

# Virtual Hosting Setup

## tutorial #tutorial01b

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## Tutorial Goals

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This tutorial will walk you through setting up virtual hosting in XAMPP, for testing webapps.

The first time may be a challenge, but you will find that it is easy to setup a new virtual host for any webapp you want to work on!

Suggestion: you may want to skim the slideshow first, before working your way through it.

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## Virtual Hosting

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Apache supports name-based hosting, with multiple domains served from the same Apache instance, and each domain mapped to its own document root.

We can exploit this by defining our own "local only" domains, one for each project we are working on, and have Apache treat these as free-standing webapps.

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## Windows Note

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Depending on your configuration, you may find that your "system" files are opened as "read-only" when you try to edit them.

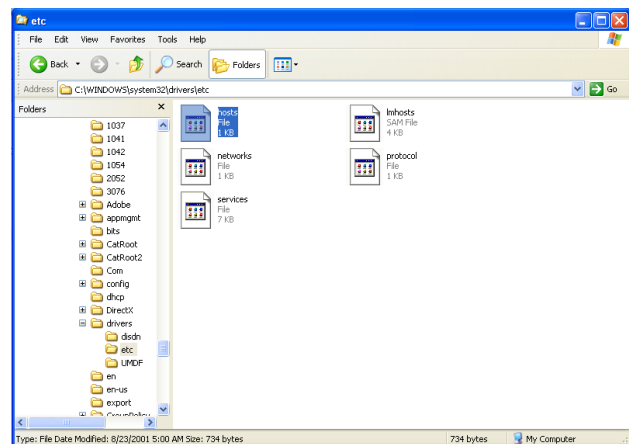
In such a case, on the following slides, you will have to run your text editor with elevated privileges, so you can save any changes.

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## Define Local Domain Names

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Local domain names are defined in the "hosts" file on your platform. On Linux, this is found in "/etc/hosts". On Windows, this will be found in "%SystemRoot%\system32\drivers\etc\hosts", shown right.

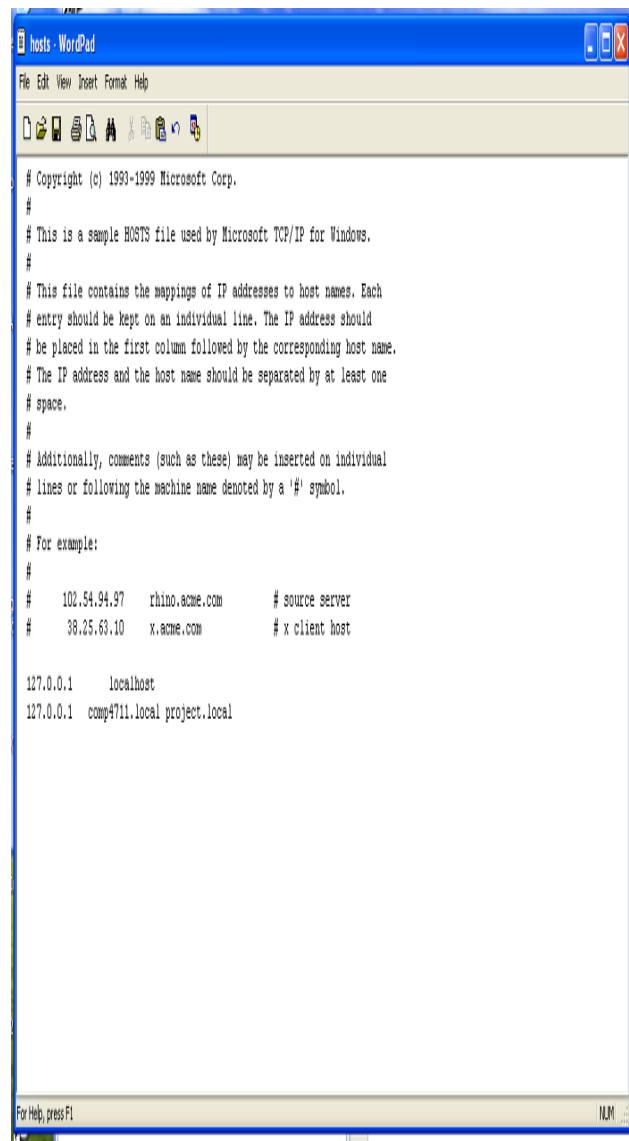


## Add Your Domains

You can add domains to the main "home" line there, or you can add separate lines for each domain. These will look like

```
127.0.0.1 localhost
127.0.0.1 comp4711.local project.local
```

