

Creating a Local Web Server Using XAMPP

This paper is intended to show TNG users how to create a Web server on their local (home) computer to experiment and test their TNG-based Web site prior to uploading their files to a remote (hosted) Web server for public viewing.

Even if you plan on using a commercial host for final deployment, it's usually more convenient to perform testing and development on a desktop machine. However, as will be seen, the configuration and security settings that are established for the experimentation phase of a server are not desirable on a deployment server.

Although these procedures are for creating a Web server in a Windows environment, comparable methods are available for creating Web servers in Linux, Sun Solaris, and Mac OS X environments. Likewise, since the creation of a Web server requires no changes to the Windows Registry, the Web server may be deleted at any time. These procedures are equally suited for installation on a USB "thumb" drive provided that the drive has sufficient disk space to accommodate all of the programs and your genealogy data.

Note: It will probably take you longer to read this paper than it will to perform the process.

This paper was written by John G. Pfost, who, as a freelance communications specialist and avid genealogy aficionado, is an enthusiastic champion of TNG. Please direct any comments or corrections directly to John at ... jpfost@sonic.net. I will promptly update the file and repost it.

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1. Overview

The Next Generation of Genealogy Sitebuilding (TNG) utilizes sophisticated technologies to manage and present genealogy data to Web site users. Conventional “static” Web servers display a specific existing Web page when requested by a site visitor. That is, each Web page must be physically created, and then *all* pages must be uploaded to the Web server for access by the public. TNG, on the other hand, stores your data in databases located on the server which is then rendered into “dynamic” Web pages when prompted by a site visitor. As a visitor’s requests change, TNG locates the appropriate data from the database and renders it in HTML format for viewing in their browser.

The technologies required by TNG to render “dynamic” Web pages include:

- Web (HTTP) server application that hosts the other applications
- MySQL database application that stores your specific genealogy data
- PHP scripting language which renders and passes on the correct data from the database to the Web server application.

TNG will not run without these applications installed and properly configured.

Web site developers – such as yourself – often prefer to create and test their Web sites prior to making them accessible to the public. In the case of static Web sites, that is simply a matter of creating a site on their local (home) computer using a common tool such as MS FrontPage, Adobe Dreamweaver, or even MS Word for that matter. Any application that creates HTML output is suitable for Web page development, although – as you probably well know – some are much more efficient than others. Static Web page developers can test their pages by simply opening the created files in their browsers. They can then modify the page until it appears correctly and then upload it to their production Web server.

In order to create and test Web pages generated by TNG, you would need to upload your data to a “dynamic” Web server, modify the desired TNG configurations, and then view the results. As you experiment with various formats and styles, you might find this a laborious and inconvenient routine especially if you have a living site with active users. The alternative is to create a local “dynamic” Web server on your home computer for your experimentation and testing. Unlike the creation of “static” Web pages, however, you will need to install those components that are required for TNG to run: a Web server application, MySQL database application, and PHP scripting application.

Because these components are distinct applications that require their own installations and configurations, creating a local Web server can be a daunting task. However, for many the benefits of having a local Web server far outweigh the efforts.

Thus, I’ve created this short paper to describe many of the options and walk you through a simple and practical process for creating a Web server on your local computer. Hopefully, this process will save you many hours of trial and error, which many of us have experienced.

2. About Web Servers

There are many Web servers available today, and for the most part you need not learn everything about them in order to administer your site. The following information should at least help you better understand how everything works.

I have already discussed the differences between static and dynamic Web servers. Simply, static content comes from an existing file (HTML) on the server's file system, and dynamic content is generated by another application or script that is called upon by the Web server. Again, for TNG, the Web server requires a database application (MySQL) and a scripting application (PHP)

According to a survey conducted by Netcraft in April 2008,¹ the top Web server software vendors are as shown in the following table.

