



# Richard Carlton Consulting

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## Recommended Backup Strategy for FileMaker Pro Server 7/8/9 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 Pro 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 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 Pro Server to make non-corrupted copies. If third-party backup software is used while the FileMaker Pro 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’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 2<sup>nd</sup> and 3<sup>rd</sup> 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 54 (this will be explained later). Then add 10 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.  $1 \text{ GB} \times 54 = 54 \text{ GB}$ . Then add 10 GB for expected growth of the database, and you have 64 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 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 3<sup>rd</sup> hard drive that contains an identical copy of the 1<sup>st</sup> hard drive. This backup is normally left alone, and is only refreshed when a significant software update is made to the 1<sup>st</sup> 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, grab the last database backup from the Database Backup Drive, and install it on the Backup Boot Drive. Start the FileMaker Service, and you’re set.

RCC uses SuperDuper! for making this copy on the Macintosh.  
(<http://www.shirt-pocket.com>)

RCC uses Copy Commander for making this copy on the Windows.  
(<http://www.v-com.com>)

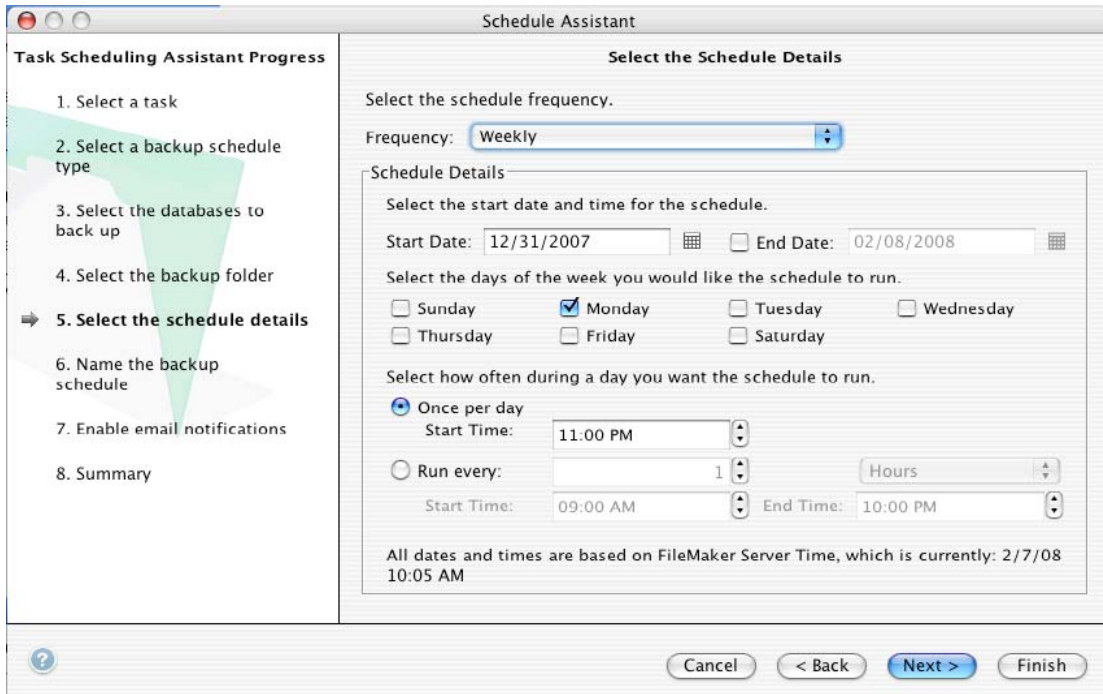
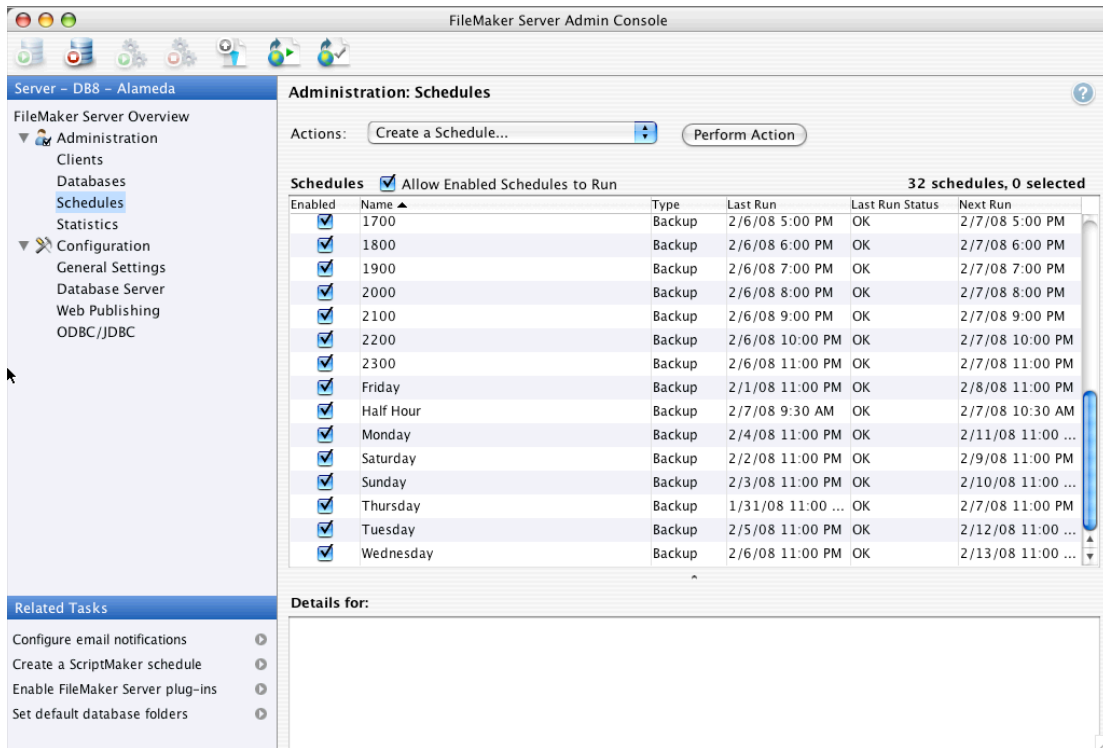
## **HOURLY & DAILY BACKUPS MADE BY FILEMAKER SERVER TO THE DATABASE BACKUP DRIVE**

