Operating documentation

Date	25 May 2023
Reference documentation	V4.12
FLASH4I library version	V04, Build 03/02/2023

Table of contents

1   General considerations

1.1   On which partition to perform the checks

All settings, and all controls, must be performed on the Production partition.

It may be necessary to connect to the Clone partition, either to respond to an error message on the backup job, or to check that the whole thing is working properly (usually in the days following the installation)

The Telnet function is not started by default on the Clone partition, so to connect to the Clone partition, you must use the 5250 console.

1.2   What controls to perform if BRMS is used

When the backup is performed with BRMS, all data is copied to the Production partition <u>at the end of the backup</u>. That is where you should check if the backup went well. As well as if the backup had been made on the Production partition itself.

Important: while a backup is taking place on the clone partition, BRMS should not be used on the Production partition.

1.3   Other control elements

Whether the backup is performed with or without BRMS, the user also has access to three items that are sent back to the Production partition:
- An internal **Flash for i** log giving details of the operations performed.
    o   Messages are generated on both partitions (Production and clone).
    o   They are transferred in real time to production.
    o   It can be accessed using the FLDSPHST command, then option 6 on the selected day line, or the FLDSPLOG command.
- The spools of the job that performed the backup.
    o   It is transferred to the production partition at the end of the backup.
    o   It is in the FLASH4I/FLASH4I output queue.
    o   It is also possible to reach it directly by using the FLDSPHST command, then option 8 on the line of the chosen day.
- The system history (usually accessible via the DSPLOG command).
    o   It is transferred to the Production partition continuously, except for a *SAVE21 or a restricted mode backup in which case it is transferred only at the end of the backup.
    o   It can be accessed using the FLDSPHST command, then option 9 on the selected day line, or the FLDSPSLOG command

1.4   The FLASH4I subsystem

The FLASH4I sub-system must be permanently active on the Production partition. It holds the FL_AUTO job, whose role is to receive information from the Clone partition, and to perform certain operations necessary for the proper functioning of the product.

To start it, use the FLSTRSBS command.

This command must be added to the QSTRUP startup program.

The FLASH4I subsystem contains at least one job (FL_AUTO), if the alerts module is configured it also contains its corresponding job (FL_ALERT).

```
Opt  Job        User       Type   -----Status-----   Function
__   FL_ALERT   FL_USER    AUTO   ACTIVE             DLY-60
__   FL_AUTO    FL_USER    AUTO   ACTIVE             DLY-10
```

If this subsystem is not active, the cloning (FLCLONE command) can be performed, the backup on the clone partition will work and the information will be sent to the clone partition, but it will not be integrated to the **Flash for i** database.
Once you have started FLASH4I subsystem the data from the clone partition will be automatically integrated.

1.5   The user profile FL_USER

The user profile FL_USER is used to perform operations on the Clone partition and to transfer information from it to the Production partition.
It must be *ENABLED and must have a password.
- Its password does not need to be known or entered in the **Flash for i** application.
- The password can be changed (via system commands) when no clone partition is active.

1.6   License key

The product license is validated by a license key. Use the FLWRKKEY command to check that the license key is valid.

```
FLWRKKEY                    Work with license keys                    PROD
                                                          23/05/23 09:06:35


Serial nb  . .   7830081        Partition nb . . . .  10
Version  . . .  V04             Generation date  . .  2023/03/02


Enter your options, then press Enter
   The following list gives the license keys for product Flash for i.
   They will be used in this order for the controls.
Seq.                                                             If *TEMP
Num License key                              Type   Option   Val. date
 10 111111 111111 111111 111111 111111 111111 111111 *ERROR
 20 260736 090598 890069 222204 579711 684668 491650 *PERM  Central
 30 173824 034100 660046 155703 546281 123112 327767 *PERM  Reconfigur
 40 086912 030183 730023 070284 613350 561556 163884 *PERM  eMail
 50 231765 413780 880061 510669 422501 497483 103689 *PERM  Base
 60 260727 836066 190069 233555 311311 671507 867700 *ERROR
 70 110727 836066 190069 233555 311311 671507 867700 *ERROR
 80 028969 763940 710007 690094 870230 185723 096412 *ERROR
 90 260727 875418 690069 199503 092211 671507 867700 *ERROR
100 260724 794764 590069 199503 088611 671507 866080 *ERROR


F3=Exit   F5=Refresh   F12=Cancel
```

The first valid key in the list will be considered.

