

FDRPAS

FDRPAS Quick Start and Best Practices

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Audience: This guide is for sites migrating less than 1000 volumes and references the ***FDRPAS, FDRMOVE, and FDRERASE User Documentation***. If your intent is to SWAP thousands of volumes, we recommend that you use the GENSWAP option. See Section 315 in the User Documentation. That manual contains the complete documentation for the installation and usage of FDRPAS.

All examples in this guide are found in the JCL library (version 5.4L85 SPIN=1 and higher) installed with FDRPAS.

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Part 1

Introduction

1.1 What is FDRPAS?

FDRPAS is used to perform a non-disruptive move of a DASD volume from one physical device to another. FDRPAS allows a data center to install new DASD hardware and move existing DASD volumes to the new hardware from older hardware, without disrupting normal operations or requiring an IPL. FDRPAS can also be used to move volumes within an existing configuration for load balancing purposes, and to create point-in-time copies of volumes for non-disruptive backups.

1.2 What is FDRMOVE?

FDRMOVE combines the proven technology of FDRPAS (volume migration) and FDRINSTANT (instant data set copy) to provide non-disruptive or minimally-disruptive movement of data sets.

FDRMOVE can be used to move data at the data set level to new DASD, and is particularly useful for combining data from smaller DASD volumes onto larger DASD volumes, such as moving three (3) 3390-9s onto a 3390-27 or 3390-54s to a 3390-A Extended Address Volume (EAV).

1.3 What is FDRERASE?

FDRERASE is used to erase all data from DASD volumes before they are reused or removed from a data center. FDRERASE can be licensed as part of your FDRPAS license and can also be licensed separately.

1.4 What is FDRPASVM?

FDRPASVM allows users to swap active z/VM user volumes. This enables the non-disruptive migration of volumes containing minidisks, full pack minidisks, and dedicated volumes for CMS users, Linux for System z, and other guest operating systems. FDRPASVM also supports CP-Owned volumes so that an entire z/VM system or Single System Image (SSI) can be migrated while it is running.

FDRPASVM provides an FDRPAS monitor for z/VM systems. This extends the power of FDRPAS to both z/OS and z/VM. When the FDRPASVM monitor is active, the FDRPAS z/OS main SWAP task can simultaneously coordinate SWAP functions on both z/VM and z/OS systems. Without the FDRPASVM monitor, FDRPAS users would have to add EXCLUDE statements to the FDRPAS SWAP task jobs for all of the z/VM systems that have access to the DASD volume being swapped, and the z/VM system would have to be shutdown.

The [November 14, 2014 FDRPASVM Newsletter](#) contains additional information.

This Quick Start Guide only covers FDRPAS.

Part 2

Planning for the SWAP

2.1 Prepare for Your First SWAP

Many of the documents referenced in this section are available in the `fdrpas/service/PLEASE_ReadMe_First` directory on the INNOVATION FTP site (<http://fdr.com/ftp/ftp.cfm>).

- ❑ Review [Section 320.1 “FDRPAS Special Hardware Considerations”](#) for special hardware considerations that may affect your SWAP. This document is also available on the FTP site.
- ❑ Review [Section 320.2 “FDRPAS Special Software Considerations”](#) for special software considerations that may affect your SWAP and for information regarding movement of **PAGE** and **SWAP** data sets. This document is also available on the FTP site.
- ❑ Review document [FDRPAS IBM and ThirdParty Maintanance_04122016.pdf](#) on the FTP site for recommended maintenance from IBM and other vendors.

2.1.1 Examples of SIMSWAP, SIMSWAPMON, and SWAP

- ❑ Run SIMSWAP job (Section [2.2](#)).
See example **PASIVP01** and check the output.
- ❑ Run MONITOR jobs on **ALL** LPARs (Section [2.6](#) or Section [2.7](#)).
See example **PASIVP02** or **PASIVP03**.
- ❑ Run SIMSWAPMON (Section [2.7.2](#)).
See example **PASIVP04** and check the output.
- ❑ Run SIMSWAPMON (Section [2.9.1](#)).
See example **PASIVP05** and check the output.
- ❑ Run FDRPAS SWAP (Section [3.1](#)).
See example **PASIVP06** and make sure you have the monitor jobs running on each participating system.
- ❑ Run CONFIRMSWAP (Section [3.4](#)).
See example **PASIVP07**.
- ❑ Run RESETVOL (Section [3.5](#)).
See example **PASIVP08** and check the output.

2.2 Check for Potential Problems on Source Volumes

After the install of FDRPAS, your first step in the verification process is running a SIMSWAP job.

SIMSWAP performs a simulation of a SWAP operation. The SIMSWAP statement accepts all of the operands and statements of a SWAP operation but it does not actually perform a SWAP. The SIMSWAP statement does not require MONITOR tasks on other systems; if MONITOR tasks are running they do not participate.

SIMSWAP has these uses:

- It validates all of the operands that appear on the SWAP statement.
- It validates the online volumes and offline target devices specified on the MOUNT statements on the system where the SIMSWAP is executed. This identifies errors such as the target device does not exist or is not offline, or is the wrong type or size.
- For DASD volumes in subsystems where FDRPAS can determine the systems with access to the source volume, it displays all of the identified systems, including their CPU IDs, in FDR233 messages. You can verify that all of the systems you expect have access, and that there are no unexpected systems with access.

This example, **PASIVP01**, uses the keywords:

- **CHECKSOURCE=YES**

FDRPAS checks the integrity of the VTOC and VVDS. It is recommended that a **CHECKSOURCE=YES** be run at least once before running the actual SWAP to check the source volumes for errors.

CHECKSOURCE= should not be used on **VM** volumes.

- **CHECKTARGET=YES**

FDRPAS checks the target device before beginning a SWAP or SWAPDUMP operation to ensure that the target is empty. The operation is terminated if the target contains any data sets other than a VTOC, VTOC index (SYS1.VTOCIX.volser), or VVDS (SYS1.VVDS.Vvolser). Also, volumes initialized by z/VM, with a dummy VTOC in cylinder 0 track 0, are accepted. DASD volumes that do not contain a valid volume label (such as those that have never been used since they were delivered or defined) are also accepted; this includes volumes that were the source volumes of successful FDRPAS SWAPs. Although **CHECKTARGET=** is ignored on SIMSWAP it is better to use the same statements over all the jobs.