Make sure that you add the "comp4711.local" domain, as we will use that for labs. The example above also adds "project.local", a domain that might be used for your assignments.



```
# Copyright (c) 1993-1999 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
# 102.54.94.97 rhino.acme.com # source server
# 38.25.63.10 x.acme.com # x client host

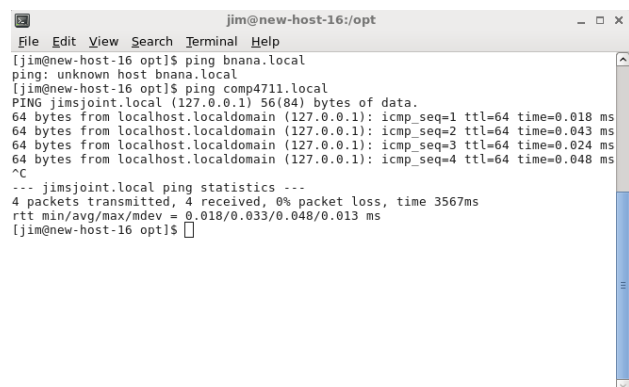
127.0.0.1 localhost
127.0.0.1 comp4711.local project.local
```

## Test Your Domain Name

In a command prompt, ping a "bad" domain, and then ping one that you added to your "hosts". The results should look something like the screen to the right.

In my case, I have a "jimsjoint.local" defined on the same line as "comp4711.local", but the result is still "localhost" or "127.0.0.1"

Using ".local" as part of the domain name will serve as a reminder that you are in development mode.

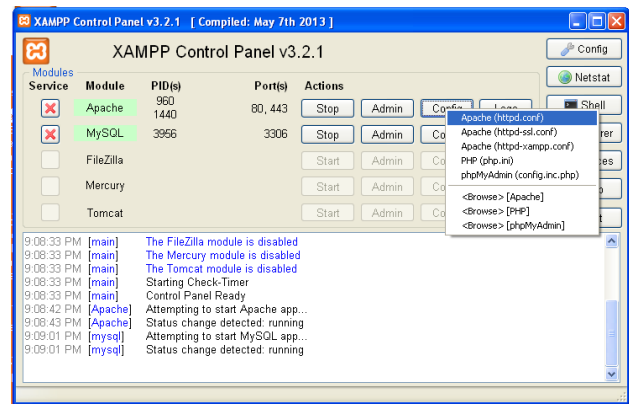


```
jim@new-host-16/opt
File Edit View Search Terminal Help
[jim@new-host-16 opt]$ ping banana.local
ping: unknown host banana.local
[jim@new-host-16 opt]$ ping comp4711.local
PING jimsjoint.local (127.0.0.1) 56(84) bytes of data:
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=1 ttl=64 time=0.018 ms
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=2 ttl=64 time=0.043 ms
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=3 ttl=64 time=0.024 ms
64 bytes from localhost.localdomain (127.0.0.1): icmp_seq=4 ttl=64 time=0.048 ms
^C
--- jimsjoint.local ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3567ms
rtt min/avg/max/mdev = 0.018/0.033/0.048/0.013 ms
[jim@new-host-16 opt]$
```

# Apache Configuration - httpd.conf

The main Apache configuration file is "httpd.conf".

Request its editing by clicking on the "Config" button in your XAMPP control panel, and selecting the appropriate entry.

