IBM Z Software

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

VMSES/E Installation, SFS Setup, and Initial Configuration on z/VM V7.2, or later

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Agenda

- **Assumptions**
- **Creating an SFS server**
- **Installing product code and PTFs**
- **Creating the operational environment**
- **Completing the SFS steps**
- **Completing the configuration**
- **Creating a sample job and target disk pool**
- **Verifying installation and configuration**
- **References**

Assumptions

- **Installing V1.3 of Backup and Restore for z/VM**
- **Installing on z/VM V7.2 or later**
  - Standalone system, or an SSI cluster
- **INSTPROD tool has been downloaded from the z/VM Downloads website and installed on the z/VM system**
  - Be sure you have the one dated **November 19, 2021**, or later
- **DIRMAINT is installed for directory management**
  - MAINT7n0 is authorized to issue AMDISK commands
  - AUTOG is available for group USER for minidisk definitions
  - Sample directory entries are show if DIRMAINT is installed
- **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 for z/VM at: https://www.ibm.com/products/compiler-and-library-for-rexx-on-ibm-z/resources
- **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 OPERATOR**
- **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**
- **If you are also installing Tape 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
  - See installation hints/tips here: https://www.ibm.com/support/pages/hints-and-tips-installing-rexx-library-use-ibm-tape-manager-zvm-and-ibm-backup-and-restore-manager-zvm
  - Install on each member of the cluster
- **More information about running Backup and Restore Manager in an SSI environment:** https://www.ibm.com/support/pages/node/482397
- **More hints and tips for installing Backup and Restore Manager:** https://www.ibm.com/support/pages/hints-and-tips-installing-ibm-backup-and-restore-manager-zvm

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Create SFS Server

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)
  - Reference: Hints and tips for managing SFS:
    - http://www.ibm.com/support/docview.wss?uid=swg21997170

Create New SFS Server: BKRSVSFS

- **From MAINT7n0, 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 128M 128M 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 add the LABEL option to have DIRMAINT format them**

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

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

```
AMDISK 405 3390 AUTOG 010 USER R PW <readpw> <writepw> <multpw>
AMDISK 406 3390 AUTOG 010 USER R PW <readpw> <writepw> <multpw>
```
Repository log disks

```
AMDISK 260 3390 AUTOG 400 USER R PW <readpw> <writepw> <multpw>
```
Initial catalog disk

```
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>
```
User data disks

- **SCSI / FBA installs – update the disk sizes by multiplying by 1440**
- **If you are a traditional CMS user with many minidisks and CMS files (beyond those on a z/VM system that is hosting Linux), you will need to increase the catalog and user data disks above.**

BKRSVSFS Directory Entry (continued)

- **Issue the command**

```
DIRM ADD BKRSVSFS
```

- **Turn off 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> W <readpw> <writepw> <multpw>
MDISK 0250 3390 <start> 080 <vol> R <readpw> <writepw> <multpw>
MINIOPT NOMDC
MDISK 0405 3390 <start> 010 <vol> R <readpw> <writepw> <multpw>
MINIOPT NOMDC
MDISK 0406 3390 <start> 010 <vol> R <readpw> <writepw> <multpw>
MINIOPT NOMDC
MDISK 0260 3390 <start> 400 <vol> R <readpw> <writepw> <multpw>
MDISK 0310 3390 <start> 750 <vol> R <readpw> <writepw> <multpw>
MDISK 0311 3390 <start> 750 <vol> R <readpw> <writepw> <multpw>
MDISK 0312 3390 <start> 750 <vol> R <readpw> <writepw> <multpw>
MDISK 0313 3390 <start> 750 <vol> R <readpw> <writepw> <multpw>
```

Initial SFS Server Setup: BKRSVSFS

- **Logoff MAINT7n0**
- **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, MAINT7n0

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`

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Install Backup and Restore Manager for z/VM

Prepare for VMSES/E Installation

- **From MAINT7n0**
  - Have SERVLINK envelope available on the MAINT7n0 500 disk

```
acc 500 c
```

  - Unpack the VMARC file

```
vmarc unpk <envfilename> vmarc c = = c
```

    Or
  - Unpack the SERVLINK file