Vendor	Product	Web Sites Hosted	Percent
Apache	Apache	83,206,564	50.22%
Microsoft	IIS	58,540,275	35.33%
Google	GWS	10,075,991	6.08%
Oversee	Oversee	1,926,812	1.16%
lighttpd	lighttpd	1,495,308	0.9%
nginx	nginx	1,018,503	0.61%
Others	-	9,432,775	5.69%
Total	-	165,696,228	100.00%

The two primary Web server applications are Apache and Microsoft IIS (Internet Information Services). Of these, Apache is open-source and MS IIS is proprietary. Additionally, while MS IIS only supports MS Windows operating system, Apache supports Windows, Mac OS X, Linux, Sun Solaris, and others.

For additional information on the available Web servers, see:

- Wikipedia, *Comparison of Web Servers* at http://en.wikipedia.org/wiki/Comparison_of_web_servers
- ACME Labs, *Web Server Comparisons* at <http://www.acme.com/software/thttpd/benchmarks.html>
- Sorceforge.net, *HTTP Servers* at http://sourceforge.net/softwaremap/trove_list.php?form_cat=250

For our purposes, we will be installing the Apache Web server application that is available for the widest range of operating systems and supports TNG's requirements for MySQL and PHP. However, any Web server application may be used that meets the TNG requirements and that will run on your operating system.

¹ Netcraft Web Server Survey: http://news.netcraft.com/archives/web_server_survey.html

3. About Integrated Web Server Packages

In order to run on a Web server, TNG requires the following applications:

- Web server application, such as Apache
(See: <http://httpd.apache.org/>)
- MySQL database application (version 4.0.1 or newer)
(See: <http://www.mysql.com/>)
- PHP scripting application (version 4.0 or newer)
(See: <http://www.php.net/>)

Each of these applications is a distinct program and unrelated to the others. The significant benefits are that they are each open-source (the code is available for use and modification by the user) and they have a proven record of working well together.

The typical procedure for installing each of these applications is somewhat intricate and must be precisely performed. In response, various integrated Web server packages have been developed that automate much of the installation and configuration of all of these applications in a single short process.

Some of the common integrated Web server packages are described in the following table.

Package	Description
AppServ Open Project	A full-featured package that includes Apache, MySQL, PHP, phpMyAdmin. All applications download from the Official Binary Release of each application. Their Web site boasts at being able to install all of the applications within one minute. The current stable release of AppServ is version 2.5.10, which includes Apache (v. 2.2.8), PHP (v. 5.2.6), MySQL (v. 5.0.51b), and phpMyAdmin (v. 2.10.3). See: http://www.appservnetwork.com/
EasyPHP	A complete package allowing the use all the power and the flexibility that offers the dynamic language PHP. Package includes an Apache server, a MySQL database, phpMyAdmin as well as easy development tools for web sites and applications. The last dated version appears to be December 23, 2006; thus, easyPHP might not provide current versions of the applications. See: http://www.easyphp.org/index.php and http://www.canowhoopass.com/guides/easyphp/index.php
MAMP	The abbreviation MAMP stands for: Macintosh, Apache, MySQL and PHP. With just a few mouse-clicks, you can install Apache, PHP and MySQL for Mac OS X. MAMP installs a local server environment in a matter of seconds on your Mac OS X computer, be it PowerBook or iMac. Like similar packages from the Windows- and Linux-world, MAMP comes free of charge. Although Apache 1.3.x with PHP 4.3.2 are installed on all Mac systems, they are not always up-to-date. With one click and in just a few minutes MAMP will install Apache 2, current PHP 4, current PHP 5, and MySQL. Using the included eAccelerator, Current MAMP versions require Mac OS X 10.4.x, and versions are available for prior OSs. See: http://www.mamp.info/en/mamp.html

Package	Description
WampServer	A Windows web development environment. It allows you to create web applications with Apache, PHP and the MySQL database. It also comes with PHPMyAdmin and SQLLiteManager to easily manage your databases. The current version of WAMP is WampServer 2.0c, and includes: Apache (v. 2.2.8), MySQL (v. 5.0.51b), PHP (v. 5.2.6), and phpMyAdmin. See: http://www.wampserver.com/en/
XAMPP	An easy to install Apache distribution containing MySQL, PHP and Perl. XAMPP is really very easy to install and to use - just download, extract and start. At the moment there are four XAMPP distributions: XAMPP for Windows, Linux, Mac OSX, and Solaris. See: http://www.apachefriends.org/en/xampp.html

For additional information on integrated Windows-based Web server packages, see “Comparison of WAMPs” at Wikipedia: http://en.wikipedia.org/wiki/Comparison_of_WAMPs.

