

The FileMaker® Server 12 Processes and the Command Line

By:

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More processes, more stability

FileMaker Server is a true workhorse; think of the different tasks it performs:

- It hosts the files for the different clients to connect to and takes care of all the database operations (the database engine);
- It provides access to the configuration and monitoring (the admin server);
- It provides XML access and web connectivity through the IIS/Apache web servers (the web publishing engine);
- It also provides data access through ODBC and JDBC if you have FileMaker Server Advanced;
- It provides server-side scripting functionality (server assisted script execution) which includes the use of plugins on the server;
- It takes care of all the backup schedules, including the new progressive backups; and,
- It manages encryption of data in transit between the server and various clients.

In previous versions of FileMaker Server some of these tasks were combined in one process. This could lead to situations where you had to stop that process to clear an issue with one task, but all the while affecting users of the other tasks that were combined in it.

A classic example was having to restart the database engine (and thus disconnecting the users) to clear issues up the Admin Console in FileMaker® Server 10. This particular issue was solved with FileMaker® Server 11 by introducing a separate process for the admin server. FileMaker® Server 12 continues the same

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trend of dedicating separate processes to the different tasks so that the architecture now looks like Figure 1.



Figure 1 - the FileMaker Server 12 tasks

This provides us with greater stability and ultimately better uptimes so that our solutions are available longer to more clients.

Under the hood you will find processes for these tasks in the OS X Activity monitor (Figure 2) and the Windows Task Manager (Figure 3). The screenshots also clearly show which of those processes run as 64-bit and which ones run as 32-bit if you install FileMaker Server 12 on a 64-bit operating system.

PID ▲	Process Name	User	% CPU	Threads	Real Mem	Kind
4797	fmserver_helperd	fmserver	0.0	17	4.8 MB	Intel
4809	fmsib	fmserver	0.0	23	6.5 MB	Intel (64 bit)
4810	fmjdbc_listener	fmserver	0.0	8	2.3 MB	Intel (64 bit)
4856	fmserverd	fmserver	0.0	40	14.5 MB	Intel (64 bit)
4857	fmsased	fmserver	0.0	15	2.7 MB	Intel
31428	FM Web Publishing	fmserver	0.3	49	29.3 MB	Intel
31473	fmscwp	fmserver	0.1	11	87.6 MB	Intel (64 bit)

Figure 2 - The FileMaker Server 12 processes in OS X (Activity Monitor)

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fmadminserver.exe	SYSTEM	00	75,040 K	Java(TM) Platform SE binary
fmsase.exe *32	SYSTEM	00	17,952 K	FileMaker Script Engine
fmscwp.exe	SYSTEM	00	238,108 K	FileMaker Web Publishing Engine
fmsserver.exe	SYSTEM	00	43,752 K	FileMaker Server
fmshelper.exe *32	SYSTEM	00	2,864 K	FileMaker Server Helper
fmsib.exe	SYSTEM	00	22,036 K	FileMaker Server BackupServer
fmsjwpc.exe	SYSTEM	00	104,328 K	Java(TM) Platform SE binary
fmswpc.exe *32	SYSTEM	00	65,380 K	FileMaker Web Publishing
fmjdbc_listener.exe	SYSTEM	00	118,568 K	xDBC listener

Figure 3 - the FileMaker Server 12 processes in Windows Server 2008 (Task Manager)

On Windows, don't confuse the listed processes with the fact that there is only one service listed in the Windows Services control panel (Figure 4)

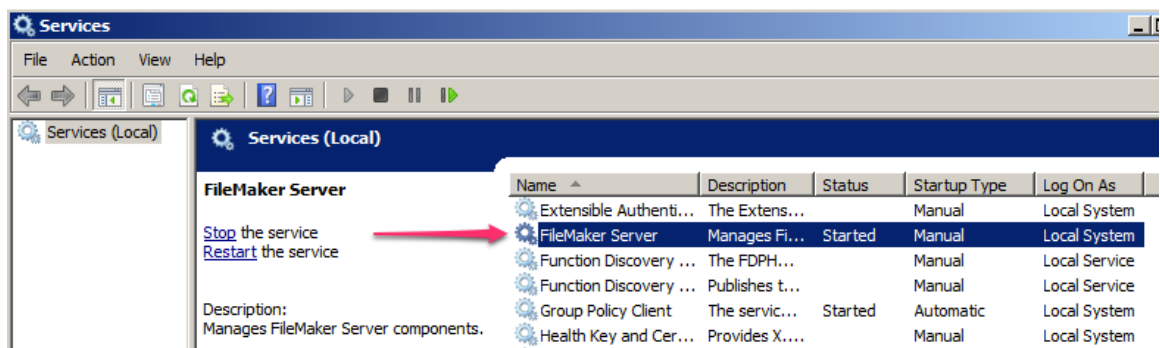


Figure 4 - the FileMaker Server service in the Windows Services control panel

That service controls the *fmshelper* process as the entry point to all other FileMaker Server processes, all of which can be started or stopped by the Admin Console and/or the command line interface.

