

FileMaker® 14

WebDirect Guide



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FileMaker, Inc.
5201 Patrick Henry Drive
Santa Clara, California 95054

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Chapter 1

Introducing FileMaker WebDirect

FileMaker WebDirect™ is a FileMaker® client that enables users to interact with your solutions on the web. You create solutions using FileMaker Pro and then host, manage, and configure your solutions on FileMaker Server.

Web users don't need to install additional software—anyone with a compatible web browser and access to the Internet or an intranet can connect to your FileMaker WebDirect solution to view, edit, sort, or search records if you give them access privileges. With FileMaker WebDirect, edits made in the web browser are automatically saved on the server, and the server automatically pushes updates to the web browser.

Important Security is important when you publish data on the web. Review the security guidelines in *FileMaker Pro User's Guide* and FileMaker Pro Help.

About this guide

This guide provides the following information:

- Chapter 1, “Introducing FileMaker WebDirect,” describes FileMaker WebDirect and explains how it works.
- Chapter 2, “Designing a FileMaker WebDirect solution,” steps through the process of creating or extending a solution for FileMaker WebDirect.
- Chapter 3, “Publishing a FileMaker WebDirect solution,” explains how to publish a database on the web as a FileMaker WebDirect solution.
- Chapter 4, “Testing, monitoring, and securing a solution,” summarizes areas of your solution to test and secure.
- Appendix A, “Design considerations,” lists aspects of FileMaker Pro solutions that behave differently in FileMaker WebDirect.

FileMaker documentation uses “publishing on the web” to refer to solutions that users can access on the Internet or on an intranet using a web browser. In this guide, the term “web user” refers to someone accessing a FileMaker Pro database published on the web using FileMaker WebDirect. “Solution” and “database” are terms for what FileMaker Pro creates and what web users access via FileMaker WebDirect.

This guide uses “FileMaker Pro” to refer to both FileMaker Pro and FileMaker Pro Advanced.

Important You can download PDFs of FileMaker documentation from <http://www.filemaker.com/documentation>. Any updates to this document are also available from the website.

About FileMaker WebDirect

FileMaker WebDirect combines aspects of a modern web application and a desktop application, bringing FileMaker Pro features to your solutions on the web. With FileMaker WebDirect, you can:

- easily and quickly deploy a solution to anyone with a compatible web browser without using web authoring tools or other technologies
- access data from most modern browsers, whether from a home office or while traveling
- import or export records and container data
- deploy a customized web application by hiding and locking the menu bar and status toolbar

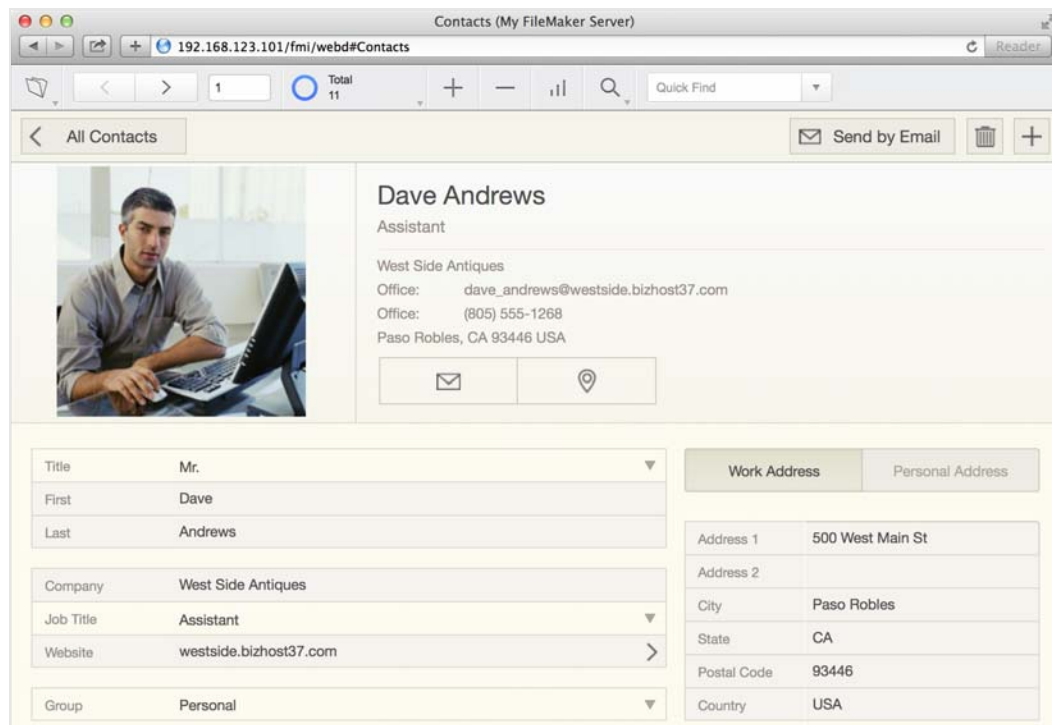
Built on advances in web technologies (HTML5, CSS3, and JavaScript), FileMaker WebDirect enables your solutions to do much of what FileMaker Pro can do, but within the constraints of modern web browsers.

FileMaker WebDirect works best when you are:

- deploying FileMaker Pro solutions intended primarily for web browsers
- extending existing solutions to include remote users outside the team or organization

For particular groups of users, you can choose to add or modify only the layouts they need. For example, if warehouse workers only need to fulfill orders in your order management solution, then you may only need to add invoice layouts that work well in a browser.

If you plan to extend an existing solution for web users, you should expect to make changes to your solution for the best possible user experience. Though you may need to make some changes to your solution using FileMaker Pro, you won't need to write any PHP, HTML, CSS, or JavaScript code. See chapter 2, "Designing a FileMaker WebDirect solution," for more information.



A FileMaker Pro layout displayed in a web browser with FileMaker WebDirect

How FileMaker WebDirect works

FileMaker WebDirect runs in a web browser and uses these standard web technologies:

- HTML5 to define the structure of the page
- CSS3 to control the appearance of the page
- JavaScript to enable interactions (for example, clicking buttons and switching tab panels)
- HTTP/HTTPS and WebSocket protocols to communicate between the web browser and the web server

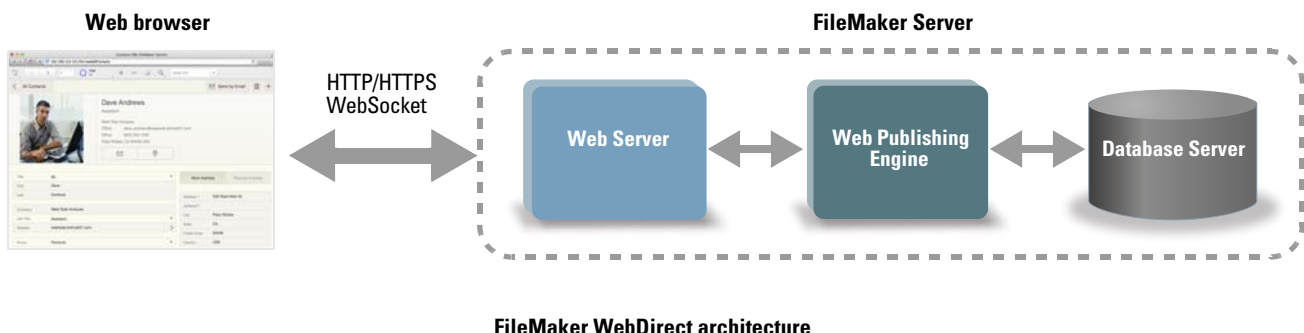
HTML5 and CSS3 are evolving standards and are implemented differently across web browsers. How your FileMaker WebDirect solution works can vary according to how the web browser conforms to these standards, how the browser's JavaScript engine performs, and how the browser parses and renders CSS. One advantage of using these web standards is that as web browsers become faster and more compliant with the standards, your FileMaker WebDirect solution will benefit from these improvements.

FileMaker WebDirect architecture

The architecture of FileMaker WebDirect bridges two different environments: the web browser and FileMaker Server. In the web browser, FileMaker WebDirect runs as a client that interacts with a solution hosted on FileMaker Server.

