RESOURCE AND PATIENT MANAGEMENT SYSTEM

How to Restore a Database from a Backup File

July 2025

Office of Information Technology (OIT)

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Purpose

Restore the most current database backup; *FullDBList_DATE_00X.cbk*. Review the *FullDBList_DATE_00X.log* and write down the Journal file name it switched to during the backup. Check the **I:\JOURNAL** for current journal files that may need to be restored. The restore process includes restoring the Journal file; abort the process if there is an error within the file, and then run the integrity check. There are two restore options covered in this technical document; **Restore ALL** and **Restore Selected or Renamed Directories**. The Restore ALL option is for restoring the entire database. Restore Selected or Renamed Directories options are for restoring certain databases by selecting the databases you want to restore. Pay close attention to this critical process as pressing the “Enter” key can end the session.

Access

The RPMS Admin is required to have full privileges to the system; File Manager Access Code @, Programmer Mode access, %ALL Role assigned in the Management Portal. The backup and journal directory used in this technical document is from the technical document Hardware Configuration Recommendations.

Process

Verify Backup Files are Available

Review the database backup log and verify the journal files are available.

1. Backup directories

   a. **Backup Log**: d:\intersystems\irishealth\mgr\backup\

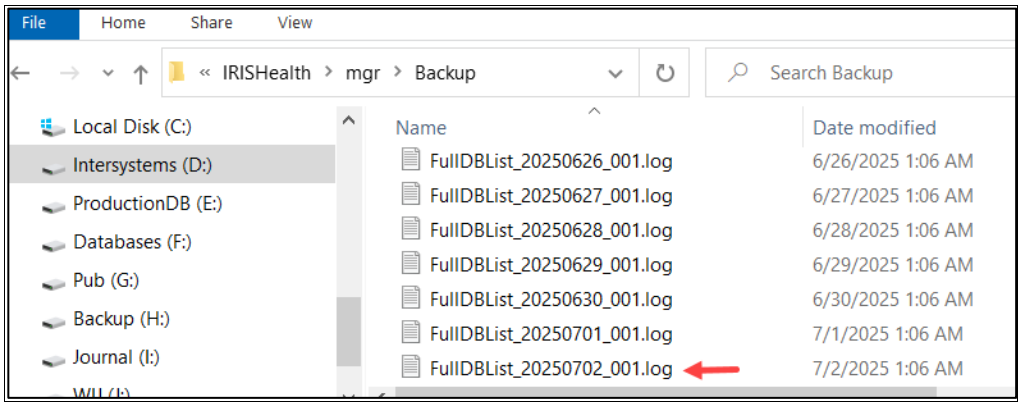

Figure 1: IRISHealth backup folder containing a list of log files

   b. **Database backup file (.cbk)**: h:\backup

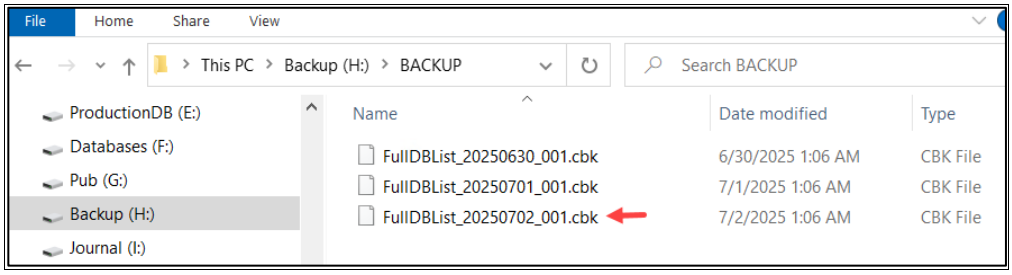

Figure 2: Backup files with cbk extension

c. **Journal Files**: i:\journal

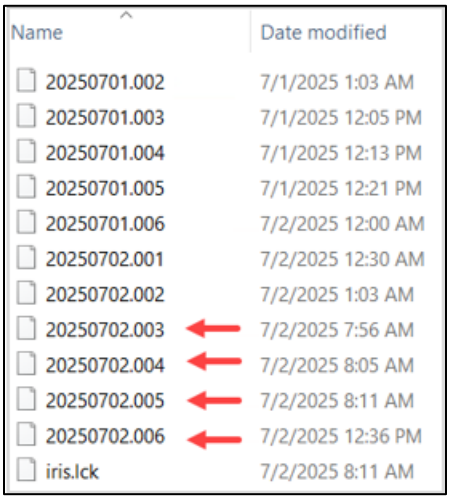

Figure 3: Journal files named by date

Example

Backup log information, backup file name is **FullDBList_20250702_001.cbk**

d:\intersystems\irishealth\mgr\backup*FullDBList_20250702_001.log*

```
*** The time is: 2025-07-02 01:03:00 ***
              InterSystems IRIS Backup Utility
              --------------------------
Performing a Full backup.
Backing up to device: h:\backup\FullDBList_20250702_001.cbk     <<backup
file
Description
Full backup of all databases that are in the backup database list.

Backing up the following directories:
   d:\intersystems\irishealth\mgr\
   d:\intersystems\irishealth\mgr\hssys\
   e:\dehr\
   f:\agmpidehr\
   f:\bprmdehr\
   f:\busadehr\
   f:\ccdadehr\
   f:\edrdehr\
   f:\erxdehr\

Journal file switched to:
   i:\journal\20250702.003     <<not included in the backup, new journal
file created
```

Figure 4: Backup Filename Example

Journal files needed to restore the database *FullDBList_20250702_001.cbk:*

20250702.003

20250702.004

20250702.005

20250702.006

Restore ALL

The Restore ALL is for restoring all the databases.

