

M21 Database Backup and Restore

M21 Database Backup and Restore

Table of Contents

1. Overview	7
2. dbbkrs - DATABASE BACKUP and RESTORE	9
EXAMPLES	13
3. runbackup - RUN DATABASE BACKUP IN QUIET MODE	15
EXAMPLES	18

Chapter 1. Overview

This document describes the programs that are used to backup or restore the M21 system.

Chapter 1. Overview

Chapter 2. dbbkrs - DATABASE BACKUP and RESTORE

Used to do a **FULL CONCURRENT** or **INCREMENTAL** backup or restore of the M(UMPS) database volumes, *database.cfg* file and *database.ports* file. The *dbbkrs* program can also carry out the backup of the database after image journal files, but the restore is automatically performed by the M(UMPS) system at IPL time if needed. The *dbbkrs* program works by having one master process that starts a number of slave processes to do the input and output, based on the **FBACKUP**, **IBACKUP** and **JBACKUP** parameters which are specified in the *database.cfg* file. The master process is the only process that reads and writes to the initiating terminal.

Other backup and restore options are controlled by the **ABACKUPOPTION**, **FBACKUPOPTION**, **FBACKUPSAVE**, **IBACKUPOPTION**, **IBACKUPSAVE**, **JBACKUPOPTION**, and **JBACKUPSAVE** parameters which are also specified in the *database.cfg* file. See the Configuration File documentation for a detailed description of these parameters.

The *dbbkrs* program is normally called using one of the shell scripts - *dbbkup*, *dbrstr*, *dbtt* and *runbackup* , which specify some of the parameters to the *dbbkrs* program automatically.

The following tables describe the parameters that can be supplied to control the behaviour of the *dbbkrs* program.

Parameter	Description
-AUDIT	<i>dbbkrs</i> will check the parameters it uses in the <i>database.cfg</i> file and <i>system.conf</i> file. The results of these checks are written to the standard output.
-BASEDIR=NAME	Where NAME is the full path name to use instead of <i>/m21</i> . This is used to force <i>dbbkrs</i> to use a different <i>system.conf</i> file.
-CLEAR	Force <i>dbbkrs</i> to just clear the Modified Block Bit Maps located in shared memory if M21 is active or the Modified Block Bit Maps located in files if it is not active. This should only be used on systems that backup the database volumes using a program other than <i>dbbkrs</i> .
-COMPLETED	Force <i>dbbkrs</i> to update all the volumes to indicate that a FULL CONCURRENT backup has been completed. This should only be used on systems that backup the database volumes using a program other than <i>dbbkrs</i> .

-FORCE	Force <i>dbbkrs</i> to run even though the database status indicates that another <i>dbbkrs</i> is already running for this database. This should be used with great care and only after making sure that there is not another <i>dbbkrs</i> running for this database. If this is not done it will conflict with the other <i>dbbkrs</i> with unpredictable results.
-LIST	Will just list the blocks that would go on an incremental backup tape or be restored from a full or incremental tape.
-LOGFILE=NAME	Where NAME is the full path name to the backup or restore log file. This should only be passed to the slave <i>dbbkrs</i> processes by the master <i>dbbkrs</i> process and is not specified by the user of the backup program.example
-NOSYNC	This informs <i>dbbkrs</i> not to synchronize the block number when restoring and a volume spans more than one tape.
-MESSAGES	Allow certain messages to be displayed even if the -v options has not been specified. This is usually only used by the <i>runbackup</i> program.
-OVERRIDE	This informs <i>dbbkrs</i> to automatically answer yes to override request if the tape mounted is not a backup tape, is for the wrong database, is the wrong type of backup tape or the tape purge date has not been exceeded. Great care should be taken with this option because it can destroy a backup that has just been completed.
-QUIET	This backup is being run via the <i>runbackup</i> program. When prompted to mount a tape automatically answer yes unless it is the second tape or a restart because of an error.
-SLAVE	This informs <i>dbbkrs</i> that it will be a slave process and to not perform the functions of the master process. This should only be passed to the slave <i>dbbkrs</i> processes by the master <i>dbbkrs</i> process and is not specified by the user of the backup program.

