iMC Database Auto Backup and Restore Using a Shared Drive (Stateless Failover Recovery)

**Keywords:** Dbman

**Abstract:** This document describes how to configure IMC database auto backup and restore using a shared drive, in a dual IMC environment with an active and standby server. This is an alternative to the standard FTP file transfer method used by IMC.

**Terminology:**

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>Active server</td>
<td>The IMC server that is actively in operation, which needs to be backed up</td>
</tr>
<tr>
<td>Standby server</td>
<td>The standby server which takes over the IMC operation when the active server fails. The standby server needs to be restored from the backup server</td>
</tr>
<tr>
<td>Dbman</td>
<td>The IMC tool which is used for backup and restore</td>
</tr>
<tr>
<td>Stateless Failover</td>
<td>The active and secondary servers are not automatically synchronized each time there is a database transaction. Those transactions that took place after the last backup are lost.</td>
</tr>
<tr>
<td>Stateful failover</td>
<td>The active and secondary servers are in a cluster and automatically synchronize each time there is a transaction.</td>
</tr>
</tbody>
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1 Overview

This document describes how the IMC Dbman tool can be used to perform periodic backups and restores of the IMC database files, using Windows scripts and a shared disk drive. This is a stateless failover solution for an IMC deployed with active and standby servers.

This document is an addition to the solutions currently recommended (see additional documentation folder):

- stateful failover is documented in 'iMC Stateful Failover Deployment Guide.doc'
- stateless failover using FTP file transfer. This is implemented by IMC and requires minimum configuration and is documented in 'iMC Automatic Backup and Restoration Feature Description.doc'

2 Pros and Cons

The embedded IMC database backup and restore operation is automatic and uses an FTP server to transfer files from the active to the standby server.

By implementing the method described here, using a shared drive instead of the FTP server avoids potential problems due to the reliability of the 3rd party FTP server application.

However this solution requires the deployment and correct scheduling of scripts. The scripts also need to be maintained if the IMC database filenames are modified in a future release.

The scripts have been developed and tested in an environment where the databases are local to the servers, and the topology consists of a single, master active server and a single standby server.

The restore operation must be scheduled after the backup is completed, however there is no way to verify programatically the integrity of the backup files. It is not possible to provide a reliable calculation for this restore method that minimizes the gap between a backup and restore, yet ensures database integrity, specially as the database continues to grow over time. The recommendation in this document is to observe the backup time and add a minimum of 20 minutes before starting the restore.
3 Operations Summary.

**IMC topology.**
The set up described in this document is for a single active server and a standby server with local databases, with a shared drive located on the standby server used to store the active server backup files:

Active Server A: Database A  
Standby Server B: Database B + Database A backup files on shared drive

**Additional Software required:**
IMC v5.0E0101L02 (minimum version) for both Active and Standby servers  
IMCBackup.Bat for Active Server  

The configuration steps include creating a Windows Scheduled task on the active server to run a daily backup script, and another Windows Scheduled task on the standby server, running a daily restore script.

4 Checklist

This is a summary of the steps:

- Configure a shared drive
- Configure IMC backup on the active server
- Install the backup script on the Active server
- Schedule the Active Server Backup Task
- Configure IMC Restore on Standby
- Install Standby Restore Script
- Schedule Standby Restore Task
5 Configure a shared drive

On the standby server, create a shared folder for the backup files IMCDATABASEBACKUP with a subfolder perm_backup with external write access.

![Create a shared folder on the standby server](image)

**Figure 5-1** Create a shared folder on the standby server

On the active server, map the shared folder IMCDATABASEBACKUP from the standby server to Z:
6 Configure IMC backup on the active server

To configure the backup and restore settings, go to the IMC Environment tab in the IMC Intelligent Deployment Monitoring Agent.
Figure 6-1 Click the Configure button

Click **Configure** in the Environment Tab. The Auto Backup and Restore configuration dialog box is displayed.
Parameter changes required:

- Select to enable auto backup and restore.
- File Lifetime: Specifies the lifetime of the stored backup files, after which the files will be removed. This parameter does not refer to the backup files created by the script, which only keeps the latest backup. Backups can use up considerable disk space. It is recommended that disk space is monitored regularly after the initial set up. 7 days for File Lifetime is recommended as an initial default.
- Operation Type: Specify auto backup.
- Backup Time in a Day: Specify the time when the IMC automatic backup operation starts. This automatic backup will be performed daily and must not conflict with the scheduled time in the backup scripts.
- Backup File Location: Specify the path to which the backup file is saved. The location must be on a local disk drive and is independent of the location of the backup files used by the scripts.
- Upload backup files to FTP Server: leave blank.
7 Install the backup script on the active server

