

**VELOCITY**  
**S O F T W A R E**

## CMS Shared File System Usage and Administration

Richard Smrcina  
[rich@velocitysoftware.com](mailto:rich@velocitysoftware.com)  
Velocity Software, Inc  
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Velocity Software, Inc.  
[info@velocitysoftware.com](mailto:info@velocitysoftware.com)

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Introduction to SFS

Disk Allocation

Filepool Configuration

Accessing the pool

Authorization

Space management

Backup and Recovery

Byte File System

Management Tools

Makes pools of disk space available

Access controls at file level

One writer/Multiple readers

Hierarchical directory structure

Each user is allocated space in the pool

Provides storage for Byte File System (bfs)

## Sample directory entry

'A' disk for pool definition files and optionally backup

Control minidisk maps the space in the filepool

Log disks help maintain the integrity of the filepool and provide a rollback mechanism

Catalog keeps track of files and directories and access control information for them

Data disk(s) provide storage for end user data

```
IDENTITY VMSYSVPS VELOCITY 96M 96M BG
INCLUDE IBMDFLT
BUILD ON VSIVM5 USING SUBCONFIG SFSVPS-1
IPL CMS
IUCV ALLOW
IUCV *IDENT RESANY GLOBAL
MACH XC
OPTION MAXCONN 200 APPLMON ACCT QUICKDSP SVMSTAT
SHARE ABS 3%
LINK MAINT 0193 0193 RR
*
SUBCONFIG SFSVPS-1
MDISK 0191 3390 3331 0030 VM5W01 MR
*Control
MDISK 0301 3390 3361 0020 VM5W01 WR
*Logging
MDISK 0302 3390 3381 0010 VM5W01 WR
MDISK 0303 3390 3391 0010 VM5W01 WR
*Catalog
MDISK 0304 3390 3401 0010 VM5W01 WR
*DATA
MDISK 0305 3390 3411 0450 VM5W01 MR
```

## Mapping minidisks into the filepool

### POOLDEF file

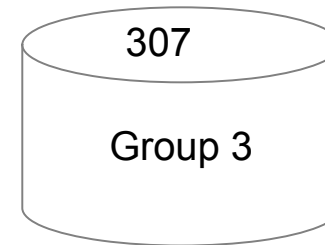
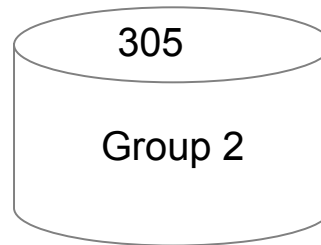
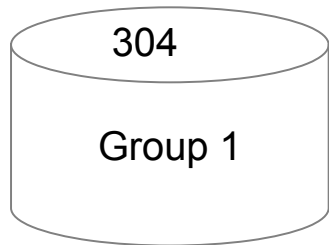
```
MAXUSERS=500
MAXDISKS=500
DDNAME=CONTROL VDEV=301
DDNAME=LOG1 VDEV=302
DDNAME=LOG2 VDEV=303
DDNAME=BACKUP DISK FN=CONTROL FT=BACKUP FM=A
DDNAME=MDK00001 VDEV=304 GROUP=1
DDNAME=MDK00002 VDEV=305 GROUP=2
```

```
MDISK 0191 3390 3331 0030 VM5W01 MR
*Control
MDISK 0301 3390 3361 0020 VM5W01 WR
*Logging
MDISK 0302 3390 3381 0010 VM5W01 WR
MDISK 0303 3390 3391 0010 VM5W01 WR
*Catalog
MDISK 0304 3390 3401 0010 VM5W01 WR
*DATA
MDISK 0305 3390 3411 0450 VM5W01 MR
```

## Grouping minidisks

### POOLDEF file

```
MAXUSERS=500
MAXDISKS=500
DDNAME=CONTROL  VDEV=301
DDNAME=LOG1     VDEV=302
DDNAME=LOG2     VDEV=303
DDNAME=BACKUP   DISK  FN=CONTROL  FT=BACKUP  FM=A
DDNAME=MDK00001 VDEV=304  GROUP=1
DDNAME=MDK00002 VDEV=305  GROUP=2
DDNAME=MDK00003 VDEV=306  GROUP=2
DDNAME=MDK00004 VDEV=307  GROUP=3
```



## Two files used to define/configure a filepool

### DMSPARMS file

```
ADMIN MAINT FTPSERVE ZVPS ZADMIN  
BACKUP  
SAVESEGID CMSFILES  
FILEPOOLID VMSYSVPS  
USERS 200
```

### POOLDEF file

```
MAXUSERS=500  
MAXDISKS=500  
DDNAME=CONTROL VDEV=301  
DDNAME=LOG1 VDEV=302  
DDNAME=LOG2 VDEV=303  
DDNAME=BACKUP DISK FN=CONTROL FT=BACKUP FM=A  
DDNAME=MDK00001 VDEV=304 GROUP=1  
DDNAME=MDK00002 VDEV=305 GROUP=2
```

## DMSPARMS parameters

ADMIN – defines filepool administrators

- Also BFS super users

BACKUP – automatic backup of control data

- Kicks in when logs are 80% full

SAVESEGID – name of saved segment that contains filepool executable code

FILEPOOLID – name of THIS filepool

- Also the filename of the POOLDEF file

USERS – Estimate of the number of users

## POOLDEF parameters

MAXUSERS – number of filepool users authorized to create objects

- Files, directories, aliases
- Used to calculate size of catalog and control areas