From the Programmer's Prompt in the %SYS namespace, run the following commands identified below:

```
DEHR>ZN "%SYS"           << switch to %SYS namespace
%SYS>D ^BACKUP         << Run this command to get into the Backup menu
options

Backup
Restore ALL         << select this option
Restore Selected or Renamed Directories
Edit/Display List of Directories for Backups
Abort Backup
Display Backup volume information 7) Monitor progress of backup or restore
Option? 2                      << Enter 2 to select the Restore All option
Proceed with restoring ALL directories Yes => Yes

Top directory for all Databases to be restored to (? for Help)?
F:\DATABASE\   <<enter path
Do you want to set switch 10 so that other processes will be prevented from
running during the restore? Yes => Yes

Specify input file for volume 1 of backup 1
 (Type STOP to exit)
Device: h:\backup\FullDBList_20220121_001.cbk =>     << confirm and accept
default
This backup volume was created by:
   Cache for Windows (x86-64) 2017.2.2

The volume label contains:
   Volume number      1
   Volume backup      JAN 21 2022 01:02AM Full
   Previous backup    JAN 20 2022 11:01AM Full
   Last FULL backup   JAN 20 2022 11:01AM
   Description        Full backup of all databases that are in the backup
database list.    Buffer Count       0
Is this the backup you want to start restoring? Yes => Yes
The following directories will be restored: d:\intersystems\healthshare\mgr\ =>
f:\database\intersystems\healthshare\mgr\ d:\intersystems\healthshare\mgr\hssys\ =>
       f:\database\intersystems\healthshare\mgr\hssys\ f:\database\agmpidehr\ =>
f:\database\database\agmpidehr\ f:\database\busadehr\ =>
f:\database\database\busadehr\ f:\database\ccdadehr\ =>
f:\database\database\ccdadehr\ f:\database\dehr\ => f:\database\database\dehr\
f:\database\phr\ => f:\database\database\phr\
Restore will overwrite the data in the old database. Confirm Restore? No =>  Yes
WARNING: Switch is set and may affect production for up to 10 seconds. Waiting for
system activity to finish... ready.

WARNING: Switch is set and may affect production for up to 10 seconds. Waiting for
system activity to finish... ready.

***Restoring d:\intersystems\healthshare\mgr\ to
f:\database\intersystems\healthshare\mgr\ at 10:50:00
10092 blocks restored in 0.4 seconds for this pass, 10092 total restored.

WARNING: Switch is set and may affect production for up to 10 seconds. Waiting for
system activity to finish... ready.

WARNING: Switch is set and may affect production for up to 10 seconds. Waiting for
system activity to finish... ready.
```

```
***Restoring d:\intersystems\healthshare\mgr\hssys\ to
f:\database\intersystems\healthshare\mgr\hssys\ at 10:50:05
227 blocks restored in 0.0 seconds for this pass, 227 total restored.

WARNING: Switch is set and may affect production for up to 10 seconds. Waiting for
system activity to finish... ready.

WARNING: Switch is set and may affect production for up to 10 seconds. Waiting for
system activity to finish... ready.

***Restoring f:\database\agmpidehr\ to f:\database\database\agmpidehr\ at 10:50:11
11659 blocks restored in 0.5 seconds for this pass, 11659 total restored.

WARNING: Switch is set and may affect production for up to 10 seconds. Waiting for
system activity to finish... ready.

***Restoring f:\database\busadehr\ to f:\database\database\busadehr\ at 10:50:16
15163 blocks restored in 0.6 seconds for this pass, 15163 total restored.