As indicated in the above table, many of these integrated packages include an accessory application, *phpMyAdmin*. According to the phpMyAdmin project Web site,² “phpMyAdmin is a tool written in PHP intended to handle the administration of MySQL over the Web. Currently it can create and drop databases, create/drop/alter tables, delete/edit/add fields, execute any SQL statement, manage keys on fields, manage privileges, export data into various formats and is available in 55 languages.”

4. About XAMPP

We will be installing the Web server applications using XAMPP due to its supported operating systems and longevity.

The current full version of XAMPP (v. 1.6.8), includes:

- Apache HTTPD 2.2.9
- OpenSSL 0.9.8i
- MySQL 5.0.67
- PHP 5.2.6 (and 4.4.9)
- phpMyAdmin 2.11.9.2
- FileZilla FTP Server 0.9.27
- Mercury Mail Transport System 4.52

As optional add-ons, XAMPP also supports Perl (v. 5.10.0-2.2.9-pl1) and Tomcat (v. 6.0.14).

XAMPP may be downloaded and installed by one of the following methods.

- Installer
- ZIP archive
- Self-extracting ZIP archive

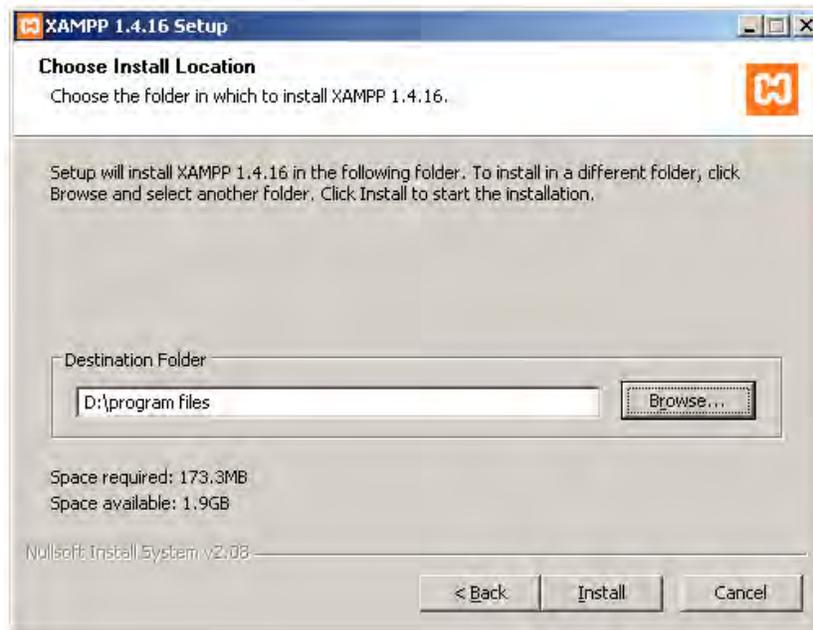
² phpMyAdmin Project Web site: http://www.phpmyadmin.net/home_page/index.php

5. Installing XAMPP

The easiest way to install XAMPP is by using the Installer as follows.

▼ To install XAMPP using the installer:

1. Go to SourceForge.net (http://sourceforge.net/project/showfiles.php?group_id=61776) and select the version that you wish to download, e.g. “XAMPP Windows.”
2. On the next screen, select the installer version: `xampp-win32-1.6.8-installer.exe`.
3. Save the file to your desktop.
4. Double click on the installer file to start the installation wizard.
5. When prompted confirm or select another destination folder for the XAMPP program files. In this case, we will install XAMPP in the default Program Files directory.