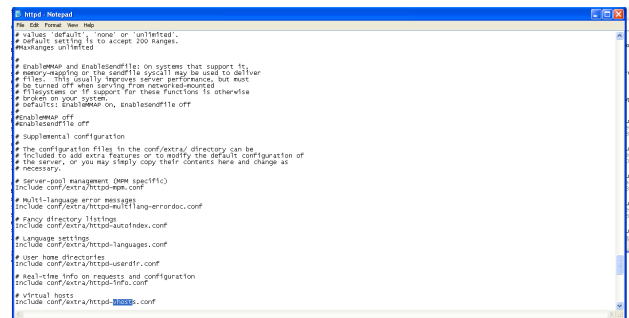


## Enable Virtual Hosting

Apache's virtual hosting is disabled by default.

Enable it by uncommenting the "include" directive below the "# Virtual hosts" comment, about line 490 in "httpd.conf".

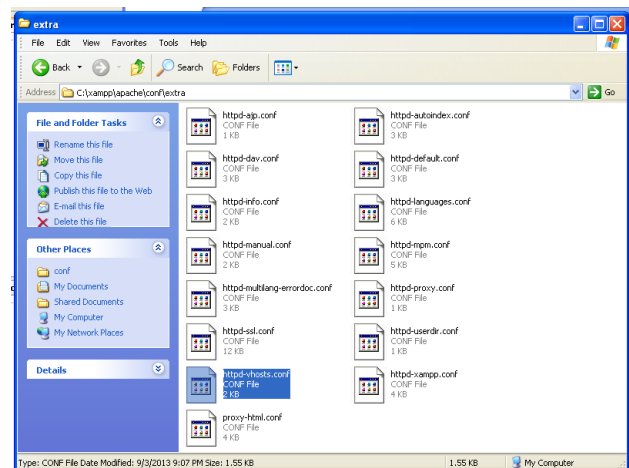
The Apache configuration files are inside "C:\XAMPP\Apache\conf" on Windows, and inside "/opt/lampp/etc" on Linux, if you want to open them directly.



## Virtual Host Configuration

We need to define the virtual host mappings for Apache. Edit the configuration file for this, eg "conf/extras/httpd-vhosts.conf"

This might be accessible from the XAMPP control panel, but it is usually easier to open it for editing from your file manager.



## Define Virtual Host Mappings

Each virtual host needs to be mapped to its document root. Two example mappings are in the default installation.

You want a "default" mapping, as well as one for each of your virtual hosts. The default mapping is simply the first one in the configuration file, and it should use the ServerName "localhost".

```
<VirtualHost *:80>
    ServerAdmin webmaster@dummy-host.examp
    DocumentRoot "c:/xampp/htdocs"
    ServerName localhost
    ErrorLog "logs/localhost-error_log"
    CustomLog "logs/localhost-access_log"
</VirtualHost>
```

## Virtual Host Mapping Settings

ServerAdmin is bogus for our purposes.

DocumentRoot identifies our webapp folder. Keep this inside your XAMPP/htdocs. Note the Unix style folder separators.

ServerName is the local domain name.

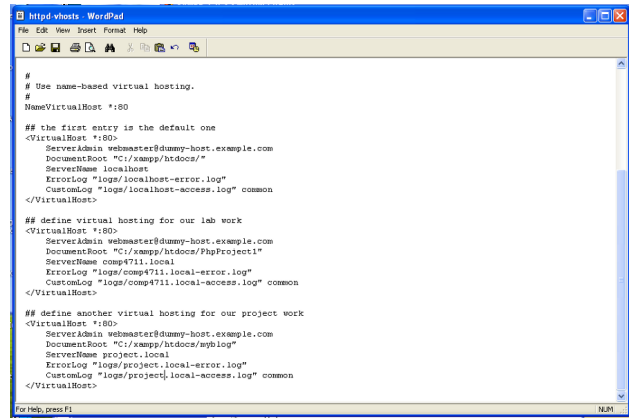
The log file directives let you collect error and access messages for each webapp.

```
<VirtualHost *:80>
    ServerAdmin webmaster@dummy-host.examp
    DocumentRoot "c:/xampp/htdocs"
    ServerName localhost
    ErrorLog "logs/localhost-error_log"
    CustomLog "logs/localhost-access_log"
</VirtualHost>
```

## Virtual Host Mappings

Add a VirtualHost element for each of the local domain names you setup earlier.