```
deterse <envfilename> servlink c 5697J06C = c
```

Set Up INSTPROD for Backup and Restore Manager Installation

- **From MAINT7n0**
- **Set up INSTPROD options**

```
INSTPROD SELECT
INSTPROD INITIALIZE
```

- **Select Backup and Restore Manager**
  - Fill in the name of the SERVLINK file you uploaded to the MAINT7n0 500 disk
  - Choose other options as required for your system regarding Dirmaint
    - Use DirMaint?: YES
    - DirMaint allocation: AUTOG
    - Common allocation name: *specify the appropriate name from your EXTENT CONTROL file for minidisks that are common across the SSI cluster*
    - Member n allocation name: *specify the appropriate name from your EXTENT CONTROL file for minidisks that are unique to each member of the SSI cluster*
  - Press ENTER to validate your entries
  - Press F5 to process/continue

Create Installation ID

- **From MAINT7n0**
- **Continue with INSTPROD**

```
INSTPROD PLAN
INSTPROD BUILDINSTALL
```

- **Update the draft directory entry created**

```
XEDIT 5697J06C DIRECT
```

- **Change the password according to your site policies**
- **Save and exit**

```
FILE
```

- **Run the EXEC created by INSTPROD to add the installation ID to your system and format the disks**

```
$DIRMADD
INSTPROD FORMATINSTALL
```

Install Backup and Restore Manager Code

- **From MAINT7n0**
- **Continue with INSTPROD**

```
INSTPROD INSTALL
```

- **The base code is now installed**

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Install All Available Service

Install All Available PTFs (COR Service)

- **Order/obtain all PTFs available for Backup Manager V1.3**
  - If you obtained the Backup Manager base code after November 13, 2020, all PTFs through UI70973 are preinstalled
  - Obtain all PTFs after UI70973
  - If you obtain the PTFs from Shopz in one order, it will arrive as one file, so you only need to install this single cumulative PTF
- **Installing from envelopes**
  - Place them on MAINT7n0 500 disk
  - From MAINT7n0
    ```
    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 MAINT7n0**
  - Confirm MAINT 51D is accessed read/write
  - Repeat the following as needed for each PTF
    Note: Be sure to install them oldest to newest (or lowest PTF number first and highest PTF number last)
    - Installing from an envelope
      - Issue
        `access 500 c`
      - Issue
        `service 5697J06C%bkupmgr <ptf number>`

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Create the Operational Environment

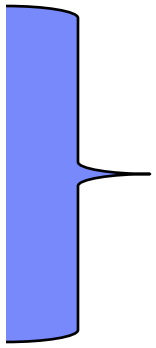
Create Backup and Restore Manager Service Machines

- **From MAINT7n0**
- **Continue with INSTPROD**

```
INSTPROD BUILDPRODUCTION
```

- **If you specified YES for "Configure Logon-By", continue to the next page**
- **If you specified NO for "Configure Logon-By", update the draft directory entries to change the password according to your site policies:**

```
BKRBKUP  DIRECT
BKRCATLG DIRECT
BKRADMIN DIRECT
BKRWRK01 DIRECT
BKRWRK02 DIRECT
BKRWRK03 DIRECT
BKRWRK04 DIRECT
BKRBKP-1 DIRECT
BKRCAT-1 DIRECT
BKRWK1-1 DIRECT
BKRWK2-1 DIRECT
BKRWK3-1 DIRECT
BKRWK4-1 DIRECT
```



For these files, repeat for each of the related entries ending in -2, -3, and -4 depending on the number of members in your SSI cluster

Install Backup and Restore Manager Code on Production Disks

- **From MAINT7n0**
- **Run the EXEC created by INSTPROD to add the Backup and Restore Manager service machines to your system**

```
$DIRMADD
```

- **Format the disks**

```
INSTPROD FORMATPRODUCTION
```

- **Copy the code to the production disks**
  - Note: IBM recommends copying code to MAINT 19E and 19D

```
INSTPROD PUT2PROD
```

- **Copy the product sample files to the production disks**