MAXDISKS – number of minidisks ever to be used by this filepool server

## Generate the filepool

Log on to filepool server

Format the A-disk

Create POOLDEF, DMSPARMS and PROFILE EXEC

Access the 193 disk

Issue the command:

```
FILESERV GENERATE VMSYSVPS POOLDEF
```

## FILESERV GENERATE output

```
DMSWFV1117I FILESERV processing begun at 19:12:41 on 12 Jul 2011
DMSWFV1121I VMSYSVPS DMSPARMS A1 will be used for FILESERV processing
DMS4PD3400I Initializing begins for DDNAME = CONTROL
DMS4PD3400I Initializing ends for DDNAME = CONTROL
DMS4PD3400I Initializing begins for DDNAME = MDK00001
DMS4PD3400I Initializing ends for DDNAME = MDK00001
DMS4PD3400I Initializing begins for DDNAME = MDK00002
DMS4PD3400I Initializing ends for DDNAME = MDK00002
DMS4PD3400I Initializing begins for DDNAME = LOG1
DMS4PD3400I Initializing ends for DDNAME = LOG1
DMS4PD3400I Initializing begins for DDNAME = LOG2
DMS4PD3400I Initializing ends for DDNAME = LOG2
DMS5FD3032I File pool server has terminated
DMSWFV1120I File VMSYSVPS POOLDEF A1 created or replaced
DMSWFV1117I FILESERV processing ended at 19:13:02 on 12 Jul 2011
```

## Backup the control area

FILESERV BACKUP

## Create PROFILE EXEC

```
/* VMSYSVPS PROFILE EXEC */  
'CP SPOOL CON ZVPS START'  
'CP SET PF12 RETRIEVE'  
'ACCESS 193 B'  
'CP SET RUN ON'  
'CP SET EMSG ON'  
'FILESERV START'
```

## Execute PROFILE to start filepool server

```
DMSACP723I B (193) R/O  
DMSWFV1117I FILESERV processing begun at 20:00:53 on 12 Jul 2011  
DMSWFV1121I VMSYSVPS DMSPARMS A1 will be used for FILESERV processing  
DMSWFV1121I VMSYSVPS POOLDEF A1 will be used for FILESERV processing  
DMS5BB3045I Ready for operator communications
```

Users are enrolled in the filepool

- Lets them connect to the pool
- Allows access to directories and files

```
ENROLL USER ZVPS VMSYSVPS
```

Users can be given space in the filepool

```
ENROLL USER ZVPS VMSYSVPS (BLOCKS 20000
```

Or in a specific group

```
ENROLL USER ZVPS VMSYSVPS (BLOCKS 20000 GROUP 3
```

Hint: 100 cylinders is approximately 18,000 4K blocks

## Graphic administration of the pool

- z/VM Administration
  - Backup and Restore
  - Central Processing Complex Management
  - Directory Management
  - EDEV Management
  - RSCS Management
  - Security Management
  - Send CP Command
  - Shared File Systems**
  - Storage Server Management
  - System Allocation
  - vNetwork Management
  - zSPOOL
  - zVPS Alerts/Logs

Shared File Systems

Line 1 of 6 - 1 checked

Sel	System	Pool Name	Owning Userid	Res Type	Pool Type	Stg Groups	Authorized
<input type="checkbox"/>	VSIVC1	CL1SFS	VMSEVP	GLOBAL	SSI	2	LIMITED
<input type="checkbox"/>	VSIVC1	SFSVC1	SFSLCL	GLOBAL	REMOTE	2	ADMIN
<input type="checkbox"/>	VSIVC1	VMSYS	VMSEVP	LOCAL	LOCAL	2	ADMIN
<input type="checkbox"/>	VSIVC1	VMSYSU	VMSEVP	LOCAL	LOCAL	2	USER
<input checked="" type="checkbox"/>	VSIVC1	VMSYSVPS	VMSYSVPS	LOCAL	LOCAL	2	ADMIN
<input type="checkbox"/>	VSIVC1	ZPROBKUP	ZPROBKUP	GLOBAL	REMOTE	2	ADMIN

List Users List Admins All Directories Full Report Add Disk to SFS Pool

## Graphic administration of the pool

Shared File System Users VMSYSVPS

Line 1 of 67 - 1 checked

X Search Criteria ...

Sel	Userid	Stg Grp	4K Blk Limit	Committed Blks	Prct Committed	Threshold
<input type="checkbox"/>	ZVPS	2	200000	64387	32%	90%
<input type="checkbox"/>	ZWEBLOG	2	150000	36410	24%	90%
<input type="checkbox"/>	ZVWS	2	100000	21838	21%	90%
<input type="checkbox"/>	ZPRO	2	20000	4351	21%	90%
<input type="checkbox"/>	ZADMIN	2	8000	3724	46%	90%
<input checked="" type="checkbox"/>	OPERATOR	2	9900	2395	24%	90%
<input type="checkbox"/>	ZMON	2	14400	2116	14%	90%
<input type="checkbox"/>	ZMAP	2	50000	1688	03%	90%
<input type="checkbox"/>	ZWRITE	2	50000	1143	02%	90%
<input type="checkbox"/>	ZPORTAL	2	5400	1077	19%	90%
<input type="checkbox"/>	ZTCP	2	5400	544	10%	90%
<input type="checkbox"/>	SMRCINA	2	2000	476	23%	90%
<input type="checkbox"/>	ZVRM	2	3600	406	11%	90%
<input type="checkbox"/>	ZALEPT	2	1800	71	04%	90%

Update User List Directories New User Delete User

Update User on Pool VMSYSVPS

Userid: OPERATOR - Storage Group: 2

Modify Blocks

9900

Update

## Graphic administration of the pool

Shared File System Users VMSYSVPS

Line 1 of 67 - 1 checked

X Search Criteria ...