With this improved division of labor of the various FileMaker Server 12 parts we get better control over each of the tasks, and we can take remedial action without interfering with the other running tasks.

So where and how can we take that control over each task/process? In the next sections we will go over those tasks that FileMaker Server 12 performs and show where in the Admin Console and from the command line these can be controlled. If you have never worked with the *fmsadmin* command line, this will be a good introduction. The command line interface can do things that are not possible from the Admin Console. The command line interface needs to be executed from the FileMaker Server machine itself you cannot do it remotely like you can with the Admin Console.

The Helper: `fmshelper` (Windows) / `fmserver_helperd` (OS X)

This is the utility process that needs to be running to start and stop the other processes from the Admin Console or the command line. It is launched by starting FileMaker Server itself.

On Windows you do that by starting the FileMaker Server service in the Windows control panel (see Figure 4). As with pretty much anything you can also start it from the command line by using the command:

```
net start "filemaker server"
```

There is no real equivalent to the Windows services control panel on OS X but you can use this command from the terminal to start it:

```
sudo launchctl start com.filemaker.fms
```

(Or use stop/restart depending on your intent).

On both platforms the FileMaker Server helper process is configured to automatically start when the Operating System starts. The FileMaker Server helper process will evaluate the settings in Figure 7 and Figure 9 to see if the database engine and the web publishing should be started automatically. Remember that the best practice is to turn those preferences off. This can be adjusted to be a manual start on Windows via the Services CP. OS X you may have to launch the CTL process as well in some instances.

The helper process also monitors the admin server process and will automatically restart it if it does not respond in 60 seconds. You can turn that behavior off from the command line by using this command:

```
fmsadmin autorestart adminserver off
```

When you turn it off you can still restart the admin server yourself as we will describe later. Note that when you turn the auto restart feature off it will only stay off until you restart all of FileMaker Server. After a restart the auto restart defaults

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back to “on”. If you had turned it off and want to turn it back on without restarting FileMaker server use this command:

```
fmsadmin autorestart adminserver on
```

Database Engine: fmserver (Windows) / fmserverd (OSX)

This is the core database engine that makes the files available to the clients and runs the regular backup schedules. There is a separate process for the new progressive backups feature that we will discuss later in this document.

There are two main areas in the Admin Console that affect the behavior of the database engine. The first are the start and stop buttons in the top left corner of the console (Figure 5) that you can use to manually start and stop the database engine (or from the Server menu in Figure 6); and the second is the “Auto Start” settings under General Settings (Figure 7).

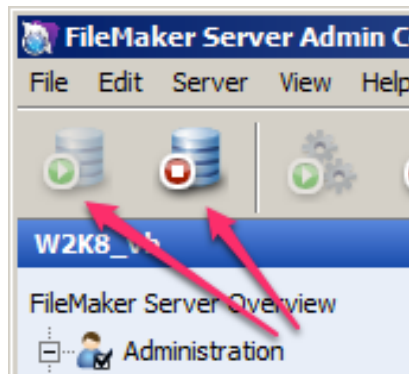


Figure 5 - manually start and stop the database engine

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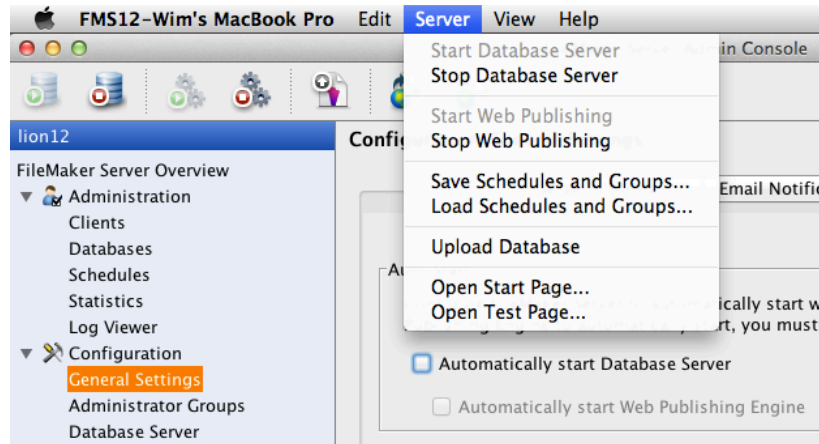