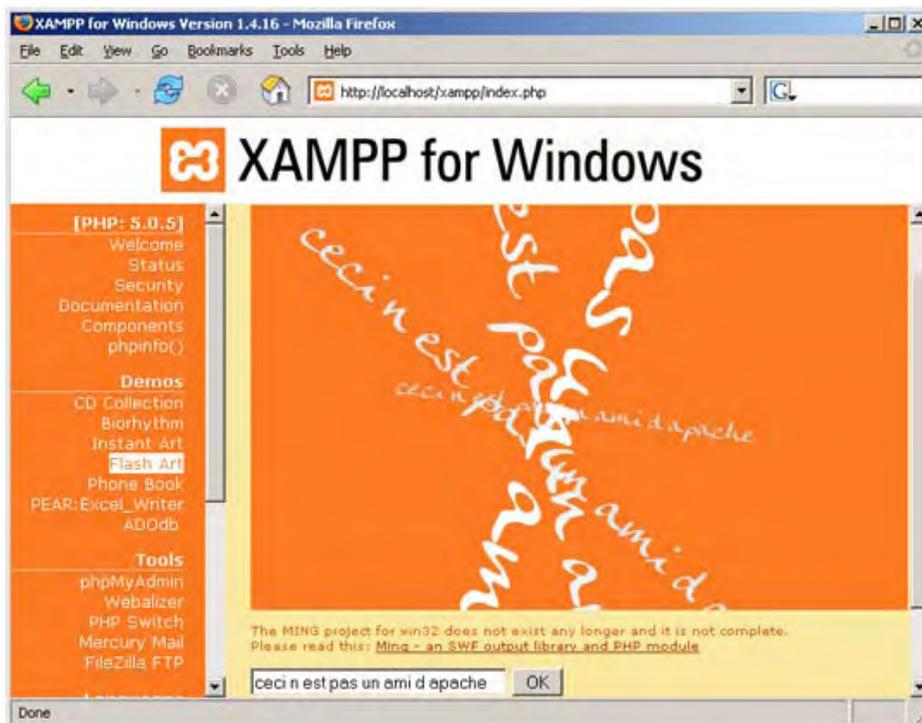
6. After the installation is complete, you can access XAMPP from **Start > Programs > XAMPP**. This will display the XAMPP Control Panel.

You can use the XAMPP Control Panel to start/stop all services and also to install and uninstall other services.



7. From the Control Panel, confirm that Apache and MySQL are running (highlighted in green).
8. To access the XAMPP for Windows home page, do one of the following:
 - In the Control Panel, click on the **Admin...** button to the right of the Apache entry.
 - From your browser, type <http://127.0.0.1> or <http://localhost> in the location bar.

This will display the **XAMPP for Windows** screen with several example and test links in the left menu bar. You should bookmark this page for future easy access.



For a description of the various options, click on the **Documentation** link. Likewise, the **Security** link will display the current security settings (see below).