Sel	Userid	Stg Grp	4K Blk Limit	Committed Blks	Prct Committed	Threshold
<input type="checkbox"/>	ZVPS	2	200000	64387	32%	90%
<input type="checkbox"/>	ZWEBLOG	2	150000	36410	24%	90%
<input type="checkbox"/>	ZVWS	2	100000	21838	21%	90%
<input type="checkbox"/>	ZPRO	2	20000	4351	21%	90%
<input type="checkbox"/>	ZADMIN	2	8000	3724	46%	90%
<input checked="" type="checkbox"/>	OPERATOR	2	9900	2395	24%	90%
<input type="checkbox"/>	ZMON	2	14400	2116	14%	90%
<input type="checkbox"/>	ZMAP	2	50000	1688	03%	90%
<input type="checkbox"/>	ZWRITE	2	50000	1143	02%	90%
<input type="checkbox"/>	ZPORTAL	2	5400	1077	19%	90%
<input type="checkbox"/>	ZTCP	2	5400	544	10%	90%
<input type="checkbox"/>	SMRCINA	2	2000	476	23%	90%
<input type="checkbox"/>	ZVRM	2	3600	406	11%	90%
<input type="checkbox"/>	ZAL EDT	2	1800	74	04%	90%

Update User List Directories New User Delete User

SFS Directory Listing OPERATOR VMSYSVPS

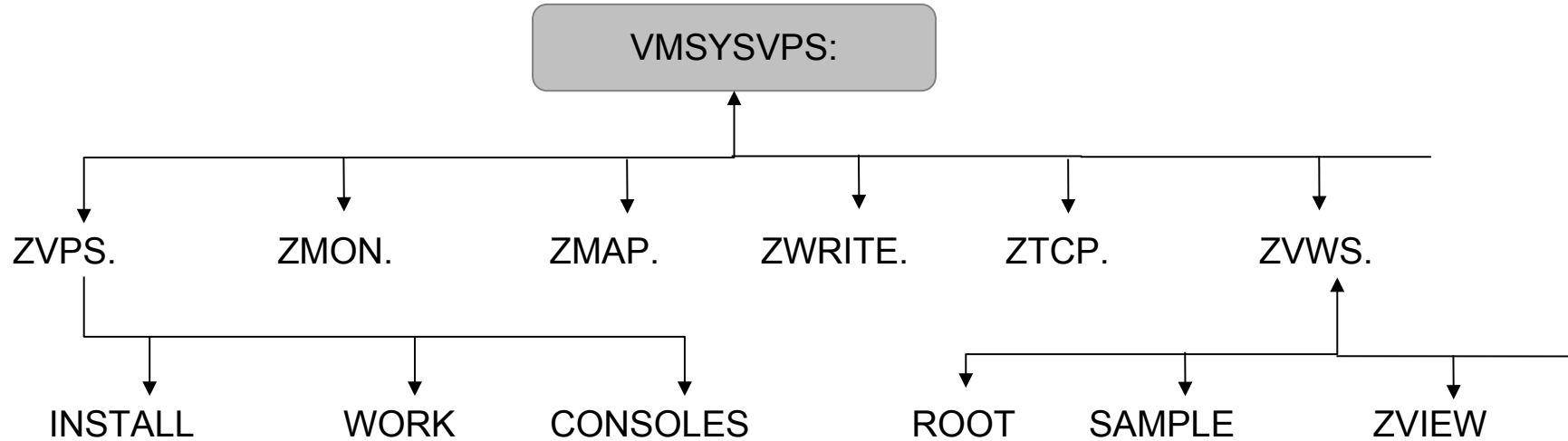
Line 1 of 4

X Search Criteria ...

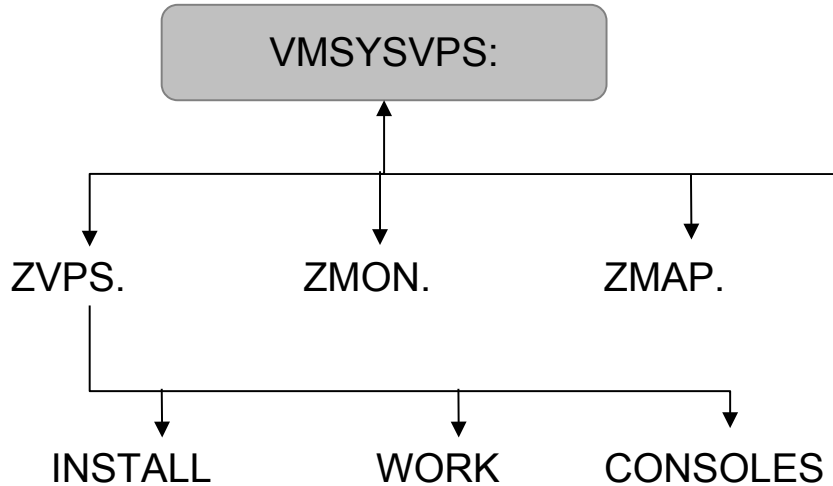
Sel	Blocks	Percent	Files	Directory
	2395	24.1%	103	*TOTAL* used out of 9900
<input type="checkbox"/>	2283	23.0%	87	VMSYSVPS:OPERATOR.LOGS.
<input type="checkbox"/>	21	0.2%	16	VMSYSVPS:OPERATOR.TCPIP_DOS.
<input type="checkbox"/>	0	0.0%	0	VMSYSVPS:OPERATOR.