Ignore the keys indicating an error.

2 Operating Flash for i

This chapter aims to
- Describe the operations that need to be performed regularly to control the proper functioning of **Flash for i**.
- Indicate how to respond to the most common incidents.

This document refers to several commands whose description can be found in the chapter "Control and Monitoring Commands" of the reference documentation.

2.1 Set up the environment and access the menu

To use the product **in English**
ADDLIBLE FLASh4I
FLMENU

```
FLMENU                    Flash for i general menu


Select one of the following:


   Commands for information and status
      1. Display cloning history        FLDSPHST
      2. Display cloning status         FLDSPSTS
      3. Display Flash for i log         FLDSPLOG
      4. Display clone's system log      FLDSPSLOG
      5. Work with spools                WRKOUTQ  OUTQ(FLASH4I)
   Related Commands Menus
     10. Menu for Configuration
     11. Menu for Controls
     12. Menu for Actions
     13. Menu for key management and miscellaneous
     14. Menu for HMC resources management
     15. Menu for Central Management
     16. Menu for SafeGuarded Copies
Selection or command





===>  _____
```

To use the product **in French**
ADDLIBLE FLASh4I
ADDLIBLE FLASH4I_FR

FLMENU

```
FLMENU                     Menu général de Flash for i

 Choisir une des options suivantes :


    Commandes d'informations et d'état
      1. Historique des clonages        FLDSPHST
      2. Tableau de bord d'un clonage   FLDSPSTS
      3. Visu du log de Flash for i     FLDSPLOG
      4. Visu du log système de clone   FLDSPSLOG
      5. gestion des spoules            WRKOUTQ  OUTQ(FLASH4I)


    Commandes associées
     10. Menu de Configuration
     11. Menu des Contrôles
     12. Menu des Actions
     13. Menu gestion des clés et divers
     14. Menu de gestion des ressources HMC
     15. Menu pour la gestion centralisée
 Option ou commande


 ===>
```

2.2   Checking the status of clones

Option 1, or command FLDSPHST

```
FLDSPHST                Display Cloning history                PROD
                                                       23/05/23 09:23:59
 Local partition type . . . .     PROD / *Primary             A
 Subsystem status . . . . . . .   Active                          B
 Errors not related to a cloning since 48h:    0
 Position to  . . . . . . . . .   0/00/00
 Enter your options, then press Enter                              D
   5=Display   6=Flash for i Logs   8 =Joblog   9=Clone's system Log


             Cloning  -- Start FLCLONE --          C   Nb     Nb      %
 Opt Envir.   Number   Date      Time     Status       Msg    Err   Disk
  _  BRMS_DAY2   2299   23/05/23  02:00:15  *BRMS_END    60     0      %
  _  BRMS_DAY1   2298   22/05/23  02:00:17  *BRMS_END    66     2      %
  _  BRMS_WEEK2  2297   21/05/23  02:00:17  *END_FC      68     2     64%
  _  BRMS_DAY1   2296   20/05/23  02:00:17  *END_FC      70     2     64%
  _  BRMS_DAY2   2295   19/05/23  02:00:17  *END_FC      70     2     64%
  _  BRMS_DAY1   2294   18/05/23  02:03:53  *END_FC      68     0     64%
  _  BRMS_DAY2   2293   17/05/23  02:00:17  *END_FC      68     0     64%
  _  TEST_REC2   2292   16/05/23  17:28:48  *END_FC      69     0     25%
  _  BRMS_DAY2   2291   16/05/23  02:00:17  *END_FC      66     0     63%
  _  TEST_REC2   2290   15/05/23  15:38:23  *END_FC      66     0     29%
                                                             More...
 F3=Exit   F5=Refresh   F11=Display time   F12=Cancel
```

This screen displays the list of clones.

