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Recommended Backup Strategy for FileMaker Server 7, 8, 9 and 10 for Macintosh & Windows

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This document provides a single cohesive document for managing and understanding data backups for FileMaker Pro databases. It deals with misconceptions, planning, hardware requirements, and the correct procedures for restoring databases after a crash.

What should I do to back up a FileMaker Pro database?

Misconception: *“Any third party backup software will do.”* **The goal of any backup strategy is to provide the complete backup data** for those instances of failure or loss of your database. However, conventional backup strategies cannot meet the needs of FileMaker Server for Macintosh or for Windows. Current IT department doctrine dictates using an incremental backup utilizing a corporate network and one or more dedicated backup servers. While this methodology works well for end users, it is unsatisfactory for an active database server. What most users of FileMaker Server fail to understand is that since an active FileMaker database is always open, creating a copy of that file will result in unusable, corrupted, and damaged backups. In the case of FileMaker Pro, an administrator must use the built-in backup scheduling capabilities of FileMaker Server to make non-corrupted copies. If third-party backup software is used while the FileMaker Server software is running, the backup copies of the database created by the third-party backup software will be corrupted and unusable.

What to do when a Database Crashes???

Misconception: *“If a database crashes, simply restart the server/database and you’re back in business.”* FileMaker, Inc. specifically cautions against simply restarting a crashed database and putting it back into service. Indeed, a crashed database may have been partially corrupted, and continuing to use it after the crash means that sooner or later, that corruption will cause your database to become unstable and loose data. A database that has been crashed and corrupted may successfully start up on FileMaker Server, with no outward indication that corruption has occurred. FileMaker Inc.’s policy on a crash is to ALWAYS restore from the last good backup. RCC follows this policy also. Take the database that was running, drop it into the trash, and don’t use it. You may opt to archive it to review data that may be on it, but you should never use it in production again.

HARDWARE

Choosing a backup technology is important. While tape seems to be an IT standard, tape will not afford you the needed flexibility in the event of a database failure. Using DVD-R’s, CD-RW’s or similar media is not practical. These tools would be considerably slower and would require constant manual changing of the

media. A better idea is to use a 2nd and 3rd hard drive that are NOT connected to a RAID system. Using RAID may help save the server from a single drive failure; however, a database that is corrupted, or in which a user accidentally erases all the database records, is not protected by RAID. A raid system would write the bad database to both drives, while not preserving a historical backup.

To determine the size of external hard drive you need, multiply the size of all the databases you will be serving by 100 or 200 (this will be explained later). Then add 50 gigabytes (GB) as an extra safety factor.

Example of determining size requirement: Assuming all databases together are 500 megabytes (MB). Expect moderate growth, so figure 1 GB (twice the actual size) to allow for growth. 1 GB x 100 (or 200) = 100 GB. Then add 50 GB for expected growth of the database, and you have 150 GB for a minimum hard drive size.

While an internal hard drive works well, a good alternative is to look at “1394 Firewire” or “USB 2.0” as possible external storage devices. These devices contain a fixed hard drive, similar to what is inside the server, except that these backup units are external so they are easily moved from computer to computer during an emergency.



TWO TYPES OF BACKUPS ... “Bootable Backups” and “Daily and Hourly Backups”

RCC STRONGLY RECOMMENDS USING BOTH BACKUP TECHNIQUES ON A MISSION CRITICAL FILEMAKER SERVER.

For mission critical database servers, RCC recommends a three hard drive configuration.

Drive #1 – Boot Drive (the original drive in the server): This drive acts as the boot drive with the operating system loaded onto it, along with the FileMaker Server service and the master databases.

Drive #2 – Database Backup Drive (Daily or Hourly Backups): This drive acts as a repository for the backups created by the FileMaker Server service that runs on a specific backup schedule. Typically, there are hourly backups here plus one backup for each day of the week. This drive is NOT bootable and typically does not contain any information other than the backup copies of the databases.

