presentation

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

- **Installing V1.3 of Backup and Restore for z/VM (V1.3 GAed on Feb 27, 2015)**
- **Installing on z/VM V6.2 or z/VM V6.3**
  - Standalone system, or an 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 5697J06C**
  - No PPF overrides
- **3390 ECKD DASD – see exception notes for SCSI/FBA installs**
- **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

IBM Software

Preparing to Install

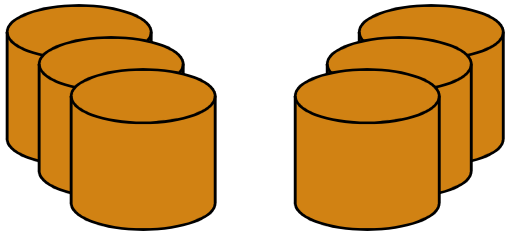
- Create installation ID
- Create an SFS server
- Prepare system for VMSES/E installation

Define the Installation ID: 5697J06C

- **From MAINT620 or MAINT630**
  - Create a file called 5697J06C DIRECT

```
USER 5697J06C password 64M 256M BG
* 5697-J06 - SES install & admin for Backup Mgr V1.3
MACHINE ESA
IPL CMS
OPTION LNKNOPAS
CONSOLE 009 3215 T
SPOOL 00C 2540 READER A
SPOOL 00D 2540 PUNCH A
SPOOL 00E 1403 A
LINK MAINT 190 190 RR
LINK MAINT 19D 19D RR
LINK MAINT 19E 19E RR
LINK MAINT 51D 51D MR
LINK MAINT 5E5 5E5 RR
```

Define the Installation ID: 5697J06C



- **Add required minidisks to 5697J06C DIRECT, have DIRMAINT format them**

```
AMDISK 191 3390 AUTOG 010 USER MR LABEL J06191 PW <readpw> <writepw> <multpw>
AMDISK 2A2 3390 AUTOG 005 USER MR LABEL J062A2 PW <readpw> <writepw> <multpw>
AMDISK 2A6 3390 AUTOG 005 USER MR LABEL J062A6 PW <readpw> <writepw> <multpw>
AMDISK 2B2 3390 AUTOG 010 USER MR LABEL J062B2 PW <readpw> <writepw> <multpw>
AMDISK 2C2 3390 AUTOG 005 USER MR LABEL J062C2 PW <readpw> <writepw> <multpw>
AMDISK 2D2 3390 AUTOG 050 USER MR LABEL J062D2 PW <readpw> <writepw> <multpw>
AMDISK 491 3390 AUTOG 010 USER MR LABEL J06491 PW <readpw> <writepw> <multpw>
AMDISK 492 3390 AUTOG 005 USER MR LABEL J06492 PW <readpw> <writepw> <multpw>
AMDISK 49D 3390 AUTOG 005 USER MR LABEL J0649D PW <readpw> <writepw> <multpw>
```

- **SCSI / FBA installs – update the disk sizes based on the Program Directory**
- **Issue the command**
  `DIRM ADD 5697J06C`

Resulting Minidisk Statements in Directory Entry for 5697J06C

```
MDISK 0191 3390 <start> 010 <vol> MR <readpw> <writepw> <multpw>
MDISK 02A2 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
MDISK 02A6 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
MDISK 02B2 3390 <start> 010 <vol> MR <readpw> <writepw> <multpw>
MDISK 02C2 3390 <start> 005 <vol> MR <readpw> <writepw> <multpw>
MDISK 02D2 3390 <start> 050 <vol> MR <readpw> <writepw> <multpw>
MDISK 0491 3390 <start> 010 <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>
```

Format All Minidisks (If Not Already Formatted by DIRMAINT)

- **From MAINT620 or MAINT630, issue**

```
link 5697J06C 191 333 MR
format 333 z
release z (det
```

- **Repeat for each 5697J06C 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
  - 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 5679J06C
  - 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
  IUCV ALLOW
  IUCV *IDENT RESANY GLOBAL
  IPL CMS
  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
```

Required to use data spaces

Make Ops Mgr the secondary console

BKRSVSFS Directory Entry (continued)

- **Add required minidisks to BKRSVSFS DIRECT – do not have DIRMAINT format them**