- **ALLOWPAV=YES**

Indicates that the Parallel Access Volume (PAV) alias for the source volume stays enabled during the copy phase.

- **MAXTASKS=**

The default is MAXTASKS=1. Within one FDRPAS job, you can swap up to 64 volumes concurrently.

SIMSWAP performs a simulation of a SWAP operation. It validates all of the operands that appear on the SWAP statement. It also validates the online volumes and offline target devices specified on the MOUNT statements on the system where SIMSWAP is executed. This identifies errors such as the target device does not exist or is not offline, or is the wrong type or size. For more information see Section 310.2 SIMSWAP STATEMENT.

2.2.1 PASIVP01 JCL and Control Statements:

```
//SIMSWAP EXEC PGM=FDRPAS,REGION=0M
//STEPLIB DD DISP=SHR,DSN=fdrpas.loadlib <-- CHANGE
//SYSPRINT DD SYSOUT=*
//FDRSUMM DD SYSOUT=*
//SYSIN DD *
SIMSWAP TYPE=FULL,MAXTASKS=5,CHECKSOURCE=YES,CHECKTARGET=YES,ALLOWPAV=YES
MOUNT VOL=EU2F02,SWAPUNIT=2F51 3390-3
MOUNT VOL=EU2F04,SWAPUNIT=2F53 3390-9
MOUNT VOL=EU2F0D,SWAPUNIT=2F55 3390-27
MOUNT VOL=EU2F0C,SWAPUNIT=2F5B 3390-9
/*
```

2.2.2 FDRSUMM Output

FDR001 FDR PLUG AND SWAP - FDRPAS VER. 5.4/85P - INNOVATION DATA PROCESSING								
COMP	ELAPSED		VOLUME	DASD BYTES	DATASETS UPDATED		TRACKS	
VOLSER	CODE	TIME (MIN)	SIZE (CYL)	READ FROM VOL	PROCESSED	TRACKS	SWAPPED	
EU2F02	0012*	0.0	3,339	0	0	0	0	
EU2F0D	0	0.0	32,760	0	0	0	0	
EU2F0C	0	0.0	10,017	0	0	0	0	
EU2F04	0	0.0	10,017	0	0	0	0	

2.2.3 SYSPRINT Output

Reason:

```
FDR234** SWAP ERROR ON VOL=EU2F02 - UNIT=2F51 REASON=8 - TARGET SWAPUNIT IS NOT OFFLINE ON THIS LPAR
```

Action:

VARY TARGET(s) OFFLINE

All Target UCB's need to be offline to all LPARs.

2.2.4 SYSPRIN1 Output

SWAP EU2F04 to 2F53

```

FDR001  FDR PLUG AND SWAP          - FDRPAS  VER. 5.4/85P  - INNOVATION DATA PROCESSING
CPK320I  COMPAKTOR OPTIONS IN EFFECT -- CHECKSOURCE-----EU2F04
CPK583W  VVDS CONTAINS WRONG VOLSER
CPK529I  INDEXED VTOC EXISTS ON VOLUME=EU2F04
VOLUME SUMMARY --- DEVICE TYPE .....3390-9
                NO. OF TRACKS .....150255
                NO. OF CYLINDERS ..... 10017
                NO. OF ALLOCATED TRACKS ..... 2846
                PERCENTAGE OF VOLUME IN USE ..... 2
CPK600I  COMPAKTOR SUCCESSFULLY COMPLETED CHECKSOURCE RUN ----- VOLUME=EU2F04
FDR233  CPU WITH (SERIAL# 05E2572965) IS ATTACHED TO VOL=EU2F04 - IBM 2107941 TO IBM 2107941
FDR233  CPU WITH (SERIAL# 02E2572965) IS ATTACHED TO VOL=EU2F04 - IBM 2107941 TO IBM 2107941
FDR233  CPU WITH (SERIAL# 01E2572965) IS ATTACHED TO VOL=EU2F04 - IBM 2107941 TO IBM 2107941
FDR233  CPU WITH (SERIAL# 09E2572965) IS ATTACHED TO VOL=EU2F04 - IBM 2107941 TO IBM 2107941
FDRW66  SWAP OF VOL=EU2F04 TO UNIT=2F53 NEEDS TO BE STARTED ON 4 SYSTEMS
FDR233  FOLLOWING LPARS NEED MONITOR
FDR233  CPU WITH (SERIAL# 05E2572965)
FDR233  CPU WITH (SERIAL# 02E2572965)
FDR233  CPU WITH (SERIAL# 01E2572965)
FDR233  CPU WITH (SERIAL# 09E2572965)

```

FDRPAS will SWAP the volume

- **CHECKSOURCE=YES**

FDRPAS checks the integrity of the VTOC and VVDS. It is recommended that **CHECKSOURCE=YES** be run at least once before running the actual SWAP to check the source volumes for errors. In this example, volume EU2F04 has a VVDS with the wrong name. FDRPAS found the VVDS name of SYS1.VVDS.VEU2F41 on volume EU2F04. **FDRPAS will SWAP this volume even if you do not correct the VVDS.**

2.3 Validate the Parameters and Setup the Monitors

SIMSWAPMON performs a simulation of a SWAP operation and provides additional processing above that performed by SIMSWAP by communicating with the MONITOR tasks. The SIMSWAPMON statement accepts all of the operands and statements of a SWAP operation so they can be used for the actual SWAP operation after running the SIMSWAPMON. The SIMSWAPMON does not perform the SWAP. SIMSWAPMON requires and verifies that MONITOR tasks are running on all the other systems.

SIMSWAPMON has these uses:

- It validates all of the operands that appear on the SWAP statement.
- It validates the source volumes and target devices specified on the MOUNT statements on the system where SIMSWAPMON is executed as well as all the systems where MONITOR tasks are running. This identifies errors such as the target device does not exist, or is the wrong type or size.
- It displays all the systems that respond and that join in the SWAP operation. It also displays all the systems that did not join (ERROR) or did not need to join (OK). Non-responding systems where MONITOR tasks are not running are also displayed.
- It can check the integrity of the VTOC and VVDS on the source volume (CHECKSOURCE=YES), and whether the target device is empty of data sets (CHECKTARGET=YES).
- SIMSWAPMON will default to running 32 tasks at a time.
- It is recommended to always run SIMSWAPMON before running any SWAPs when using dynamic monitors, to allow SIMSWAPMON to populate the MONITOR tasks (if needed).