List Auths List Files New Directory Delete Directory

## Conceptual view



# Accessing the pool



Use CMS ACCESS command

First component is filepool name

Then top level directory and any subdirectories

ACC VMSYSVPS:ZVPS. B

ACC VMSYSVPS:ZVPS.CONSOLES D

## Set the default filepool

```
SET FILEPOOL VMSYSVPS
```

## Set top level directory as A-disk

```
IPL CMS PARM AUTOCR FILEPOOL VMSYSVPS:
```

## Different pools can be accessed

```
ACC VMSYSVPS:ZVPS.CONSOLES B
```

```
ACC VMSYSU:RKSDEV. Q
```

## VMLINK command

```
VMLINK .DIR VMSYSVPS:ZVPS.CONSOLES
```

## Which directories are accessed?

### q accessed

Mode	Stat	Files	Vdev	Label/Directory
A	R/W	125	191	RKS191
S	R/0	699	190	MNT190
X	R/0	362	DIR	SFSZVPS4:ZVPS.CONFIG
Y/S	R/0	1097	19E	MNT19E
Z	R/0	692	DIR	VMSYSVPS:ZMON.CODE

### q search

RKS191	191	A	R/W	
MNT190	190	S	R/0	
-	DIR	X	R/0	SFSZVPS4:ZVPS.CONFIG
MNT19E	19E	Y/S	R/0	
-	DIR	Z	R/0	VMSYSVPS:ZMON.CODE

## Some commands allow directory ID specification

```
ERASE RACF DATA SFSVM6:RKSDEV.
```

```
FILELIST * * SFSVM6:RKSDEV.
```

```
RENAME RACF DATA SFSVM5:RKSDEV. RACF DATAOLD SFSVM5:RKSDEV.
```

See individual command syntax

## Display directory hierarchy with LISTDIR

```
LISTDIR  
Fm Directory Name  
A SFSVM5:RKSDEV.
```

```
LISTDIR VMSYSVPS:ZVPS.  
Fm Directory Name  
- VMSYSVPS:ZVPS.  
- VMSYSVPS:ZVPS.CONFIG  
- VMSYSVPS:ZVPS.CONSOLES  
- VMSYSVPS:ZVPS.INSTALL  
- VMSYSVPS:ZVPS.WORK
```

## Full screen display of directory hierarchy with DIRLIST

```
RKSDEV  DIRLIST  A0  V 319  Trunc=319  Size=5  Line=1  Col=1  Alt=0
```

```
Cmd  Fm Directory Name
Z  VMSYSVPS:ZVPS.
X  VMSYSVPS:ZVPS.CONFIG
-  VMSYSVPS:ZVPS.CONSOLES
-  VMSYSVPS:ZVPS.INSTALL
-  VMSYSVPS:ZVPS.WORK
```

```
1= Help      2= Refresh  3= Quit    4= Sort(fm)  5= Sort(dir)  6= Auth
7= Backward  8= Forward  9=         10=          11= Filelist  12= Cursor
```

```
====>
```

```
X E D I T  1 File
```

Directory attributes are specified at creation

Two different attributes

- Directory Control (DIRCONTROL)

- File Control (FILECONTROL)

**DIRCONTROL** directories work like minidisks

- One writer, Multiple readers

- Authorization given at directory level

- Suited primarily for read activity

**FILECONTROL** directories much more flexible

- Multiple writers and readers

- Authorization given at file level

Access is granted to a directory

Four types of directory access

- READ
- NEWREAD
- WRITE
- NEWWRITE

## READ

- Allows access to a directory
- See the files and sub-directories

## NEWREAD

- Implies READ
- Allows a user to see new files or sub-directories

## WRITE

- Implies READ
- Allows a user to create new files

## NEWWRITE

- Implies WRITE
- Allows a user to write to new files

## To give a user full access to a directory

```
GRANT AUTH VMSYSVPS:ZVPS. TO RKSDEV (NEWREAD NEWWRITE
```

## Give a user read access to a directory

```
GRANT AUTH VMSYSVPS:ZVPS.CONSOLES TO ZWEB01 (NEWREAD
```

Access can also be granted to a file or files in a directory

Two types of file access

- READ, WRITE

**READ**

- See the contents of a file

**WRITE**

- Change the contents of a file
- Rename and erase a file
- Requires write access to the directory

## Grant read access to a file

```
GRANT AUTH PROFILE EXEC VMSYSVPS:ZVPS. TO RKSDEV (READ
```

## Grant all access to a file

```
GRANT AUTH INSTALL PROD4200 VMSYSVPS:ZVPS. TO RKSDEV (WRITE
```

## Grant access to all files in a directory

```
GRANT AUTH * * VMSYSVPS:ZVPS.CONSOLES TO ZWEB01 (READ
```

Enrolled users also have access to PUBLIC areas,  
directories or files granted to PUBLIC

```
GRANT AUTH VMSYSVPS:ZMON.CODE TO PUBLIC (NEWREAD
```

All users can be allowed to connect

```
ENROLL PUBLIC VMSYSVPS:
```

GRANT AUTHORITY command is used to allow users to access files and directories

- Can be issued by ADMIN or OWNER

GRANT is reversed with REVOKE AUTHORITY

ADMIN authority

- Users listed in ADMIN statement in POOLDEF
- Users listed in ENROLL ADMIN

ENROLL ADMIN ZVPS

## Storage group messages

DMS4KC3202W Storage group 2 is short on storage

DMS4DL3201E Storage group 2 is full

DMS3202W is issued based on the GROUPTHRESH  
parameter

In the DMSPARMS file

Default is 90%

## Check minidisk and storage group space

Q FILEPOOL MINIDISK VMSYSVPS

VMSYSVPS File Pool Minidisks

Start-up Date 09/01/23  
Start-up Time 06:30:11

Query Date 06/07/24  
Query Time 11:00:26

=====

### FILE POOL MINIDISK INFORMATION

500 Maximum Number of Minidisks  
3 Minidisks in Use

=====

### STORAGE GROUP MINIDISK INFORMATION

Storage Group No.	Minidisk Number	4K Blocks In-Use	4K Blocks Free	Virtual Address
1	1	2988 - 83%	600	0304
1	3	2449 - 27%	6534	0306
2	2	141425 - 26%	398006	0305