```
AMDISK 191 3390 AUTOG 002 USER W PW <readpw> <writepw> <multpw>

AMDISK 250 3390 AUTOG 080 USER R PW <readpw> <writepw> <multpw>

AMDISK 405 3390 AUTOG 010 USER R PW <readpw> <writepw> <multpw>
AMDISK 406 3390 AUTOG 010 USER R PW <readpw> <writepw> <multpw>

AMDISK 260 3390 AUTOG 050 USER R PW <readpw> <writepw> <multpw>

AMDISK 310 3390 AUTOG 750 USER R PW <readpw> <writepw> <multpw>
AMDISK 311 3390 AUTOG 750 USER R PW <readpw> <writepw> <multpw>
AMDISK 312 3390 AUTOG 750 USER R PW <readpw> <writepw> <multpw>
AMDISK 313 3390 AUTOG 750 USER R PW <readpw> <writepw> <multpw>
```

Work disk

Control disk

Repository log disks

Initial catalog disk

User data disks

- **SCSI / FBA installs – update the disk sizes by multiplying by 1440**

BKRSVSFS Directory Entry (continued)

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

- **Turn of minidisk cache for some minidisks**
  ```
  DIRM FOR BKRSVSFS MINIOPT 250 NOMDC
  DIRM FOR BKRSVSFS MINIOPT 405 NOMDC
  DIRM FOR BKRSVSFS MINIOPT 406 NOMDC
  ```

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 5697J06C
ADMIN BKRADMIN
ADMIN BKRBKUP
ADMIN BKRCATLG
ADMIN BKRWRK01
ADMIN BKRWRK02
ADMIN BKRWRK03
ADMIN BKRWRK04
ADMIN xxxxxxxx
NOBACKUP
FILEPOOLID BKRSFS
NOCRR
NOLUNAME
SSI
SAVESEGID CMSFILES
USERS 700
CATBUFFERS 5000
```

Any other user IDs that will be Backup Manager administrators, such as MAINT, MAINTvrm, OPMGRM1, OPMGRSn

Optional – SSI or REMOTE for SFS server supporting multiple z/VM systems in an SSI cluster or ISFC collection

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 5697J06C

- **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 5697J06C, 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 5697J06C 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.

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 5697J06C = 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 5697J06C BKUPMGR (plan nomemo
    ```

    or

    ```
    vmfins install ppf 5697J06C BKUPMGR (plan nomemo env <envfilename>
    ```
  - Review for errors

    ```
    vmfview install
    ```

Create Directory Entries for All Required Users

- **Use directory entry samples provided in 5697J06C PLANINFO**
  - Located on 191 disk of MAINT620 or MAINT630
- **Note - 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 5697J06C 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
    - Add a minidisk entry to BKRADMIN DIRECT

```
AMDISK 191 3390 AUTOG 005 USER MR LABEL ADM191 PW <readpw> <writepw> <multpw>
```

    - Create directory entry

```
DIRM ADD BKRADMIN
```

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 and SUBCONFIG statements
      - Add AMDISK statements for BKRBKUP 198 disk and make it RR
    - Create directory entry

```
DIRM ADD <userid>
```

Create Directory Entries for Multiconfiguration Users

- **Create subconfig entries for BKRBKUP, BKRCATLG, BKRWRKnn**
  - From MAINT620 or MAINT630
    - Create file: <userid-1> DIRECT
      - Add the SUBCONFIG statement from the sample <userid> DIRECT file
      - Add AMDISK statements for each remaining minidisk
      - Note that the BKRBKUP 591 and 592 disks should be RR
      - 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 on this member for each user ID
    - BKRBKUP, BKRCATLG, BKRWRKnn
  - Repeat for SUBCONFIG entries on each member of the cluster

Add Minidisks to Multiconfiguration Users If Not Already Added in Directory Entries

- **To 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)
- **On this member of the cluster**
  - Repeat for each BKRBKUP, BKRCATLG, and BKRWRKnn minidisk defined in the table in topic 5.3 of the Program Directory
- **Repeat minidisk creation on other members of the cluster**

Format All Minidisks If Not Formatted via Directory Entry

- **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
- **Repeat for other members of the cluster**

IBM Software

Installing using VMSES/E

Initial VMSES/E Install

- **From 5697J06C**
  - Update the PROFILE EXEC

```
xedit profile exec a
```

    - Add/update 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 5697J06C 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 5697J06C BKUPMGR (nomemo nolink env <envfilename>
```

Initial VMSES/E Install (continued)

- Review for errors