WARNING: Switch is set and may affect production for up to 10 seconds. Waiting for
system activity to finish... ready.
***Restoring f:\database\ccdadehr\ to f:\database\database\ccdadehr\ at 10:50:22
23042 blocks restored in 1.1 seconds for this pass, 23042 total restored.
WARNING: Switch is set and may affect production for up to 10 seconds. Waiting for
system activity to finish... ready.
***Restoring f:\database\dehr\ to f:\database\database\dehr\ at 10:51:34
1752904 blocks restored in 229.4 seconds for this pass, 1752904 total restored.

WARNING: Switch is set and may affect production for up to 10 seconds.
Waiting for system activity to finish.....
System is idle except WD is still running.
     Waiting up to 2 minutes for WD to finish... ready.
***Restoring f:\database\phr\ to f:\database\database\phr\ at 10:57:11 1 blocks
restored in 0.0 seconds for this pass, 475857 total restored.

Specify input file for volume 1 of backup following JAN 21 2022  01:02AM  (Type STOP
to exit)
Device:                                    << accept default, press "Enter" key

Do you have any more backups to restore? Yes => No  << if there is more,
enter Yes
Mounting f:\database\intersystems\healthshare\mgr\
    f:\database\intersystems\healthshare\mgr\  ... (Mounted)
Mounting f:\database\intersystems\healthshare\mgr\hssys\
    f:\database\intersystems\healthshare\mgr\hssys\  ... (Mounted)
Mounting f:\database\database\agmpidehr\
    f:\database\database\agmpidehr\  ... (Mounted)

Mounting f:\database\database\busadehr\
    f:\database\database\busadehr\  ... (Mounted)

Mounting f:\database\database\ccdadehr\
    f:\database\database\ccdadehr\  ... (Mounted)

Mounting f:\database\database\dehr\
    f:\database\database\dehr\  ... (Mounted)

Mounting f:\database\database\phr\
    f:\database\database\phr\  ... (Mounted)


Restoring a directory restores the globals in it only up to the date of the
backup.  If you have been journaling, you can apply journal entries to
restore any changes that have been made in the globals since the backup was
made.
```

```
What journal entries do you wish to apply?

All entries for the directories that you restored   << select this option
All entries for all directories
Selected directories and globals
No entries

Apply: 1 => 1                 << Enter 1 to select the All entries for the
directories that you restored option

We know something about where journaling was at the time of the backup:
0: offset 17908736 in i:\journal\20220121.001

Are journal files created by this Cache instance and located in their
original paths? (Uses journal.log to locate journals)?  Yes
The earliest journal entry since the backup was made is at offset 17908736
in i:\journal\20220121.001

Do you want to start from that location? Yes =>  Yes
Enter ? for a list of journal files to select the final file from
Final file to process:  i:\journal\20220121.001 => < reconfirms if this is
correct
Prompt for name of the next file to process? No =>  Yes
The following actions will be performed if you answer YES below:

Listing journal files in the order they will be processed
Checking for any missing journal file on the list ("a broken chain")
The basic assumption is that the files to be processed are all currently
accessible. If that is not the case, e.g., if you plan to load journal
files from tapes on demand, you should answer NO below.
Check for missing journal files? Yes => Yes