FileMaker Server comprises the following components:

- **Database Server:** Hosts the solutions you share with all FileMaker clients (FileMaker Pro, FileMaker Go®, and FileMaker WebDirect). As the core component of FileMaker Server, it handles everything about your solution including layouts, data, scripts, script triggers, user account authentication, and record locking.
- **Web Publishing Engine:** Translates the layouts, interactions, and data defined by your FileMaker Pro solution into HTML5, CSS3, JavaScript, and data for the web browser. In real time, the Web Publishing Engine (WPE) creates the user interface from your FileMaker Pro layouts to work in the web browser.
- **Web server:** Communicates with web browsers using HTTP/HTTPS and WebSocket protocols to serve your FileMaker Pro solution as a web application.



FileMaker WebDirect architecture

FileMaker Server responds to requests from the web browser as follows:

1. The Database Server sends layout information and data from a hosted solution to the WPE.
2. The WPE translates layouts and data from the solution into HTML5, CSS3, and JavaScript code and data for the browser.
3. The web server sends the translated layouts and data from the WPE to the browser.

In the web browser, FileMaker WebDirect renders the HTML5, CSS3, and JavaScript code generated by the WPE; captures user clicks and key presses; and sends these interactions to the Database Server to be processed.

Implicit interaction model

To enable your solution to behave more like an application, FileMaker WebDirect implements an *implicit interaction model*. In FileMaker Pro and FileMaker Go, users are accustomed to committing changes in fields, clicking buttons to show custom dialog boxes, seeing data as it is being updated by other users, and seeing conditional formatting change as conditions change, all without explicitly submitting their changes or refreshing the display. FileMaker WebDirect brings that same level of implicit interaction to users on the web.

A connection between a web browser and a server starts when the browser sends a request to the server; the server then sends back data in response. To enable FileMaker Server to push data to the browser when the browser hasn't requested anything, FileMaker WebDirect employs the WebSocket protocol and a technique called *long polling*. Once FileMaker WebDirect establishes a connection to FileMaker Server, the web browser and server communicate as needed to update records, change layouts, perform scripts, and more.

How FileMaker WebDirect renders a layout

For every object on a layout, the WPE generates a unique ID. When a web user interacts with an object, the browser detects the interaction and sends the object ID and interaction to the WPE and then to the Database Server, which controls the entire operation. The Database Server processes the interaction and sends a response; the WPE converts the response to HTML5, CSS3, and JavaScript code and then sends it to the browser.

For example, you've designed a FileMaker WebDirect solution that has one layout containing a button that's set up to run the Show Custom Dialog script step. To access the solution, a web user types the URL in a browser or clicks a link. The request to open the solution comes to the web server, which passes the request to the WPE. The WPE tells the Database Server to open the specified database. The WPE authenticates the user with the Database Server, opens a session, and performs other startup activities. If the user is allowed to open the database, the Database Server passes information about the layout and button to the WPE. In real time, the WPE generates the code to represent the layout and the button, including the formatting information for the button's pressed and hover states and a unique ID for the button. When the user clicks the button on the layout, the browser sends the click along with the button's ID to the WPE. The WPE tells the Database Server that the button was clicked; the Database Server runs the script step, responds that the script ran successfully, and tells the WPE to display the custom dialog box. The WPE generates the code for the custom dialog box and then sends it to the web browser to display.

How web technologies affect your solution

Even though FileMaker WebDirect runs in a web browser, you don't need to be a web expert to make your solution work well in FileMaker WebDirect. You do need to follow some simple design principles.

- Layouts should reflect standard best practices on the web.
Every object, style, image, and interaction on a layout means more data transferred from the Database Server to the web browser, so make wise decisions about what to include on a layout. Most web applications don't have hundreds of interactive objects or large, high-resolution images because web browsers cannot render them quickly enough and can be slowed by poor network connections.
- Keep in mind that your solution is running on the web, so limitations inherent to the web remain. For example, if the CSS standard doesn't define a property for a particular style, that style won't be displayed in your FileMaker WebDirect solution.
- There are some things you can do in FileMaker Pro that you should avoid in your FileMaker WebDirect solution.
Some features, like opening multiple windows, don't translate well to the web. Other features, like rich text, simply don't work. Consider designing a new solution specifically for FileMaker WebDirect, or extending the portions of your existing solution that make the most sense on the web. See "Step 2: Understand the capabilities of FileMaker WebDirect" on page 13.

While designing your solution, keep in mind these important implications of how FileMaker WebDirect works:

- The Database Server does most of the work for the FileMaker WebDirect client. (By comparison, FileMaker Pro and FileMaker Go clients share the workload with the Database Server when they access hosted solutions.) For example, key presses and mouse clicks that are handled by FileMaker Pro must be sent from FileMaker WebDirect to the server. The Database Server also sets record locks, activates script triggers, fetches data, and manages layout and data caches.
- Clicking through an object stacked in front of another object is not supported on the web. For example, in FileMaker Pro, if a rectangle is in front of an image that is set up to run a script, the click passes through the rectangle to the image behind and runs the script. On the web, clicking stacked objects doesn't pass the click through to an object behind; therefore in FileMaker WebDirect, clicking these stacked objects doesn't run the script. An alternative approach is to assign the script to the front-most object. The same limitation applies to placing an object on a tab label; clicking the object doesn't cause the tab panel to switch. Instead of putting an object (like a field) on a tab label, use a calculation to control the tab name.
- Script steps that affect windows work differently in FileMaker WebDirect than in FileMaker Pro. FileMaker Pro supports a multiple document interface, so a solution can open multiple windows. Because web browsers employ a single document interface, if your FileMaker WebDirect solution uses the New Window script step, the new window is stacked in front of the current window within the same browser window. In many cases, using popovers or slide controls can provide a better user experience than windows. See "Working with virtual windows" on page 18.

- For security reasons, browsers run web applications like FileMaker WebDirect with limited access to system resources. (This limited environment is called a *sandbox*.) For example, FileMaker WebDirect can't access arbitrary locations in the file system, so the Import Records and Export Records script steps work differently than in FileMaker Pro.
- Many tasks—such as CSS cascading, determining focus, propagating events, and tabbing—are ultimately controlled by the web browser and behave differently than in FileMaker Pro. For example, FileMaker WebDirect intercepts Tab key presses and sends them to the Database Server to determine the next object in the layout's tab order. But at some point, pressing the Tab key exits the webpage and enters the web browser's interface (for example, the address bar). Another example is event propagation: browsers enable web applications to respond to a click only after the click happens, unlike FileMaker Pro, which enables your solution to respond via script triggers before, during, or after a click.
- Objects in HTML5 observe a true parent-child hierarchy—that is, a child object is always contained within a single parent object. For example, an image that extends across the boundary between the header and body parts of a layout in FileMaker Pro displays exactly as it is placed, spanning both parts. However, in FileMaker WebDirect, the image can be in only one part, so the image is cropped at the boundary between the parts it spans.

For detailed information, see chapter 2, “Designing a FileMaker WebDirect solution.”

FileMaker WebDirect requirements

To publish databases using FileMaker WebDirect, you need:

- a Windows or OS X computer running FileMaker Server
- access to the Internet or an intranet
- one or more FileMaker databases

You must convert files created in FileMaker Pro 11 and earlier to the FileMaker Pro 12 format. For more information on file format conversion, see FileMaker Pro Help.

- a web browser for accessing your solutions

The supported web browsers are:

Windows	OS X	iOS	Android
Internet Explorer	Safari	Safari	Chrome
Chrome	Chrome		

Note On Android, FileMaker WebDirect supports Google and ATOK input method editors (IMEs).

For information on the minimum hardware and software requirements, see <http://www.filemaker.com/r/fms-specs>.

Connecting via the Internet or an intranet

When you publish databases on the Internet or an intranet, the host computer must be running FileMaker Server, and the databases you want to share must be open.