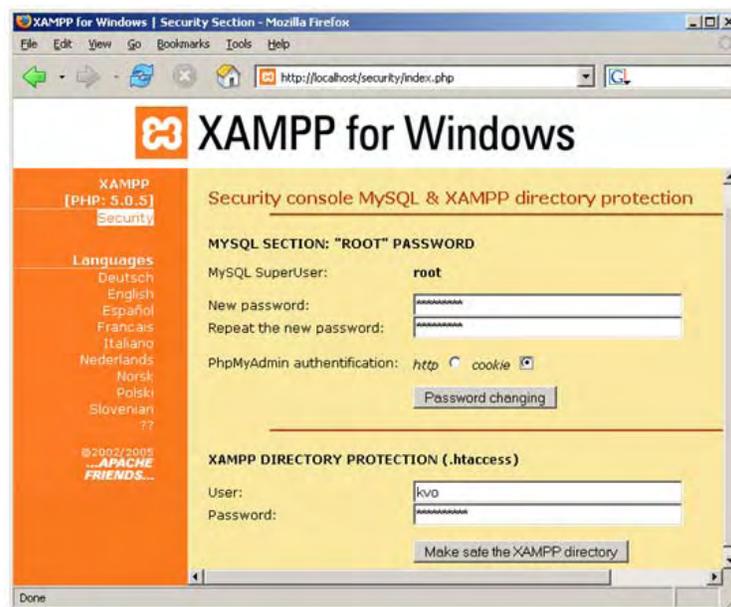
6. About XAMPP Security

XAMPP is not meant for production use (a live site with public access), but only for Web site developers in a development environment. XAMPP is configured to be as open as possible and to allow the Web developer anything s/he wants. For development environments this is great, but in a production environment it could be disastrous.

Some of the critical security issues in using XAMPP are:

- The MySQL administrator (User: “root”) has no password.
- The MySQL daemon is accessible via a network.
- PhpMyAdmin is accessible via a network.
- Examples are accessible via a network.
- The standard default users of Mercury and FileZilla are well known.

Note: *XAMPP should be made secure before anything is published online.* A firewall or router are only sufficient for low levels of security. For slightly more security, you can run the XAMPP Security console from the Control Panel and assign passwords.



The most critical security weaknesses can be fixed by calling the URL from `/localhost:`

- Versions prior to 1.4.15: <http://127.0.0.1/xampp/xamppsecurity.php>
- Versions after 1.4.15: <http://127.0.0.1/security>

The root password for MySQL, phpMyAdmin, and also the XAMPP directory protection can be established here. For Mercury and FileZilla, you should also change the user and password settings. Alternatively, if you do not need these services, simply do not start them.

7. Uninstalling XAMPP

▼ To uninstall XAMPP:

1. Stop Apache and MySQL from the Control Panel.
2. Delete the `xampp` directory that was initially installed.

8. Installing TNG

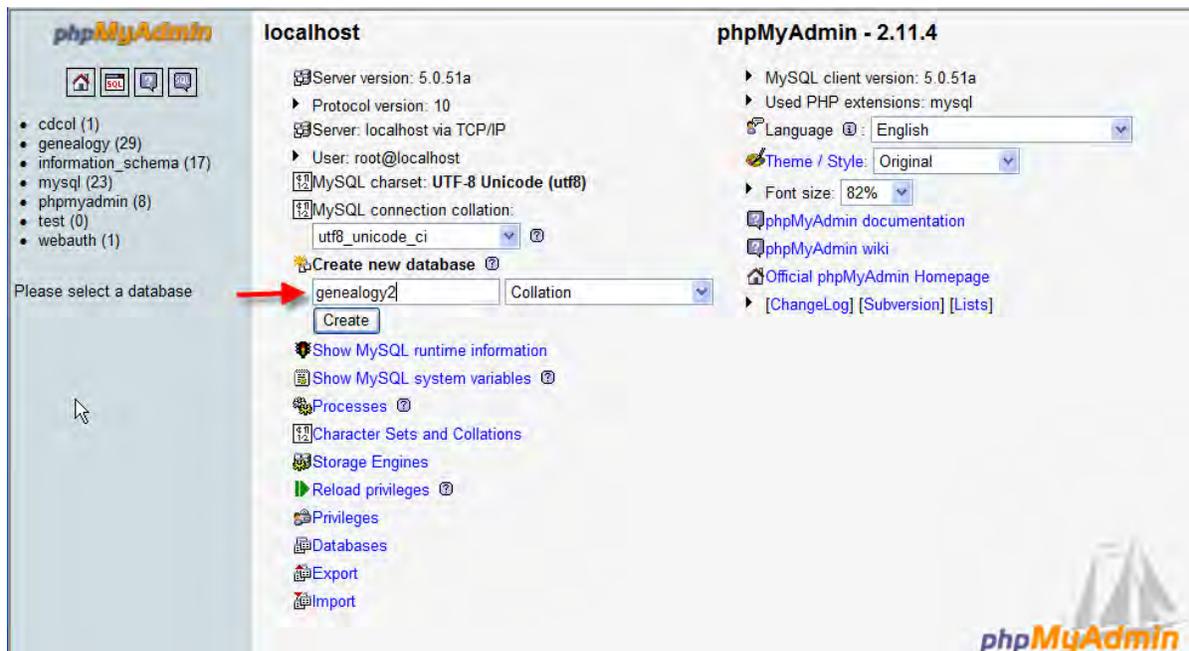
The next step in the process is to prepare XAMPP to access the TNG application. To do this we need to create a TNG-specific database in MySQL.