  ```
  vmfview install
  ```

- Update Build Status Table

  ```
  vmfins build ppf 5697J06C BKUPMGR (serviced nolink
  ```

- Review for errors

  ```
  vmfview install
  ```

- Do **not** copy to production yet
  - We will do this later after service has been applied

Prepare for Service

- **From MAINT620 or MAINT630**
  - Confirm MAINT 51D is accessed read/write
  - Issue
    `VMFSUFTB`
  - Issue
    `VMFUPDAT SYSPINV PROD 5697J06C` *`membername1 {membername2 ..}`*

Where Code is Installed for Configuration and Testing

Disk on 5697J06C	Description
2C2	**Sample files**
491 **BKRBKUP 591**	**Test and production service machine executables for** –BKRBKUP –BKRCATLG –BKRWRKxx
492 **BKRBKUP 592** **MAINT 19E**	**Test and production end user and administrator executables**
SFS directory	**Backup job templates and DISKPOOL files (not used during installation so still considered “installing on minidisks”)**
49D **MAINT 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**

IBM Software

Install All Available Service

Install All Available PTFs (COR Service)

- **Order/obtain all PTFs available for Backup Manager V1.3**
- **If installing from envelopes**
  - Place them on MAINTnnn 500 disk
  - From MAINT620 or MAINT630
    `ACC 500 C`
  - If each PTF is in tersed format (from IBMLINK), issue:
    `DETERSE <fn> <ft> C <fn> SERVLINK C`
  - If each PTF is in VMARC format, issue:
    `VMARC UNPK <fn> <ft> C <fn> SERVLINK C`

Install All Available PTFs (COR Service) …

- **From MAINT620 or MAINT630**
  - Confirm MAINT 51D is accessed read/write
  - Repeat the following as needed for each PTF
    - If installing from tape
      - Mount installation tape at virtual address 181
      - Issue
        ```
        service 5697J06C%bkupmgr
        ```
    - If installing from an envelope
      - Issue
        ```
        access 500 c
        ```
      - Issue
        ```
        service 5697J06C%bkupmgr <ptf number>
        ```

Copy Code to Production Disks

- **Copy code from installation/test disk to production disk**
- **From MAINT620 or MAINT630**

```
link 5697J06C 491 491 rr
acc 491 e
link BKRBKUP 591 591 mr
acc 591 f
vmfcopy * * e = = f (prodid 5697J06C%BKUPMGR olddate replace
link 5697J06C 492 492 rr
acc 492 e
link BKRBKUP 592 592 mr
acc 592 f
vmfcopy * * e = = f (prodid 5697J06C%BKUPMGR olddate replace
```

Copy Code to Production Disks (continued)

- Copy user code from installation disk to Y disk (MAINTnnn 19E) – strongly suggested to simplify access to code
  - Logon to MAINTnnn

```
link 5697j06c 492 492 rr
acc 492 e
link MAINTnnn 19e 19e mr
acc 19e f
vmfcopy * * e = = f2 (prodid 5697J06C%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 (MAINTnnn 19D)

```
link 5697j06c 49d 949d rr
acc 949d e
link MAINTnnn 19d 19d mr
acc 19d f
vmfcopy * helpabkr e = = f2 (prodid 5697J06C%BKUPMGR olddate replace
vmfcopy abkr helpmenu e = = f2 (prodid 5697J06C%BKUPMGR olddate replace
```

- Repeat on other members of the cluster
- **Do not** reload CMS saved system or help segment. We’ll do this later.

IBM Software

Configuring

Define Backup Mgr Servers as ADMINs for VMSYS: file pool

- **Logon to VMSERVS (user ID that owns the VMSYS: file pool)**
- **Shut it down**
  `stop`
- **Add BKRBKUP and all BKRWRKnn user IDs as ADMINs in the file VMSERVS DMSPARMS on the A-disk**
- **Restart the VMSERVS service machine**
  `profile`

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 5697J06C, issue

```
enroll public bkrsfs:
```

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** (CP FORCE) ➢ **Privilege Class B** (CP MSGNOH) ➢ **Privilege Class D** (CP PURGE) ➢ Admin authority to VMSYS: filepool
BKRCATLG	➢ **Privilege Class G** ➢ **Privilege Class B** (CP MSGNOH) **Privilege Class E** (determine z/VM SSI status through CP DIAG 2CC) ➢ **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) ➢ **OPTION DEVMAINT** (if you plan to back up DASD volumes (vs minidisks) ➢ ***OPTION LNKSTABL*** *(if you want to link disks in STABLE mode during a backup)*