If you defined two local domains, then your httpd-vhosts.conf will contain three mappings: one for the "default" and one for each of yours, as shown to the right.



## Document Root Notes

A webapp's document root is the location of the folder containing its homepage, eg. "index.html" or "index.php".

Note the Unix-style folder separators whenever filename paths are specified - follow this convention.

It is possible to have your document root anywhere in your file system, but you will save a lot of grief at this point by putting all of yours inside your XAMPP folder.

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## Apache Restart

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Apache only reads its configuration files when first started.

Any time you make a configuration change (for instance virtual hosting settings), you need to restart Apache.

This can be done through your XAMPP control panel, or from the command line ("xampp restart").

Why not do this now, before you forget!

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## Test Your Virtual Host Mapping

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We want to make sure we got it right.

We are going to create a simple "Hello World" project, in the proper place, and make sure that we get the expected results when we use our local domain name as the browser location.

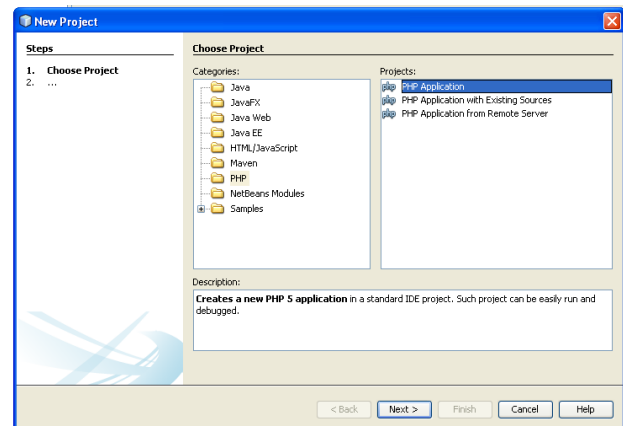
In the last few pages of this tutorial, we use the NetBeans IDE. It isn't the only one, or even necessarily the best one, but it is the one we have settled on, and which we use for **marking** (hmmm).

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## Start a New Project

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Start a new PHP project in NetBeans - a PHP Application.



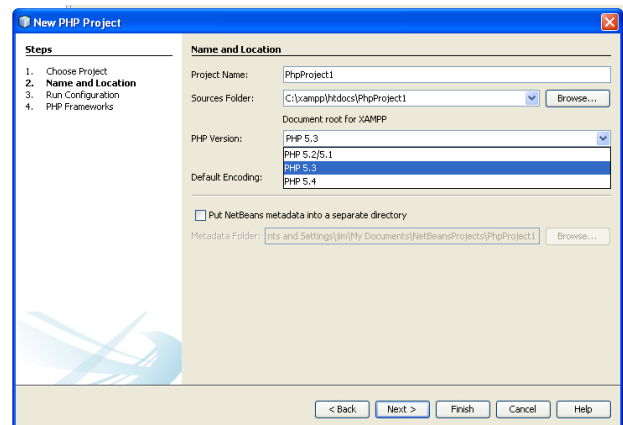
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## Project Name

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Your project name will also be the document root for your "webapp". I suggest that the project name be the same as the folder you specified as a document root in your virtual host configuration for "comp4711.local".

PHP version: your choice, but be aware that CodeIgniter does not use namespaces.

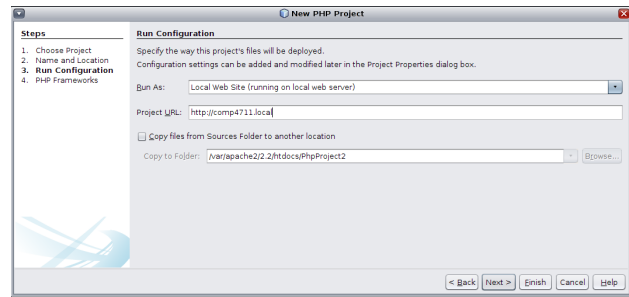


## Project Run Configuration

Your project will be run locally, using XAMPP.