```
INSTPROD COPYSAMPLES
```

Copy Sample Files to Production Disks

- **If you are installing in an SSI cluster**
  - Logoff MAINT7n0
  - Repeat the following steps on each member of the cluster
    - Logon to MAINT7n0
    - Format the service machine disks

      `INSTPROD FORMATPRODUCTION`
    - Copy the code to the production disks
      - Note: IBM recommends copying code to MAINT 19E and 19D

      `INSTPROD PUT2PROD`
    - Copy the product sample files to the production disks

      `INSTPROD COPYSAMPLES`

System Access Privileges for Backup Servers

User ID	Privileges Required and *Recommended* Required settings are included in default configuration *Recommended* settings must be added manually
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
BKRWRKnn	➢ **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)*

Set Up 5697J06C

- **From any member of the cluster, logon to 5697J06C**
- **Create a PROFILE EXEC on the 191 (A) disk, containing**

```
/*  */
'ACCESS 5E5 B'
'ACCESS 51D D'
'CP SET PF11 RETRIEVE FORWARD'
'CP SET PF12 RETRIEVE'
Exit 0
```

- **Run the PROFILE**

```
profile
```

Product Installation and Default Configuration is Complete

- **All code and PTFs are installed**
- **Default configuration files are installed**
  - May be ready to use as-is
- **INSTPROD is a huge timesaver so thank Bruce Hayden next time you see him** 

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Complete the SFS Steps

Authorize Users in SFS for Backup Manager Catalog

- **Authorize service machines to space in SFS**
  - From 5697J06C or MAINnnn, 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
```

- **Give all users access to the catalog for restore requests**
  - User access is limited to catalog directories for their own data
  - From 5697J06C or MAINTnnn, issue

```
enroll public bkrsfs:
```

Define Backup Manager Servers as ADMINs for SFS file pools

- **To back up and restore files in an SFS file pool, Backup Manager must have ADMIN authority to the file pool**
  - Recommend access to these file pools included with z/VM
    - VMSYS: (managed by server VMSERVS)
    - VMPSYS: (managed by server VMSERVP)
    - VMSYSU: (managed by server VMSERVU)
    - VMSYSR: (managed by server VMSERVR)
  - Add any SFS file pools you have created
- **To back up and restore data in BFS, Backup Manager must have ADMIN authority to the VMSYS: file pool**
  - This is already covered above

Define Backup Manager Servers as ADMINs for SFS file pools

- **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`
- **Disconnect**
  `#cp disc`
- **Repeat for each SFS file pool server listed on previous page**
- **Repeat on each member of the cluster for those that are unique on each member**
  - VMPSYS is shared across the cluster so no need to repeat on each member

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Complete the Configuration Steps

Define Special Users to Backup Manager

- **From MAINT7n0**

```
vmlink bkrbkup 198 (w filel
xedit bkrusers names
```

  - Authorize additional users as Administrators, as required by your site:
    - System programmer user IDs
    - MAINT7n0
    - Operations Manager servers if you plan to have Operations Manager submitting backup jobs as part of automation
      - OPMGRM1
      - OPMGRS1
      - OPMGRS2
      - OPMGRS3
      - OPMGRS4
  - Save changes and exit
    `file`

- **Note: the configuration disk (BKRBKUP 198) is shared across the SSI cluster, so no need to repeat these steps on other members**

Update the Configuration File: BKRSYSTM CONFIG

- **Many sites can use the defaults in BKRSYSTM CONFIG**
- **At least review the file to confirm the settings**
- **From MAINT7n0**

```
vmlink bkrbkup 198 (w filel
xedit bkrsystm config
```

- **Note: the configuration file is on BKRBKUP 198 which is shared across the SSI cluster, so no need to repeat these steps on each member**

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 52,000 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:**
  - Summarized here
    - 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
    - Uncomment these lines contained in the default config file:

```
Tape_Handled_Via_EUM = EUM
EUM_Pool_Owner = BKRADMIN
EUM_Pool_Name = BKRPOOL
```