2.4 EXCLUDE STATEMENT

The SWAP task EXCLUDE CPUID specifies the hardware CPU serial number of a system image where all source volumes to be processed in this job step are known to be offline or not in the I/O configuration. One or more EXCLUDE statements can be specified **BUT our recommendation is to only use these EXCLUDE statements as a last option!** When the source subsystem is EMC, or IBM DS8700 or above with the Query Host Access feature, EXCLUDE statements are ignored, because FDRPAS can tell which other systems have the source volume online. If you feel that you have a need to use an EXCLUDE CPUID= statement on such a subsystem, please contact INNOVATION Technical Support. See [Section 310.4 SWAP Task EXCLUDE Statement](#).

2.5 Monitor Job

The Monitor jobs should run on all LPARS that are participating in the SIMSWAPMON and SWAP, including the LPAR where the SWAP is running. You have seen the number of systems in the SIMSWAP job:

```
FDR233 FOLLOWING LPARS NEED MONITOR
FDR233 CPU WITH (SERIAL# 05E2572965)
FDR233 CPU WITH (SERIAL# 02E2572965)
FDR233 CPU WITH (SERIAL# 01E2572965)
FDR233 CPU WITH (SERIAL# 09E2572965)
```

FDRPAS MONITOR task is started on each system that has access to the target device, monitoring that device. The FDRPAS SWAP task communicates with the MONITOR tasks on all other systems to coordinate the swap operation. It verifies that every system that can see both the source and target volumes is involved in the SWAP.

NOTE: Even though it is not required to run a monitor job on the system that the swap runs on, we recommend you do, so it will not matter what system you run the SWAP task on.

There are two ways you can setup the FDRPAS MONITOR jobs:

1. Using Dynamic Monitoring - this will only MONITOR the devices INVOLVED with the SWAP, SIMSWAPMON and SWAPDUMP. This is simpler and less error prone to let FDRPAS SWAP or SIMSWAPMON match up the monitor UCB address. DYNMON=YES dynamically monitors ONLY the volumes involved with a SWAP, SWAPDUMP, or SIMSWAPMON method only takes resources when a main swap process specifies a target device for a swap. Since a dynamic monitor only uses resources when swapping, it could be started at IPL time and remain available.
2. Using the MOUNT SWAPUNIT= statement - this will MONITOR all devices coded in the MOUNT SWAPUNIT= statement.

See [Section 310.5 MONITOR SWAP STATEMENT](#) for more information.

2.6 FDRPAS MONITOR Job with DYNMON=YES.

2.6.1 PASIVP02 JCL and Control Statements

```
//MONITOR EXEC PGM=FDRPAS,REGION=0M
//STEPLIB DD DISP=SHR,DSN=fdrpas.loadlib <-- CHANGE
//SYSPRINT DD SYSOUT=*
//FDRSUMM DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
MONITOR TYPE=SWAP, DYNMON=YES, ALLOWPAV=YES
/*
```

When the FDRPAS MONITOR job is started you will see this:

```
FDR235 FDRPAS ON CPU SERIAL# 09E2572965 IS MONITORING DYNAMICALLY
```

When the SWAP or SIMSWAPMON is started it starts to MONITOR the devices involved:

MONITOR	SIMSWAPMON/SWAP
FDR238 FDRPAS STARTED MONITOR JOIN TASK FOR UNIT=2F55	MOUNT VOL=EU2F0D, SWAPUNIT=2F55
FDR238 FDRPAS STARTED MONITOR JOIN TASK FOR UNIT=2F51	MOUNT VOL=EU2F02, SWAPUNIT=2F51
FDR238 FDRPAS STARTED MONITOR JOIN TASK FOR UNIT=2F53	MOUNT VOL=EU2F04, SWAPUNIT=2F53
FDR238 FDRPAS STARTED MONITOR JOIN TASK FOR UNIT=2F5B	MOUNT VOL=EU2F0C, SWAPUNIT=2F5B

2.7 FDRPAS MONITOR Job with MOUNT SWAPUNIT=

2.7.1 PASIVP03 JCL and Control Statements

Monitors all offline units that starts with 2F5*

```
//MONITOR EXEC PGM=FDRPAS,REGION=0M
//STEPLIB DD DISP=SHR,DSN=fdrpas.loadlib <--CHANGE
//SYSPRINT DD SYSOUT=*
//FDRSUMM DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
    MONITOR TYPE=SWAP,ALLOWPAV=YES
    MOUNT SWAPUNIT=2F5*
/*
FDR235 FDRPAS ON CPU SERIAL# 09E2572965 IS MONITORING THE FOLLOWING 16 UNITS:
FDR235 2F50 2F51 2F52 2F53 2F54 2F55 2F56 2F57 2F58 2F59 2F5A 2F5B 2F5C 2F5D 2F5E 2F5F
```

2.7.2 PASIVP04 JCL and Control Statements

```
//SIMSWAPM EXEC PGM=FDRPAS,REGION=0M
//STEPLIB DD DISP=SHR,DSN=fdrpas.loadlib <--CHANGE
//SYSPRINT DD SYSOUT=*
//FDRSUMM DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
    SIMSWAPMON TYPE=FULL,MAXTASKS=20,CHECKSOURCE=YES,CHECKTARGET=YES,ALLOWPAV=YES
    MOUNT VOL=EU2F02,SWAPUNIT=2F51 3390-3
    MOUNT VOL=EU2F04,SWAPUNIT=2F53 3390-9
    MOUNT VOL=EU2F0D,SWAPUNIT=2F55 3390-27
    MOUNT VOL=EU2F0C,SWAPUNIT=2F5B 3390-9
/*
```