In addition:

- It is strongly recommended that you publish your database on a computer with a full-time Internet or intranet connection using TCP/IP. You can publish databases without a full-time connection, but they are only available to users when your computer is connected to the Internet or an intranet.
- The host computer should have a dedicated *static* (permanent) Internet Protocol (IP) address or a domain name. If you connect to the Internet with an Internet service provider (ISP), your IP address might be *dynamically allocated* (it is different each time you connect). A dynamic IP address makes it more difficult for users to locate your databases. If you are not sure of the type of access available to you, consult your ISP or network administrator.
- While a web user is connected to a FileMaker WebDirect solution, he or she should use a single ethernet, Wi-Fi, or mobile (4G or LTE) network connection with consistent signal strength and connectivity. Loss of network connectivity—which can be caused by intermittent signal or by switching between networks—can cause FileMaker WebDirect to disconnect from the server.
- Consider using Secure Sockets Layer (SSL) encryption to secure communication between FileMaker WebDirect and FileMaker Server. See “Enabling SSL encryption” on page 27.

About accessing databases with FileMaker WebDirect

By default, FileMaker Server supports one FileMaker WebDirect or one FileMaker Go connection at a time. To share information with multiple simultaneous web users, you can purchase additional concurrent connections at the FileMaker Store. See <http://www.filemaker.com>.

Other ways to publish FileMaker data on the web

In addition to FileMaker WebDirect, there are two other ways to publish your data:

Static publishing: If your data rarely changes, or if you don't want users to have a live connection to your database, you can use static publishing. With static publishing, you export FileMaker Pro data to create a webpage that you can further customize with HTML. The webpage doesn't change when information in your database changes, and users don't connect to your database. See FileMaker Pro Help.

Custom Web Publishing: To integrate your FileMaker database with a custom website, use the Custom Web Publishing technologies. See *FileMaker Server Custom Web Publishing Guide*.

Chapter 2

Designing a FileMaker WebDirect solution

With FileMaker WebDirect, you can host FileMaker solutions for web users and extend existing solutions to the web for occasional or remote users.

If you are modifying an existing database for use with FileMaker WebDirect, consider creating new layouts specifically intended for web browsers.

If you are designing a solution that will be accessed by both FileMaker WebDirect and FileMaker Pro network clients, design with web users in mind to ensure compatibility across both technologies.

Note For a full description of FileMaker Pro features and functionality, see FileMaker Pro Help.

Follow the general steps below to design a FileMaker WebDirect solution. For more design tips, see appendix A, “Design considerations.”

Step 1: Plan your FileMaker WebDirect solution

A well-planned FileMaker WebDirect solution promotes consistent:

- data entry
- data retrieval
- access for multiple concurrent users

To ensure that your solution provides a reliable experience for web users, you should identify potential problems and modify your solution accordingly.

Purpose of the solution

Determine the purpose for your solution, or the problem you want to solve. If the solution solves multiple problems or tracks multiple kinds of data, identify how you will split the solution into several layouts and tasks.

Layouts should have unique names, even if they are organized in different folders in the Manage Layouts dialog box.

Number of web users

The number of concurrently connected web users directly affects the performance of all connected web browsers. You may need to evaluate the hardware and network configuration of your FileMaker Server installation if it does not support the number of concurrent users you require.

For recommended hardware configurations for FileMaker Server, see the FileMaker Knowledge Base at <http://help.filemaker.com>.

Devices that access the solution

Devices vary by hardware and network performance, screen size, and resolution. If you identify which devices will access your solution, you can design layouts with the devices' capabilities in mind.

Devices with limited processing capabilities may render layouts and communicate with FileMaker Server slower than devices with more robust hardware configurations.

How much of the solution FileMaker WebDirect will access

Based on the solution's purpose, the maximum number of concurrent web users, and the devices that will access the solution, decide which layouts and features will be accessed by FileMaker WebDirect.

Plug-ins

When using third-party plug-ins with a FileMaker WebDirect solution, only use plug-ins that have been enabled for the WPE. (In general, a plug-in designed for use only with FileMaker Pro will not be compatible with the WPE.) For information on installing plug-ins on FileMaker Server, see FileMaker Server Help.

Step 2: Understand the capabilities of FileMaker WebDirect

FileMaker WebDirect brings many FileMaker Pro features to your solutions on the web, including:

- implicit record commits
- data entry validation
- conditional formatting
- modern layout themes
- script triggers
- quick find

For information about how web users interact with FileMaker WebDirect solutions, see “Implicit interaction model” on page 8.

Although FileMaker WebDirect is very similar to FileMaker Pro, it does not have all the features of a FileMaker Pro network client.

- Web users can choose layouts and different layout views, but they cannot add, delete, or modify fields, layouts, scripts, relationships, value lists, or other database schema.
- FileMaker WebDirect does not support Table View. Script steps or script step options that change the view to Table View are not supported. If a layout's default view is Table View, the layout displays in a different view. If no other views are enabled, the layout displays in List View.
- FileMaker WebDirect does not allow users to click objects that are located behind other layout objects, even if the front-most objects are transparent or if users click empty space in an object group. Rather than stacking multiple objects:
 - use calculated values for tab labels
 - add icons to buttons instead of stacking images in front of buttons
 - group multiple objects and apply button settings to the group
- FileMaker WebDirect offers limited text styles: rich text, highlighting, paragraph text styles, and tab stops are not supported.
- FileMaker Pro Advanced custom menus have no effect in FileMaker WebDirect solutions.

Step 3: Optimize performance

As the host for the solution, FileMaker Server processes data entered through FileMaker WebDirect, performs calculations, runs scripts, and processes script triggers. The web browser renders layouts and communicates the web user's actions to FileMaker Server. For an example of how FileMaker WebDirect and FileMaker Server communicate, see "FileMaker WebDirect architecture" on page 7.

How efficiently FileMaker WebDirect can perform these tasks is affected by:

- the processing capabilities of the web user's device
- the number of web users concurrently accessing the solution
- the quality of the web user's network connection
- the amount of data transferred between FileMaker Server and the web browser
- the frequency with which the web browser communicates with FileMaker Server

The web browser communicates with FileMaker Server whenever:

- a record is created, opened, committed, or deleted
- the current record is changed
- the layout is changed
- a calculation is evaluated
- a script is performed
- a script trigger is activated

To improve the overall performance of your FileMaker WebDirect solution, you should minimize the amount of data transferred between FileMaker Server and the browser, the frequency with which the browser communicates with FileMaker Server, and the amount of processing the web browser must perform when rendering each layout.

Keep the following best practices in mind:

- In List View and portals, minimize the number of layout objects displayed simultaneously.
- Minimize the number of portals and panel controls.
- Minimize the use of unstored calculations and script triggers.

Improving HTML performance

Reduce the amount of HTML transferred between FileMaker Server and the web browser to make layouts change faster, records load faster, and script triggers activate faster.

To reduce the amount of HTML in your solution:

- create several layouts with a minimum of objects rather than one layout with many objects
- reduce the number of tooltips on each layout
- keep image sizes appropriate for web use

Improving CSS performance

Reduce the amount of CSS in the solution to improve the web browser's layout rendering performance. Layouts with large amounts of CSS may load slowly, particularly on devices with limited processing capabilities.

To reduce the amount of CSS in your solution:

- choose or create simple themes, such as themes that do not use gradients or image slices
- create custom themes and custom styles rather than overriding existing themes and styles
- reduce the use of object states on each layout object
- minimize conditional formatting

Step 4: Design layouts for mobile browsers

Web users access FileMaker WebDirect solutions with mobile devices that have different screen sizes and resolutions. To provide an optimal experience for mobile browsers, identify the target devices for your solution, and design your solution to adapt to each device.