All clones with a status of *END_FC have been completed. FlashCopy has been stopped. It is no longer possible to access these disks. But the history transferred to the production is still accessible.

The following items should be controlled:

| A |

Subsystem status: Must be Active.
If this line contains

`Subsystem status . . . . . . .` `The automatic job is stopped.`

The FLASH4I subsystem must then be restarted with the following command:
FLSTRSBS

| B |

Number of messages not directly related to a cloning process in the last 48 hours.
Most of the error messages are cloning related (see below under D). But some messages are related to the overall product, e.g., if the license key has expired, or if it concerns purges.
This number must be 0. If it is not, use the FLDSPLOG command to view the messages and deal with any errors that have occurred.

| C |

The stage at which the environment arrived on the Clone partition. Possible values are:
*HOLD = The *HOLD function has been requested. The Clone partition will not be not started by the **Flash for i** product.
*INIT = Initialization of the process.
*STR_FC = FlashCopy startup requested.
*STR_LPAR = Startup the current clone partition.

*FIRST_STR = First startup of the partition after cloning.

*BRMS = Backup by BRMS in progress.
*BRM21 = BRMS backup in progress.
*SAV21 = Full backup (SAVE21) in progress.
*SAVE = Backup with a specific program.
*USER = Specific treatment managed by the User.
*NEWCFG = Clone partition being reconfigured.

*BRMS_TFR = BRMS backup completed. QUSRBRM library is being transferred.
*BRM21_TFR = BRMS backup completed. QUSRBRM library is being transferred.

*BRMS_END = BRMS backup completed. The partition remains active.
*BRM21_END = BRMS backup completed. The partition remains active.
*SAV21_END = Full backup (SAVE21) completed. The partition remains.
active
*SAVE_END = End of backup with specific program. The partition remains active.
*USER_END = End of specific processing. The partition remains active.
*NEWCF_END = End of partition reconfiguration. Partition remains active.

*CHG_PROD = The Clone partition has changed its role (FLCHGROL command). It has become production independent (from the **Flash for i** product point of view).
*CHG_NONE = The Clone partition has changed its role (FLCHGROL command). It has become production independent (from the **Flash for i** product point of view).

*END_LPAR = Processing completed on the Clone partition. A stop of the partition is requested, the FlashCopy will remain active.
*END_FC = Processing completed on the Clone partition. A stop of the partition and FlashCopy were requested.
*ERROR = An error has occurred on the Clone partition.

| D |

Number of error messages related to this cloning.
This number must be 0, if it is not, choose option 6 (or use the FLDSPLOG command) to view the messages and deal with any errors that have occurred.

Other things to watch out for

If an error occurs, **Flash for i** will generate an error message, but there are some circumstances that do not allow **Flash for i** on the production partition to know that an error has occurred. For example, if the clone partition IPLs and performs the backup, but it fails to communicate with the production partition, in this case, the status will remain locked on *STR_LPAR for a much longer time than usual, and there will be no time shown in the "Prep on Prod" and "Save" columns. If this happens, log in to the 5250 console on the clone partition, and verify that the connection to production works properly.