2.7.3 FDRSUMM Output (from SIMSWAPMON Job)

VOLSER	COMP CODE	ELAPSED TIME (MIN)	VOLUME SIZE (CYL)	DASD BYTES READ FROM VOL	DATASETS PROCESSED	UPDATED TRACKS	TRACKS SWAPPED
EU2F0C	0	0.0	10,017	0	0	0	0
EU2F04	0	0.0	10,017	0	0	0	0
EU2F02	0	0.0	3,339	0	0	0	0
EU2F0D	0	0.0	32,760	0	0	0	0

2.8 Output Example Where All the Monitors were in Place

SIMSWAPMON displays all the systems that respond and that join in the SWAP operation. It also displays all the systems that did not join (ERROR) or did not need to join (OK). Non-responding systems where MONITOR tasks are not running are also displayed.

```
FDR001 FDR PLUG AND SWAP - FDRPAS VER. 5.4/85P - INNOVATION DATA PROCESSING
CPK320I COMPAKTOR OPTIONS IN EFFECT -- CHECKSOURCE-----EU2F0D
CPK529I INDEXED VTOC EXISTS ON VOLUME=EU2F0D
VOLUME SUMMARY --- DEVICE TYPE ..... 3390-27
NO. OF TRACKS .....491400
NO. OF CYLINDERS ..... 32760
NO. OF ALLOCATED TRACKS .....293518
PERCENTAGE OF VOLUME IN USE ..... 60
CPK600I COMPAKTOR SUCCESSFULLY COMPLETED CHECKSOURCE RUN ----- VOLUME=EU2F0D
FDR233 CPUE (SERIAL# 05E2572965) ACKNOWLEDGES THE SIMSWAP VOL=EU2F0D - IBM 2107941 TO IBM 2107941
FDR233 CPUB (SERIAL# 02E2572965) ACKNOWLEDGES THE SIMSWAP VOL=EU2F0D AND HAS JOINED IN SIMS OF UNIT=2F0D TO 2F55
FDR233 CPUC (SERIAL# 01E2572965) ACKNOWLEDGES THE SIMSWAP VOL=EU2F0D AND HAS JOINED IN SIMS OF UNIT=2F0D TO 2F55
FDR233 CPUA (SERIAL# 09E2572965) ACKNOWLEDGES THE SIMSWAP VOL=EU2F0D AND HAS JOINED IN SIMS OF UNIT=2F0D TO 2F55
FDRW66 SIMSWAP VOL=EU2F0D TO UNIT=2F55 COMPLETED 4 SYSTEMS (CPUE CPUB CPUC CPUA)
```

The FDRPAS Monitor Output (for this example one volume was picked and one LPAR, it will be the same for all participating systems and volumes).

Remember it's a **simulate**, volume is NOT swapped! This means that the FDRPAS SIMSWAPMON has verified it can communicate with the FDRPAS MONITOR jobs on the other SYSTEMS and the TARGET is OFFLINE for that system:

```
FDR303 CARD IMAGE -- MOUNT SU=2F55
FDR235 FDRPAS ON CPU SERIAL# 01E2572965 IS MONITORING THE FOLLOWING 1 UNITS:
FDR235 2F55
FDR233 CPUC (SERIAL# 01E2572965) ACKNOWLEDGES THE SWAP OF VOL=EU2F0D AND HAS
JOINED IN SWAP OF UNIT=2F0D TO 2F55
FDR999 FDR SUCCESSFULLY COMPLETED
```

2.9 Output Example Where a Monitor was NOT Running

CPU with Serial # 02E2572965 (CPUB) does not have a Monitor running.

```

FDR001  FDR PLUG AND SWAP          - FDRPAS  VER. 5.4/85P  - INNOVATION DATA PROCESSING
CPK320I  COMPAKTOR OPTIONS IN EFFECT -- CHECKSOURCE-----EU2F0D
CPK529I  INDEXED VTOC EXISTS ON VOLUME=EU2F0D
VOLUME SUMMARY --- DEVICE TYPE ..... 3390-27
          NO. OF TRACKS .....491400
          NO. OF CYLINDERS ..... 32760
          NO. OF ALLOCATED TRACKS .....293518
          PERCENTAGE OF VOLUME IN USE ..... 60
CPK600I  COMPAKTOR SUCCESSFULLY COMPLETED CHECKSOURCE RUN ----- VOLUME=EU2F0D

FDR234** SWAP ERROR ON VOL=EU2F0D - UNIT=2F55 REASON=M - CPU (SERIAL#=02E2572965) FAILED TO RESPOND IN PHASE 1
FDR234** SWAP ERROR ON VOL=EU2F0D - UNIT=2F55 REASON=Q - SWAP OPERATION CANCELLED NONRESPONDING=FAIL

```

The VOLUME will not SWAP. Ensure an FDRPAS MONITOR JOB is running on all participating systems.

- **NONRESPONDING=**

If a non-responding system is detected during initialization (usually due to a system where no FDRPAS MONITOR is running), then NONRESPONDING= controls how FDRPAS responds.

FAIL – The swap fails immediately, as if (“NO”) was replied to message FDRW68.

RETRY – Message FDRW68 is issued, allowing the user only to terminate the swap (“NO”) or retry the missing systems (“RETRY”). See [Section 300.3 Phase 1 Initialization](#) for details.

Default: RETRY, unless a different default has been set for the global option NONRESPONDING, as described in [Section 380.16 “FDRPAS and FDRERASE Options \(Panel A.I.4.14\)”](#).

NOTE: If the FDRW68 message is not replied to within 30 minutes, a reply of “NO” is issued automatically.

When you have checked and solved all the issues that came up running the FDRPAS SIMSWAP and SIMSWAPMON, your SIMSWAPMON job should look like this.