Drive#3 – Backup Boot Drive (Bootable Backups): This drive is an exact bootable copy of the Boot Drive. The system administrator typically runs this backup process manually. This drive should be used if the Boot Drive fails, but does not contain any useful backup copies of the database. This drive also protects against any system updates or changes that might negatively affect the FileMaker Server service. (See “Bootable Backups”)

BOOTABLE BACKUPS

Restoring service to a damaged FileMaker Server can be tricky, especially if users are running FileMaker Server Advanced. Web Publishing Engines, SSL certificates, and PHP modules add complexity to installation and configuration if you have to rebuild the hard drive. Running an automatic software update from either Apple or Microsoft typically causes the most common failures of FileMaker Server. Hardware

problems with the hard drive itself are the next most common source of failure in our experience; both of these issues may be mitigated by having a third hard drive that contains an identical copy of the first hard drive. This backup is normally left alone, and is only refreshed when a significant software update is made to the first drive. In the event of a failure, set your boot drive to the Backup Boot Drive, or pull the Boot Drive and install the Backup Boot Drive. Once the new drive is booted and running, pull the last database backup from the Database Backup Drive, and install it on the Backup Boot Drive. Start the FileMaker Server Service, and you're set.

RCC uses SuperDuper! for making Bootable Backups on the Macintosh.

(<http://www.shirt-pocket.com>)

RCC uses Copy Commander for making Bootable Backups on the Windows.

(<http://www.avanquest.com>)

HOURLY & DAILY BACKUPS MADE BY FILEMAKER SERVER TO THE DATABASE BACKUP DRIVE

RCC frequently sees customers that do not use the backups in FileMaker Server, or only schedule one backup each day. In reality, a single backup per day is unacceptable for critical databases. Richard Carlton Consulting recommends running an automatic backup with one backup every hour, 24/7 (some mission critical databases are also backed up at the bottom of every hour too). Each Hourly backup is stored in its own directory on the backup drive, to prevent the files from being overwritten. RCC typically allows the bottom of the hour backup to be overwritten.

Given the hourly backup schedule, backup copies will begin to overwrite themselves after 24 hours, so this allows the database administrator a 24-hour window to determine that some piece of critical database has been erased, and to activate a backup copy.

For FileMaker Server 7, 8 for Macintosh: Twenty-four hours, while providing quality backups, is not typically sufficient to find database problems. For this reason Richard Carlton Consulting recommends making *daily* backup copies of the database in addition to the hourly backup schedule. The screenshots below show backups for a 30-day schedule in addition to the hourly backups already discussed. This strategy results in each day having its own separate backup for thirty days, which in this screenshot occurs everyday at 11:30PM.

The screenshot shows the FileMaker Server configuration window for a Macintosh. The window title is "FileMaker Server @ (localhost) (127.0.0.1)". The menu bar includes Summary, Databases, Clients, Schedules, Plug-Ins, Statistics, and Configure. The main area displays a table of backup schedules:

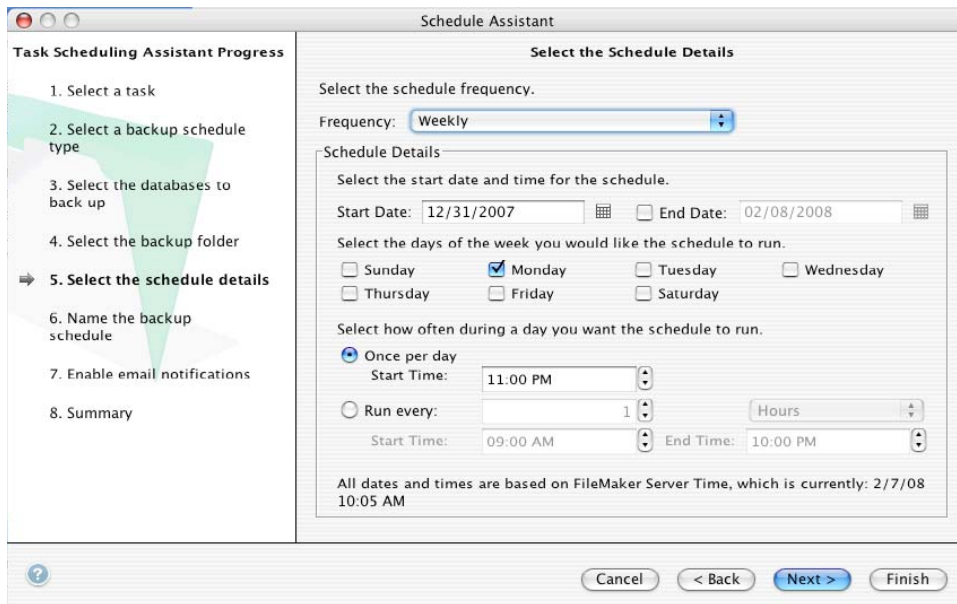
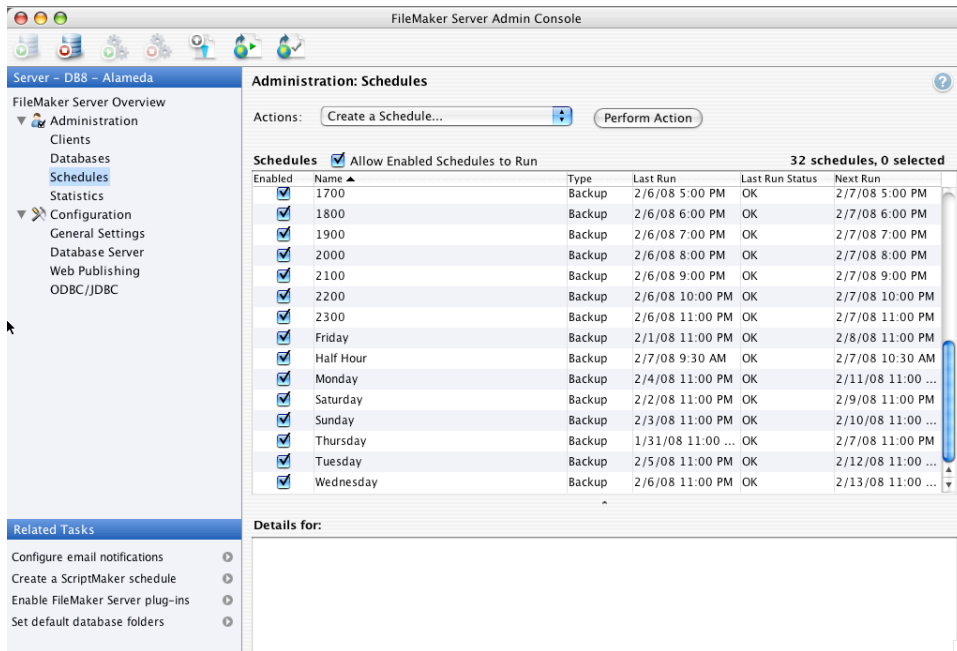
Schedule Name	Task	Last Run	Next Run
<input checked="" type="checkbox"/> Day_13	Back Up Databases		09/13/2004 11:30P
<input checked="" type="checkbox"/> Day_14	Back Up Databases		09/14/2004 11:30P
<input checked="" type="checkbox"/> Day_15	Back Up Databases		09/15/2004 11:30P
<input checked="" type="checkbox"/> Day_16	Back Up Databases		09/16/2004 11:30P
<input checked="" type="checkbox"/> Day_17	Back Up Databases		09/17/2004 11:30P
<input checked="" type="checkbox"/> Day_18	Back Up Databases		09/18/2004 11:30P
<input checked="" type="checkbox"/> Day_19	Back Up Databases		09/19/2004 11:30P
<input checked="" type="checkbox"/> Day_2	Back Up Databases	09/02/2004 11:30PM	10/02/2004 11:30P
<input checked="" type="checkbox"/> Day_20	Back Up Databases		09/20/2004 11:30P
<input checked="" type="checkbox"/> Day_21	Back Up Databases		09/21/2004 11:30P
<input checked="" type="checkbox"/> Day_22	Back Up Databases		09/22/2004 11:30P
<input checked="" type="checkbox"/> Day_23	Back Up Databases		09/23/2004 11:30P
<input checked="" type="checkbox"/> Day_24	Back Up Databases		09/24/2004 11:30P
<input checked="" type="checkbox"/> Day_25	Back Up Databases	08/26/2004 12:25AM	09/24/2004 11:30P
<input checked="" type="checkbox"/> Day_26	Back Up Databases	08/26/2004 11:30PM	09/25/2004 11:30P
<input checked="" type="checkbox"/> Day_27	Back Up Databases	08/27/2004 11:30PM	09/26/2004 11:30P
<input checked="" type="checkbox"/> Day_28	Back Up Databases	08/28/2004 11:30PM	09/27/2004 11:30P
<input checked="" type="checkbox"/> Day_29	Back Up Databases	08/29/2004 11:30PM	09/28/2004 11:30P
<input checked="" type="checkbox"/> Day_3	Back Up Databases	09/03/2004 11:30PM	10/03/2004 11:30P