Journal files in the order they will be processed:
1. i:\journal\20220121.001

While the actual journal restore will detect a journal integrity problem
when running into it, you have the option to check the integrity now before
performing the journal restore. The integrity checker works by scanning
journal files, which may take a while depending on file sizes.

Check journal integrity? No => Yes No error was found in the journal files
<< No error in the Journal file
The journal restore includes the current journal file. You cannot do that
unless you stop journaling or switch journaling to another file.

Do you want to switch journaling? Yes => Yes
Journaling switched to i:\journal\20220121.002

You may disable journaling of updates for faster restore for all databases
other than mirrored databases. You may not want to do this if a database to
restore is being shadowed as the shadow will not receive the updates.

Do you want to disable journaling the updates? Yes => Yes
Updates will NOT be journaled
     ** WARNING ** Switch 10 is set, preventing multi-job journal restore
     Will restore in single job mode if switch 10 is not cleared
Clear switch 10 to start multi-job restore? No =>  No
You may tailor the response to errors by choosing between the alternative
actions described below.  Otherwise you will be asked to select an action
at the time an error actually occurs.
```

```
     Either Continue despite database-related problems (e.g., a target
database is not journaled, cannot
     be mounted, etc.), skipping affected updates

     or  Abort if an update would have to be skipped due to a database-
related problem
(e.g., a target
     database is not journaled, cannot be mounted, etc.)
     Either Abort if an update would have to be skipped due to a journal-
related problem
(e.g., journal
     corruption, some cases of missing journal files, etc.)

     or  Continue despite journal-related problems (e.g., journal
     corruption, some missing journal files, etc.), skipping affected
updates
Would you like to specify error actions now? No => Yes

Continue despite database-related problems (e.g., a target database      is
not journaled, cannot be mounted, etc.), skipping affected updates
Abort if an update would have to be skipped due to a database-related
problem (e.g., a target database is not journaled, cannot be mounted, etc.)

Select option [1 or 2]:  1

Abort if an update would have to be skipped due to a journal-related
problem (e.g., journal corruption, some cases of missing journal files,
etc.)
Continue despite journal-related problems (e.g., journal corruption,
some missing journal files, etc.), skipping affected updates
Select option [1 or 2]:  1

Based on your selection, this restore will
** Abort if an update would have to be skipped due to a database-related
problem (e.g., a target database is not journaled, cannot be mounted, etc.)
** Abort if an update would have to be skipped due to a journal-related
problem (e.g., journal corruption, some cases of missing journal files,
etc.)
Start the restore? Yes => Yes
 i:\journal\20220121.001                    << journal file that was
restored   93.27%100.00%
***Journal file finished at 11:06:52

[journal operation completed]
Backup
Restore ALL
Restore Selected or Renamed Directories
Edit/Display List of Directories for Backups
Abort Backup
Display Backup volume information 7) Monitor progress of backup or restore

Option?
```