Keep these points in mind:

- Design each layout for the smallest device in a range of devices, and configure the auto-resize options for layout objects to expand based on the web browser's height and width.
 - In some mobile browsers, users may not be able to view objects near the bottom edge of a layout if the layout is larger than the mobile device's viewable area.
 - Mobile browsers can't zoom out beyond the area that is displayed when the web user enters the layout.
 - In some browsers, zooming in to the layout may lead to unexpected results.
- Use the OnLayoutSizeChange script trigger to change layouts if the browser dimensions change to be greater or smaller than a certain height or width, such as when a mobile browser changes orientation.
- To make it easy for web users to read and select the objects on small screens, use one of the Touch themes or increase the size of fonts and layout objects.
- Make fields large enough to display and print the data contained in the field. In the web browser, fields don't expand when they are active and field contents are truncated if the contents don't fit within the field boundaries.
- To allow users to commit records, design a scripted button or leave enough inactive space on the layout so that web users can click outside fields on small screens.
- FileMaker WebDirect does not support saving snapshot links, importing records, exporting records, or exporting the contents of container fields from mobile browsers.
- When a solution launches from the Home screen of an iOS device, the solution opens in a full-screen web browser window, minimizing the web browser controls and increasing the space available for layouts. If you require mobile web users to launch the solution from the Home screen, add instructions to your solution's documentation. See "Step 10: Document your solution" on page 22.

Step 5: Set the solution icon and options for layouts, views, and tools

You should set an identifiable solution icon, direct web users to layouts appropriate for their devices, and display the tools applicable to your FileMaker WebDirect solution.

Setting the solution icon

The solution icon identifies your solution in FileMaker WebDirect Launch Center and distinguishes it on that server. You can specify a custom icon or choose a pre-designed icon from a list. See FileMaker Pro Help.

Setting the initial layout and view

When a FileMaker WebDirect solution is set to perform a script at startup, users see the results of that script each time they open the solution. To determine which layout and view web users see when they open the solution, use the OnFirstWindowOpen script trigger with a startup script that includes the following script steps:

- Go to Layout []
- Enter Browse Mode []
- View As []

To send web users to layouts appropriate for their devices, identify which devices and web browsers are running your solution. See “Functions” on page 19.

You can also specify a starting layout in the FileMaker Pro File Options dialog box. See FileMaker Pro Help.

Hiding the menu bar and status toolbar

The controls and options in the menu bar and status toolbar allow users to create, edit, delete, import, export, find, and sort records; switch views and modes; open Help; and so on. If you want to present your own interface for performing tasks, you can hide the menu bar and the status toolbar when the file opens.

To suppress FileMaker WebDirect controls, set the menu bar and status toolbar to hide by default in the FileMaker Pro File Options dialog box. See FileMaker Pro Help.

For multi-file solutions, you must suppress FileMaker WebDirect controls in each file.

To prevent web users from being able to create new records:

- hide the menu bar and the status toolbar
- use the FileMaker Pro Manage Security dialog box to edit record access and creation privileges

Important When you suppress the FileMaker WebDirect controls, web users are completely dependent on your scripted buttons. You must include buttons that let web users navigate and log out of the solution as well as perform other tasks. Thoroughly test your solution to make sure you have provided users all required functionality. See “Testing, monitoring, and securing a solution” on page 30.

You can include scripted buttons on your layout to:

- add, select, navigate, and delete records
- import and export records
- specify search criteria and perform find requests
- sort the records
- change layouts and layout views
- continue or cancel scripts that may have paused

Provide documentation to help users interact with your solution, as the instructions included in FileMaker WebDirect Help may not apply. See “Step 10: Document your solution” on page 22.

Step 6: Set up tasks for web users

In addition to entering or modifying data, your solution may require web users to perform other tasks.

Specifying the sort order

Web users can sort data based on fields on the current layout. To control which fields web users can sort:

- hide the menu bar and the status toolbar, then create buttons that are scripted to sort the data
- use the Manage Security dialog box to restrict access to layouts with a user’s account

Working with graphics, sounds, and movies

Container fields store and display pictures, sounds, movies, and files. Container data can be embedded inside the solution itself or stored externally.

Note FileMaker WebDirect does not support container data that is linked by reference. Referenced container data displays as a static icon and can’t be exported.

You can optimize container fields for static content or for interactive content:

- By default, container fields are optimized for static content. Web users can’t play video or audio files, or open PDF files. Web users see either a static graphic or a link to the container field object.
- Container fields optimized for interactive content allow web users to play media files and to interact with PDF files. To optimize the container field as an interactive container, select the **Interactive content** option in FileMaker Pro using the Inspector.

Note Web users insert a file as interactive content by dragging the file into the container field. You can define scripts that use the Insert Picture, Insert Audio/Video, and Insert PDF script steps.

Web browsers provide inconsistent support for media files, and browser versions may vary on different operating systems. Some browsers may not correctly insert, display, or play certain media files. For example, video files may play as audio files if the video file format is not supported by the browser or operating system.

Web users may be prompted to unblock content before it can be played.

Web users may be prompted to install browser plug-ins. For example, web users may be prompted to install Windows Media Player or QuickTime Player to play media files. If you know which browser your web users will use, then test your media files with that browser.

The recommended file types appear in the table below.

For this kind of media	Use these recommended file types
Video file	.mp4
Audio file	.mp3
Image file	.jpg, .png, .gif

Working with virtual windows

Web users can navigate between multiple virtual windows in a single web-browser window to view a solution in different layouts, views, modes, and so on. Only one virtual window displays in the browser window at a time, but inactive virtual windows remain open when they are not visible.

Virtual windows are opened, closed, and manipulated using script steps. For information about individual script steps, see FileMaker Pro Help.

Keep these points in mind:

- If you open a new virtual window with the New Window script step, provide scripted buttons to navigate and close the virtual windows.
- Close unused virtual windows with the Close Window script step.
- If you design a script to perform an external script from a FileMaker data source and you want to return to the original window, add a Select Window [Current Window] script step immediately after the Perform Script step in the original script.
- If you use the Exit Application script step or close the last virtual window with the Close Window script step, the script ends the user's session and takes the user back to FileMaker WebDirect Launch Center.

Importing and exporting data

Web users may need to share data between the solution and another application. In FileMaker WebDirect, web users can import and export the following file formats:

File format	Import	Export
FileMaker Pro	X	
Tab-Separated Text	X	X
Comma-Separated Text	X	X
DBF	X	X
Merge	X	X
Excel	X	
HTML Table		X

Note To import from a FileMaker Pro file, web users must have access to an account in the file, and the account must have the FileMaker WebDirect extended privilege enabled.

Exported or saved files are downloaded to the web browser's default download location.

Step 7: Enable users to log out of the solution

It is important that web users properly close their sessions by opening the menu bar and then clicking **Log Out**. If they close the browser window or quit the browser before logging out, their sessions may still be open, which might:

- prevent others from accessing the solution if the maximum number of connections has been reached
- prevent the solution from running scripts assigned to script triggers (see “Script triggers” on page 21)
- cause a script to continue running until the specified timeout occurs, which may lead to unexpected results
- make data vulnerable to hackers until the specified timeout occurs

To minimize these situations, set the session timeout to a short amount of time or create a scripted button to safely log out web users. See “Disconnecting inactive web accounts” on page 27 and “Working with virtual windows” on page 18.

Note If you hide the menu bar, create a scripted button to log out web users. See “Hiding the menu bar and status toolbar” on page 16.

Step 8: Review the functions, scripts, and script triggers in your solution

Some functions, scripts, and script triggers are not supported in FileMaker WebDirect or perform differently than in FileMaker Pro. Review all calculations and scripts in your solution to make sure they perform the desired tasks.

Functions

Functions in FileMaker WebDirect are useful for generating or manipulating data.


For information about individual functions, see FileMaker Pro Help.

