



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 V6.4 or later

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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**
- **Installing on z/VM V6.4 or later**
 - Standalone system, or an SSI cluster
- **DIRMAINT is installed for directory management**
 - MAINT640 or MAINT710 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>
- **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 MAINT 19E to simplify access to it
 - If on MAINT 19E, make sure all files have filemode number of 2 (not the default of 1)
 - Required for loading into the CMS saved segment (via PUT2PROD SAVECMS)
 - Repeat on each member of the cluster
- **More information about running Backup and Restore Manager in a z/VM V6.4 or later environment:**

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



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Preparing to Install

Create installation ID

Create an SFS server

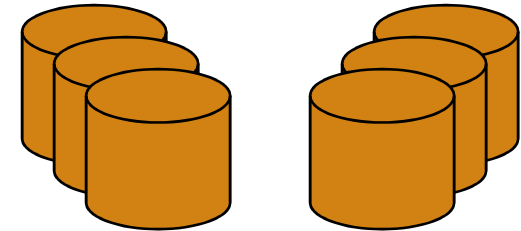
Prepare system for VMSES/E installation

Define the Installation ID: 5697J06C

- **From MAINT640 or MAINT710**
 - 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 GBLK4K 010 USER MR LABEL J06191 PW <readpw> <writepw> <multpw>
AMDISK 2A2 3390 GBLK4K 005 USER MR LABEL J062A2 PW <readpw> <writepw> <multpw>
AMDISK 2A6 3390 GBLK4K 005 USER MR LABEL J062A6 PW <readpw> <writepw> <multpw>
AMDISK 2B2 3390 GBLK4K 010 USER MR LABEL J062B2 PW <readpw> <writepw> <multpw>
AMDISK 2C2 3390 GBLK4K 005 USER MR LABEL J062C2 PW <readpw> <writepw> <multpw>
AMDISK 2D2 3390 GBLK4K 050 USER MR LABEL J062D2 PW <readpw> <writepw> <multpw>
AMDISK 491 3390 GBLK4K 010 USER MR LABEL J06491 PW <readpw> <writepw> <multpw>
AMDISK 492 3390 GBLK4K 005 USER MR LABEL J06492 PW <readpw> <writepw> <multpw>
AMDISK 49D 3390 GBLK4K 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 MAINT640 or MAINT710, 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)
- Reference: Hints and tips for managing SFS:
 - <http://www.ibm.com/support/docview.wss?uid=swg21997170>

Create New SFS Server: BKRSVSFS

- From MAINT640 or MAINT710, 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>
```

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 050 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**

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> 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 MAINTnn0**
- **Logon to BKRSVSFS**
- **Format 191 disk**
 - From BKRSVSFS, issue
- **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**

```
/* */  
'ACCESS 5E5 B'  
'ACCESS 51D D'  
'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, MAINT640, MAINT710, 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 MAINT640 or MAINT710**

- Have SERVLINK envelope available on the MAINTnn0 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 env <envfilename>
```

- **Obtain planning info**

```
vmfins install ppf 5697J06C BKUPMGR (plan nomemo env <envfilename>
```

- **Review for errors**

```
vmfview install
```

- **If you are editing USER DIRECT directly**

```
acc 2cc
```

Create Directory Entries for All Required Users

- **Use directory entry samples provided in 5697J06C PLANINFO**
 - Located on 191 disk of MAINTnn0
- **Note - list of basic steps to create directory entries and add minidisks is on next 2 pages**
- **From MAINT640 or MAINT710, 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 MAINT640 or MAINT710

- 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 MAINT640 or MAINT710, 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
 - Add T OPMGRM1 to CONSOLE statement so Operations Manager can monitor the console of each service machine
 - Create directory entry

```
DIRM ADD <userid>
```

Create Directory Entries for Multiconfiguration Users

- **Create subconfig entries for BKRBKUP, BKRCATLG, BKRWRKnn**
 - From MAINT640 or MAINT710
 - 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
 - For example:

```
DIRM ADD <userid-1> BUILD ON <nodeid> IN <userid>
```
 - 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 MAINT640 or MAINT710

```
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 MAINT640 or MAINT710, 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 for those disks listed in SUBCONFIG entries for BKRBKUP, BKRCATLG and BKRWRKnn**