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRADMIN**
  - From 5697J06C

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

  - Change

```
Job_Templates = ‘199’
```

    to

```
Job_Templates = ‘BKRSFS:BKRADMIN.JOBDEFS’
```

  - Save and exit

```
file
rel z (det
```

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRCATLG**
  - From 5697J06C

```
link bkrcatlg 191 292 mr
acc 292 z
acc 2c2 e
copy catprof sampexec e profile exec z
xedit profile exec z
```

  - Change

```
Job_Templates = ‘199’
```

    to

```
Job_Templates = ‘BKRSFS:BKRADMIN.JOBDEFS’
```

  - Save and exit

```
file
rel z (det
```

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRBKUP**
  - From 5697J06C

```
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’`

```
file
rel z (det
```

Create PROFILE EXECs for Test Service Machines

- **PROFILE EXEC for BKRWRK01**
  - From 5697J06C

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

  - Change

```
Job_Templates = ‘199’
```

    to

```
Job_Templates = ‘BKRSFS:BKRADMIN.JOBDEFS’
```

  - Save and exit

```
file
```

Create PROFILE EXECs for Test Service Machines

- **Copy to BKRWRK02 (no changes needed for each worker)**

```
link bkrwrk02 191 392 mr
acc 392 x
copy profile exec z = = x
rel x (det
```

- **Repeat for BKRWRK03 and BKRWRK04**
- **Release and detach BKRWRK01 191 disk**

```
rel z (det
```

Define Special Users to Backup Manager

- **From 5697J06C**

```
link bkrbkup 198 198 mr
access 198 z
access 2c2 e
copy bkrusers namesamp e = names z
xedit bkrusers names z
```

  - Authorize additional users as Administrators, as required by your site:
    - System programmer user IDs
    - MAINT620
    - MAINT630
    - Operations Manager servers if you plan to have Operations Manager submitting backup jobs as part of automation
      - OPMGRM1
      - OPMGRS1
      - OPMGRS2
      - OPMGRS3
      - OPMGRS4
  - File to save changes and exit

Update the Configuration File: BKRSYSTM CONFIG

- **From 5697J06C**

```
link bkrbkup 198 198 mr
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

Update Backup Manager to Work with Tape Manager

- **If you are using Tape Manager:**
  - See the last section of Chapter 2 of the Backup Manager Administration Guide for full details
  - If you followed the Tape Manager verification steps from the Tape Manager Admin Guide:
    - Most steps are already done
    - Update BKRSYSTM CONFIG to reflect Tape Manager pool already defined:

```
Tape_Handled_Via_EUM =1
EUM_Pool_Owner = BKRADMIN
EUM_Pool_Name = BKRPOOL
```

Update Backup Manager to Work with Tape Manager

- **If you are using an ATL or VTS for tapes**
  - Decrease the polling/delay interval from 60 seconds to 10 seconds
  - Increase the times to poll from 15 to 60
  - This will cause Backup Manager to detect a mounted tape faster

```
Tape_Delay_Interval = +00:00:60
Tape_Times_To_Poll  = 15
```

- **Confirm Tape Manager user code is on MAINT 19E**
- **Give Backup Manager servers required access to Tape Manager**

```
TAPCMD POOLACC BKRADMIN BKRPOOL USER BKRADMIN BKRBKUP BKRCATLG TAPE
TAPCMD POOLACC BKRADMIN BKRPOOL USER BKRWRK01 BKRWRK02 BKRWRK03 BKRWRK04 TAPE
```

Make the Configuration Files Available

- **Copy BKRUSER NAMES and BKRSYSTM CONFIG to a shared disk**
  - Recommended
    - From MAINT620 or MAINT630

```
link bkrbkup 198 333 rr
access 333 e
link maint<i>nnn</i> 19e 19e mr
access 19e f
vmfcopy bkrusers names e = = f2 (prodid 5697J06C%BKUPMGR olddate replace
vmfcopy bkrsystm config e = = f2 (prodid 5697J06C%BKUPMGR olddate replace
```

      - Note: Copy as filemode number 2.
      - **See next page for reloading the CMS saved system**
  - Alternative
    - From 5697J06C

```
Link bkrbkup 198 198 rr
access 198 z
access 592 f
copy bkrsystm config z = = f
copy bkrusers names z = = f
```