2.3 Check the current condition of the product and its components

FLDSPHST command then option 5, or FLDSPSTS command

```
FLDSPSTS              Display an environment general status            PROD
                                                           23/05/23 09:35:08
Environment
  Clone number . . . . . . . .         2.299 started 23/05/23 at  2:00:15
  Environment . . . . . . . . .   BRMS_DAY2  Daily backup with BRMS + Recover PR
  Action to perform . . . . . .   *BRMS      BRMS FlashCopy State : *ENDPRC
  Partition definition . . . .    LPAR_CL2   Partition for Backup and Recover fo
  Storage definition . . . . .    STG_CL2    Disks for backup Clone 2 and recove
  Serial Nb, Nb LPAR PROD . . .   7830081   010
  Serial Nb, Nb LPAR CLONE . .    7830081   012


Real time status
  Cloning status . . . . .        *BRMS_END  Ending of the save with BRMS        E
  Last update . . . . . .    C    23/05/23 at  9:35:00            B
  Clone partition status . . .    Running, SRC code: 00000000
  FlashCopy status . . . . .      copying                    % Disk used . . . 53%
  Last error message . . . . .     0/00/00 at  0:00:00
  Messages number . . . . . .     Nb errors :       0 Nb Valid. :        0
                                   Total :      60
  Subsystem status . . . . . .    Active

                                                            More...

  Press ENTER to continue
 F3=Exit   F5=Refresh   F10=Log   F12=Cancel
```
(labels: A, C, B, E, D, F shown on screen)
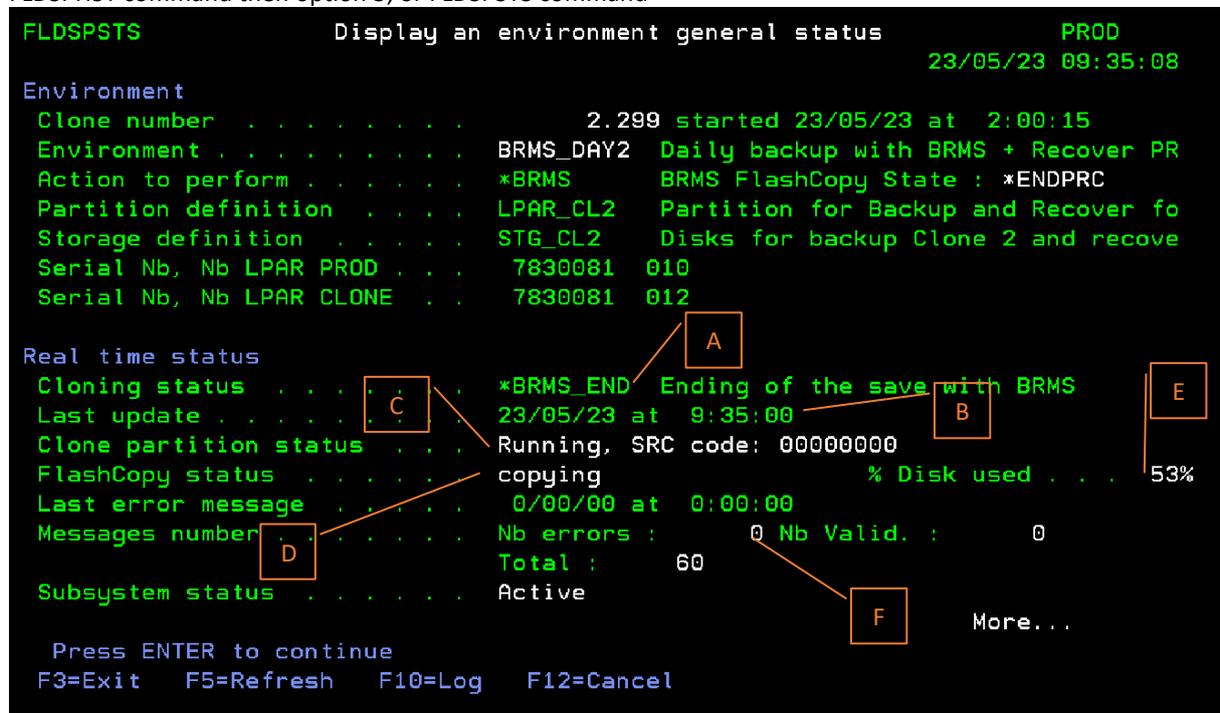
Displays the status of the selected clone:

| A | The stage at which the environment arrived on the Clone partition. See previous chapter for possible values. |

| B | Date and time when the last information was received from the clone partition. Status information and messages are transmitted from the Clone partition at regular intervals. |

| C | Clone partition status: Clone partition status obtained in real time from the HMC and the corresponding SRC code. |

Not activated = Partition is not booted.
Starting = The partition is booting.
Running = The partition is active.
"Could not create directo" = product configuration problem. See the troubleshooting chapter.
If SRC code is B9003C70, the clone partition is in restricted mode. No information will come back before the end of the backup.