=====

### STORAGE GROUP MINIDISK TOTALS

Storage Group No.	4K Blocks In-Use	4K Blocks Free
1	5437 - 43%	7134
2	141425 - 26%	398006

## Check minidisk and storage group space

```
=====
LOG INFORMATION
```

```
First Log Virtual Address      0302
Second Log Virtual Address     0303

    17972  Number of Log Minidisk 4K Blocks
    36%   Percent(%) of Log Space Used
    95%   LUW Rollback/Suspend Threshold (% Log Space)
    80%   Backup Threshold (% Log Space)
06/06/24  Date of Last Control Backup
21:30:00  Time of Last Control Backup
```

```
=====
CONTROL MINIDISK INFORMATION
```

```
Control Minidisk Virtual Address 0301
14570  Number of Control Minidisk 512 Blocks
```

## Check minidisk and storage group space

```
Shared File System Report for VMSYSVPS - VSIVC1
=====
STORAGE GROUP MINIDISK INFORMATION

Storage      Minidisk      4K Blocks      4K Blocks      Virtual
Group No.    Number        In-Use         Free           Address
-----
1            1             2996 - 84%    592            0304
1            3             2447 - 27%    6536           0306
2            2             141395 - 26%  398036         0305
=====
STORAGE GROUP MINIDISK TOTALS

Storage      4K Blocks      4K Blocks
Group No.    In-Use         Free
-----
1            5443 - 43%    7128
2            141395 - 26%  398036
=====
```

## Filespace messages

DMSCPY1141W User filespace threshold exceeded for file pool SFSVM5

DMSCPY1254E An attempt to commit will exceed the number of 4K blocks allowed for the user in file pool SFSVM5

## Check filespace allocation

### q limits for rksdev

Userid	Storage Group	4K Block Limit	4K Blocks Committed	Threshold
RKSDEV	2	70000	69923-99%	90%

### q limits all

Userid	Storage Group	4K Block Limit	4K Blocks Committed	Threshold
BARTON	2	0	0-00%	90%
DSADDEV	2	0	0-00%	90%
OPERATOR	2	20000	1231-06%	90%
ZADMIN	2	180	3-01%	90%
ZMAP	2	1000000	1246-00%	90%
ZMON	2	3600	1562-43%	90%
ZSERVE	2	180	3-01%	90%
ZTCP	2	5400	302-05%	90%
ZVPS	2	200000	62547-31%	90%
ZVWS	2	5580	2531-45%	90%
ZWEBLOG	2	1800	1185-65%	90%
ZWEB01	2	180	3-01%	90%
ZWEB02	2	180	3-01%	90%
ZWEB03	2	180	3-01%	90%
ZWEB04	2	180	3-01%	90%
ZWEB05	2	180	3-01%	90%
ZWRITE	2	1000000	686-00%	90%

## Check filespace allocation

Shared File System Users VMSYSVPS

✓ Line 1 of 67 X Search Criteria ...

Sel	Userid	Stg Grp	4K Blk Limit	Committed Blks	Prct Committed	Threshold
<input type="checkbox"/>	ZVPS	2	200000	64387	32%	90%
<input type="checkbox"/>	ZWEBLOG	2	150000	36410	24%	90%
<input type="checkbox"/>	ZVWS	2	100000	21838	21%	90%
<input type="checkbox"/>	ZPRO	2	20000	4351	21%	90%
<input type="checkbox"/>	ZADMIN	2	8000	3724	46%	90%
<input type="checkbox"/>	OPERATOR	2	9900	2395	24%	90%
<input type="checkbox"/>	ZMON	2	14400	2116	14%	90%
<input type="checkbox"/>	ZMAP	2	50000	1688	03%	90%
<input type="checkbox"/>	ZWRITE	2	50000	1143	02%	90%
<input type="checkbox"/>	ZPORTAL	2	5400	1077	19%	90%
<input type="checkbox"/>	ZTCP	2	5400	544	10%	90%
<input type="checkbox"/>	SMRCINA	2	2000	476	23%	90%
<input type="checkbox"/>	ZVRM	2	3600	406	11%	90%
<input type="checkbox"/>	ZAL EDT	2	1800	74	04%	90%

# Space Management

Controlling filespace allocation

ENROLL USER ZWEB05 (BLOCKS 180)

Increase/reduce filespace allocation

MODIFY USER +100 FOR ZWEB05

MODIFY USER -50 FOR ZWEB01

Delete filespace

DELETE ZWEB01



**New User for Pool VMSYSVPS**

Userid

Storage Group  
2

Blocks

Add

**Shared File System Users VMSYSVPS**

Line 1 of 67 - 1 checked

Sel	Userid	Stg Grp	4K Blk Limit	Committed Blks	Prct Committed	Threshold
<input checked="" type="checkbox"/>	ZVPS	2	200000	64387	32%	90%
<input type="checkbox"/>	ZWEB				24%	90%
<input type="checkbox"/>	ZVWS				22%	90%
<input type="checkbox"/>	ZPRO				21%	90%
<input type="checkbox"/>	ZADM				46%	90%
<input type="checkbox"/>	OPER				24%	90%
<input type="checkbox"/>	ZMON				14%	90%
<input type="checkbox"/>	ZMAP				03%	90%
<input type="checkbox"/>	ZWRI				02%	90%
<input type="checkbox"/>	ZPOR				19%	90%
<input type="checkbox"/>	ZTDR				10%	90%