RCC frequently sees customers that don’t use the backup software in their 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 copied to 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.

**FileMaker Server for Windows (and FileMaker Server 9 for Macintosh):** 24 hours, while providing quality backups, is not typically sufficient to find database problems. For this reason Richard Carlton Consulting also recommends making a *Daily* backup copy of the database. The longest interval between backup schedules is 7 days. Essentially, this means that FileMaker Server would provide backups for 7 days, and then overwrite the backups with a new copy. If

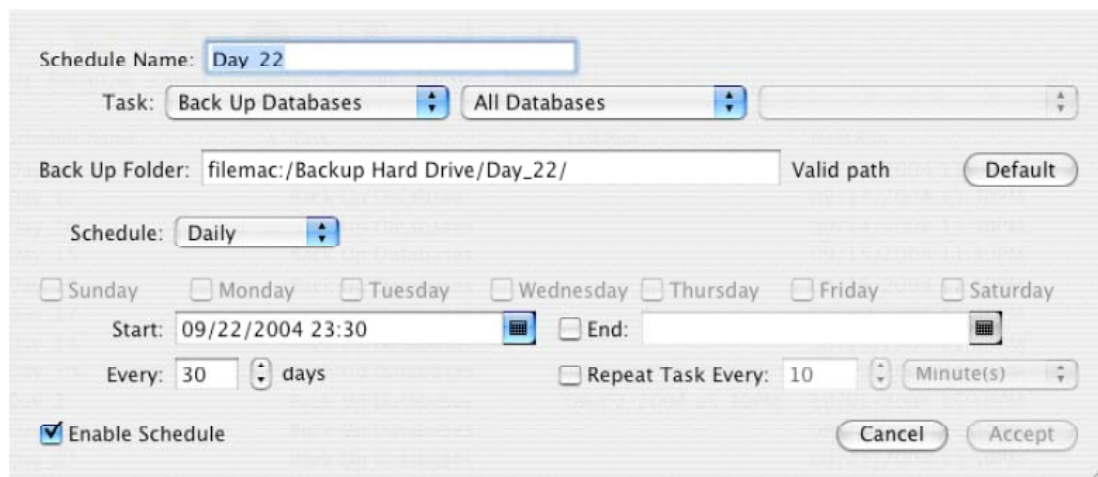
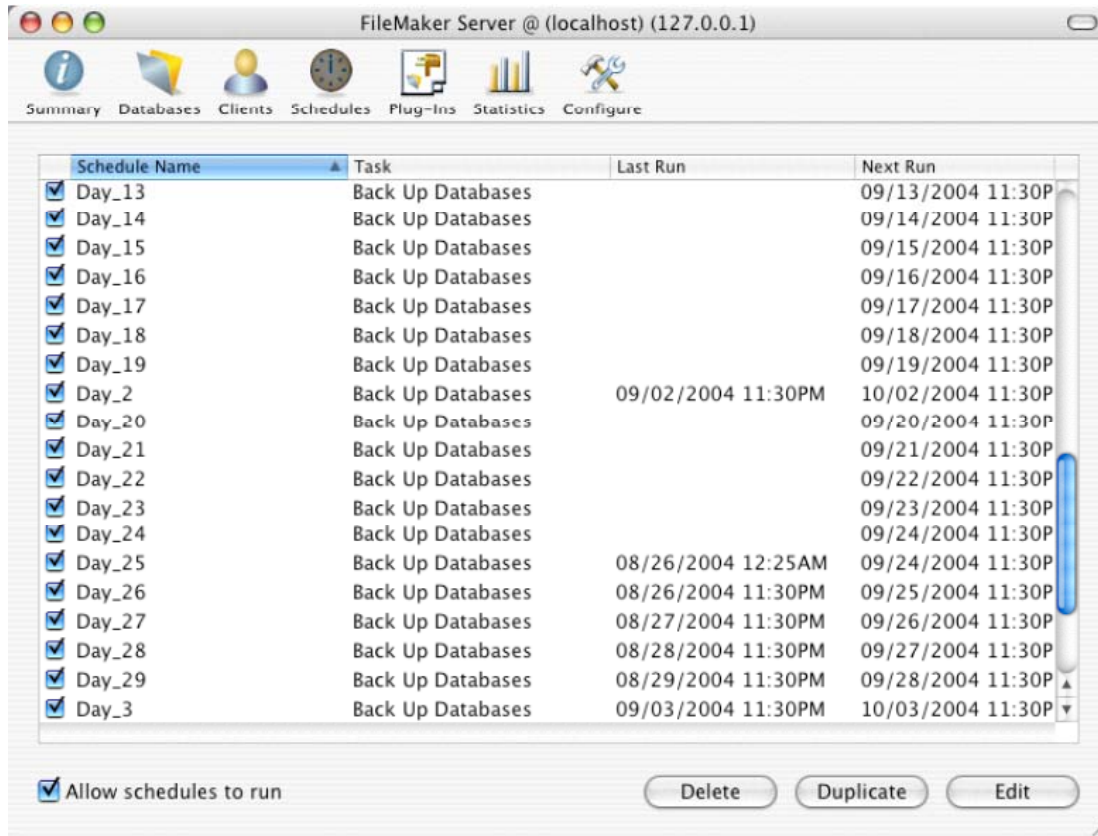
you need a backup farther back than 7 days, then you are required to use a third party program like Retrospect.



- FileMaker 9 Schedule Examples

**FileMaker Server for Macintosh (version 7/8):** 24 hours, while providing quality backups, is not typically sufficient to find database problems. For this reason Richard Carlton Consulting also recommends making a *Daily* backup copy of the database. The graphic above show backups

named after a 30-day schedule in addition to the hourly backups already discussed. This strategy results in each day's having its own separate backup for thirty days, which in the case shown in the graphic, occurs everyday at 11:30PM.



- FileMaker Schedule Examples (Macintosh version 7/8)

**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 if using FileMaker Server for Windows or FileMaker Server 9 for Macintosh, or 30 daily backup schedules if using FileMaker server for Macintosh prior to version 9. This strategy guarantees

database backups for either a 30-day period or a one-week period 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%.

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

