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Installing OptiRain Open on Macintosh OS X 10.6 (Snow Leopard)

OptiRain Open provides local scheduling for multiple EtherRain valve controllers and so is capable of providing irrigation control in a wide range of installations. The main benefits of using OptiRain include:

1. Calendar based scheduling – to save time and water
2. Seasonally optimized water control – to save water
3. Weather dependent programs for more optimal irrigation
3. Superior user interface for easy control
4. Easy access through any browser residing on a local network
5. Convenient control of large numbers of valves from one control point.

This note provides in-depth instructions for installing OptiRain Open on a Mac running OS X 10.6 or higher. It's possible that these instructions may also apply to versions of Mac OS X beneath OS X 10.6, however there may be additional software installation required.

Using a Macintosh as an Irrigation Controller

Practical use of OptiRain on a Macintosh requires that the Macintosh be running and not in sleep mode, so OptiRain Open is ideal for use on Macintosh computers that are used as always-on servers. However, because OS X 10.6 supports one scheduled wake up event and one scheduled sleep event, it's possible to also use OptiRain Open on client Macs without necessarily keeping them on all of the time.

The Mac Mini, because of its very low standard operating power, is a very suitable platform for running OptiRain Open. The power consumption of latest Mac Mini in idle mode is only 10 Watts, however, if desired, the power draw can be minimized by coordinating the Mac Mini's wake up and sleep events with the irrigation schedule.

OptiRain is a web-based application so once it is installed on your Mac it can be accessed through the browser on your Mac. In addition, as long as your Mac is not in sleep mode, OptiRain can be accessed from other computers on your network through a browser.

Pre-Installation

Pre-installation consists of configuring the web software that came with your Mac and then configuring your Mac to enable the web software.

Web Software provided with Mac OS X

OptiRain Open is a web application and is dependent on the availability of several programs in order to function. The following programs are required:

1. Apache Web Server
2. PHP 5.29 or greater
3. SQLite 3
4. CURL (on Mac OSX platform)

These programs are already installed as part of the OS X 10.6 install package, so pre-installation consists primarily of configuring these applications.

Pre-Installation: Enabling the Web Server on your Mac

On a Mac the web-server is enabled from the System Preferences window. Click the Apple Icon, click system preferences, under the "Internet & Wireless" heading, click the "Sharing" folder.

From this folder we can set up the Mac to enable the built-in web server, and we optionally provide easy access to the web-server from other computers on the network.

First, create a Local Host name for your computer. Note: this name is not the "computer name." To create a Local Host name, click the "Edit" button located in the top of the "Sharing" window (to the right of: "Computers on your network can access your computer at: ").

Click the "edit" button to change the network host name. This is the name that you will use later in configuring your web server, so make a note of this name. If you change this name you have to re-configure your web server.

Check the "File sharing" box. Click the options button. Check the box "Share Files and Folders using SMB.

To enable your web server for access to OptiRain locally through your web browser or through other computers on your LAN, check the box labeled "Web Sharing."

Note: Don't check the "Web Sharing" box now. The web server is not yet configured, so for now this box should be unchecked.

Pre-Installation: Configuring the Web Server and PHP

The pre-installed Apache Web server and the PHP script interpreter are configured by editing text-based configuration files. This document assumes that the Apache web server and the PHP scripting module are in their initial not-yet-configured state, and these

instructions provide information on how to configure these programs from this state. If your web server has already been configured you may be able to skip some or all of these steps.

IMPORTANT NOTE: In order to configure OS X Apache and PHP you will need to use the Mac terminal program to enter shell commands.

Editing configuration files is easy. Those familiar with UNIX text editors will be able to easily edit with their favorite editing application. Those who are not familiar with UNIX editors may want to download and install the Macintosh application "Text Wrangler." This free application allows editing of hidden files using a somewhat graphical context.

Configuring the Apache Web server

To configure Apache, follow these steps:

1. Make a backup of the configuration file (httpd.conf)
2. Edit the configuration file (httpd.conf) and save it.

Step 1. Make a backup of the configuration file.