**Update User on Pool VMSYSVPS**

Userid: ZVPS - Storage Group: 2

Modify Blocks

Update

## Add space to a storage group

- Add a minidisk to the server
- Create a file describing the new minidisk
- Expand storage group

## Add minidisk to the server

```
MDISK 0307 3390 3251 0500 VM5W02 WR
```

## Create a file describing the new minidisk

- On an admin ID
- Eg: NEW307 POOLDEF A

```
DDNAME=MDK00004 VDEV=307 GROUP=2
```

```
MAXUSERS=500
MAXDISKS=500
DDNAME=CONTROL          VDEV=301
DDNAME=LOG1             VDEV=302
DDNAME=LOG2             VDEV=303
DDNAME=BACKUP  DISK  FN=CONTROL  FT=BACKUP  FM=C
DDNAME=MDK00001        VDEV=304      GROUP=1  BLOCKS=1790
DDNAME=MDK00002        VDEV=305      GROUP=2  BLOCKS=80906
DDNAME=MDK00003        VDEV=306      GROUP=2  BLOCKS=3588
```

## Expand storage group

### VMLINK MAINT 193

DMSVML2060I MAINT 193 linked as 0120 file mode X

### FILEPOOL MINIDISK VMSYSVPS NEW307 POOLDEF A

DMSWFP3485I FILEPOOL processing begun at 07:53:36 on 15 Jun 2024.

DMSJMD3426I The following minidisk(s) will be formatted and reserved

DMSJMD3426I for VMSYSVPS on RKS2LV

DMSJMD3426I MDK00004 0307 00002

DMSJMD3427R FORMAT will erase all files on the above minidisk(s).

DMSJMD3427R Do you wish to continue? Enter 1 (Yes) or 0 (No)

1

DMSJMD3533I Linking to minidisk MDK00003 at 0307 as FFFF.

DASD FFFF DETACHED

DMSJMD3423I The minidisk with virtual device address FFFF has been formatted

DMSJMD3922I 1 minidisk(s) added to the file pool

DMSJMD3428I New minidisk(s) will not be available for use until a

DMSJMD3428I confirmation message is sent to your virtual reader

DMSWFP3486I FILEPOOL processing ended at 07:53:55 on 15 Jun 2024.

## Expand storage group

**Shared File Systems**

Line 1 of 6 - 1 checked

Sel	System	Pool Name
<input type="checkbox"/>	VSIVC1	CL1SFS
<input type="checkbox"/>	VSIVC1	SFSVC1
<input type="checkbox"/>	VSIVC1	VMSYS
<input type="checkbox"/>	VSIVC1	VMSYSU
<input checked="" type="checkbox"/>	VSIVC1	VMSYSVPS
<input type="checkbox"/>	VSIVC1	ZPROBKUP

**Add Disk to Pool VMSYSVPS**

There are roughly 180 blocks per cylinder of 3390 disk, minus a small amount for control space

**Add to Pool Storage Group**  
2

**Cylinder Size to Add**  
0

**From Disk Storage Group**  
Select...

**Device Type**  
Select...

Once you add a new disk it can not be removed from the file pool

**Add**

**Authorized**

- LIMITED
- ADMIN
- ADMIN
- USER
- ADMIN
- ADMIN

List Users | List Admins | All Directories | Full Report | **Add Disk to SFS Pool**

## Backups

Control data

User data

## Control data

User allocations

Authorizations

Storage group 1, control disk and POOLDEF file

Control backups are automatic when logs fill

From an admin

**FILEPOOL CONTROL BACKUP**

## User data

Files and directories that users create

## Two type of user backup

FILEPOOL BACKUP

FILEPOOL UNLOAD

Both admin commands

Can be issued concurrent with filepool operations

## FILEPOOL BACKUP

Used to back up a storage group

FILEDEF must be issued to define the backup file

```
FILEDEF BACKUP DISK VMSYSVPS BKUP2 D  
FILEPOOL BACKUP 2
```

## Restore from BACKUP

Restore a storage group

FILEDEF must be issued to define the backup file

```
FILEDEF RESTORE DISK VMSYSVPS BKUP2 D  
FILEPOOL RESTORE 2
```

## Restore from BACKUP

Restore individual files

Create a file containing the list of files to restore

- CONTROL FILELOAD A
- *filename filetype dirname*

eg:

```
INSTALL LOG ZVPS.  
ZMON 20140531 ZVPS.CONSOLES
```

FILEDEF must be issued to define the backup file

```
FILEDEF RESTORE DISK VMSYSVPS BKUP2 D  
FILEPOOL FILELOAD 2
```

## FILEPOOL UNLOAD

Used to back up a storage group or filespace

Storage group, file space or individual files can be recovered

FILEDEF must be issued to define the backup file

```
FILEDEF UNLOAD DISK VMSYSVPS UNLD2 D
```

```
FILEPOOL UNLOAD GROUP 2
```

*- or -*

```
FILEPOOL UNLOAD FILESPACE ZVPS
```

## Restore from UNLOAD

Restore storage group

FILEDEF must be issued to define the backup file

```
FILEDEF RELOAD DISK VMSYSVPS UNLD2 D  
FILEPOOL RELOAD GROUP 2
```

## Restore from UNLOAD

Restore file space

FILEDEF must be issued to define the backup file

Optional GROUP can be used to move a filespace to a different group

- Use ALL option on UNLOAD
- Backs up aliases and authorizations by other users

```
FILEDEF RELOAD DISK VMSYSVPS UNLD2 D
```

```
FILEPOOL RELOAD FILESPACE USER ZVPS [GROUP n]
```

## Restore from UNLOAD

Restore individual file

Create a file containing the list of files to restore

- CONTROL RELOAD A
- *filename filetype dirname*

eg:

```
INSTALL LOG ZVPS.  
ZMON 20140531 ZVPS.CONSOLES
```

FILEDEF must be issued to define the backup file

```
FILEDEF RELOAD DISK VMSYSVPS UNLD2 D  
FILEPOOL RELOAD FILES
```

## Additional information

All commands require access to MAINT 193

Backups/Restores can use tape

Read usage notes!