Update Backup Manager to Work with Tape Manager

- **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

- **File and save the changes to BKRSYSTM CONFIG**
- **Copy BKRUSER NAMES and BKRSYSTM CONFIG to a common disk**
  - Recommended (perform this step on each member of the cluster)
    - From MAINT7n0

```
vmlink bkrbkup 198 <* e rr>
vmlink maint 19e <* f mr>
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 (perform this step on each member of the cluster if you are not sharing the BKRBKUP 592 disk)
    - From 5697J06C

```
vmlink bkrbkup 198 <* z rr>
vmlink bkrbkup 592 <* f mr>
copy bkrsystm config z = = f (olddate
copy bkrusers names z = = f (olddate
```

Reload CMS Saved System if Needed

- **From MAINT7n0**
  - 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 MAINT7n0

```
put2prod savecms
```

- **Logoff MAINT7n0**
  - This will make the 19E disk changes active next time you logon
- **Repeat the above steps on <u>each member of the cluster</u>**

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Create a Backup Job and Pool of Target Disks

Create Backup Job to Test

- **Start with a sample**
- **From your system programmer ID, BKRADMIN, or MAINT7n0, issue**

```
vmlink 5697j06c 2c2 <* e rr>
vmlink bkrbkup 199 <* z mr>
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 SAMPFULL 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 BKRBKUP 199 disk
  - In the file add only these statements

```
BKUPDISK 300
BKUPDISK 310
BKUPDISK 320
BKUPDISK 330
```

Create a Disk Pool to Which Backup Data Will be Written

- **If backing up to disk (not tape) …**
- **From MAINT7n0**
  - 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
    - Minidisks must be large enough to contain the largest minidisk you plan to back up to disk
      - E.g. MAINT 19E is 500 cylinders so a file level backup of MAINT 19E requires at least one disk in diskpool to have 500 cylinders of free disk space
  - Format each minidisk if not already done by DIRMAINT
  - This user should never logon
    - You can make it NOLOG in its directory entry

See next slide for example directory entry

Sample User ID to Store Backup Data: BKUPDISK

BKUPDISK DIRECT

```
USER BKUPDISK NOLOG 128M 256M G
   ACCOUNT 5697-J06 BKR
   IPL CMS
   MACHINE ESA
   CONSOLE 0009 3215 T OPMGRM1
   SPOOL 000C 2540 READER *
   SPOOL 000D 2540 PUNCH A
   SPOOL 000E 1403 A
   AMDISK 0300 3390 AUTOG 1500 USER MR LABEL BKP300
   AMDISK 0310 3390 AUTOG 1500 USER MR LABEL BKP310
   AMDISK 0320 3390 AUTOG 1500 USER MR LABEL BKP320
   AMDISK 0330 3390 AUTOG 1500 USER MR LABEL BKP330
```

Make Operations Manager the secondary console if it's XAUTOLOGged for some reason

Replace USER with your GROUP name for AUTOG*

LABEL option will tell Dirmaint to format the disks when they are created

Create the file above then issue the command:

```
DIRM ADD BKUPDISK
```

* Dirmaint GROUP definitions are in EXTENT CONTROL file on DIRMAINT 1DF disk

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 MAINT7n0 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 MAINT7n0 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 MAINT7n0 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, MAINT7n0 or your system 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