D   FlashCopy Status: Indicates the status (in real time) of the FlashCopy function on the disk array.
     Copying = FlashCopy is active.
     stopped = FlashCopy is stopped.
     idle_or_copied = The consistency group was created, and never started.
     Connection error = An error has occurred while connecting to the
     Storwize. See the troubleshooting chapter.

E   Disk occupancy rate of the Clone partition on the disk array.

F   Number of error messages related to this cloning.
This number must be 0, if it is not, press F10 (or use the FLDSPLOG command) to view the messages and deal with any errors that have occurred.

2.4 View internal product history messages

FLDSPHST command then option 6, or FLDSPLOG command

```
FLDSPLOG1              Display Flash For i log                    PROD
                                                         23/05/23 17:53:34
Clone number  . . . . . .   2298       *ALL, *NONE, 1-999999999
Position to  . . . . . .    0/00/00 at  0:00:00
Lookup for a text . . . .  _____  (May be long)
Enter your options, then press Enter
   5=Display    6=Validate                  Clone
Opt Date      Time    Type Msg ID  LPAR  Number    Message text
 _   22/05/23  4:37:49 INF FLA1802 CLONE    2298 Saving QUSRICC library.
 _   22/05/23  4:35:08 INF FLA0910 CLONE    2298 Changing state : *BRMS_TFR, S
 _   22/05/23  4:35:08 INF FLA0910 CLONE    2298 Changing state : *BRMS_TFR, B
 _   22/05/23  4:34:57 INF FLA0910 CLONE    2298 Changing state : *BRMS, Resta
 _   22/05/23  4:26:59 INF FLA0910 CLONE    2298 Changing state : *BRMS, INZBR
 _   22/05/23  4:26:59 INF FLA1202 CLONE    2298 Save with BRMS done
 _   22/05/23  4:26:59 ERR FLA1207 CLONE    2298 Error found during BRMS save,
 _   22/05/23  4:26:59 ERR BRM1820 CLONE    2298 Control group DAY type *BKU e
 _   22/05/23  2:32:06 INF FLA0307 CLONE    2298 Cfg: FLCHGTIM, Ok, the differ
 _   22/05/23  2:30:48 INF FLA1101 CLONE    2298 Starting the Automat
 _   22/05/23  2:30:47 INF FLA0910 CLONE    2298 Changing state : *BRMS, Start
 _   22/05/23  2:30:47 INF FLA1201 CLONE    2298 Starting BRMS save, Control g
 _   22/05/23  2:30:42 INF FLA0910 CLONE    2298 Changing state : *BRMS, INZBR
                                                            More...
F3=Exit  F5=Refresh  F10=Errors only  F12=Cancel  F23=Validate all
```

Each major step in the cloning process generates a message in the internal history of the product that can be viewed on this screen, along with the date and time the message occurred.

The LPAR column indicates the origin of the message:
-    PROD: The message was generated on the Production partition
-    CLONE: The message was generated on the clone partition

Error messages can be identified with the ERR type in reverse video.

```
ERR FLA1207 CLONE    2298 Error found during BRMS save,
ERR BRM1820 CLONE    2298 Control group DAY type *BKU e
```

These error messages should be analyzed to see if they have had an impact on the backup or not.
They can then be validated (by option 6), their type will be changed to VAL (for Validated), they will no longer be counted in the number of errors on the dashboard (FLDSPSTS command) and will no longer raise an alert via the FLCHKLOG command.

Special error messages:

Message FLA0510: Job nnnnnn/uuuuuu/jjjjj in MSGW state, in subsystem ssssssss
This message indicates that a job has been found on the Clone partition in the "Message Wait" state. That job is waiting for a response before continuing.
- If the job is known and is not related to the backup, you should take the necessary steps (by setting up the Production partition correctly) to ensure that this does not happen again.
- If the job is the one that performs the backup, then you must connect to the Clone partition to respond to this message. **Without this, the backup will never finish**. Usually, this is because a cartridge is missing.