At the bottom of the window, there is a checkbox labeled "Allow schedules to run" which is checked. To the right are buttons for "Delete", "Duplicate", and "Edit".

The screenshot shows the configuration dialog for a specific schedule. The "Schedule Name" is "Day 22". The "Task" is "Back Up Databases" and "All Databases". The "Back Up Folder" is "filemac:/Backup Hard Drive/Day_22/". The "Schedule" is "Daily". The "Start" time is "09/22/2004 23:30" and the "End" time is empty. The "Every" interval is "30" days. The "Repeat Task Every" interval is "10" minutes. The "Enable Schedule" checkbox is checked. There are "Cancel" and "Accept" buttons at the bottom right.

- FileMaker Server Schedule Examples (Macintosh version 7/8)

For FileMaker Server 7, 8 and 9 for Windows (and FileMaker Server 9 for Macintosh): Twenty-four hours, while providing quality backups, is not typically sufficient to find database problems. For this reason Richard Carlton Consulting recommends making *daily* backup copies of the database in addition to the hourly backup schedule. These specific releases of FileMaker Server will provide up to 7 days of backups before overwriting their backup folder. The screenshots below show backups for a weekly schedule in addition to the hourly backups already discussed. If you need backups beyond 7 days, then you must use a third party program like Retrospect in conjunction with the FileMaker Server backup schedules.



- FileMaker Server 9 Schedule Examples

For FileMaker Server 10 for Windows and for Macintosh: Twenty-four hours, while providing quality backups, is not typically sufficient to find database problems. For this reason Richard Carlton Consulting recommends making *daily* backup copies of the database in addition to the hourly backup schedule. The screenshots below show two backups, one Hourly (24 hour cycle) and one Daily (30 day cycle). This strategy results in each day having its own separate backup for thirty days. The Daily backup can be extended beyond 30 days if the backup drive capacity allows. RCC internally makes this value out to “99.”

The screenshot shows the FileMaker Server Administration Schedules window. The left sidebar lists navigation options: Administration, Clients, Databases, Schedules, Statistics, Log Viewer, Configuration, General Settings, Database Server, Web Publishing, and ODBC/JDBC. The main area shows a table of schedules with two entries: 'Daily' and 'Hourly'. The 'Daily' schedule is selected, and its details are shown below.

Enabled	Name	Type	Last Completed	Status	Next Run
<input checked="" type="checkbox"/>	Daily	Backup			1/2/09 11:00 PM
<input checked="" type="checkbox"/>	Hourly	Backup			1/2/09 6:00 PM

Details for: Daily

Schedule type	Backup
Schedule name	Daily
Databases to back up	All databases
Backup folder	filemac:/Boot Drive/Library/FileMaker Server/Data/Backups/Daily/
Maximum backups to keep	30
Verify backup integrity	Enabled
Frequency	Daily
Start date	1/2/09
End date	None
Repeat	Run every day, Once per day starting at 11:00 PM
Email notifications	Disabled
Email addresses	N/A

1. Select a task
2. Select a backup schedule type
3. Select the databases to back up
4. Select the backup folder
- ➔ 5. Schedule the backup
6. Name the schedule
7. Enable email notifications

The dialog box is titled 'Select the schedule frequency.' The 'Frequency' dropdown is set to 'Daily'. Below, the 'Schedule Details' section includes fields for 'Start Date' (01/02/2009) and 'End Date' (01/03/2009). Under 'Select how often during a day you want the schedule to run.', the 'Run every:' radio button is selected, with a value of '1' and a unit of 'Hours'. The 'Start Time' is 12:00 AM and the 'End Time' is 11:00 PM.