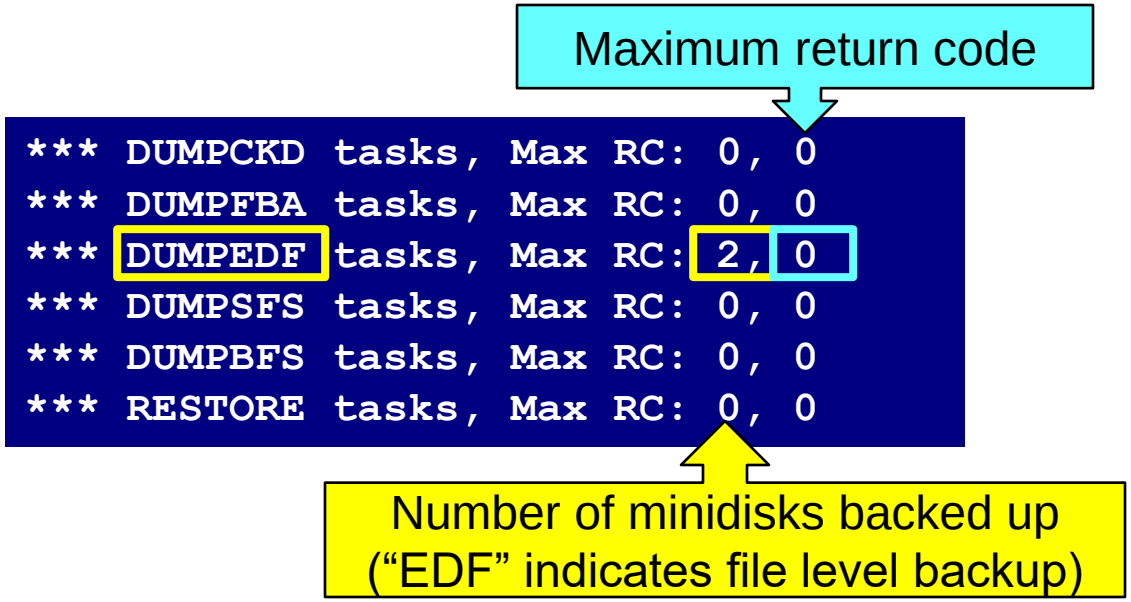
- **Submit a job and perform real backup**
  - From BKRADMIN (or other user authorized as a Backup Manager admin), issue

    ```
    smsg bkrbkup submit testbkup
    ```

  - Note the message(s) indicating which worker(s) the job went to
  - Review consoles of BKRWRKnn servers
    - If needed, authorize the user submitting the job to view backup server consoles in Operations Manager
      - Use AUTH statement
      - See Chapter 5 of Operations Manager Administration Guide
    - Issue
      - VIEWCON BKRWRKnn
        or
      - GOMCMD OPMGRM1 VIEWCON USER BKRWRKnn

Confirm Successful Job Completion

- **Summary output in the worker console:**



- **F3 to exit VIEWCON**
- **To view the content in the backup catalog, issue:**

  `BKRUSER *`

  - Notice the user IDs for whom backup data exists
  - Use cursor to select a user and press F11
  - Continue "drill down" via F11 to see more details
  - Request a restore via F10

Backup and Restore Manager is Up and Running

- **Major task is SFS setup**
  - Especially if you aren't familiar with SFS
    - Hints and tips for managing SFS: http://www.ibm.com/support/docview.wss?uid=swg21997170
- **INSTPROD makes remaining tasks simpler**
  - Creation of installation ID and service machines
  - VMSES/E installation of the code
  - Configuration
    - 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

Where Code is Installed for Configuration and Testing

Disk	Description
5697J06C 2C2	**Sample files**
5697J06C 491 **BKRBKUP 591**	**Test and production service machine executables for** –BKRBKUP –BKRCATLG –BKRWRKnn
5697J06C 492 **BKRBKUP 592** **MAINT 19E**	**Test and production end user and administrator executables**
BKRSFS: **file pool**	**Backup Manager catalog (does not contain code and not used during installation so still considered “installing on minidisks”)**
5697J06C 49D **MAINT 19D**	**Help files**
BKRBKUP 198 **MAINT 19E**	**Configuration files (BKRSYSTM CONFIG, BKRUSERS NAMES)**
BKRBKUP 199	**Backup job templates**

References and More Information

- **Backup and Restore Manager for z/VM Web site**
  - https://www.ibm.com/products/backup-and-restore-manager-for-zvm
  - Publications
  - White papers
  - Support
- **e-mail: Tracy Dean, tld1@us.ibm.com**
- **Publications**
  - CMS File Pool Planning, Administration, and Operation
  - Directory Maintenance Facility Commands Reference
  - 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)

धन्यवाद

Hindi

多謝

Traditional

감사합니다

Korean

Спасибо

Russian

Ndzi khense ngopfu

Tsonga

Gracias

Spanish

Thank You

English

Obrigado

Brazilian Portuguese

شكرا

Arabic

Grazie

Italian

Danke

German

多谢

Simplified Chinese

Ke a leboha

Tswana

Merci

French

நன்றி

Tamil

ありがとうございました

Japanese

ขอบคุณ

Thai