Message FLA0530: The Clone partition did not IPL within the specified time.
The definition entered in the environment states that the Clone partition should have sent its first messages after a certain time.
The error message FLA0530 indicates that this time limit has been exceeded and no messages have been received from the Clone partition.
Check that the partition has booted correctly and that there are no network problems.

Message FLA0531: The Clone partition did not complete within the specified time.
The definition entered in the environment states that the backup on the Clone partition must be completed after a certain time.
The error message FLA0531 indicates that this time has been exceeded and that the end of backup message has not been received from the Clone partition.
Log on to the Clone partition console and check if everything is normal.

Message FLA0302: Cfg: FLCHGTIM, Error while connecting to the production partition.
Message CPE3429: A route to the remote host is not available.
Message FLA6011: Error while transferring a message to the system "X".
Message FLA6012: Error while transferring the product state to the system "X".

The four previous errors could appear in the clone partition and they are related to some communication problem between it and the production partition, the product wanted to connect to the production partition to transmit information and the connection was not possible.
These messages are often found during product installation when some part of the network configuration is not correct.
When the configuration is correct, the most likely reason is that the production partition was stopped at that time.
If the shutdown is scheduled and/or regular, it is possible to indicate it to **Flash for i** so that it does not attempt to connect during this time slot, to do that use the FLPARAM command then select PLANNING.

Message FLA1207: Error found during BRMS save, control group "X". Check the log.
Message BRM1820: Control group "X" type *BKU ended abnormally.

The two previous errors could appear if there is an error during the BRMS backup. Use the BRMS commands to find the errors that occurred.

Message FLA0999: ATTENTION, The system value QCTLSBSD is incorrect.
The controlling subsystem is currently FL_CLONE on the production partition. This subsystem is reserved for Clone partitions. It is necessary to fix this error before the next IPL.

Cause: the command FLCLONE or FLSTRFC has been aborted during the start of FlashCopy/Snapshot.
Fix: The controlling subsystem should be X (library Y). To fix the problem, please use the commands:

Usually X = QCTL Y = QSYS, but verify them in the details of the error (option 5)

CHGSYSVAL SYSVAL(QCTLSBSD) VALUE('X Y')
CHGIPLA STRPRTWTR(*YES) STRTCP(*YES)

BRMS backup in restricted mode crashes
Problem description:
A backup in restricted mode abruptly stops and does not transfer any information to the production partition.
On the Clone partition, we see that the backup was running normally, but the job abruptly stopped, and the system rebooted.
In the JOBLOG of the job that was performing the backup, a message indicates that the QSYS user stopped the job, and the CPI096A message indicates, " Batch restricted state ended,"

Solution:
In BRMS, there is a parameter that specifies a maximum duration for the restricted state.
The backup took longer than expected.

WRKPCYBRM TYPE(*SYS)
1. Display or Change system policy

```
Controlling subsystem:
  Allow backups in batch . . . . . . . .  *YES        *NO, *YES
  Restricted state time limit  . . . . .  *NOMAX      5-9999 minutes, *NOMAX
```