Open Extensions implements POSIX standards under CMS

POSIX 1003.1 (POSIX.1) - System Interfaces

POSIX 1003.1a (POSIX.1a) - Extensions to POSIX.1

POSIX 1003.1c (POSIX.1c) - Threads

POSIX 1003.2 (POSIX.2) - Shell and Utilities

Provides POSIX compliant file system

Shell and Utilities

Traditionally used to port UNIX features

Now used for z/OS packages on z/VM

- LDAP, SSL, MPROUTE, etc.

## Provides POSIX compliant file system

- Stored as a filespace in SFS

- Byte-stream view and format

- Long file/directory names

- Many possible directory levels

- Unix style permissions

- Unix command set

## Shell and Utilities

- Provides a command line interface
- Runs OE programs
- Environment variables and aliases
- Shell script programming
- Manipulate BFS files
- Ported applications
- Development utilities

## Creating a BFS filesystem

```
ENROLL USER RKS0 (BLOCKS 20000 BFS)
```

## Specifying a BFS path in CMS command

`/./VMBFS:filepool:filesystem/`

Required part  
of the path  
identifier

File pool that  
contains the  
data

BFS filesystem  
to reference

## Integrating BFS actions in CMS

OPENVM command allows manipulation of BFS objects from CMS

CREATE DIRECTORY - Create a directory

ERASE - Delete a file or directory

GETBFS - Extract BFS object into CMS

LISTFILE - List files in a directory

MOUNT/UNMOUNT - Mount/unmount a filespace

OWNER - Change owner of file or directory

PERMIT - Change permissions of file or directory

PUTBFS - Insert CMS file into BFS

SET DIRECTORY - Change current working directory

SHELL - Start OPENVM shell

## Starting the shell

```
openvm mount ../../vmbfs:vmsys:root/ /  
Ready; T=0.01/0.02 08:05:03  
openvm shell
```

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#

## Starting the shell

```
#
pwd
/
#
ls -l
total 0
drwxr-xr-x  1 maint630 system      0 May 29  2013 bin
drwxr-xr-x  1 maint630 system      0 May 29  2013 dev
Erwxrwxrwx  1 maint630 system    21 May 29  2013 etc -> /../VMBFS:VMSYSU:ETC
drwxr-xr-x  1 maint630 system      0 May 29  2013 home
lrwxrwxrwx  1 maint630 system      8 May 29  2013 lib -> /usr/lib
drwxr-xr-x  1 maint630 system      0 May 29  2013 opt
Erwxrwxrwx  1 maint630 system    21 May 29  2013 tmp -> /../VMBFS:VMSYSU:TMP
lrwxrwxrwx  1 maint630 system      5 May 29  2013 u -> /home
drwxr-xr-x  1 bin          bin        0 May 29  2013 usr
Erwxrwxrwx  1 maint630 system    21 May 29  2013 var -> /../VMBFS:VMSYSU:VAR
```

## Similar command set

```
#  
ps -ef  
  UID          PID     PPID  STIME TTY          TIME COMMAND  
maint630      3868         1 17:42:23 tty          0:00  
maint630      4098         1 16:46:59 tty          0:00  
maint630      4360       3868 17:42:24 tty          0:00 sh -L  
maint630      4625       4360 20:40:03 tty          0:00 ps -ef
```

## Other commands

alias, awk, bg, c89, cat, cd, chgrp, chmod, chown, cp, cut, date, echo, find, grep, head, join, ln, ls, make, mv, pax, sleep, tail, tar, type

## A number of tools ported

### VM OpenEdition Ported Packages

- gzip, gnumake, syslog, ldapd, apache

## “Porting Unix Applications to OpenEdition for VM/ESA” - SG24-5458

Read about the process

## VM Downloads page

<http://www.vm.ibm.com/download/packages/>

Name	Types	Date	Abstract
SFSKTOOL	v-365K	2011-02-28	Various tools related to SFS management. V1.0
SFSULIST	v-134K	2011-02-28	<u>SfsUserList</u> lets you handle SFS users in a FILELIST like way V1.13
SETDATE	v-9K	2009-10-27	SETDATE EXEC - Set the date of last update on CMS or SFS files.
NONAMES	v-5K	2008-08-06	Avoid NAMEFIND <u>lookup</u> for SFS administrative commands
ERALIAS	v-8K	2002-10-25	An exec to remove <u>ERASEd ALIASes</u> from the SFS catalog.
DIREXEC	v-65K	2000-05-01	Execute or <u>execload</u> execs from non-accessed SFS directories.
XSFS	v-76K	2000-05-01	XEDIT files that reside in <u>unaccessed</u> SFS directories.
OBFUSCAT	v-8K	1996-12-16	Prevent direct links by randomly changing file and HTML link names in SFS.
FPUBLIC	v-16K	1996-08-26	Identify SFS Files and Directories with PUBLIC Access
PIPEFILE	v-47K	1996-08-26	Modern Pipelines file I/O using DMSREAD/DMSWRITE; SFS
SFSTAR	v-32K	1996-08-26	Archive (zip up) SFS directory tree into file/pipeline stream
WORF	v-30K	1996-08-26	Simple Shared File System (SFS) external security manager (ESM)
WORFAUTH	v-11K	1996-08-26	WORF SFS ESM rule database updater