### **COMPLETE SUMMARY**

- (1) Purchase server and three hard drives.
- (2) Setup an hourly backup to the Database Backup Drive. Setup one backup for every day on a 7-day schedule, or if possible, a 30-day schedule.
- (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, Inc. has NOT certified FileMaker Server to run on Windows Vista.
- (2) **Can I use a computer running OS X Leopard as the Server?** FileMaker, Inc. has now released FileMaker Server 9.0v3, which is the first version of FileMaker Server to be compatible with OS X Leopard. Previous versions should never be installed on an OS X Leopard computer.
- (3) **Can I use a computer running Windows XP as the server?** FileMaker, Inc. has certified FileMaker Server 7v4 / 8.0 / 9.0 for use with XP Professional SP2. If using XP, 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 8 Server, you will need OS X 10.3.9 or better; for FileMaker Server 9, you will need OS X 10.4.9 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 won't work correctly on my Mac.** 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 10.4.2 was so bad that FileMaker had to issue a technical advisory on dealing with permissions. In OS X 10.3, setting the permissions for can be a real challenge, especially for external hard drives. To the right is a screen shot of the correct permission setting for a 2<sup>nd</sup> internal hard drive.



- (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 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 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 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 5.5: Multiple processors are not used so don't bother.

FileMaker Server 7.0: 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 opted not to fix this issue in this version of the software. Stick to single processors.

FileMaker Server 8/9: 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.