-TDNX	Where X is the tape drive number for the slave process to use. This should only be passed to the slave <i>dbbkrs</i> processes by the master <i>dbbkrs</i> process and is not specified by the user of the backup program.
-b	Cause <i>dbbkrs</i> to run in backup mode. This option is mutually exclusive with the <i>-l</i> , <i>-r</i> and <i>-t</i> options.
-dNAME	Where NAME is the full path name of the database to be accessed by <i>dbbkrs</i> . NAME should not contain any file extensions, i.e. NOT NAME.cfg .
-f	Do a FULL CONCURRENT backup or restore. This option is mutually exclusive with the <i>-i</i> , <i>-j</i> and <i>-l</i> options.
-gN	Where N is the group (1 - 9) of configuration parameters to use, i.e. FBACKUP1 .
-i	Do an INCREMENTAL backup or restore. This option is mutually exclusive with the <i>-f</i> , <i>-j</i> and <i>-l</i> options.
-j	Do a journal backup. This option is mutually exclusive with the <i>-f</i> , <i>-i</i> and <i>-l</i> options.
-l	List or write tape labels. If this is selected, no other options are required. The user will be prompted for the tape drive number and density. This option is mutually exclusive with the <i>-b</i> , <i>-m</i> , <i>-r</i> , and <i>-t</i> options.
-m	Causes <i>dbbkrs</i> to monitor an already running <i>dbbkrs</i> . Shows the status line only. The only other option required is <i>-dNAME</i> . This option is mutually exclusive with the <i>-l</i> and <i>-t</i> options.
-oNAME	Causes <i>dbbkrs</i> to use NAME when comparing the database name on the tapes when doing a restore. This is used to change the database name when doing a restore.
-r	Do a restore. This option is mutually exclusive with the <i>-b</i> , <i>-l</i> , and <i>-t</i> options.

-smNNN	Causes <i>dbbkrs</i> to allocate NNN megabytes of shared memory. This is only valid when running <i>dbbkrs</i> with the database shut down. The default is 8MB.
-t	Causes <i>dbbkrs</i> to perform all the normal checks as if restoring a database, but does not write anything to the disk. This will test if all the tapes are readable at this time. This option is mutually exclusive with the <i>-b</i> , <i>-r</i> , <i>-l</i> , and <i>-m</i> options.
-vX	Where X is between 1 and 9 for the level of verbosity. If just <i>-v</i> is specified, the level will be incremented by 1 each time. This option shows the I/O counts and percent completion of the backup or restore.

If the *-v* option is specified, the following status line will be displayed and updated each second. After five seconds, if there are multiple tape drives, the display will switch to the next tape drive number, cycling through all tape drives.

D X VNN SS CDB: _____ CTB: _____ ._% TDB: _____ TTB: _____

X	Current tape drive number for the rest of the status line.	
VNN	NN is the current volume number or --- for journal backup.	
SS	One of the following 2 character status codes:	
	AB	This tape drive is in the process of aborting, generally due to some unrecoverable error condition.
	AF	Prompting for an alternate file during a full restore. Only seen by a monitoring <i>dbbkrs</i> .
	CT	Closing the tape.
	CV	Creating a volume. Only seen during a full restore.
	ER	An error condition has occurred for this tape drive.
	FS	File synchronisation, The operating system buffers are being forced to be written to disk. Only seen during a full restore.
	MR	Mount request for a tape. Only seen by a monitoring <i>dbbkrs</i> .
	OR	Override request, to write on a tape that has the wrong label or has not expired. Only seen by a monitoring <i>dbbkrs</i> .
	OT	Opening tape.
	OV	Opening a database volume.
	PT	Positioning a tape.
	RF	Reading from a database volume file.

X	Current tape drive number for the rest of the status line.	
	RL	Reading the label a from tape.
	RQ	Requesting a quiesce.
	RT	Reading from a tape.
	RW	Rewinding a tape.
	WF	Writing to a database volume file.
	WL	Writing a label to a tape.
	WM	Writing a tape mark on a tape.
	WT	Writing to a tape.
	--	No status.
	??	UNKNOWN STATUS.
CDB	Current number of database blocks read or written for this tape.	
CTB	Current number of tape buffers read or written for this tape.	
%	Percentage completed.	
TDB	Total number of database blocks read or written.	
TTB	Total number of tape buffers read or written.	