Example IMCbackup.bat script below. Store this script in the folder C:\Program Files\IMCDB. Modify DBMANPATH, this is the location of the dbman folder.

```
rem backup on primary server:
rem start time:
time /T
set DBMANPATH=C:\program files\imc\dbman\bin
rmdir C:\dbman_tmp /s /q
mkdir C:\dbman_tmp
"%DBMANPATH%\dbman" -backup C:\dbman_tmp
rmdir Z:\perm_backup /s /q
mkdir Z:\perm_backup
copy C:\dbman_tmp\* Z:\perm_backup
rem end time:
time /T
```

After completing the network discovery and fully configuring IMC, test the backup script, by running IMCbackup.bat from a Windows Dos Box.

There may be several errors, this is normal. The dbman tools wants to backup all the possible database records for all the IMC module, but not all modules may have been installed.

During this test, make a note of the overall time taken to do the backup, as it is dependent on the database size.

**OVERALL BACKUP TIME** =

Based on the overall backup time, decide on the script scheduling time, according to the formula:

**RESTORE TIME** = **BACKUP START TIME** + **OVERALL BACKUP TIME** + 20 minutes minimum
8 Schedule the Active Server Backup Task

Configure the backup task to be scheduled at BACKUP START TIME, according to your formula.

Step 1 Go to Scheduled Tasks

Step 2 Add Scheduled Task
Step 3. Follow the wizard prompt

Step 4 Browse to C:\Program Files\IMCBackup.bat
Step 5 Schedule task daily

Step 6 Enter start date and time

Step 7 enter user credentials and Finish.
9 Configure IMC Restore on the standby server

Configure in the environment Tab as displayed by Figure 8.1, and select Auto Restore as the operation type as shown in the following figure.

Parameter changes required:
- Select to enable auto backup and restore:
- Operation Type: Auto Restore
- Backup files location: The directory containing the backup files
- Location to archive restored files: The directory to which the database backup files are saved for a long-term backup after the restore operation.

Figure 9-1 Automatic restore configuration dialog box.
10 Install Standby Restore Script

Example IMCRestore.bat script. Store this script in the folder C:\Program Files\IMCDB.
Modify DBMANPATH variable as required, this is the location of the dbman folder
Modify C:\IMCDATABASEBACKUP with the local drive on the standby server.
rem restore on standby server:
rem start time:
time /T
set DBMANPATH=C:\program files\imc\dbman\bin
for /F "usebackq tokens=1,2,3 delims=-/ " %%i in (\date /t) do (set DATANUM=%%k%%j%%i)
rmdir "C:\Program Files\IMC\dbman\dbman_tmp" /s /q
mkdir "C:\Program Files\IMC\dbman\dbman_tmp"
copy C:\IMCDATABASEBACKUP\perm_backup\%DATANUM%*.db "C:\Program
Files\IMC\dbman\dbman_tmp"
copy C:\IMCDATABASEBACKUP\perm_backup\%DATANUM%*.zip "C:\Program
Files\IMC\dbman\dbman_tmp"
for /f %%I in ('dir "C:\Program Files\IMC\dbman\dbman_tmp\*.db" /O:N /b') do ( 
   "%DBMANPATH%\dbman" -onlyrestore "C:\Program
Files\IMC\dbman\dbman_tmp\%%I"
)
rem end time:
time /T
rem restart iMC
"%DBMANPATH%\..\..\..\deploy\procctl.bat" start

11 Schedule Standby Restore Task

Run the IMCRestore.bat script from a Windows Dos Box to test it. There may be several errors, due to the script containing all the possible database files, which may be missing from the installation.

The restore script has to be scheduled in good time after the backup has completed, to ensure database integrity.
The scheduled restore time is calculated according to the formula:

\[
\text{RESTORE TIME} = \text{BACKUP START TIME} + \text{OVERALL BACKUP TIME} + 20 \text{ minutes minimum.}
\]

Following the instructions in section 8, now create a restore task for the script IMCRestore.bat which you have installed on the standby server.

12 Operation Completed

You now have a Windows Scheduled task on the active server, running daily the IMCBackup.bat script, and another Windows Scheduled task on the standby server, running daily the IMCRestore.bat script.