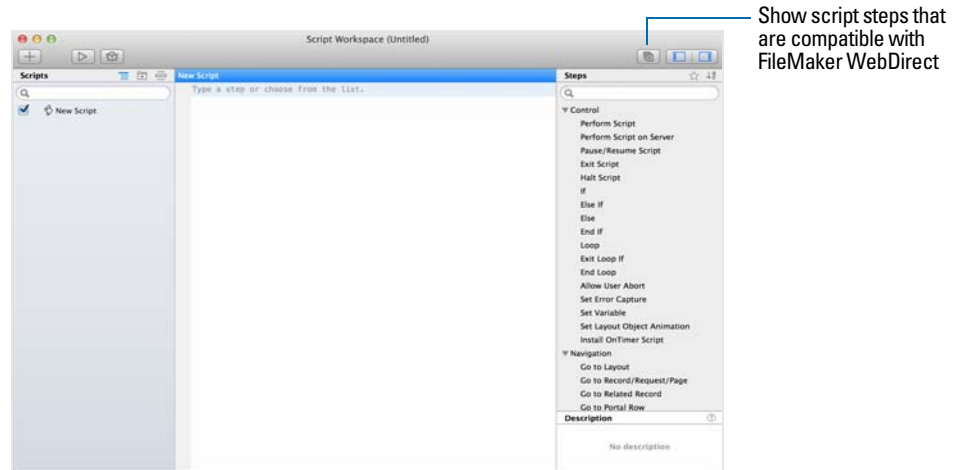
Keep these points in mind:

- To create conditional behaviors based on the type of client, use the `Get(SystemPlatform)` function. If the function returns `4`, the current user is accessing your solution with FileMaker WebDirect.
- You can detect the operating system and web browser running your solution by using the `Get(SystemVersion)` function. If you have difficulty identifying the device, use `Get(WindowWidth)` and `Get(WindowHeight)` to identify the appropriate layouts for the device.
- When the `GetLayoutObjectAttribute` function acts on a web viewer or a chart in FileMaker WebDirect, the `content` and `source` attributes return an empty string.

Scripts

FileMaker Pro scripts are useful for automating frequently performed tasks or for combining several tasks. When used in FileMaker WebDirect, scripts can allow web users to perform more tasks, or to easily perform a series of tasks simply by clicking a button.

FileMaker WebDirect supports more than 100 script steps. To see which script steps are supported, open the Script Workspace window in FileMaker Pro, click , then choose **FileMaker WebDirect**. Dimmed script steps are not supported in FileMaker WebDirect.



FileMaker Pro Script Workspace window

Although many script steps work identically in FileMaker WebDirect, several work differently, such as the Windows script steps.

For information about individual script steps, see FileMaker Pro Help.

Keep these points in mind:

- Use accounts and privileges to restrict the set of scripts that a web user can execute. Verify that the scripts only contain script steps compatible with FileMaker WebDirect, and only provide access to scripts that should be used from a web browser.
- Consider the side effects of scripts that execute a combination of steps that are controlled by access privileges. For example, if a script includes a step to delete records and a web user does not log in with an account that allows record deletion, the script does not execute the Delete Record/Request script step. However, the script might continue to run, which could lead to unexpected results.
- You can set scripts to run with full access privileges to perform tasks that you would not grant individuals access to. For example, you can prevent users from deleting records with their accounts and privileges, but still allow them to run a script that would delete certain types of records under conditions predefined within a script.
- If a script encounters an *unsupported* script step (a step that is not compatible with FileMaker WebDirect) or an *unknown* script step (a step that is obsolete or unrecognized), the script step is skipped and the script continues to execute.
- In FileMaker WebDirect, scripts can't access the client's file system. Web users must select files to import or insert, and exported or saved files are downloaded to the web browser's default download location.

- Script steps can't enter a field if access to the field is restricted by either the Browse Mode or Find Mode option in the Inspector.
- If the Pause/Resume Script step pauses a script and the web user is idle for longer than the session timeout specified in the FileMaker Server Admin Console, the web user's connection will close and the script will end early, which may lead to unexpected results. See "Disconnecting inactive web accounts" on page 27.
- Any script that uses a portion of field data should include the Set Selection script step because FileMaker WebDirect can't detect selections made by the user. This includes script steps such as Cut, Copy, Paste, Clear, Insert Text, Insert Calculated Result, Insert From Last Visited, Insert From URL, Insert Current Date, Insert Current Time, Insert Current User Name, and Find Matching Records.
- If a script sends an email message via an email client, limit the To, CC, BCC, Subject, and Body fields to 2000 characters total. If the email message contains more than 2000 characters, the web browser may not allow FileMaker WebDirect to send the message.
- Scripts in FileMaker WebDirect can't add attachments to email messages. Web users must manually attach saved or exported files to email messages.

Script triggers

As in FileMaker Pro, user actions (such as the user clicking a field) and scripts can activate script triggers in FileMaker WebDirect. For example, if a FileMaker WebDirect user clicks a field that has an OnObjectEnter script trigger, the trigger is activated.

For information about individual script triggers, see FileMaker Pro Help.

Keep these points in mind:

- FileMaker WebDirect does not support the OnLayoutKeystroke and OnObjectKeystroke script triggers.
- FileMaker WebDirect does not support using the OnObjectModify script trigger to monitor keystrokes in a field (such as when a web user enters text via a keyboard, an input method editor, or a predictive-text suggestion). Monitoring keystrokes with OnObjectModify may reduce performance or lead to unexpected results.
- If a web user closes a browser window or clicks the web browser's Refresh button, FileMaker WebDirect leaves the current session without logging out or activating the OnWindowClose and OnLastWindowClose script triggers. If the web user clicked the Refresh button, FileMaker WebDirect then creates a new connection to FileMaker Server, activating the OnFirstWindowOpen and OnWindowOpen script triggers.

Step 9: Set up external data sources

In addition to data entered by web users, FileMaker WebDirect solutions can access external ODBC and FileMaker data sources.

Setting up external ODBC data sources

To support authentication with an external ODBC data source in FileMaker WebDirect, use FileMaker Pro to store the user name and password for the external data source in the solution. See FileMaker Pro Help.

If a solution is configured to use ODBC data source single sign-on, users will be prompted to enter authentication information when attempting to access the ODBC data source.

For information about external ODBC data sources, see FileMaker Server Help.

Setting up external FileMaker data sources

To access external FileMaker data sources in FileMaker WebDirect, all referenced database files must be hosted on the same FileMaker Server deployment as the FileMaker WebDirect solution.

To support authentication with an external FileMaker data source in FileMaker WebDirect, the FileMaker WebDirect solution and the external data source should have matching account names and passwords assigned to privilege sets with the FileMaker WebDirect extended privilege enabled.

If the web user's account name and password in the FileMaker WebDirect solution do not match an account in the external data source, the user will be prompted to sign in to the external data source when the FileMaker WebDirect solution attempts to access it.

For information about external FileMaker data sources, see FileMaker Pro Help.

Step 10: Document your solution

Provide documentation on a separate layout or webpage to explain how web users should interact with your solution, especially if the solution includes many layouts and scripted buttons.

You should include the following information in your documentation:

- Browsing and finding records: Let web users know that they work with data in Browse mode and search for records in Find mode. Instruct users how to create, edit, delete, find, and sort records.
- Navigating the solution: Tell web users how to view records in appropriate layouts and views.
- Closing the session: Tell web users to open the menu bar and then click **Log Out** to properly close their connection to FileMaker Server. For more information, see “Step 7: Enable users to log out of the solution” on page 19.
- Layout objects: Create tooltips for layout objects to help web users understand how to interact with the solution. Tooltip text appears in a web browser's default text style.
- Pop-up blockers: Tell web users how to disable their browser's pop-up blocker. Some pop-up blockers prevent FileMaker WebDirect from sending mail.

Chapter 3

Publishing a FileMaker WebDirect solution

You can share layouts from your database on the web dynamically with FileMaker WebDirect and FileMaker Server. If your server computer is connected to a LAN or WAN, you can share your FileMaker WebDirect solution without requiring additional software.

Follow these steps to publish and manage a FileMaker WebDirect solution.

Sharing a FileMaker WebDirect solution

To publish a database on the web as a FileMaker WebDirect solution, use FileMaker Pro to determine which user accounts can access the solution from a web browser and then upload the database to FileMaker Server.

Choosing which users can access a solution

For web users to access a FileMaker WebDirect solution, each database file must be configured to allow access to one or more privilege sets.

To configure a database for FileMaker WebDirect:

1. Open the database in FileMaker Pro.
2. Choose **File** menu > **Sharing** > **Configure for FileMaker WebDirect** to open the FileMaker WebDirect Settings dialog box.