EXAMPLES

To perform a full concurrent backup of database *testdb*:

```
dbbkrs -b -f -v -d/m21/db00/testdb
```

To perform a full concurrent backup of database *testdb* using parameter group 2:

```
dbbkrs -b -f -g2 -v -d/m21/db00/testdb
```

To perform an incremental backup of database *testdb*:

```
dbbkrs -b -i -v -d/m21/db00/testdb
```

To perform a journal backup of database *testdb*:

```
dbbkrs -b -j -v -d/m21/db00/testdb
```

To perform a full restore of database *testdb*:

```
dbbkrs -r -f -v -d/m21/db00/testdb
```

To perform an incremental restore of database *testdb*:

```
dbbkrs -r -i -v -d/m21/db00/testdb
```

To perform a full restore of database *testdb* and rename it to *freddb*:

```
dbbkrs -r -f -otestdb -v -d/m21/db00/freddb
```

To list the blocks that would go on an incremental backup for database *testdb*:

```
dbbkrs -b -i -v -LIST -d/m21/db00/testdb
```

To monitor an already running backup or restore for database *testdb*:

```
dbbkrs -m -d/m21/db00/testdb
```

To show or write labels on a tape.

```
dbbkrs -l
```

Chapter 3. runbackup - RUN DATABASE BACKUP IN QUIET MODE

This shell script is used to do unattended **FULL CONCURRENT** , **INCREMENTAL** and **JOURNAL** backups of the M21 database volumes, *database.cfg* file, *database.ports* file, and the database journal files. This is done by scheduling the *runbackup* program to be run using the UNIX system *cron* command to run at a specific time and placed in the user's *crontab* file. The *runbackup* script calls the *dbbkrs* program with the parameters set to automatically answer **yes** when the *dbbkrs* program prompts to mount a tape. Therefore the parameters located in the *database.cfg* file can still be the same as those for running backups using *dbbkrs* .

Dependent upon the options specified and the hardware configuration available it is possible to schedule all three backup types to be performed one after another starting with a **FULL CONCURRENT** , then an **INCREMENTAL** , and then a **JOURNAL** . This particular example would require that the system had three available tape drives with tapes mounted, and that the different backup types were configured to be backed up to different tape drives.

Each backup type must be able to complete without requesting to mount additional tapes once the backup has started. If an additional tape is required or there are any hard tape errors the backup will be aborted.

The following table describes the parameters that can be supplied to control the behaviour of the *runbackup* shell script.

Parameter	Description
-DEBUG	Debugging information will be written to the standard output. When run via <i>cron</i> the information will be mailed to the login id that <i>cron</i> ran the <i>runbackup</i> shell script for.
-a	Request that all three backup types be done, a FULL CONCURRENT , an INCREMENTAL , and a JOURNAL , one after the other. This requires the use of three tape drives otherwise the backup will overwrite one another.
-ac	For all backup types requested, continue to the next backup type if the current one fails. See the -fc and -ic options.
-agN	For all backup types requested, N is the group (1 - 9) of configuration parameters to use, i.e. FBACKUP1 , IBACKUP1 , JBACKUP1 .
-ao	For all backup types requested, automatically answer yes for any override request. See the -fo , -io , and -jo options.