2.5   View the system history messages of the Clone partition

FLDSPHST command then option 9, or FLDSPSLOG command

```
FLDSPSLOG1                Display system Log                          PROD
                                                       23/05/23 09:42:25
Clone number. . . . . . .    2298       *ALL, *NONE, 1-999999999
position to . . . . . . .    0/00/00 at  0:00:00
Lookup for a text . . . .  _____ (May be long)
Enter your options, then press Enter
  5=Display                              Clone
Opt Date      Time     Sev Msg ID  System   Number     Message text
 _  23/05/23  9:40:30 00 CPC3722 PROD         2298 3 objects saved from librar
 _  23/05/23  9:40:30 00 CPC3722 PROD         2298 1 objects saved from librar
 _  23/05/23  9:39:50 00 CPC3722 PROD         2298 1 objects saved from librar
 _  23/05/23  9:39:45 00 CPC3703 PROD         2298 1 objects restored from VOL
 _  23/05/23  9:39:44 99         PROD         2298 Message identifier  not fou
 _  23/05/23  9:39:44 99 CPA7025 PROD         2298 Receiver $VOLUM0349 in VOLU
 _  23/05/23  9:39:44 99 CPA7025 PROD         2298 Receiver $VOLUM0349 in VOLU
 _  23/05/23  9:39:44 00 CPC3703 PROD         2298 1 objects restored from VOL
 _  23/05/23  9:39:44 99         PROD         2298 Message identifier  not fou
 _  23/05/23  9:39:44 99 CPA7025 PROD         2298 Receiver $JRN0349 in VOLUME
 _  23/05/23  9:39:44 99 CPA7025 PROD         2298 Receiver $JRN0349 in VOLUME
 _  23/05/23  9:39:44 00 CPC3703 PROD         2298 1 objects restored from LIC
 _  23/05/23  9:39:43 99         PROD         2298 Message identifier  not fou
                                                           More...
F3=Exit  F5=Refresh  F10=Errors only  F12=Cancel  F23=Validate all
```

This screen displays the system messages (DSPLOG command) of the Clone partition.

2.6 Check the log of the backup job

If there is a problem with the backup, more information can be obtained by looking at the history of the backup type.

For BRMS, use the command DSPLOGBRM

In all cases, the job log of the job that performed the backup is automatically recovered on the production partition, it is possible to consult it by using the FLDSPHST command, then option 8 in front of the chosen cloning or by consulting the OUTQ FLASH4I/FLASH4I.

3 BRMS, How to restart a backup on the clone

If the clone partition is started and the BRMS backup has been started but stopped before the BRMS history could be sent to the production partition, then it is possible to restart the backup.

Please note that before using the procedures below, you must ensure that there are no processes running on either the clone partition or the production partition.

Checking on the clone partition
- Open a session on the 5250 console of the clone partition
- WRKACTJOB
- The list should no longer contain any jobs whose name starts with FL_STRUPxx.

```
                     Current
Opt   Subsystem/Job  User        Type   CPU %  Function         Status
__    FL_CLONE       QSYS        SBS     0,0                     DEQW
        DSP01        DEMOEN      INT     0,3    CMD-WRKACTJOB    RUN
__    FLASH4I        QSYS        SBS     0,0                     DEQW
__       FL_AUTO     FL_USER     ASJ     1,2    DLY-10           DLYW
__    QALERT         QSYS        SYS     0,0                     DEQW
__    QCMNARB01      QSYS        SYS     0,0                     EVTW
```

Check on the production partition
- Use the FLDSPHST command
- The last environment started must be in one of the following states:
    - o *BRMS or *BRM21 = Means that the BRMS backup was in progress, but no results were received
    - o *BRMS_TFR or BRM21_TFR = Means that the transfer of QUSRBRM has started.
- For any other status, the procedures below should not be used.

There are several types of recovery possible, which may depend on the time or circumstances. Each user must choose the recovery procedure they consider most appropriate.

1/ Transfer history from BRMS to Production
Context:
A backup with BRMS was performed on the clone partition, but the transfer of the QUSRBRM library did not take place or was not completed correctly. For example, for the following reasons:
- The BRMS control group was set to perform an IPL at the end of the backup.
- No communication was possible between the clone and production partitions. In this case, you will need to ensure that communication is possible. See Chapter 13.12

FlashCopy is still active and the clone partition is active or can be restarted.

How to restart the backup :
It is possible to force Flash for i to transfer the QUSRBRM library again.
- If the clone partition is stopped, start it.
- Open a session on the clone partition.
- Check that the control subsystem is FL_CLONE
    o WRKACTJOB, the FL_CLONE subsystem must be active, and probably the only active one. QCTL should not appear in the list.
- Type the following commands
    o ADDLIBLE FLASH4I
    o FLSTRSBS
    o SBMJOB CMD(FLCPYOBJ OBJ(*BRMS) CONFIRM(*NO)) JOB(QUSRBRM) JOBQ(FL_MULTI) INLLIBL(*CURRENT)
- The job will run in the FL_CLONE subsystem, and will finish when the transfer is complete.
- On the production partition, the FLASH4I subsystem will automatically receive and restore the data.