The screenshot shows the FileMaker Server Administration Schedules window with the 'Hourly' schedule selected. The details for this schedule are shown below.

Enabled	Name	Type	Last Completed	Status	Next Run
<input checked="" type="checkbox"/>	Daily	Backup			1/2/09 11:00 PM
<input checked="" type="checkbox"/>	Hourly	Backup			1/2/09 6:00 PM

Details for: Hourly

Schedule type	Backup
Schedule name	Hourly
Databases to back up	All databases
Backup folder	filemac:/Boot Drive/Library/FileMaker Server/Data/Backups/Hourly/
Maximum backups to keep	24
Verify backup integrity	Disabled
Frequency	Daily
Start date	1/2/09
End date	None
Repeat	Run every day, Every 1 Hours 12:00 AM - 11:00 PM
Email notifications	Disabled
Email addresses	N/A

- FileMaker Server 10 Schedule Examples

To summarize the recommended strategy: The user sets up a backup for every hour over a 24-hour period. Additionally, the user makes an additional 7 daily backup schedules or 30 daily backup schedules

depending on which version of FileMaker Server is installed. FileMaker Server 10 allows these to be compiled into just 2 recurring schedules. This strategy guarantees database backups for 30-days, or in some cases one-week, before the system begins to overwrite itself.

If compliance with corporate IT is a requirement, set the corporate backup software to make a copy of the daily backup files (i.e. Day 1, Day 2, Day 3, etc). If the software backs up the entire backup drive (which would include the bi-hourly backups), then IT will likely receive several GB of data per day. (13 GB in the previous example.) Fortunately, FileMaker Pro databases compress approximately 75 percent.

FOR WINDOWS 2003 Server: A similar schedule screen to the one seen above exists on FileMaker Server 7 for Windows 2003 Server. Check that application's documentation for more details.

COMPLETE SUMMARY

- (1) Purchase server and three hard drives.
- (2) Set up an hourly and daily backup to the Database Backup Drive as described above.
- (3) Install third party backup software and periodically make a "mirrored" and "bootable" backup of the Boot Drive on to the Backup Boot Drive.
- (4) Check weekly that the scheduled backups are operating normally.

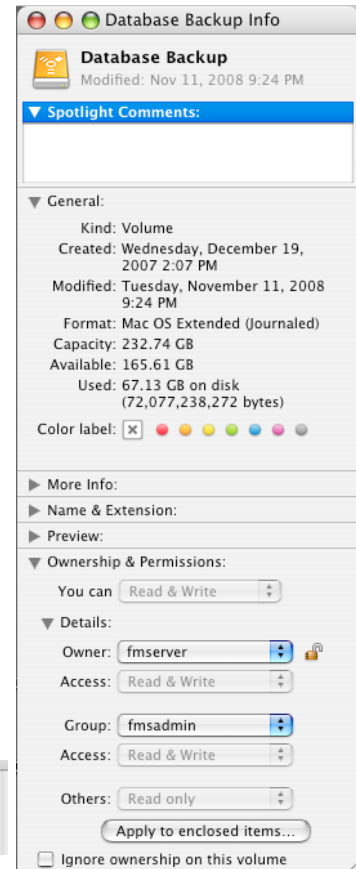
F.A.Q. – FMS and Backups

- (1) **Can I use a computer running Windows Vista as the server?** FileMaker Server 10 is compatible with Windows Vista Business (SP1). FileMaker, Inc. does not claim compatibility of any FileMaker Server product prior to version 10 with Windows Vista. FileMaker Pro (client), versions 8.5v2 and higher, will work with Windows Vista.
- (2) **Can I use a computer running OS X Leopard (10.5.x) as the Server?** FileMaker Server 9.0v3 and beyond (including version 10) is compatible with OSX 10.4.11 and higher. Previous versions (prior to 9.0v3) should never be installed on an OSX Leopard (10.5.x) computer.
- (3) **Can I use a computer running Windows XP as the server?** FileMaker, Inc. does not claim any compatibility of FileMaker Server 10 with Windows XP Professional. FileMaker Server 7v4 thru FileMaker Server 9.0v3 can be used with Windows XP Professional SP2. If you are using Windows XP Professional with these previous versions of FileMaker Server, then your maximum number of connected users is 50 versus the full 250 when running on Windows 2003 Server.