Figure 5: Commands to Restore Restore ALL Databases

Restore Selected or Renamed Directories

Restore Selected or Renamed Directories is for restoring certain databases. Select the databases you want to restore.

From the Programmer's Prompt in the %SYS namespace run the following commands identified below:

```
DEHR>ZN "%SYS"           << switch to %SYS namespace
%SYS>D ^BACKUP          << Run this command to get into the Backup menu
options

1) Backup
2) Restore ALL
3) Restore Selected or Renamed Directories            << select this option
4) Edit/Display List of Directories for Backups
5) Abort Backup
6) Display Backup volume information 7) Monitor progress of backup or
restore
Option? 3  << Enter 3 to select the Restore Selected or Renamed Directories
Do you want to set switch 10 so that other processes will be prevented from
running during the restore? Yes => Yes

Specify input file for volume 1 of backup 1
 (Type STOP to exit)
Device: h:\backup\FullDBList_20220121_001.cbk =>        << confirm path and
backup file

This backup volume was created by:
   Cache for Windows (x86-64) 2017.2.2
The volume label contains:
   Volume number      1
   Volume backup      JAN 21 2022 01:02AM Full
   Previous backup    JAN 20 2022 11:01AM Full
   Last FULL backup   JAN 20 2022 11:01AM
   Description        Full backup of all databases that are in the backup
database list.
   Buffer Count       0

Is this the backup you want to start restoring? Yes =>  Yes
 For each database included in the backup file, you can:
  -- press RETURN to restore it to its original directory;
 -- type X, then press RETURN to skip it and not restore it at all.  --
type a different directory name.  It will be restored to the directory
you specify.  (If you specify a directory that already contains a
database, the data it contains will be lost).

d:\intersystems\healthshare\mgr\ => X             << enter X to skip this
Database, no restore d:\intersystems\healthshare\mgr\hssys\ => X
f:\database\agmpidehr\ => X f:\database\busadehr\ => X
f:\database\ccdadehr\ => X
f:\database\dehr\ =>                                << this database will
be restored f:\database\phr\ => X

Do you want to change this list of directories? No =>  No

 Restore will overwrite the data in the old database. Confirm Restore? No
=> Yes
 Starting skip of d:\intersystems\healthshare\mgr\.              << skipped
skipped 10092 blocks in .387927 seconds.
 Starting skip of d:\intersystems\healthshare\mgr\hssys\.        << skipped
skipped 227 blocks in .010271 seconds.
 Starting skip of f:\database\agmpidehr\.                        << skipped
skipped 11659 blocks in .546272 seconds.
 Starting skip of f:\database\busadehr\.                         << skipped
skipped 15163 blocks in .741031 seconds.
```

```
 Starting skip of f:\database\ccdadehr\.                          << skipped
skipped 23042 blocks in 1.112785 seconds.
***Restoring f:\database\dehr\ at 11:23:56                 << restore   1
blocks restored in 0.0 seconds for this pass, 1753095 total restored.

Starting skip of f:\database\phr\.                               << skipped
skipped 1 blocks in .000006 seconds.

Specify input file for volume 1 of backup following JAN 21 2022  01:02AM
 (Type STOP to exit)
Device:

Do you have any more backups to restore? Yes => No Mounting
f:\database\dehr\
    f:\database\dehr\     ... (Mounted)

Restoring a directory restores the globals in it only up to the date of the
backup.  If you have been journaling, you can apply journal entries to
restore any changes that have been made in the globals since the backup was
made.
What journal entries do you wish to apply?              << journal file
restore starts
1. All entries for the directories that you restored
2. All entries for all directories
3. Selected directories and globals
4. No entries

Apply: 1 => 1        << Enter 1 to select the All entries for the
directories that you restored
We know something about where journaling was at the time of the backup:
0: offset 17908736 in i:\journal\20220121.001                        <<
verify journal file path and name

Are journal files created by this Cache instance and located in their
original paths? (Uses journal.log to locate journals)?  Yes

The earliest journal entry since the backup was made is at
offset 17908736 in i:\journal\20220121.001
Do you want to start from that location? Yes => Yes
Enter ? for a list of journal files to select the final file from
Final file to process:  i:\journal\20220121.002 =>           << accept
default, press "Enter" key