The configuration file is located in the following folder:

```
/etc/apache2/httpd.conf
```

This file is located in a hidden folder. Because this folder is owned by root you must use the Mac Terminal program to create the backup. From the Utilities folder, click on the Terminal application. Enter the following commands:

```
cd /etc/apache2
sudo cp httpd.conf httpd.conf.original
```

Terminal will ask for your password. Enter your password followed by <enter>

Check that the backup was created by entering the following command:

```
ls -l
```

You should see the original httpd.conf and the new file backup file (httpd.conf.original) listed along with some other files.

Step 2. Edit the Configuration File.

The following changes need to be made to the Apache configuration file:

1. Change the document root.
   The original document root folder is owned by root. Using this folder requires root access, which is generally painful, so the web server document root is usually changed to a "Sites" folder and this is recommended when installing OptiRain
2. Change the directory command to reflect the new document root.
3. Enable loading the PHP dynamic module

If you are familiar with UNIX you can use your favorite UNIX editor to make these edits (nano, vi, pico) for others it is recommended that you install "Text Wrangler" and use Text Wrangler to make these edits. This document shows how to make the required edits using "Text Wrangler:" Note: after opening the Apache configuration file, and upon entering an edit within this file, "Text Wrangler" will flash a dialog box: "Are you sure you want to unlock this file?" Respond with "Yes".

From applications, activate "Text Wrangler." From the file menu, click "Open Hidden." Navigate to and then open the following file:

```
/etc/apache2/httpd.conf
```

Search for the following line within this file:

```
DocumentRoot "/Library/WebServer/Documents"
```

Change the line to:

```
DocumentRoot "/Users/<Local Host>/Sites"
```

where <Local Host> is the host name for your computer (described above).

Example: The Local Host name for my computer is "MiniMe" so I've changed my document root line to the following:

```
DocumentRoot "/Users/MiniMe/Sites"
```

Next, move down about 22 lines, find the following directory command:

```
<Directory  "/Library/WebServer/Documents" >
```

Change this to reflect your new document root directory. Example:

```
<Directory  "/Users/MiniMe/Sites">
```

Note: Make sure to substitute your Local Host name in place of "MiniMe"

The PHP dynamic module is already configured on recent Mac OS X distributed Apache config files. See appendix if Apache PHP configuration is needed.

Save the file. TextWrangler will save this file, but will first ask you for your password. Assuming no errors were made, configuration of Apache is now complete.

Configuring PHP

PHP is a scripting language upon which OptiRain Open was written. It works in conjunction with the web server to deliver database driven web pages. Apache should already be configured to use PHP but we must first configure PHP on the Mac so that it operates as expected.

This configuration can be accomplished by editing one file :

```
PHP.ini
```

Two items need to be configured within the PHP initialization file:

1. Set a default time zone
2. Allow “short tags”

Create PHP.ini

By default, the PHP initialization file is not set up on the Mac. Because of an issue with time-zone warnings, the PHP.ini file must be created and then configured. This must be done using the Mac Terminal application. From Mac Terminal, issue the following commands:

Go to the folder that contains the default php.ini file (called php.ini.default)

```
cd /etc
```

Create a new file called php.ini from the default file:

```
sudo cp php.ini.default php.ini
```

Make the new file readable and writeable:

```
sudo chmod 666 php.ini
```

The file is now ready for modification. The original php.ini.default file remains unchanged.

Step 1. Set a Default Timezone

Using TextWrangler, or your favorite UNIX editor, locate the following line:

```
;date.timezone =
```

Uncomment this line, (see example below) and insert your time zone. A list of time - zones can be found here:

http://php.net/manual/en/timezones.php

For example, to set the time zone to Pacific Standard Time, I'll select the time zone for Los Angeles:

```
date.timezone ="America/Los_Angeles"
```

Note that the initial semi-colon has been removed. Also, the time zone must be spelled correctly. (Use the underscore within the name "Los_Angeles" not a space character)

The default time zone has been set.

Step 2. Enable Short Tags

Don't worry what short tags are. Generally they are enabled, however the initialization file that comes with Mac has short tags turned off and they must be turned on for OptiRain.