Parameter	Description
-at	For all backup type requested, test the readability of the tapes to ensure that the backup is good. See the -ft , -it , and -jt options.
-dNAME	Where NAME is the full path name of the database to be accessed by <i>dbbkrs</i> . NAME should not contain any file extensions, i.e. NOT <i>NAME.cfg</i> .
-f	Perform a FULL CONCURRENT backup.
-fc	When a FULL CONCURRENT backup has been requested and it fails, continue to the next requested backup type.
-fgN	When a FULL CONCURRENT backup has been requested, N is the group (1 - 9) of configuration parameters to use, i.e. FBACKUP1 . See the -ag , -ig , and -jg options.
-fo	When a FULL CONCURRENT backup has been requested and an override is requested, automatically answer yes . The override request will be needed if the tape in the tape drive is not a database backup tape, is not a backup tape for this database, is the wrong type of backup tape, or the purge date has not been exceeded.
-ft	When a FULL CONCURRENT backup has been requested, test the readability of the tapes to ensure that the backup is good. See the -at , -it , and -jt options.
-I	Perform an INCREMENTAL backup.
-ic	When an INCREMENTAL backup has been requested and it fails, continue to the next requested backup type.
-igN	When an INCREMENTAL backup has been requested, N is the group (1 - 9) of configuration parameters to use, i.e. IBACKUP1 . See the -ag , -fg , and -jg options.

Parameter	Description
-io	When an INCREMENTAL backup has been requested and an override is requested, automatically answer yes . The override request will be needed if the tape in the tape drive is not a database backup tape, is not a backup tape for this database, is the wrong type of backup tape, or the purge date has not been exceeded.
-it	When an INCREMENTAL backup has been requested, test the readability of the tape to ensure that the backup is good. See the -at , -ft , and -jt options.
-j	Perform a JOURNAL backup.
-jgN	When a JOURNAL backup has been requested, N is the group (1 - 9) of configuration parameters to use, i.e. JBACKUP1 . See the -ag , -fg , and -ig options.
-jo	When a JOURNAL backup has been requested and an override is requested, automatically answer yes . The override request will be needed if the tape in the tape drive is not a database backup tape, is not a backup tape for this database, is the wrong type of backup tape, or the purge date has not been exceeded.
-jt	When a JOURNAL backup has been requested, test the readability of the tape to ensure that the backup is good. See the -at , -ft , and -it options.
-ma=USER	Whether the requested backups succeed or fail then send mail to USER indicating the status.
-mb=USER	If the requested backups fail then send mail to USER indicating that the backup failed.
-mg=USER	If the requested backups succeed then send mail to USER indicating that the backup completed.
-sla	If the requested backups succeed or fail then log a message to the system logger. See the -slb and -slg options.
-slb	If the requested backups fail then log a message to the system logger. This will be a warning message. See the -sla and -slg options.

Parameter	Description
-slg	If the requested backups succeed then log a message to the system logger. This will be an information message. See the -sla and -slb options.

EXAMPLES

To perform a full concurrent, incremental, and journal backup with continue and override. Mail status to user *m21* and send messages to the *syslog* for all backups for database *testdb*:

```
runbackup -a -ac -ao -d/m21/db00/testdb -ma=m21 -sla
```

To perform a full concurrent and an incremental backup and send mail to *m21* if the backup fails for database *testdb*:

```
runbackup -d/m21/db00/testdb -f -i -mb=m21
```

To perform a full concurrent using group 2 parameters and mail *root* for database *testdb*:

```
runbackup -d/m21/db00/testdb -f -fg2 -ma=root
```

To perform a full concurrent, incremental, journal backup and test the tapes. Mail status to *root* and send messages to the *syslog* for all backups for database *testdb*:

```
runbackup -a -at -d/m21/db00/testdb -ma=root -sla
```

The following *crontab* file will perform a FULL CONCURRENT backup of the M21 system at 11pm on Tuesday, Thursday, Saturday and Sunday; an INCREMENTAL backup at 11pm on Monday, Wednesday and Friday; a JOURNAL backup at 10:30pm on Sunday:

```
SHELL=/bin/ksh
MAILTO=root
HOME=/m21
PATH=/sbin:/bin:/usr/sbin:/usr/bin:$HOME/dbin:$HOME/adbin:$HOME/bin:/local/bin
USERNAME="m21"
BASE=/m21
DBNAME=/home/m21/db00/priam

0 23 * * 2,4,6,7 /m21/adbin/runbackup -f -fc -fo -d/m21/db00/testdb -
ma=root
0 23 * * 1,3,5 /m21/adbin/runbackup -i -ic -io -d/m21/db00/testdb -ma=root
30 22 * * 7 /m21/adbin/runbackup -j -jc -jo -d/m21/db00/testdb -ma=root
```