2.9.1 PASIVP05 JCL and Control Statements

```
//SIMSWAPM EXEC PGM=FDRPAS,REGION=0M
//STEPLIB DD DISP=SHR,DSN=fdrpas.loadlib <-- CHANGE
//SYSPRINT DD SYSOUT=*
//FDRSUMM DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
  SIMSWAPMON TYPE=FULL,MAXTASKS=20,CHECKSOURCE=YES,CHECKTARGET=YES,ALLOWPAV=YES
  MOUNT VOL=EU2F02,SWAPUNIT=2F51
  MOUNT VOL=EU2F04,SWAPUNIT=2F53
  MOUNT VOL=EU2F0D,SWAPUNIT=2F55
  MOUNT VOL=EU2F0C,SWAPUNIT=2F5B
/*
```

2.9.2 FDRSUMM Output

FDR001 FDR PLUG AND SWAP - FDRPAS VER. 5.4/85P - INNOVATION DATA PROCESSING							
VOLSER	COMP CODE	ELAPSED TIME (MIN)	VOLUME SIZE (CYL)	DASD BYTES READ FROM VOL	DATASETS PROCESSED	UPDATED TRACKS	TRACKS SWAPPED
EU2F0D	0	0.0	32,760	0	0	0	0
EU2F0C	0	0.0	10,017	0	0	0	0
EU2F04	0	0.0	10,017	0	0	0	0
EU2F02	0	0.0	3,339	0	0	0	0

Part 3

Performing the SWAP

3.1 FDRPAS SWAP

The FDRPAS SWAP job is similar to the FDRPAS SIMSWAPMON job.

We are using **ALLOWPAV=YES** to indicate that the Parallel Access Volume (PAV) aliases for the source volume stay enabled during the copy phase.

NOTE: ALLOWPAV=YES needs to be added to the MONITOR task also.

3.1.1 PASIVP06 JCL and Control Statements

```
//SWAP      EXEC PGM=FDRPAS,REGION=0M
//STEPLIB  DD DISP=SHR,DSN=fdrpas.loadlib  <-- CHANGE
//SYSPRINT DD SYSOUT=*
//FDRSUMM  DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN    DD *
  SWAP      TYPE=FULL,MAXTASKS=20,CHECKSOURCE=YES,CHECKTARGET=YES,
            ALLOWPAV=YES
  MOUNT     VOL=EU2F02,SWAPUNIT=2F51          3390-3
  MOUNT     VOL=EU2F04,SWAPUNIT=2F53          3390-9
  MOUNT     VOL=EU2F0D,SWAPUNIT=2F55          3390-27
  MOUNT     VOL=EU2F0C,SWAPUNIT=2F5B          3390-9
/*
```

When running the FDRPAS SWAP job you can see the progress using the ISPF panels via "A" – ABR ISPF panels and option "P" PLUG and SWAP to bring you to the ISPF Panel.

3.2 Using the ISPF Dialogs

The ISPF dialogs can be used to build the JCL and control statements for the SWAP job as well as the MONITOR jobs.

3.2.1 Start the FDRPAS Dialog

Select option "P" from the FDR Primary Options menu to monitor and control FDRPAS.

```

----- FDR TOTAL DASD MANAGEMENT SYSTEM -- FDR PRIMARY OPTIONS MENU -----
OPTION  ==>
                                                    V 5.4/85

1  REPORTS      - ABR REPORTING FUNCTIONS
2  RESTORE      - ABR DATA SET RESTORE
3  ARCHIVE      - ABR DATA SET ARCHIVE OR SUPERSCRATCH
4  BACKUP       - ABR DATA SET BACKUP
5  REMOTE Q     - ABR REMOTE QUEUE UTILITY FUNCTIONS

C  COMPAKTOR    - COMPAKTOR MAP AND SIMULATION REPORTS
R  RELEASE      - COMPAKTOR RELEASE

I  INSTALL      - INSTALLATION AND MAINTENANCE OF FDR AND OPTIONAL PRODUCTS
J  JCL PARMS    - SPECIFY FDR JCL AND SYSOUT DEFAULTS FOR SUBMITTED JOBS
K  FORMAT       - MODIFY FORMAT OF GENERATED REPORTS

P  PLUG & SWAP  - FDRPAS PLUG & SWAP
E  FDRERASE     - FDR DISK ERASE
M  FDRMOVE      - FDRMOVE PLUG & SWAP DATA SET MOVE

Q  QUERY        - FDR/ABR STATISTICS QUERY
S  SRS          - SEARCH, REPORT, SERVICES DIALOG
T  FDRTSEL      - BACKUP FILE MANAGEMENT UTILITY

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```

Select Option "P" (Plug & Swap)

3.2.2 Set the Desired Options

Press ENTER and when an FDRPAS SWAP is active, it shows the progress of each volume that participates in the SWAP.

```

----- FDRPAS Plug & Swap ----- Row 1 to 4 of 4
COMMAND ==>                               SCROLL ==> PAGE
Menu                                         Panel: 1 of 3
Command  Volume Unit      SMS   Swap to      Refresh 0
        Serial Addr      CU   Storage Offline
        Mask  Mask  SSID Serial Group  Unit  Status
-----
      EU2F0C 2F0C 8104 LR221 EUSGR02 2F5B ACTIVE SWAP      3%
      EU2F0D 2F0D 8104 LR221 EUSGR03 2F55 ACTIVE SWAP      1%
      EU2F02 2F02 8104 LR221          2F51 ACTIVE SWAP     10%
      EU2F04 2F04 8104 LR221          2F53 ACTIVE SWAP      3%
***** Bottom of data *****

```

As well as checking swap progress and activity with the panels, you can issue commands like SUsuspend, REsume, and more. Commands entered in the command line at the top of the screen apply to every volume on the display. A command entered next to any volume in the display applies to that volume or volumes. Place the cursor on MENU and press ENTER on your keyboard to see the options.

```

Active      SWAP job      Clear entries
CONFIRM     SWAPDUMP job  RESET status
Message     CONFIRM job
Suspend     MONITOR job
REsume     SIMSWAP job
ABORT      SIMSWAPMON job
Options     AUTOSWAP job
HISTORY     HYPERSWAP job
Sort

```

Place the cursor next to the command to execute and press enter. Press PF3 to exit. Press PF1 for the Help tutorials.

3

PERFORMING THE SWAP

These are some screens following the progress of the SWAPs.