To enable Short Tags, find the following line in the currently open php.ini file:

```
short_open_tag = off
```

Then, comment out the line by placing a semi-colon in the first column:

```
;short_open_tag = off
```

Save the file PHP.ini. Configuration of PHP is now complete. Exit the editor.

At this point, Apache and PHP have been configured and the pre-installation portion of installing OptiRain Open is complete.

Test the configuration by enabling the web server. From System Preferences, under "Internet & wireless," click the "Sharing" forder. Check the "Web Sharing" box. If the box is already checked, then uncheck the box. Wait a few minutes and then check the box again. By unchecking and checking the "Web Sharing" box the apache server is

stopped, and then re-started. Upon re-start it reads in the new configuration file. From a browser window on the Mac, enter "localhost" in the brower URL field and hit <enter>. A default test page should be displayed.

Installing OptiRain Open

The following steps are required in order to install OptiRain Open on a Macintosh computer based on OS X 10.6

1. Copy OptiRain Open software to the Macintosh
2. Set file permissions

Once OptiRain is installed you'll be able to access it from a browser on your local computer, or any computer attached to your network.

If your web server is already serving web pages, you may already have an index page for your server. If you do, then you'll need to set a link on your index page to the OptiRain Open main page.

The main page for OptiRain Open is: **`or_main.php`**

If you have Windows networking or Bonjour enabled on your network you'll be able to access your web server by entering the Local Host name in the browser window. If, after installation is complete, you wish to access OptiRain from the same computer that OptiRain is running on, you'll use your web browser and enter:

`localhost`

into the browser's URL textbox.

Note: OptiRain Open is a local area network (LAN) application. You don't need to open your network to the Internet or re-configure any firewalls to use it.

Step 1. Transfer the files to your Mac.

OptiRain Open is supplied in a compressed folder. Within the folder you'll find a file:

`index.html`

and a folder:

`optirain`

Uncompress this file and folder. Copy this file and folder to the following folder on your Mac:

```
Sites
```

This assumes that you configured your web server per the instructions above. If you have a different configuration from that recommended within this document, copy the files and folder into the document root folder that you specified.

NOTE: If you already have an index file in your document root folder, don't copy the index file supplied with OptiRain unless you first rename your current index file.

Step 2. Set file permissions and ownership

Once the OptiRain files are transferred to the document root folder of your Mac, you will need to set the file permissions in order for OptiRain to execute properly.

You must use the Mac Terminal application to set these permissions and ownership.

If you installed the OptiRain files in the folder "Sites" per the above instructions, follow these steps:

From Mac Terminal: (<enter> - means press the enter key)

```
cd Sites <enter>
```

```
ls -l  <enter>
```

You should see list of files including the OptiRain directory. Enter the following:

```
sudo chmod -R 0775 optirain  <enter>
```

You will be asked for your password. Enter your password. Permissions have been set.

Now set the ownership. It is important that the web user owns the OptiRain folder. You need to know the name of the web user for your operating system. It changes from version to version on Mac OS X. For OS X 10.6 (Snow Leopard) the web user is "_www"

```
sudo chown -R _www optirain  <enter>
```

Ownership has been set. OptiRain has been installed.

Set Operating Platform

Once OptiRain is running, from the left navigation bar on OptiRain's main page, click "Utilities." Set the Operating platform to Mac OS X. and click submit.

OptiRain is configured!

Appendix

Additional Configurations

Configure Apache to work with PHP

Recent Apache config files that ship with the Mac already have Apache configured for PHP. This is provided for those who have Apache config files that were not set up for PHP.

Enable PHP in the web server:

Open the file:

/etc/apache2/httpd.conf

Uncomment this line:

LoadModule php5_module libexec/apache2/libphp5.so

Save the config file and restart the web server.

How to Restart the Web Server

From the command line:

Restart Apache
sudo apachectl restart

From the System Preferences Window:

Under "Internet & wireless," click the "Sharing" folder. Check the "Web Sharing" box.

If the "Web Sharing" box is checked, then uncheck the box. Wait a few minutes and then check the box again. By un-checking and checking the "Web Sharing" box the apache server is stopped, and then re-started. Upon re-start it reads in the new configuration file.