FileMaker WebDirect Settings dialog box in FileMaker Pro

3. Choose the filename to publish on the web from the list of open files.

4. Choose which users can access the file.

Choose	To
All users	Provide access to anyone who has the IP address or domain name of the server hosting the database.
Specify users by privilege set	Allow select users access to the FileMaker WebDirect solution. Users may be asked to enter their account name and password, defined in the Manage Security dialog box, depending on the settings in the File Options dialog box. See FileMaker Pro Help.
No users	Prevent any user from accessing the FileMaker WebDirect solution.

Note If you change the **FileMaker WebDirect access to file** setting while users are logged in, those users do not lose their connections and can continue using the solution until they log out or their sessions time out. If you make other changes to FileMaker WebDirect settings while guests are logged in to a solution, guests lose their connections and are returned to FileMaker WebDirect Launch Center.

5. Repeat steps 3 and 4 for each database you want to publish.

6. Click **OK** or choose additional settings.

Tip Select **Don't display on FileMaker WebDirect Launch Center** in the FileMaker WebDirect Settings dialog box to suppress a filename from appearing in FileMaker WebDirect Launch Center. This is useful if your solution includes multiple files and you don't want all the filenames displayed.

7. Close the database.

Keep these points in mind:

- Assigning access to files in the FileMaker WebDirect Settings dialog box changes the extended privilege settings in the associated user's privilege set. You can review and modify the Extended Privileges settings directly in the Manage Security dialog box. For more information on setting or modifying access privileges, see FileMaker Pro Help.
- The list of open files and file access options in the FileMaker WebDirect Settings dialog box are dimmed if you don't have Full Access privileges or the privileges to manage the extended privileges for a file.
- Web users can open solutions without specifying a password if the Guest account is set up for web access or an account name and password are specified in the File Options dialog box in FileMaker Pro.
- If a solution developer creates a script that includes the Re-Login script step, web users can change their login accounts without leaving the solution (for example, to switch from the Guest account to an account with more privileges).

Uploading a FileMaker WebDirect solution to FileMaker Server

To make a FileMaker WebDirect solution available to web users, you must host the database files in the solution on FileMaker Server. You can upload database files to FileMaker Server with FileMaker Pro.

Note For information on manually uploading databases to FileMaker Server, see FileMaker Server Help.

To upload a database using FileMaker Pro:

1. Choose **File** menu > **Sharing** > **Upload to FileMaker Server**.

The Upload to FileMaker Server dialog box appears.

2. In the **Hosts** list, choose the host you want to upload files to.

Or, for **Host Address**, type the host's IP address or domain name (as `host.domain.com`).

3. Enter your FileMaker Server Admin Console name and password, then click **Next**.

4. Click **Browse**, select the database file that you want to upload, and click **Open**.

5. Select **Automatically open databases (on server) after upload** to make your FileMaker WebDirect solution available immediately after the upload.

6. Click **Upload**.

FileMaker Pro updates the status for each file to indicate whether the upload was successful.

7. Click **Done**.

Changing FileMaker WebDirect settings in Admin Console

To change language and connection settings, run FileMaker Server Admin Console on a machine that has network access to the FileMaker Server deployment that is hosting your solution.

Note For a full description of Admin Console features and functionality, see FileMaker Server Help.

To start Admin Console:

1. Open a web browser and enter:

```
https://<host>:16000/
```

where `<host>` is the IP address or domain name of the master machine in your FileMaker Server deployment.

Before the FileMaker Server Start Page appears, your web browser may ask you to respond to a security message. This is normal behavior for the self-signed certificate that is included with FileMaker Server. Select the option to continue. For information about using certificates with FileMaker Server, see FileMaker Server Help.

2. Click **Start Admin Console**.

3. Enter the name and password for the Admin Console account, then click **Log In**.

Admin Console starts and displays the Status pane.

Limiting the list of solutions in FileMaker WebDirect Launch Center

You can limit the list of hosted solutions displayed in FileMaker WebDirect Launch Center to only those solutions each web user can access. Web users will be prompted for their account information before they view FileMaker WebDirect Launch Center.

To limit the list of solutions:

1. Open Admin Console.
2. Click the **Database Server > Security** tab.
3. Select **List only the databases each user is authorized to access**.
4. Click **Save**.

Choosing a language for FileMaker WebDirect

By default, FileMaker WebDirect displays its interface, tooltips, and onscreen Help in your web browser's current language. If FileMaker WebDirect can't detect the web browser's language or doesn't support the web browser's language, it uses the language specified in the Admin Console. Choosing or changing the language has no effect on your actual data.

To specify the language:

1. Open Admin Console.
2. Click the **Web Publishing > FileMaker WebDirect** tab.
3. For **Status Area Language**, select the language to display.
4. Click **Save**.

Checking the maximum number of connections

By default, FileMaker Server supports one FileMaker WebDirect or one FileMaker Go connection at a time. To share information with multiple simultaneous web users, you can purchase additional concurrent connections at the FileMaker Store or by clicking **Buy More Connections** in the **General Settings > Connections** tab of Admin Console.

When the maximum number of connections is reached, additional web users see an error message in the web browser when they try to access the solution.

To view the maximum number of connections allowed:

1. Open Admin Console.
2. Click the **General Settings > Connections** tab.
3. View the **Maximum connections** number.

Keep these points in mind:

- If you think the server has reached the maximum number of users erroneously, it's possible that a web user has not logged out of the solution properly. You can wait for the sessions to time out, close the file to disconnect all web users from the solution, or disconnect specific web users via Admin Console. See FileMaker Server Help.
- Web users should avoid accessing the same solution from multiple browser windows or in multiple tabs of the same browser window. Each browser window or tab uses its own connection to the server, which may cause the server to reach its maximum number of concurrent connections quickly. See “Working with virtual windows” on page 18.

Enabling SSL encryption

Consider using Secure Sockets Layer (SSL) encryption to secure communication between FileMaker WebDirect and FileMaker Server. SSL certificates digitally identify the sender, receiver, or both parties to provide secure connections between FileMaker Server and FileMaker clients. See FileMaker Server Help.

Important If you are not the server administrator, contact the server administrator before making changes to FileMaker Server security settings.

Keep these points in mind:

- The standard FileMaker SSL certificate installed by default with FileMaker Server is available only for test purposes.
- If you enable SSL encryption, you should import a custom SSL certificate from a Certificate Authority supported by FileMaker. If you enable SSL encryption without importing a custom SSL certificate, FileMaker WebDirect prompts web users with security messages and may not open solutions in some web browsers.
- If SSL is enabled for database connections but progressive downloading is set to use an unencrypted connection, images on layouts and data in interactive containers may not appear in the web browser.

Disconnecting inactive web accounts

You can specify the amount of time web users remain connected to the solution when their session, or connection to the web server, is idle. Sessions are considered idle when web users do not submit requests from the web browser, such as finding, creating, or submitting changes, changing layouts, and so on. A session also becomes idle when the web user closes the web browser window, moves to another website, or quits the web browser without opening the menu bar and clicking **Log Out**.

To specify the duration that a session can be idle before it times out:

1. Open Admin Console.
2. Click the **Web Publishing > FileMaker WebDirect** tab.
3. For **Session Timeout (minutes)**, specify the amount of time before disconnecting idle web users (from 1 to 60 minutes), then click **Save**.

If you are concerned that web users might not log out of the solution properly, specify a short session timeout. You can also create a scripted button to log out web users. See “Working with virtual windows” on page 18.

Accessing a FileMaker WebDirect solution

Web users access FileMaker WebDirect solutions via FileMaker WebDirect Launch Center. FileMaker WebDirect Launch Center displays icons and names for each of the FileMaker WebDirect solutions hosted on a FileMaker Server installation.

To prevent a solution from displaying in FileMaker WebDirect Launch Center, see “Limiting the list of solutions in FileMaker WebDirect Launch Center” on page 26.

To access FileMaker WebDirect Launch Center:

1. Open the web browser and enter:

```
http://<host>/fmi/webd
```

where `<host>` is the IP address or domain name of the FileMaker Server deployment.