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Installing using VMSES/E

Initial VMSES/E Install

- **From 5697J06C**

- Installing from an envelope

- Access the product code on the MAINT640 or MAINT710 500 disk

```
link maintnn0 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 MAINT640 or MAINT710**
 - 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 <ul style="list-style-type: none">-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 envelope**
- **Standard install commands used by most z/VM products**
- **This was the easy part**



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Install All Available Service

Install All Available PTFs (COR Service)

- **Order/obtain all PTFs available for Backup Manager V1.3**
- **Installing from envelopes**
 - Place them on MAINTnn0 500 disk
 - From MAINT640 or MAINT710
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 MAINT640 or MAINT710**
 - Confirm MAINT 51D is accessed read/write
 - Repeat the following as needed for each PTF
 - 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**
 - Do **not** use PUT2PROD since we have not yet copied the full code to production
- **From MAINT640 or MAINT710**

```
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 (MAINTnn0 19E) – strongly suggested to simplify access to code

- Logon to MAINTnn0

```
link 5697j06c 492 492 rr
acc 492 e
link MAINTnn0 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 (MAINTnn0 19D)

```
link 5697j06c 49d 949d rr
acc 949d e
link MAINTnn0 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
 - Copy to 591 and 592 on each member if those disks are unique on each member
 - Copy to 19E on each member
- **Do not** reload CMS saved system or help segment. We'll do this later.



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Configuring

Define Backup Manager Servers as ADMINS for VMSYS: file pool

- **Logon to VMSEKVS (user ID that owns the VMSYS: file pool)**
- **Shut it down**
`stop`
- **Add BKRBKUP and all BKRWRKnn user IDs as ADMINS in the file VMSEKVS DMSPARMS on the A-disk**
- **Restart the VMSEKVS service machine profile**
- **Disconnect**
`#cp disc`
- **Repeat on each member of the cluster**

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 <i>Recommended</i>
BKRADMIN	<ul style="list-style-type: none"> ➤ OPTION LNKNOPAS (or equivalent, such as RACF OPERATIONS) ➤ Privilege Class G ➤ Privilege Class B (for CP MSGNOH)
BKRBKUP	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ➤ 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	<ul style="list-style-type: none"> ➤ 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 <i>STABLE</i> 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 (olddate
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

- **On each member of the cluster, create PROFILE EXEC for BKRCATLG**

- **From 5697J06C**

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

- **On each member of the cluster, create PROFILE EXEC for BKRBKUP**

- **From 5697J06C**

```
link bkrbkup 191 292 mr
acc 292 z
acc 2c2 e
copy mastprof sampexec e profile exec z (olddate
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

- **On each member of the cluster, create PROFILE EXEC for BKRWRK01**

- **From 5697J06C**

```
link bkrwrk01 191 292 mr
acc 292 z
acc 2c2 e
copy wrkprof sampexec e profile exec z (olddate
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 (olddate
rel x (det
```

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

```
rel z (det
```

- **Repeat the above steps on each member of the cluster**

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 (olddate
```

```
xedit bkrusers names z
```

- Authorize additional users as Administrators, as required by your site:

- System programmer user IDs

- MAINT640

- MAINT710

- 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

- **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: BKRSYSTEM CONFIG

- **The configuration file is on BKRBKUP 198 which is shared across the SSI cluster, so no need to repeat these steps on each member**
- **From 5697J06C**

```
link bkrbkup 198 198 mr
```

```
access 198 z
```

```
access 2c2 e
```

```
copy bkrsystem confsamp e = config z (olddate
```

```
xedit bkrsystem config z
```

Update the Configuration File: BKRSYSTEM 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:**

- 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 BKRSYSTEM 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

- **File and save the changes**
- **Copy BKRUSER NAMES and BKRSYSTEM CONFIG to a shared disk**
 - Recommended (perform this step on each member of the cluster)
 - From MAINT640 or MAINT710

```
link bkrbkup 198 333 rr
access 333 e
link maintnn0 19e 19e mr
access 19e f
vmfcopy bkrusers names e = = f2 (prodid 5697J06C%BKUPMGR olddate replace
vmfcopy bkrsystem 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

```
link bkrbkup 198 198 rr
access 198 z
link bkrbkup 592 592 rr
access 592 f
copy bkrsystem config z = = f (olddate
copy bkrusers names z = = f (olddate
```

Reload CMS Saved System if Needed

- **Perform the following steps on each member of the cluster if you added code to MAINT640 or MAINT710 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 MAINT640 or MAINT710
`put2prod savecms`
- **Logoff MAINTnn0**

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, MAINT640, or MAINT710, 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 MAINT640 or MAINT710**
 - 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

Configuration is Complete

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





IBM Software

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 MAINT640 or MAINT710 issue

```
cp xautolog bkrcatlg
cp msg 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 MAINT640 or MAINT710 issue

```
cp xautolog bkrbkup
cp msg 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 MAINT640 or MAINT710 issue

```
cp xautolog bkrwrk01
cp msg 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, MAINT640, MAINT710 or your system programmer ID, issue

```
msg 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

```
msg 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)