```
----- FDRPAS Plug & Swap ----- Row 1 to 4 of 4
COMMAND ==> SCROLL ==> PAGE
Menu Panel: 1 of 3
Refresh 0
Command Volume Unit SMS Swap to
Serial Addr CU Storage Offline
Mask Mask SSID Serial Group Unit Status 03:56:49
-----
EU2F0C 2F0C 8104 LR221 EUSGR02 2F5B ACTIVE SWAP 14%
EU2F0D 2F0D 8104 LR221 EUSGR03 2F55 ACTIVE SWAP 4%
EU2F02 2F02 8104 LR221 2F51 ACTIVE SWAP 40%
EU2F04 2F04 8104 LR221 2F53 ACTIVE SWAP 13%
***** Bottom of data *****
```

```
----- FDRPAS Plug & Swap ----- Row 1 to 4 of 4
COMMAND ==> SCROLL ==> PAGE
Menu Panel: 1 of 3
Refresh 0
Command Volume Unit SMS Swap to
Serial Addr CU Storage Offline
Mask Mask SSID Serial Group Unit Status 03:57:09
-----
EU2F0C 2F0C 8104 LR221 EUSGR02 2F5B ACTIVE SWAP 27%
EU2F0D 2F0D 8104 LR221 EUSGR03 2F55 ACTIVE SWAP 8%
EU2F02 2F02 8104 LR221 2F51 ACTIVE SWAP 77%
EU2F04 2F04 8104 LR221 2F53 ACTIVE SWAP 26%
***** Bottom of data *****
```

Progress of SWAPs

```
----- FDRPAS Plug & Swap ----- Row 1 to 4 of 4
COMMAND ==> SCROLL ==> PAGE
Menu Panel: 1 of 3
Refresh 0
Command Volume Unit SMS Swap to
Serial Addr CU Storage Offline
Mask Mask SSID Serial Group Unit Status 04:00:43
-----
EU2F0C 2F5B 8104 LR221 EUSGR02 SWAPPED
EU2F0D 2F0D 8104 LR221 EUSGR03 2F55 ACTIVE SWAP 90%
EU2F02 2F51 8104 LR221 SWAPPED
EU2F04 2F53 8104 LR221 SWAPPED
***** Bottom of data *****
```

3

PERFORMING THE SWAP

This screen display shows that all of the volumes have been swapped.

```
----- FDRPAS Plug & Swap ----- Row 1 to 4 of 4
COMMAND ==> SCROLL ==> PAGE
Menu Panel: 1 of 3
Command Volume Unit SMS Swap to Refresh 0
          Serial Addr CU Storage Offline
          Mask Mask SSID Serial Group Unit Status
-----
          EU2F0C 2F5B 8104 LR221 EUSGR02 SWAPPED
          EU2F0D 2F55 8104 LR221 EUSGR03 SWAPPED
          EU2F02 2F51 8104 LR221 SWAPPED
          EU2F04 2F53 8104 LR221 SWAPPED
***** Bottom of data *****
```

All Volumes are on new UCB addresses

3

PERFORMING THE SWAP

During the SWAP process, updates are monitored on the participating LPARS where the FDRPAS SWAP and FDRPAS MONITOR jobs are running.

Output example:

```
FDR007 STARTING TIME OF FULL VOL SWAP -- 03.56.23 -- UNIT=3390 ,IN=D#EU2F02,OUTPUT=TAPE4
FDR239 4032 TRACKS UPDATED BY CPUE
FDR239 4032 TOTAL UNIQUE TRACKS UPDATED IN PASS 1 - RE-COPYING UPDATED TRACKS
...
FDR007 STARTING TIME OF FULL VOL SWAP -- 03.56.23 -- UNIT=3390 ,IN=D#EU2F04,OUTPUT=TAPE3
FDR239 23918 TRACKS UPDATED BY CPUE
FDR239 23918 TOTAL UNIQUE TRACKS UPDATED IN PASS 1 - RE-COPYING UPDATED TRACKS
...