2. Click a solution's filename to open the solution.

Keep the following points in mind:

- In some cases, web users can type the domain and host name of the FileMaker Server host rather than the IP address, for example `http://accounts.yourcompany.com/fmi/webd`. Or, they can type the host name, for example `http://yourcompany.com/fmi/webd`. Contact your Internet service provider or network administrator for information about mapping a domain and host name to an IP address.
- To access a solution over a connection with SSL encryption, use `https://` before the host's IP address or domain name. See “Enabling SSL encryption” on page 27 and FileMaker Server Help.

Linking to a database from an HTML page

Rather than having web users type the IP address or domain name to access your solution, you can create an HTML page that specifies a link to your solution.

To view	Use this link
FileMaker WebDirect Launch Center	<code>http://<host>/fmi/webd</code>
A particular database	<code>http://<host>/fmi/webd#<database name></code>
A particular database and run a script	<code>http://<host>/fmi/webd#<database name>[?script=<script name> [&param=<script parameter>][&<\$variable name>=<value>]]</code>

Keep these points in mind:

- To link to a database or FileMaker WebDirect Launch Center over a connection with SSL encryption, use `https://` before the host's IP address or domain name. See “Securing your data” on page 31 and FileMaker Server Help.
- FileMaker WebDirect supports the `/` character before the database name in URLs and accepts the following URL syntax: `http://<host>/fmi/webd/<database name>`.
- If you close your solutions frequently, or if web users access a number of solutions, consider linking to FileMaker WebDirect Launch Center, which dynamically creates links for all databases that are open and shared with FileMaker WebDirect.

- If possible, host solutions on a static IP address or use a domain name. In some environments, a new IP address is assigned dynamically to a computer every time it reconnects to the network.
- If a database name, script name, script parameter, variable name, or variable value contains spaces or other special characters, replace the characters with the corresponding encoded values required for valid URLs. For example, replace a space character with %20.

Using a custom homepage

To use a custom homepage for your FileMaker WebDirect solutions, place an HTML file in the web server's root folder. This folder is on the machine in your FileMaker Server deployment where the web server is running. The following shows the default locations.

- For IIS (Windows) through HTTP or HTTPS:

```
[drive]:\Program Files\FileMaker\FileMaker Server\HTTPServer\conf
```

where [drive] is the drive on which the Web Publishing Engine component of your FileMaker Server deployment resides.

- For Apache (OS X) through HTTP:

```
/Library/FileMaker Server/HTTPServer/htdocs
```

- For Apache (OS X) through HTTPS:

```
/Library/FileMaker Server/HTTPServer/htdocs/httpsRoot
```

You can create your own homepage, such as one that redirects web users to another page on your website, or you can use the `fmwebd_home.html` file that is on the disk image as a basis for your custom homepage. Be sure to make a copy of the original file before modifying it.

To access your custom homepage, use the following URL syntax:

```
<scheme>://<IP address>/<filename>
```

For example, if your custom homepage is `xyz_home.html` and your Web Publishing Engine's IP address is `192.168.123.101`, you would direct users to the following URL:

```
http://192.168.123.101/xyz_home.html
```

To return web users to a custom homepage when they log out, add the `homeurl` parameter to each FileMaker WebDirect solution's URL. For example:

```
http://192.168.123.101/fmi/webd?homeurl=http://192.168.123.101/  
xyz_home.html#Contacts
```

You can set `homeurl` to the custom homepage's URL or any other URL.

Chapter 4

Testing, monitoring, and securing a solution

Before notifying web users that your FileMaker WebDirect solution is available, it is important to verify that it looks and functions as you expect.

- Test features like finding, adding, deleting, sorting, importing, and exporting records with different accounts and privilege sets.
- Verify that various privilege sets are performing as expected by logging in with different accounts. Make sure unauthorized users can't access or modify your data.
- Verify that all container fields store and display container data as expected. See "Working with graphics, sounds, and movies" on page 17.
- Test all scripts and scripted buttons to verify that the outcome is expected. See "Scripts" on page 20 for information on designing scripts that will work well in web browsers.
- Test your solution with different operating systems and browsers.
- If the webpages aren't displaying properly, see "FileMaker WebDirect requirements" on page 10 and review chapter 2, "Designing a FileMaker WebDirect solution."

Testing your database with a network connection

To access a published solution, open a web browser, type the IP address of the FileMaker Server deployment followed by `/fmi/webd`, and press Enter or Return. See "Accessing a FileMaker WebDirect solution" on page 28.

Testing your database without a network connection

Test your database in all compatible web browsers on your FileMaker Server computer.

To access FileMaker WebDirect solutions on the host computer, open a web browser, type `http://127.0.0.1/fmi/webd`, and press Enter or Return.

FileMaker WebDirect Launch Center should display a list of all open database files that have FileMaker WebDirect enabled. If you don't see an open, shared database listed, see "Accessing a FileMaker WebDirect solution" on page 28.

Monitoring web activity with log files

Use the Log Viewer in FileMaker Server Admin Console to view activity, client access, and other information about your FileMaker WebDirect solutions. For information on using the Log Viewer, see FileMaker Server Help.

To log activity for FileMaker WebDirect solutions:

1. Open Admin Console. See "Changing FileMaker WebDirect settings in Admin Console" on page 25.
2. Click the **Web Publishing > General Settings** tab.

3. Select **Enable logging for Web Publishing, then click **Save**.**

For a list of error codes and descriptions, see FileMaker Pro Help.

Keep these points in mind:

- Entries are added to a log file in the order that FileMaker Server processes them.
- You can also use FileMaker Pro functions to track user activity. See FileMaker Pro Help.

Securing your data

When you publish a FileMaker WebDirect solution, it is very important to determine who should have access to the data and to specify which tasks users can perform. For more information on securing your database, see FileMaker Pro Help.

Keep these security considerations in mind when publishing solutions on the web:

- User accounts operate the same regardless of which technologies clients use to access your solutions. For example, if you create an account that restricts access to deleting records, users who access the solution with that account name and password will not be able to delete records, whether they access the data from FileMaker WebDirect, an ODBC data source, or FileMaker Pro.
- When enabling access to solutions via FileMaker WebDirect, assign accounts and privilege sets to web users rather than providing access to all users.
- If an account limits record-by-record browse privileges but does not limit the privilege to delete records, it is possible for users to delete records they cannot view.
- Consider using Secure Sockets Layer (SSL) encryption to secure communication between FileMaker WebDirect and FileMaker Server. See “Enabling SSL encryption” on page 27.
- As operating system vendors continue to patch security problems, they may disable certain features, often in conjunction with security settings within the user’s web browser. Such changes might disable or change the behavior of web viewers in FileMaker WebDirect. If such changes affect your solution, tell users how to change security settings in their browsers to allow web viewers to function properly, or ensure that the URLs used by your web viewers are for trusted webpages only.

Appendix A

Design considerations

Although FileMaker WebDirect is very similar to FileMaker Pro, some aspects of FileMaker solutions behave differently on the web. Keep the following considerations in mind as you design your solution.

General considerations

- FileMaker WebDirect does not support gestures or animations.
- Modifying a solution while web users are connected could produce unexpected results. For example, if you save changes to a layout that web users are accessing in List View, each web user's current record is changed to the first record in the found set.
- Use fonts that are installed on all target operating systems. If a font is not available to a web browser accessing a FileMaker WebDirect solution, the web browser substitutes its default font for the unavailable font.
- Objects and grouped objects should not span multiple layout parts. If an object or group of objects spans multiple parts, it displays only in the layout part in which it is anchored.
- To identify the current record, style the layout body part's Active object state to identify the current record. The current record indicator is not supported in List View. See FileMaker Pro Help.
- If you copy an object from a layout that uses the Classic theme, change the object to use a style defined in the target layout's theme.
- If layout text wraps to a new line, increase the size of the text boundaries in the FileMaker Pro layout. For example, if the text is aligned left, drag the lower right handle slightly toward the right.
- The highlight, superscript, and subscript conditional formatting options are not supported. Underline, word underline, and double underline are all rendered as regular underline.
- Tooltips are not supported with the following layout objects: text, images, fields that do not allow entry, merge fields, merge variables, portals, charts, and web viewers that do not allow interaction.
- Popovers do not resize when the window resizes, so design popovers with the size of the web browser window in mind. Resizing a browser window to be smaller than an open popover or opening a popover that is larger than the current window could produce unexpected results.
- Make sure that all SVG files conform to the SVG standard. FileMaker WebDirect does not support non-standard SVG files. See *FileMaker Pro SVG Grammar for Button Icons*.
- When you print FileMaker WebDirect records, the web browser prints the records you see onscreen. Printed pages may not match the layout you see onscreen and may contain layout parts and objects that are not printed in FileMaker Pro, such as navigation parts and placeholder text.