# VSIPump SFS Dashboard

System VSIVM4 ▾ File Pool SFSZVPS4 ▾ User Storage Group All ▾

## File Pool Size on VSIVM4



## File Pool Usage on VSIVM4

	Value	Percent
SFSZVPS4	1.34 GiB	58%
SFSVM4	978 MiB	42%



## File Pool Usage over Time [Last 30 days](#)



## Storage Group Overview SFSZVPS4

### SFS Log Configuration

Last Backup	1st	2nd	Blocks	In Use
2024-06-17 17:30:00	0302	0303	17972	54%

### SFS Catalog Utilization

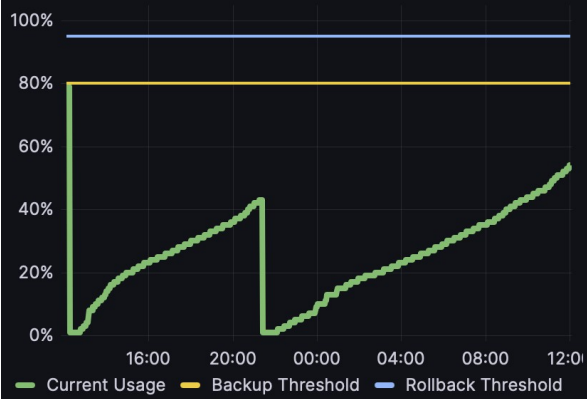
42%

### User Storage Group Utilization

38%

# VSIPump SFS Dashboard

## Log Utilization



## User Storage Group Usage



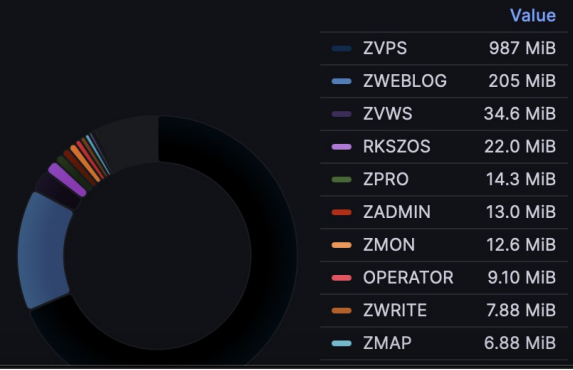
## Storage Group 02

### Largest File Spaces in Storage Group 02

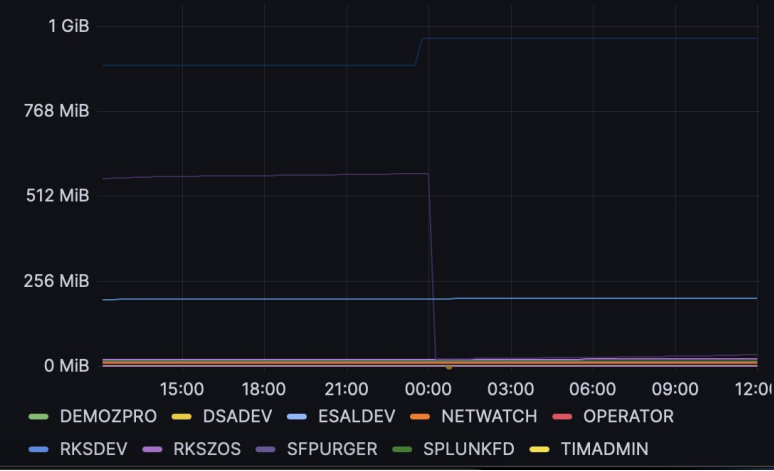
File Space	Limit	Used ↓	Use %	Warning %
ZVPS	2.25 GiB	987 MiB	42%	90%
ZWEBLOG	469 MiB	205 MiB	43%	90%
ZVWS	781 MiB	34.6 MiB	4%	90%
RKSZOS	78.1 MiB	22.0 MiB	28%	90%
ZPRO	78.1 MiB	14.3 MiB	18%	90%
ZADMIN	31.3 MiB	13.0 MiB	41%	90%
ZMON	19.5 MiB	12.6 MiB	64%	90%
OPERATOR	117 MiB	9.10 MiB	7%	90%
ZWRITE	19.5 MiB	7.88 MiB	40%	90%
ZMAP	19.5 MiB	6.88 MiB	35%	90%

### Overcommit

#### Storage Group 02 Usage



### Storage Group 02 Usage



CMS File Pool Planning, Administration, and Operation

CMS Commands and Utilities Reference

CMS User's Guide

OpenExtensions Shell Commands

OpenExtensions User's Guide

OpenEdition for VM/ESA Implementation and Administration  
Guide (SC24-4747)

Porting UNIX Applications to OpenEdition for VM/ESA (SG24-  
5458)

## Exciting News!!

**Velocity Software is now your place for z/VM education!**

- **Self-Study and Instructor-led classes**
- **Upcoming Instructor-led Class:**
  - **July 8-10 2026 – Modules 1, 2 and 3 (from our education page)**

**Ask about it here at the workshop!**

**See our website – [VelocitySoftware.com/Educate/Training](https://velocitysoftware.com/Educate/Training)**

**Send an email to – [education@velocitysoftware.com](mailto:education@velocitysoftware.com)**

## Questions?

Velocity Software Inc.  
196-D Castro Street  
Mountain View CA 94041  
650-964-8867

Rich Smrcina  
Velocity Software, Inc.  
[rich@velocitysoftware.com](mailto:rich@velocitysoftware.com)

Velocity Software GmbH  
Max-Joseph-Str. 5  
D-68167 Mannheim  
Germany  
+49 (0)621 373844