(4) **Can I use a computer running Macintosh OS X workstation and not Server version?** FileMaker Server and FileMaker Server Advanced run fine on both operating systems. For FileMaker Server 8 Server, you will need OS X 10.3.9 or better; for FileMaker Server 9.0v3 and 10, you will need OS X 10.4.11 or better.

(5) **I use an external removable cartridge like the Iomega Rev drive, but the backups don't seem to work reliably.** The path name of the directories on the backup drive must be the same between different cartridges. Additionally, the permissions must be set correctly for Mac users.

(6) **My backups don't work correctly on my Mac.** Either the pathname is wrong, or the permissions are wrong. Permissions can be a real pain to get set correctly. Some versions of the Mac operating system have had significant bugs with permission management. OS X 10.3 and 10.4.2 are prime examples, with 10.4.2 being so bad that FileMaker Server had to issue a technical advisory on dealing with permissions. OSX 10.5 now uses ACL's, which has caused even more issues with permissions. To the right is a Get Info screen for the correct permission setting for a database backup hard drive. If you are using an external drive, be sure you un-check the "Ignore ownership" box before making any permission changes. Change the group first, then the owner, and ensure both have read and write access. You may have to reboot before FileMaker Server recognizes your new permissions. If you still have trouble, you can use the Terminal window to set permissions. The screenshot below shows an example of how to fix permissions using terminal.



(7) **Can I just backup across the network to another server?** Actually, you can backup across the network. Getting the permissions "right" on the destination volume could be tricky with OS X. An alternative

```
server-name:Volumes user$  
server-name:Volumes user$sudo chown -R fmserver:fmsadmin "/Volumes/DB Backups"  
server-name:Volumes user$
```

trick to get around the permissions issues is to run a local backup copy, but then use an automatic FTP program to move the files in the background to a remote FTP server, but only AFTER FileMaker Server completes making a local copy. A clever trick. When using a Macintosh, try using FTPDroplet as an automatic "agent" to FTP the files.

(8) **I asked my IT department to help me purchase a new Server, and they say that I need a machine with RAID. Do I need this?** RAID can really hurt you if you are not careful. There are a number of different types of RAID setups that can be put on a server. If you asked for two internal hard drives, and your IT department gives you two drives with RAID, then you need to have the RAID technology removed. The two most common types of RAID are situations where one drive is automatically "mirrored" or copies to the other in real time. If one hard drive fails, then the other drive is there for you. However, if the database is accidentally corrupted, or a staff member accidentally deletes 100 important database records, both the corruption and deletion of records will be recorded to both drives, so you essentially have no useful backups.

An acceptable alternative is to have three drives on the server, the first two with RAID and the last as a

separate drive, not tethered to a RAID configuration, used only for storing the FileMaker Server backups.

(9) I asked my IT department to help me purchase a new Server, and they say that I need a machine with multiple processors. Do I need this?

FileMaker Server 7: Multiple processors may be used; however, this hasn't seemed to make much difference for users. A single processor at higher speeds is more useful.

FileMaker Server 7 Advanced: Parts of this software are actually incompatible with multiple processors on a Mac, and may cause crashes. FileMaker Server opted not to fix this issue in this version of the software. Stick to single processors.

FileMaker Server 8, 9, 10: These versions do a lot more work at the server than did the previous version of Server. Using multiple processors here is a good idea, although fast clock speed on the processors is still important.

(10) I need three drives for my FileMaker Server...but my server has just one. How do I add the drives? Can I use SATA?

There are two ways of adding drives: internally or externally. Internal drives can be easy to add using an SATA card and a SATA drive. This technology is much easier to work with than IDE, and has become a standard in new computers. Older computers that have IDE or SCSI can still use SATA, simply by adding an inexpensive SATA card. External drives will most likely be "1394 Firewire" or "USB 2.0." Firewire itself comes in "400" and "800" speeds. FireWire 800 is by far the fastest, being even faster than USB 2.0.