FDR233 CPUE (SERIAL# 05E2572965) ACKNOWLEDGES THE SWAP OF VOL=EU2F0D - IBM 2107941 TO IBM 2107941
FDR233 CPUC (SERIAL# 01E2572965) ACKNOWLEDGES THE SWAP OF VOL=EU2F0D AND HAS JOINED IN SWAP OF UNIT=2F0D TO 2F55
FDR233 CPUB (SERIAL# 02E2572965) ACKNOWLEDGES THE SWAP OF VOL=EU2F0D AND HAS JOINED IN SWAP OF UNIT=2F0D TO 2F55
FDR233 CPUT (SERIAL# 03E2572965) ACKNOWLEDGES THE SWAP OF VOL=EU2F0D AND HAS JOINED IN SWAP OF UNIT=2F0D TO 2F55
FDR233 CPOA (SERIAL# 04E2572965) ACKNOWLEDGES THE SWAP OF VOL=EU2F0D AND HAS JOINED IN SWAP OF UNIT=2F0D TO 2F55
FDRW66 SWAP OF VOL=EU2F0D TO UNIT=2F55 STARTED ON 4 SYSTEMS (CPUE CPUC CPUB CPOA)
FDR236 CPUC ACTIVATED I/O INTERCEPTS ON UNIT=2F0D
FDR236 CPUB ACTIVATED I/O INTERCEPTS ON UNIT=2F0D
FDR236 CPOA ACTIVATED I/O INTERCEPTS ON UNIT=2F0D
FDR264 FDR DISABLED FLASHCOPY UNIT=2F0D
FDR251 FDR UNBOUND PAV ALIASES FROM UNIT=2F55
FDR236 CPUE ACTIVATED I/O INTERCEPTS ON UNIT=2F0D
FDR007 STARTING TIME OF FULL VOL SWAP -- 03.32.07 -- UNIT=3390 ,IN=D#EU2F0D,OUTPUT=TAPE1
FDR251 FDR UNBOUND PAV ALIASES FROM UNIT=2F0D
FDR236 CPUE DE-ACTIVATED I/O INTERCEPTS ON UNIT=2F0D 902 TRACKS UPDATED -
FDR241 FDRPAS SUCCESSFULLY COMPLETED SWAP OF VOL=EU2F0D TO UNIT=2F55 ON CPUE
FDR264 FDR RE-ENABLED FLASHCOPY UNIT=2F0D
FDR251 FDR RE-ENABLED PAV FOR UNIT=2F55
FDR251 FDR RE-ENABLED PAV FOR UNIT=2F0D
FDR241 FDRPAS SUCCESSFULLY COMPLETED SWAP OF VOL=EU2F0D TO UNIT=2F55 ON CPUC
FDR241 FDRPAS SUCCESSFULLY COMPLETED SWAP OF VOL=EU2F0D TO UNIT=2F55 ON CPUB
FDR241 FDRPAS SUCCESSFULLY COMPLETED SWAP OF VOL=EU2F0D TO UNIT=2F55 ON CPOA
FDR007 ENDING TIME OF FULL VOL SWAP -- 03.35.30 -- UNIT=3390 ,IN=D#EU2F0D,OUTPUT=TAPE1
FDR122 OPERATION STATISTICS FOR 3390 VOLUME.....EU2F0D
FDR122 CYLINDERS ON VOLUME.....32,760
FDR122 DATASETS PROCESSED.....18
FDR122 BYTES READ FROM DASD...22,307,277,300
FDR122 DASD TRACKS SWAPPED.....446,661
FDR122 UPDATED TRACKS RECOPIED.....902
FDR122 DASD EXCPS.....29,827
FDR122 TARGET DASD EXCPS.....29,794
FDR122 CPU TIME (SECONDS).....5.449
FDR122 ELAPSED TIME (MINUTES).....3.5
FDR122 SWAP TIME.....3.4
```

The FDRSUMM DD statement provides you one simple overview from all the SWAP tasks.

Completion Code 0 for all tasks is the desired output. For more information on each volume, look at the SYSPRINn DD output.

FDR001 FDR PLUG AND SWAP - FDRPAS VER. 5.4/85P - INNOVATION DATA PROCESSING						
VOLSER	COMP CODE	ELAPSED TIME (MIN)	VOLUME SIZE (CYL)	DASD BYTES READ FROM VOL	DATASETS PROCESSED	TRACKS UPDATED / SWAPPED
EU2F02	0	1.7	3,339	2,396,717,276	13	4032 / 49,371
EU2F0C	0	2.9	10,017	6,778,445,120	14	140 / 136,432
EU2F04	0	3.2	10,017	7,966,044,192	36	23918 / 161,918
EU2F0D	0	3.5	32,760	22,339,323,260	18	902 / 447,351

Elapsed Time Per Volume

3.3 ALLOWPAV

ALLOWPAV=YES indicates that the Parallel Access Volume (PAV) aliases for the source volume stay enabled during the copy phase.

This is from the FDRPAS SWAP job:

FDR251	FDR UNBOUND PAV ALIASES FROM UNIT=2F55 <-- TARGET	03.32.07
FDR236	CPUE ACTIVATED I/O INTERCEPTS ON UNIT=2F0D	03.32.07
FDR007	STARTING TIME OF FULL VOL SWAP -- 03.32.07 - UNIT=3390 ,IN=D#EU2F0D,OUTPUT=TAPE1 SYSPRINT	
FDR251	FDR UNBOUND PAV ALIASES FROM UNIT=2F0D <-- SOURCE	03.35.27
FDR236	CPUE DE-ACTIVATED I/O INTERCEPTS ON UNIT=2F0D 38,878 TRACKS UPDATED -	03.35.28
FDR241	FDRPAS SUCCESSFULLY COMPLETED SWAP OF VOL=EU2F0D TO UNIT=2F55 ON CPUE	03.35.29
FDR251	FDR RE-ENABLED PAV FOR UNIT=2F55	03.35.29
FDR251	FDR RE-ENABLED PAV FOR UNIT=2F0D	03.35.29

What we see here is the Parallel Access Volume (PAV) aliases for the TARGET volume are disabled at the start of the SWAP operation at 03.32.07 and re-enabled after the SWAP operation completes.

The Parallel Access Volume (PAV) aliases for the source volume stay enabled during the initial copy phase and are disabled during the time the actual SWAP of the volume, this occurred at 03.35.27. This reduces the amount of time that PAV aliases are not available, and in this example only 2 seconds.

3.4 CONFIRMSWAP Option

By default, a SWAP operation (to actually move a volume) completes automatically as soon as the source volume and target device are synchronized or when only a small number of data tracks remain to be synchronized. No operator or user intervention is required to complete the operation.

However, the CONFIRMSWAP=YES operand for SWAP can be used to allow the operator or user to control when the operation on a given DASD volume completes. If these operands are specified, then FDRPAS enters an "idle" state when the devices are synchronized or close to synchronization. In this state, FDRPAS continues monitoring the source volume for updates and re-entering Phase 3 to periodically copy the updated tracks, to keep the devices in close synchronization. However, it continues to do this indefinitely until it is instructed to complete the operation.

CONFIRMSWAP=YES should be used only when you have a need to complete the swap of a number of volumes at the same time; if it is not important when the swap of each individual volume completes, use the default of CONFIRMSWAP=NO.

CONFIRMSWAP=YES is coded on the SWAP statement.

```
SWAP      TYPE=FULL,MAXTASKS=20,CHECKSOURCE=YES,CHECKTARGET=YES,
          ALLOWPAV=YES,CONFIRMSWAP=YES
```

While waiting for the **CONFIRM**, FDRPAS monitors the source for updates and copies them to the target device.

FDR239	580 TRACKS UPDATED BY CPUE	
FDR239	580 TOTAL UNIQUE TRACKS UPDATED IN PASS 1 - RE-COPYING UPDATED TRACKS	
FDR236	CPUE DE-ACTIVATED I/O INTERCEPTS ON UNIT=2F55 580 TRACKS UPDATED -	

You can type CONFIRM on the COMMAND line using the Plug & Swap ISPF panels and all the volumes will SWAP to the new devices or you can submit a FDRPAS MONITOR CONFIRM SWAP job.

3.4.1 CONFIRM via the ISPF Panels

```

----- FDRPAS Plug & Swap ----- Row 1 to 4 of 4
COMMAND ==> CONFIRM                               SCROLL ==> PAGE
Menu                                                Panel: 1 of 3
Command  Volume Unit          SMS  Swap to  Refresh 0
         Serial Addr        CU  Storage Offline
         Mask  Mask  SSID Serial Group  Unit  Status
-----
      EU2F0C 2F0C 8104 LR221 EUSGR02 2F5B WAIT FOR CONFIRMSWAP
      EU2F0D 2F0D 8104 LR221 EUSGR03 2F55 WAIT FOR CONFIRMSWAP
      EU2F02 2F02 8104 LR221          2F51 WAIT FOR CONFIRMSWAP
      EU2F04 2F04 8104 LR221          2F53 WAIT FOR CONFIRMSWAP
***** Bottom of data *****

```

3.4.2 PASIVP07 JCL and Control Statements

```

//MONITOR EXEC PGM=FDRPAS,REGION=0M
//STEPLIB DD DISP=SHR,DSN=fdrpas.loadlib <-- CHANGE
//SYSPRINT DD SYSOUT=*
//FDRSUMM DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
  MONITOR TYPE=CONFIRMSWAP
MOUNT VOL=EU2F02
MOUNT VOL=EU2F04
MOUNT VOL=EU2F0D
MOUNT VOL=EU2F0C
/*

```

The volumes are now SWAPPED to the new devices.