- Keyboard shortcuts may not function when a menu is open, after a menu has closed, or when a field is active on the layout.
- FileMaker WebDirect displays scroll bars according to system preferences. FileMaker WebDirect does not support the Show scroll bar option in the Portal Setup dialog box.

Mobile browsers

- Mobile browsers do not support the option to always show vertical scroll bars in portals.
- When a script step causes the cursor to enter a field, mobile browsers do not display an onscreen keyboard.
- Set the FileMaker WebDirect language in FileMaker Server Admin Console before publishing your solution. Some mobile browsers do not automatically update the FileMaker WebDirect language after it is changed. To force a mobile browser to update the FileMaker WebDirect language, clear the browser's cache.
- PDF files in container fields appear as links. Web users must click the link to download and view a PDF.

Fields

- If a field uses system formats to display data, FileMaker WebDirect uses the default system formats for the location in which the solution was created. Default system formats affect date, time, and timestamp formatting in fields, merge fields, and validation messages.
- Fields can't auto-complete (type-ahead) field values based on existing values or value lists.
- Sideways text is not supported.
- Line spacing is not supported.
- If users add leading or trailing spaces before or after the data in a text field, the data may not appear in the text field when the solution opens in FileMaker WebDirect. Tell users to avoid adding leading spaces. If extra spaces are necessary, make sure the text field length is wide enough to accommodate the extra spaces, or add a scroll bar to the text field.

Pop-up menus and drop-down lists

- Web users can't edit value lists by using an Edit item and can't enter values that aren't in a value list by using an Other item.
- Field controls for pop-up menus and drop-down lists do not display leading or trailing spaces before or after the data for value list items.

Checkbox sets and radio button sets

- Fields that are formatted as checkbox sets or radio button sets organize values horizontally. To display values vertically, decrease the field's width.
- Radio button sets and checkbox sets display as standard HTML controls; they do not support object styles. If they appear cropped, enlarge the fields on the FileMaker Pro layout.

Container fields

- Web users can insert a file of up to 300 MB into each container field. To insert files larger than 300 MB, use FileMaker Pro.
- Web users can work with files of up to 300 MB in interactive container fields. If a file is larger than 300 MB, web users must export the contents of the container field to work with the file. To work with files larger than 300 MB in interactive container fields, use FileMaker Pro.
- To allow web users to export data from container fields, set **Available menu commands** to **All** in the Edit Privilege Set dialog box.
- To avoid cropping movies, make sure the container field is large enough to display the movie and the movie controls.
- Plug-in files, XML files, and some sound files may display as a generic file icon when the files are stored as a file in a container field.
- Only files should be entered as container data. Do not enter text, numbers, dates, times, or timestamps into container fields.

Panel controls

- Minimize the use of custom styles applied to panel controls. If a custom style is applied to a panel control, the custom style may appear on other panel controls on the same layout, even if those controls have different styles.
- Objects placed on the tab label of a tab control are rendered in the panel area.
- Tab controls display with a line separating the tab label and the panel area.
- When designing slide panels in your solution, select **Show navigation dots** to allow web users to navigate between slide panels with the slide control's dots. Slide controls do not support swiping through panels in the web browser. As an alternative, you can define scripts to control the navigation between slide panels.

Web viewers

- Some webpages may not load correctly because of security features implemented by the pages' authors. Make sure to test all webpages you intend to display in the web viewer.
- Web users might be able to interact with web viewer content in a limited way, even if you clear the **Allow interaction with web viewer** checkbox in the Web Viewer Setup dialog box. Limited interaction can also occur even if a web viewer is defined as a button.
- Webpages that load code—such as JavaScript or references to Java, ActiveX, Flash, or other plug-ins—run that code within the user's web browser. Some web technologies may not be supported or may be supported differently with FileMaker WebDirect. Security settings within the user's browser may also prevent the use of these plug-ins.
- If the contents of a web viewer contain one or more comments, use C style comments. C style comments start with the characters `/*` and finish with the characters `*/`. FileMaker WebDirect does not support C++ style comments, which begin with the characters `//` and finish at the end of the line.
- If the URL calculated by a web viewer does not include a colon (:), then FileMaker WebDirect adds the scheme `http://` to the beginning of the URL. To avoid errors, include the appropriate scheme in the web address when you set up a web viewer.

- The Back and Forward options of the Set Web Viewer script step are not supported in FileMaker WebDirect. To navigate backward and forward within a web viewer in FileMaker WebDirect, right-click (Windows) or Control-click (OS X) within the web viewer and choose **Back** or **Forward**. If the layout has more than one web viewer, the shortcut menu works only with the web viewer that has most recently changed from one page to another, not necessarily the one the mouse pointer is over.
- FileMaker WebDirect does not support web viewers whose content is itself published by FileMaker WebDirect. No webpage displays in a web viewer if the web viewer URL contains “/fmi/webd”.
- Content in a web viewer may have unintended effects on FileMaker WebDirect. Therefore you must test the webpages you want to display within a web viewer. For example, a URL (either a URL calculated from field data or a URL that the user specifies by clicking a link in a web viewer) can specify a page that has the `target=top` attribute. This attribute causes the page to replace FileMaker WebDirect in the web browser window.

Object states

- Some object states, such as In Focus or Pressed, are not available for all objects or object parts.
- Specify a Pressed state for buttons that are from solutions created with versions of FileMaker Pro earlier than version 12.0. Otherwise, the buttons will not display a Pressed state when clicked.

Borders and padding

- Object borders with a thickness that is not a whole number are rounded down to the nearest whole number. Thicknesses greater than 0 points but less than 1 point are increased to 1 point.
- If you apply a border to a layout part or a layout background, do not place objects on the border. Otherwise, parts of objects that overlap the border will not render in the web browser.
- If you apply an image slice fill to a layout part or a layout background, do not place layout objects on or near the image segments that border the layout part or layout background. Otherwise, layout objects may not render as expected.
- Change an object's padding to display the object's contents a set distance from the object's border. FileMaker WebDirect does not support indentation.

Hidden conditions

- To hide an object in an object group, apply a hidden condition to the entire object group. Users can't click objects located behind hidden objects in object groups unless the entire object group is hidden.
- If you apply button settings and a hidden condition to an object, apply the hidden condition last. Otherwise, users may not be able to click objects located behind the object with button settings when that object is hidden.

Tab order

- The tab order might vary from the tab order in FileMaker Pro. Different browsers might support the tab order in a different manner.
- The tab order in a web browser includes edit boxes, drop-down lists, pop-up menus, drop-down calendars, and portals.

Multi-file solutions

- FileMaker WebDirect must be enabled in all databases. If you don't want related files to be accessed directly, you can exclude a filename from FileMaker WebDirect Launch Center by selecting **Don't display on FileMaker WebDirect Launch Center** in the FileMaker WebDirect Settings dialog box. See "Choosing which users can access a solution" on page 23.
- Create identical accounts, passwords, and privilege sets in each file in a FileMaker WebDirect solution. When users enter the account and password for the first file, the information is used to authenticate related files.
- Web browsers can't display fields on a layout that are from another file, unless web users have access to an account in the file, and the account has the FileMaker WebDirect extended privilege enabled. This limitation also applies to calculation fields that are based on field values from other files.
- When a solution contains references to a protected related file that it is not authorized to access, web users cannot authorize access to the protected file in FileMaker WebDirect. Consequently, when web users open the solution, the file does not contain any data from the protected file. To prevent this, be sure to use FileMaker Pro to authorize all files that reference protected files. For more information on authorizing access to protected files in a multi-file solution, see FileMaker Pro Help.

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