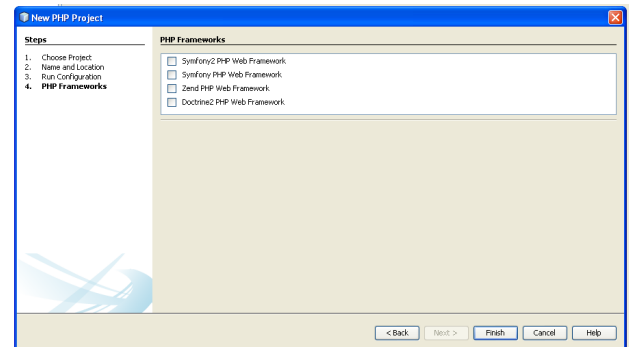
Your project URL should read "http://comp4711.local", namely the same as the virtual mapping you setup.

If you changed the Apache server port when you initially setup XAMPP, remember to add that to your URL (eg http://comp4711.local:4711).



## Supplementary Frameworks?

Do NOT select any of the supplementary frameworks. We want to keep our project as simple as possible.

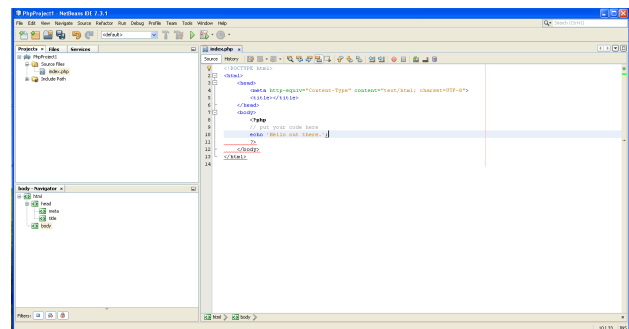


## Complete the Wizard

Click the "Finish" button for the New Project wizard, and we have our Hello World ready to go.

You will get a dummy "index.php" inside your project, which is all we need for now. It will be automatically opened in the editing panel of NetBeans.

Add a "hello world" echo statement to it, so you can recognize your "app" when it is run.



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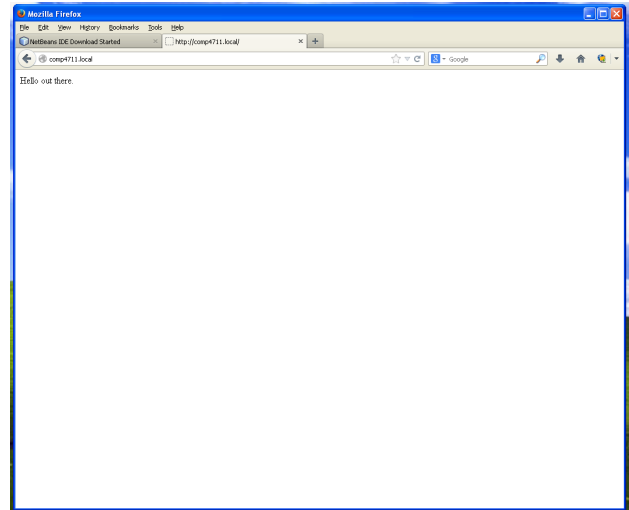
## Are We There Yet?

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Click the green "Run" button in NetBeans, and your browser should be opened, with the ultra-elegant homepage of your app displayed :-/

The same result could be achieved by entering your URL (`http://comp4711.local`) directly into your browser's location field.

Remember the server port #, if changed (eg `http://comp4711.local:4711`).



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## Congratulations!

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You have completed tutorial #tutorial01b: Virtual Hosting Setup

If you would take a minute to [provide some feedback](#), we would appreciate it!

The next activity in sequence is: [tutorial01c](#) PHP Crash Course

You can use your browser's back button to return to the page you were on before starting this activity, or you can jump directly to the course [homepage](#), [organizer](#), or [reference](#) page.