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 19D disk (during installation and/or service)**
  Does not apply to z/VM V6.3 systems
  - Rebuild CMS HELP logical saved segment (from files on 19D)
    - From MAINT620
      `put2prod segments helpseg`
- **Logoff MAINT*vrm***

Configuring Other Members of the Cluster

- **Repeat pages 42 and 46-55 for all other members of the cluster**
  - Copy or send PROFILE EXECs from the first member to other members

Create Backup Job to Test

- **Because we will store the backup job definition in SFS, we only need to define the SFS server and file pool once**
  - All members of the cluster will be able to see it
  - Our SFS server is visible across the cluster
  - By storing backup templates in SFS, multiple admins can access the files in read/write mode at the same time
    - Only one user can update a file at any one time, of course
- **Use a shipped sample backup job template as a model**

Create Backup Job to Test

- **From your system programmer ID, BKRADMIN, MAINT620 or MAINT630, issue**

```
link 5697J06c 2c2 2c2 rr
access 2c2 e
access bkrsfs:bkradmin.jobdefs z (forcerw
copy sampfull tempsamp e testbkup template z
xedit testbkup template z
```

Customize the Backup Job: TESTBKUP

- **Choose local options**
  - To increase the number of workers based on the number of items to back up, change 1 to 2, 3, or 4

```
CONFIG BKR_JOB_WORKERS = 1
```

  - Change the job name from SAMPULL to TESTBKUP

```
CONFIG BKR_JOB_NAME = SAMPFULL
```

  - If you are not currently logged onto BKRADMIN, change $$ADMIN$$ to the user ID to which you are currently logged on or to always send the console to the job submitter change $$ADMIN$$ to $$SUBMITTER$$

```
CP_Command SPOOL CONSOLE TO $$ADMIN$$ …
```

  - Many other options available
    - See job statements and comments in SAMPFULL TEMPSAMP

Customize the Backup Job: TESTBKUP

- **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 BACKUP DISKPOOL *
```

      - And add this statement

```
Config BKR_Job_Tolerate_Diskpool_Depletion = Yes
```

      - We'll add minidisks later as the target of the backup

Customize the Backup Job: TESTBKUP

- **Update INCLUDE and EXCLUDE statements**
  - Remove all entries except the following

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

  - Modify this entry to include only a single user ID and minidisk or a small number of user IDs and minidisks using wildcards
    - For example, the following line includes all minidisks owned by TCPMAINT where the virtual device address starts with 019

```
Include Minidisk TCPMAINT  =  019*  *  *  =  *  = *  =  *  *
```

  - Duplicate this line to add additional user IDs or minidisks as desired for a small test
- **Notes**
  - If you add or modify statements that provide a virtual device address be sure to include leading wildcards or leading zeroes
    - z/VM and Backup Manager work with 4-digit virtual device addresses
  - If you specify a value for the size of the minidisk, be sure you are using cylinders for ECKD volumes and blocks for SCSI/FBA volumes
- **FILE to save changes**

Create a Disk Pool to Which Backup Data Will be Written

- **If backing up to disk (not tape) …**
- **Create a new file BACKUP DISKPOOL on the job templates disk, currently accessed as Z**
  - Reminder that this is the SFS directory BKRSFS:BKRADMIN.JOBDEFS
  - In the file add only these statements

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

Create a Disk Pool to Which Backup Data Will be Written

- **If backing up to disk (not tape) …**
- **From MAINT620 or MAINT630**
  - Create a CP directory entry for the new user ID BKUPDISK
    - Define as a single configuration user (USER)
    - No special privilege classes – G is sufficient
  - Add the minidisks as specified on previous page
    - Add more minidisks as desired
    - Minidisks must contain enough room for multiple copies of backup data
  - Format each minidisk if not already done by DIRMAINT
  - This user should never logon – you can make it NOLOG in its directory entry

Configuration is Complete

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

Verifying

Start Backup Manager Service Machines

- **Start on one member of the cluster**
  - Once it's working, move to other members
- **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, MAINT620, MAINT630 or your systme programmer ID, issue

    ```
    smsg bkrbkup review testbkup
    ```

  - Review files returned to your reader
    - `TESTBKUn 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 testbkup
    ```

  - 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

      ```
      VIEWCON BKRWRKxx
        or
      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/products/en/backup-restore-manager-for-zvm
    - 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)