Note: Like the Apache Web Server, MySQL also requires network access. Thus, in order to have a functioning database, it's important to allow this access through your local Windows firewall configuration.

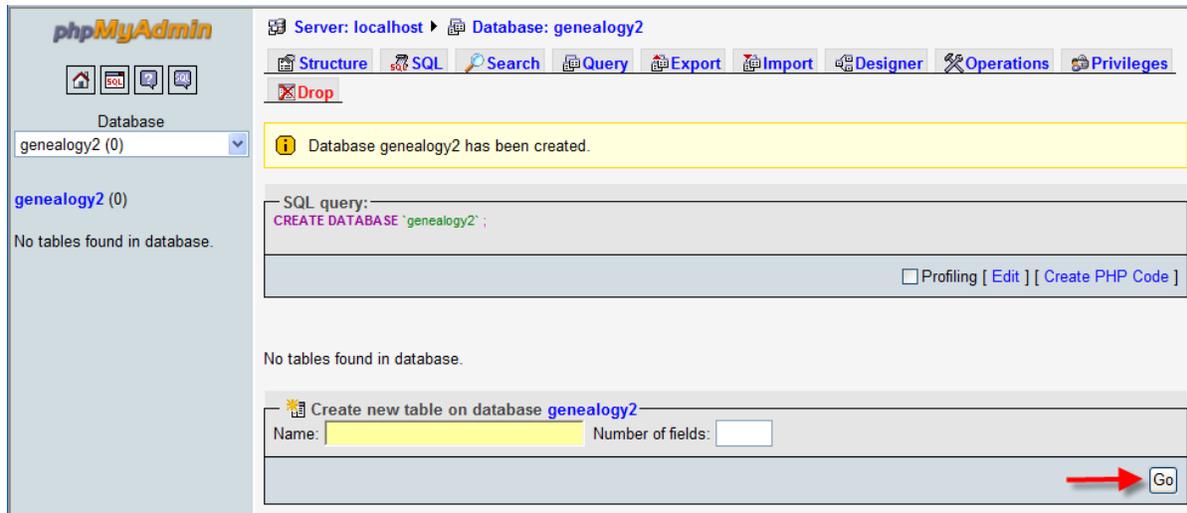
▼ To create the TNG database in MySQL:

1. From the XAMPP Control Panel, verify that Apache and MySQL are both running.
2. In your browser, type <http://localhost/phpMyAdmin/>.

This will display the **phpMyAdmin** page, which will be similar to the following.



3. Enter “genealogy” in the text box labeled **Create new database**. (Note: For this example, I created “genealogy2” since I already have an active “genealogy” database.)
4. Click the **Create** button beneath the text box.
5. In the next screen, you will be prompted to create a table for the **genealogy** database.



Since you will use TNG to create the database tables (below) and you are merely establishing the link, simply click **Go**.

Next, you will want to move the TNG files into the appropriate XAMPP directory. Please recall from the TNG *Readme* file that when installing TNG on a remote Web server, the TNG files are uploaded to the “root” directory. In the case of a local Web server, the main folder for all WWW documents is `\xampp\htdocs`.