Prompt for name of the next file to process? No => Yes < if there are more
file, it will prompt
The following actions will be performed if you answer YES below:

*  Listing journal files in the order they will be processed
*  Checking for any missing journal file on the list ("a broken chain")

The basic assumption is that the files to be processed are all currently
accessible. If that is not the case, e.g., if you plan to load journal
files from tapes on demand, you should answer
NO below.

Check for missing journal files? Yes => Yes

Journal files in the order they will be processed:
1. i:\journal\20220121.001

2. i:\journal\20220121.002
```

```
While the actual journal restore will detect a journal integrity problem
when running into it, you have the option to check the integrity now before
performing the journal restore. The integrity checker works by scanning
journal files, which may take a while depending on file sizes.

Check journal integrity? No => Yes

No error was found in the journal files

The journal restore includes the current journal file. You cannot do that
unless you stop journaling or switch journaling to another file.

Do you want to switch journaling? Yes => Yes
Journaling switched to i:\journal\20220121.003

You may disable journaling of updates for faster restore for all databases
other than mirrored databases. You may not want to do this if a database to
restore is being shadowed as the shadow will not receive the updates.

Do you want to disable journaling the updates? Yes => Yes
Updates will NOT be journaled
     ** WARNING ** Switch 10 is set, preventing multi-job journal restore
     Will restore in single job mode if switch 10 is not cleared
Clear switch 10 to start multi-job restore? No => No
You may tailor the response to errors by choosing between the alternative
actions described below.  Otherwise you will be asked to select an action
at the time an error actually occurs.

     Either Continue despite database-related problems (e.g., a target
database is not journaled, cannot
     be mounted, etc.), skipping affected updates

     or   Abort if an update would have to be skipped due to a database-
related problem (e.g., a target
     database is not journaled, cannot be mounted, etc.)

     Either Abort if an update would have to be skipped due to a journal-
related problem (e.g., journal
     corruption, some cases of missing journal files, etc.)

     or  Continue despite journal-related problems (e.g., journal
     corruption, some missing journal files, etc.), skipping affected
updates
Would you like to specify error actions now? No => Yes

1. Continue despite database-related problems (e.g., a target database
is not journaled, cannot be mounted, etc.), skipping affected updates
2. Abort if an update would have to be skipped due to a database-related
problem (e.g., a target database is not journaled, cannot be mounted,
etc.)

Select option [1 or 2]:  2
1. Abort if an update would have to be skipped due to a journal-related
problem (e.g., journal corruption, some cases of missing journal files,
etc.)

2. Continue despite journal-related problems (e.g., journal corruption,
some missing journal files, etc.), skipping affected updates
Select option [1 or 2]:  1
Based on your selection, this restore will

** Abort if an update would have to be skipped due to a database-related
problem (e.g., a target database is not journaled, cannot be mounted, etc.)
```

```
** Abort if an update would have to be skipped due to a journal-related
problem (e.g., journal corruption, some cases of missing journal files,
etc.)

Start the restore? Yes => Yes

i:\journal\20220121.001
  93.80%100.00%
***Journal file finished at 11:30:06

i:\journal\20220121.002
100.00%
***Journal file finished at 11:30:06

[journal operation completed]

1) Backup
2) Restore ALL
3) Restore Selected or Renamed Directories
4) Edit/Display List of Directories for Backups
5) Abort Backup
6) Display Backup volume information 7) Monitor progress of backup or
restore

Option?
```

Figure 6: Commands to Restore Selected or Renamed Directories

Contact Information

Please contact the Tier-2 Area Office RPMS support. If they are not available, open a ticket and request to assign to the IHS RPMS Support.

IT Service Desk: (888) 830-7280

Support Email: itsupport@ihs.gov

Web: https://www.ihs.gov/itsupport/

NOSC: (702) 562-8201 (after 6:00 PM Eastern Time)–Holidays 24/7

Support Email: NOSC@ihs.gov

> **Note**: Please do not contact the application developers directly. All issues need to be coordinated and established through the IT Service Desk.