2/ Restart the backup on the clone partition
Context:
The cloning was done and the clone partition IPLed, but the backup was not performed, for example for the following reasons:
- A message asked to mount a new cartridge, but an operator replied Cancel
- The clone partition was stopped by an operator during the backup to recover power or memory.
- A serious error occurred, which stopped the clone partition
- An error in one of the exit programs stopped the backup process
FlashCopy is still active and the clone partition is active or can be restarted.

How to restart the backup :
It is possible to restart the entire process by simulating an initial boot of the partition.
- If the clone partition is stopped, boot it.
- Open a session on the clone partition.
- Check that the control subsystem is FL_CLONE
    o WRKACTJOB, the FL_CLONE subsystem must be active, and probably the only active one. QCTL should not appear in the list.
- Type the following command
    o CHGDTAARA DTAARA(FLASH4I/FLSTS (1 5)) VALUE('PROD ')
- Put the clone partition in restricted mode
    o ENDSBS SBS(*ALL) OPTION(*IMMED)
- Then restart the control subsystem
    o STRSBS SBSD(FLASH4I/FL_CLONE)
The clone partition will restart as if it were its first IPL, and will restart the entire process, including the backup.

3/ Restart the backup by starting the whole process again
Context:
The operation on the clone partition has been stopped completely, or it has been decided not to complete the backup.
The user wants to restart the entire process from a new copy of the production disks.

Warning: The data on the clone partition as it currently stands, i.e. the data that was on the production during the previous use of FLCLONE, will be lost. The data from the current production will be used for this new backup.

How to restart the backup :

On the production partition, use the FLCLONE command again, without taking any other precautions on the clone partition.
- The clone partition and FlashCopy will be stopped automatically.
- A new FlashCopy will be triggered
- The clone partition is rebooted

4/ Aborting the backup procedure

Context:

The operation on the clone partition has been stopped completely, or it has been decided not to complete the backup. A new clone will be performed later.

The user wants to reactivate the BRMS Network while waiting for the future cloning.

Procedure:

To reactivate the BRMS network, type the following command:

INZBRM OPTION(*FLASHCOPY) STATE(*ENDPRC)

To check :

WRKPCYBRM TYPE(*SYS)

Option 4

The FlashCopy state should display *ENDPRC

```
                            Change Network Group

Network group . . . . :   *MEDINV          Posi
FlashCopy state . . . :   *ENDPRC
```

4   Automation of controls via a tool such as Nagios

The product offers commands to automate the controls, for example, via a tool such as Nagios or equivalent.

4.1   FLCHKLOG: Check the number of error messages

The FLCHKLOG command counts the number of error messages in a given period of time and generates an alert if this number exceeds the amounts passed in parameter.

4.2   FLCHKSBS: Check that the Flash for i PLC is active

The FLCHKSBS command checks that the FLASH4I subsystem is active as well as the FL_AUTO job.

4.3   FLRTVSTS, Retrieving the state of items in a CLP program

The FLRTVSTS command allows to know the state of the different elements involved in **Flash for i** in a CLP program.

It can be used in a specific CLP program, which will be used to monitor the cloning status. This command returns in real time the status of several elements involved in the cloning (FlashCopy active or not, clone partition started or stopped, **Flash for i** internal states, etc.).

5   Troubleshooting

In the event of an incident refer to the Troubleshooting chapter of the documentation to see if a resolution is available.

6   Support

Thank you for your choice to use **Flash For i** product.

For getting support during installation or use of this product:

Contact your reseller.

Or send your questions to the following address:

support@m81.eu

This support is available at working days and hours (in France) and must be associated with a maintenance contract.