Figure 6 - the Server menu in the Admin Console

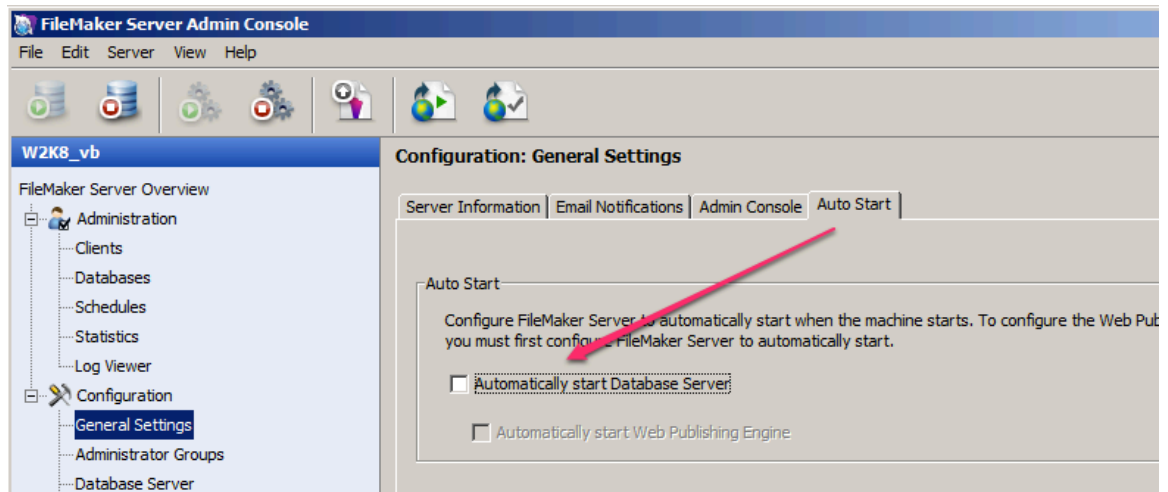


Figure 7 - setting to automatically start the database engine

The “auto start” setting from Figure 7 is enabled by default when you install FileMaker Server. *The accepted best practice however is turning it off.*

With the setting off, you have a chance to revert back to a backup in case the server reboots for an unforeseen event or crash, before the users start adding and changing data in the crashed copies of the files.

In addition to using the buttons in the Admin Console you can also start, stop and restart the database engine from the command line. The commands to use are respectively:

```
fmsadmin start server
```

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```
fmsadmin stop server
```

```
fmsadmin restart server
```

As you use these commands interactively in the terminal window on OS X or the command window on Windows you will be prompted for a username and password. Use the same one that you use to open the Admin Console.

Admin Server: fmadmsinserver (Windows) / fmsadmin (OSX)

The admin server process is responsible for the communication to and from the Admin Console and the command line interface so that all the configuration settings and statistics are properly updated. It has been a separate process since FileMaker Server 11 but was largely overlooked as a feature by the FileMaker community.

If you find that the Admin Console does not update itself as it is supposed to then you can restart the admin server process from the command line by using this command (after making sure that the Admin Console windows is closed)

```
fmsadmin restart adminserver
```

Web Publishing: fmescwpc, fmswpc, fmsjwpc (Windows) / fmescwpc, "FM Web Publishing" (OSX)

As you can tell by the title the FileMaker Server web publishing features actually consists of a number of processes. They are controlled from two buttons in the Admin Console (Figure 8) plus the Server menu (Figure 6) and an option to automatically start when FileMaker Server starts (Figure 9).

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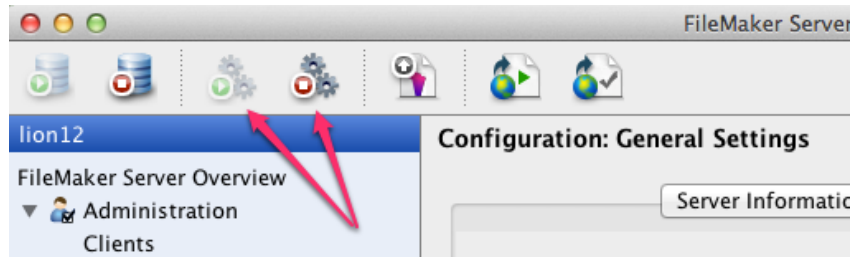


Figure 8 - buttons to start and stop the Web Publishing Engine in the Admin Console

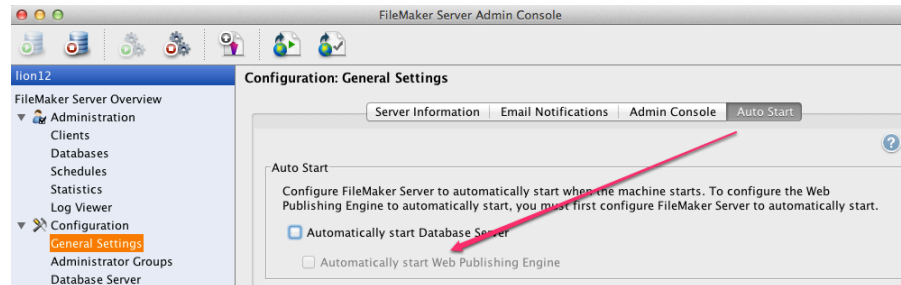


Figure 9 - the "auto start" option for the Web Publishing Engine

There is nothing new here. But what is new is that we can now start, stop and restart the processes from the command line by using respectively:

```
fmsadmin start wpe
fmsadmin stop wpe
fmsadmin restart wpe
```

Note that enabling and disabling different forms of web publishing (XML, PHP, Instant Web publishing) does not affect the list running web publishing processes.

Server-side Script Execution: fmsase (Windows) / fmsased (OSX)

Server-side Script Execution or SASE is responsible for executing scheduled scripts and script sequences and all plugin calls that happen on the server.

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You'll note from Figure 2 that this process runs in 32 bit space even on a 64 bit operating system. That is because FileMaker® Pro 12 and the plugin architecture that sits behind this feature is still 32 bit.

There is nothing in the Admin Console to start, stop or restart this process but you can do it easily from the command line:

```
fmsadmin start fmse
fmsadmin stop fmse
fmsadmin restart fmse
```

As with any of the other commands, keep an eye on the event log for feedback by FileMaker Server on the result of the commands if you suspect the commands do not have the desired effect. You can check the event log and other logs from the Admin Console, or from the Windows Event Viewer or the OS X Console application.

ODBC and JDBC: fmxdbc_listener (Windows / OSX)

ODBC and JDBC are only available in FileMaker Server Advanced, and the feature can be turned on or off from the Admin Console (Figure 10).

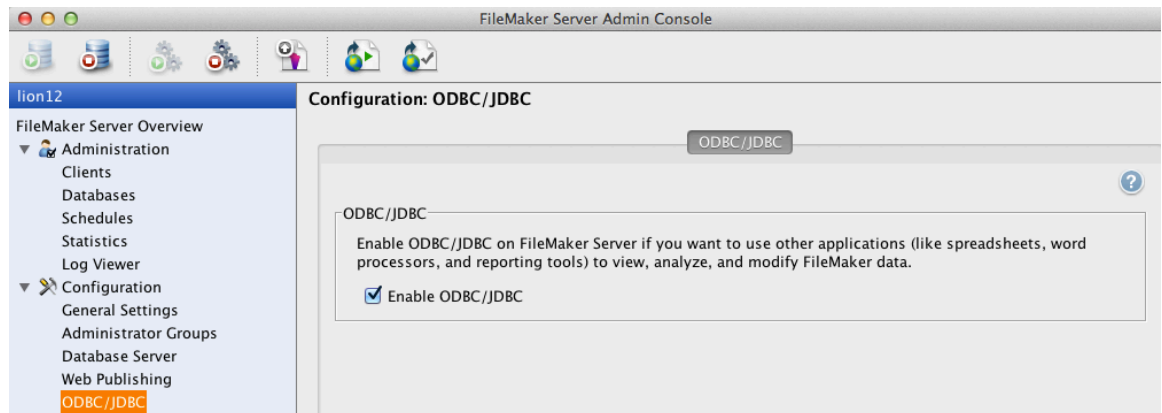


Figure 10 - ODBC and JDBC

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Since this functionality now runs in its own process you can enable and disable it without interrupting any of the other FileMaker Server tasks.

Not surprisingly you can now also do this from the command line with this command:

```
fmsadmin start xdbc
fmsadmin stop xdbc
fmsadmin restart xdbc
```

Incremental Backups: fmsib (Windows / OSX)

Incremental backups is a new feature in FileMaker Server 12 which you can enable from the Admin Console, under the Database Server settings in the “Folders” tab (Figure 11) where it is named “Progressive Backups”.

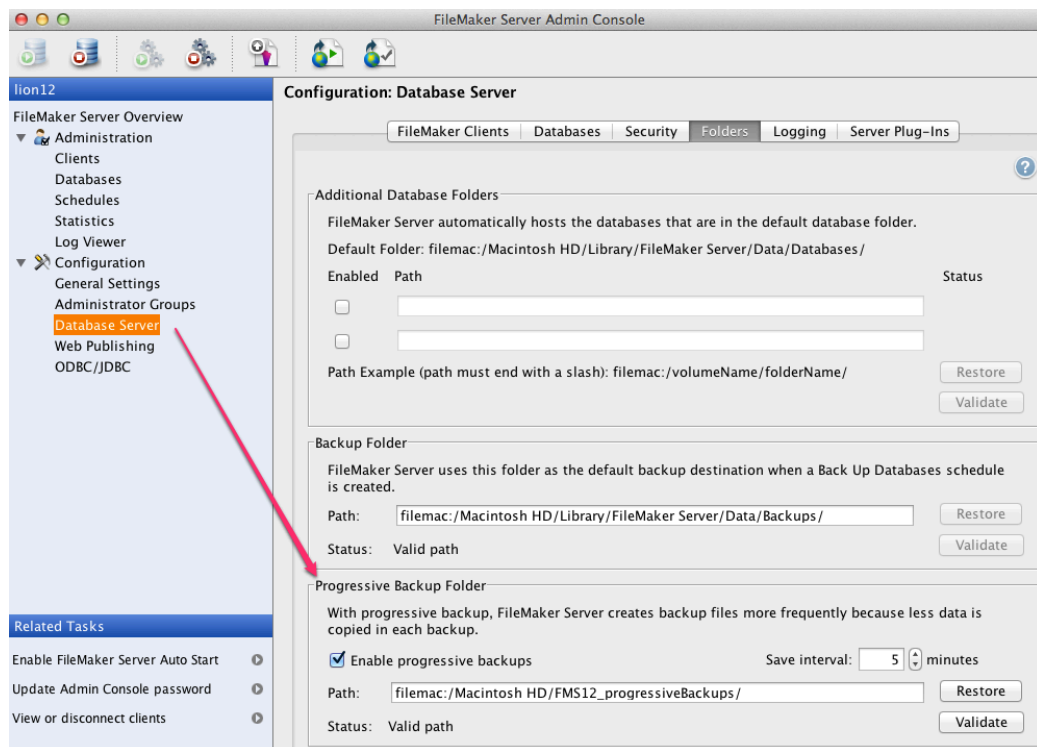


Figure 11 - the new incremental backup feature

Conclusion

Almost all of the work that was done to improve the FileMaker Server 12 stability is under the hood and the way you interact with the Admin Console is largely unchanged but it is good to realize that the various processes that make up FileMaker Server are running independent of each other for greater robustness.

With FileMaker Server 12 also comes a new set of command line tools to interact with those new processes. If you have access to the FileMaker Server machine, using the command line can be a lot faster than the Admin Console, and some of the functionality is only available through the command line. All good reasons to become very familiar with that command line and what the different processes do.

ABOUT WIM DECORTE

Wim Decorte is a Senior Architect and Senior Technical Project Lead at Soliant Consulting Inc, a long-standing reputable FileMaker development company and a Platinum member of the FileMaker Business Alliance.

Wim is a FileMaker 7, 8, 9, 10 and 11 Certified Developer and the author of numerous Tech Briefs and articles on FileMaker Server. He is also a frequent speaker at the FileMaker Developer Conference and at FileMaker Developer groups throughout the world. For his numerous contributions to the FileMaker community he was awarded with the FileMaker Excellence Award in 2002. In addition to being a renowned expert on FileMaker Server, Wim also specializes in integrating FileMaker with other applications and systems across many technologies. His pet project is the open source fmDotNet connector class that he created (www.fmdotnet.org). Sometimes referred to as the *Developer's developer*, Wim has been a true nomadic developer trekking from Belgium to Canada, through Germany to Holland, and from Bermuda to his current home on the East Coast.

ABOUT STEVEN H. BLACKWELL

Steven H. Blackwell is a Platinum Member Emeritus of the FileMaker Business Alliance, the first person ever so designated by FileMaker, Inc. in August 2011. From May of 2007 until October of 2011, he was a Platinum Level Member of the FileMaker Business Alliance. From December of 1997 to April of 2007, he was a Partner Level Member of both the Claris Solutions Alliance (CSA) and the FileMaker Solutions Alliance (FSA). He has been developing business management solutions in FileMaker® Pro and its predecessor applications since 1986.

He is the author of the definitive volume *FileMaker Security: The Book*, available at www.filemakersecurity.com. He is the creator and author of the new FileMaker Security Blog [<http://fmforums.com/forum/blog/13-filemaker-security-blog/>]