▼ To install the TNG files:

1. Download the TNG installation file from the TNG download site.
2. Create a new folder on your computer and unzip (decompress) the files into the folder. The folder should be named the same as the database that you created for MySQL, i.e. **genealogy**.
3. Verify that the required subdirectories were also created and populated. If not, delete all of the files and attempt the extraction again.
4. Copy the entire genealogy folder into the `\xampp\htdocs` directory.

On a local Web server, “localhost” is the equivalent of a domain name on a remote Web server. Thus, to access your TNG site, simply enter <http://localhost/genealogy/> in your browser. However, since you haven’t finished configuring TNG, at this point, you won’t find anything.

▼ To complete the installation and configuration of TNG:

1. Open the TNG *Readme* file that is now located in the `\xampp\htdocs\genealogy` directory by entering the following into your browser:
<http://localhost/genealogy/readme.html>

At this point, you have already completed Steps 1 through 4 (“Files”) of the *Readme*.

2. Using the automated tasks within the *Readme* finish the installation and pre-configuration beginning with “Permissions” and with the following exception...(next step).

3. In the *Readme* file section entitled “Database Tables” you need to enter the following information that is specific to your local Web server.

Host Name	localhost
Database Name	genealogy
Database Username	root
Database Password	<leave blank>

4. Click **Save and Verify** when this step has been completed.
5. Complete the remainder of the *Readme* file procedures.

Notes: If at any time you are unable to access your local TNG project, you should first check the XAMPP Console Panel to verify that all services are running. In most cases, this will be the primary source of errors.

Also, if you have Norton Internet Security installed you may have to free port 3360 so that MySQL and phpMyAdmin will run.

9. Congratulations!

After completing the XAMPP installation and the TNG installation, you should now have a working development environment. You can take those hats off and now put on your Web Site Developer and Administrator hats. As a first step, you might want to trade in your coffee mug for a nice glass of wine ~ you deserve it!

10. Publishing and Synchronizing with the Remote Server

When you finally publish your site to a remote Web server, you may want to continue to use your local Web server for ongoing development tweaks. Thus, you will want to keep the data synchronized between the two servers.

▼ To synchronize the data between the local and remote Web servers:

1. On your local server create a folder for backups named something like “mybackups.”
2. On your local server use the TNG Backup utility (**Admin > Backup**) to backup your database tables to your “mybackups” folder.
3. Use your FTP application to move the current live-site backup into the */backups/mybackups* folder.
4. Overwrite all of the backup files from the */backup* folder to the live-site backup folder. For security reasons, this should be named something unique.
5. On the remote (live) site go to **Admin > Backup** and select all tables (except “Users”) and click **Restore**. Everything should now be restored to the live site.
6. Finally, FTP any new photos, headstones, cemeteries, and other new data to the remote site.

11. Additional Local Web Server and XAMPP Information

You can get more information about creating local Web servers and XAMPP at the following:

- Server Tutorials at: <http://www.ricocheting.com/server/> provides step-by-step instructions for installing each of the related applications independently.
- XAMPP for Windows FAQs at: <http://www.apachefriends.org/en/faq-xampp-windows.html>. Similar FAQs are available for Solaris, Linux, and Mac OS X.
- The XAMPP forum at: <http://www.apachefriends.org/f/>
- The XAMPP for Windows Web site (from which much of the above information was derived) includes a number of specific XAMPP-related questions.
- For any other applications or the additional tools that are installed with XAMPP, I'll leave it to you to Google the Internet for more information.
- Also, Frans Erich has developed a module for installing “TNG on a USB drive” using MowesII. This procedure will create a complete running environment based on Apache2 with ImageMagick, MySQL5, PHP5, phpMyAdmin, and TNG 7.01 pre-installed on it. His module is available from the TNG download site under “TNG Extras.”
<http://tng.lythgoes.net/downloads7/index.php>
- Likewise, Jerry Brown and Alan Craxford have written a procedure for installing TNG on a flash drive using WOS Portable II. See:
<http://www.tngforum.us/index.php?s=&showtopic=3015&view=findpost&p=13949>

I hope this helps!