```

----- FDRPAS Plug & Swap ----- Row 1 to 4 of 4
COMMAND ==>
Menu                                                SCROLL ==> PAGE
                                                Panel: 1 of 3
Command  Volume Unit          SMS  Swap to  Refresh 0
         Serial Addr        CU  Storage Offline
         Mask  Mask  SSID Serial Group  Unit  Status
-----
      EU2F0C 2F5B 8104 LR221 EUSGR02 2F5B SWAPPED
      EU2F0D 2F55 8104 LR221 EUSGR03 2F55 SWAPPED
      EU2F02 2F51 8104 LR221          2F51 SWAPPED
      EU2F04 2F53 8104 LR221          2F53 SWAPPED
***** Bottom of data *****

```

3.5 RESETVOL

The source volumes that have been SWAPPED to new TARGET devices are offline. These devices have a volume label that has been modified so that they cannot be varied online. This RESETVOL function resets the volume label so that it can again be varied online, and also modifies the volume serial so that it can be mounted. All existing data on the volume is preserved.

3.5.1 PASIVP08 JCL and Control Statements

```
//RESETVOL EXEC PGM=FDRPAS,REGION=0M
//STEP1LIB DD DISP=SHR,DSN=fdrpas.loadlib <-- CHANGE
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//SYSIN DD *
MONITOR TYPE=RESETVOL
MOUNT VARYUNIT=2F02,NVOL=EU2FXX
/*
```

3.5.2 OUTPUT

```
FDR001 FDR PLUG AND SWAP - FDRPAS VER. 5.4/85P - INNOVATION DATA PROCESSING
FDR303 CARD IMAGE -- MONITOR TYPE=RESETVOL
FDR303 SERVICE CLASS CHANGED TO PRDBATHI
FDR303 CARD IMAGE -- MOUNT VARYUNIT=2F02,NVOL=EU2FXX
FDR261 UNIT=2F02 VOL=EU2FXX WAS RESET
FDR999 FDR SUCCESSFULLY COMPLETED
```

See [Section 310.27](#) for more examples of VARYONLINE and RESETVOL.

4.1 Product Demos

Product demos are available on the INNOVATION website for FDRPAS, FDRMOVE, and FDRERASE. Go to web site <http://fdr.com> and click the desired link in the "Product Demos" tab.

The direct link to the demos page is <http://fdr.com/demo.cfm>

The screenshot shows the INNOVATION DATA PROCESSING website. The top navigation bar includes 'Products', 'Popular Links', 'Solutions', and 'Product Demos' (highlighted with a red box). The 'Product Demos' section contains a heading 'A visual and audio overview of our products.' and three links: 'View the FATSCOPY product demo', 'View the FDRPAS product demo' (highlighted with a red box), and 'View the FDRMOVE product demo'. Below these is a large graphic with the FDRPAS logo and the text 'Simplified Automated Migration'. The left sidebar contains sections for 'Technical Center', 'FREE Trial', 'Popular Links', 'Contacts', and 'Latest News'.

4.2 FDRPAS Version 5.4 Level 85 Documentation

The following is the current documentation for the FDRPAS product. Use these links to download the documentation from the INNOVATION DATA PROCESSING FTP site.

- [FDRPAS, FDRMOVE, and FDRERASE User Manual](#)
- [FDRPASVM User Manual](#)
- [FDRERASE Concepts & Facilities Guide](#)
- [November 14, 2014 FDRPASVM Newsletter](#)
- [SHARE San Antonio March 2, 2016 FDRPASVM](#)
- [SHARE Boston August 15, 2013 DASD Migration](#)
- [FDRERASE for z/OS Demo](#)
- [FDRMOVE Demo](#)
- [FDRPAS Demo](#)
- [INNOVATION DATA PROCESSING Products Brochure](#)

4.3 INNOVATION DATA PROCESSING FTP Access

Fixes for INNOVATION products are usually provided by INNOVATION DATA PROCESSING in the form of zaps. Before using an INNOVATION product, you should check to see if there is any new maintenance required since the installation package for that product was created. Product maintenance is available on the INNOVATION DATA PROCESSING FTP site accessible from the INNOVATION DATA PROCESSING homepage: <http://www.fdr.com>



On the FTP Login screen, type your unique FTP Site Access code and click the Login button. If you do not have an Access Code, please click on the “[Register for FTP Site Access](#)” link shown to the right of the login area below.

The access codes can either be 8 or 10 digits.

- First, click on the product directory on the FTP site for the product that you wish to download maintenance.

Name	Size	Last Modified
fatscopy		5/29/2015 1:44:00 PM
fdr		5/29/2015 1:44:00 PM
fdrpas		5/1/2015 8:42:00 AM
fdrpasvm		5/1/2015 8:42:00 AM
iam		5/1/2015 8:42:00 AM
upstream		7/20/2015 2:56:00 PM
Welcome and Instructions.txt	1 KB	1/14/2010 12:00:00 AM

- Next, click on the “service” directory to see the product maintenance versions available.

Name	Size	Last Modified
documentation		5/18/2016 9:09:00 AM
icl		7/23/2015 12:00:00 PM
jcl		7/23/2015 12:00:00 PM
service		4/13/2016 12:30:00 PM

- Next, click on the directory for the product version you have, to see the maintenance for that version of the product.

Name	Size	Last Modified
PLEASE_ReadMe_First		6/8/2016 12:06:00 PM
v54180		10/9/2015 12:00:00 AM
v54183		2/25/2016 1:28:00 PM
v54185		4/13/2016 12:30:00 PM



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FDRPAS Quick Start and Best Practices