

Setting Up Wireless Viewing of Meet Manager Results

This document shows how to set up an environment so that Meet Manager results can be viewed either from a wireless computer, or a web-capable PDA such as an iPhone.

To accomplish this, additional equipment is attached to the existing network that supports the timing systems.

The additional equipment consists of:

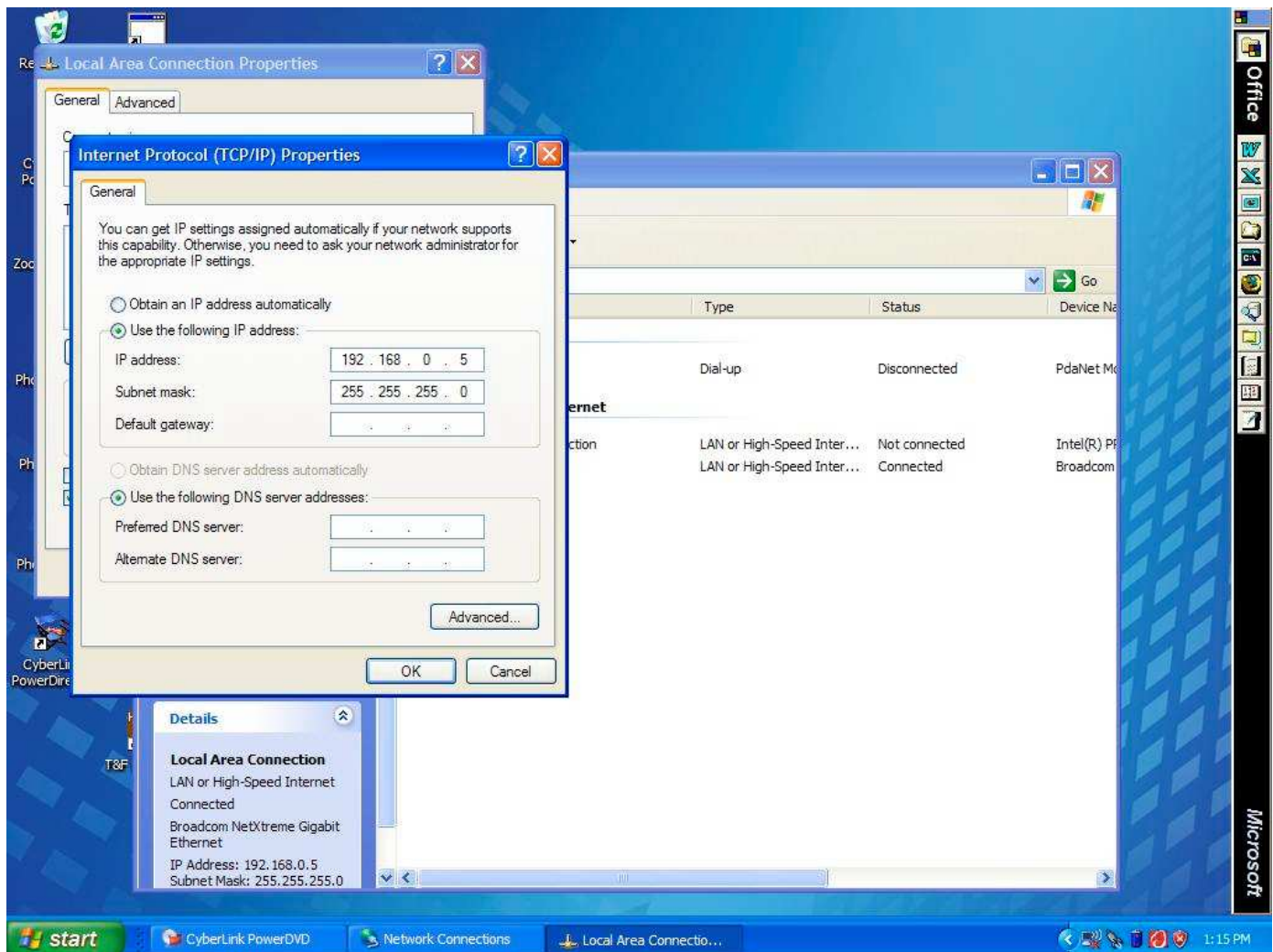
- a Buffalo WHR-HP-G54 router with wireless support
- a laptop or other computer with web server software loaded, specifically the XAMPP package

Assumptions

A network is in place for the timing systems, such as Finishlynx and Meet Manager

Meet Manager is installed with the “Pro” option – this generates web-ready results.

The network number used for the timing network is 192.168.0.xxx



You know what you are doing

Actually, you don't need to know what you're doing. This guide will explain how to set up the equipment and configure it in such a way that it can be used. If you use the equipment described here, then following these instructions should get you to a working environment. However, substituting equipment (such as using a different wireless router, or different web server software) will require work on your part to figure out what changes are needed to make your equipment work properly.

The Big Picture

The goal is to create a separate network that wireless users can use to access results that are made available by Meet Manager. This network is connected via a single cable to the network that is used by the timing systems.

This configuration has these advantages:

Modularity – the additional equipment is just plugged in, requiring no changes to the timing environment that is in place.

Security – wireless users cannot access any of the timing systems.

Reduced traffic – since wireless users are on a totally separate network, the network traffic that they generate will not impact the timing network.

Illustration 1 shows a typical timing network consisting of a Finishlynx camera, a “Capture” system and an “Evaluation” system. Your environment may have more or less computers but the concept is the same: all of the components are connected via LAN cables to a single hub.

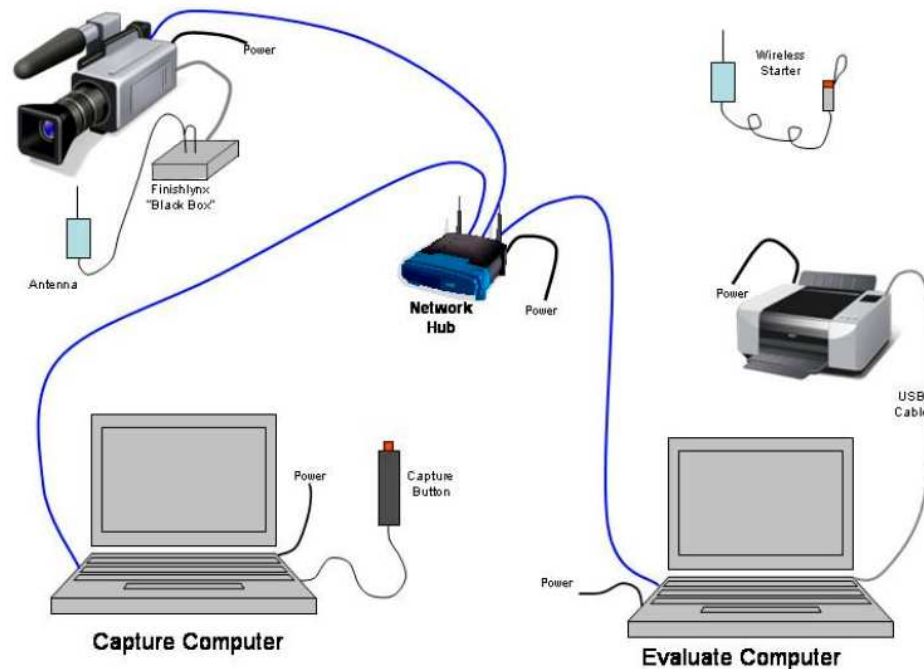


Illustration 1: A typical system used in timing track meets

Illustration 2 shows our "big picture" - the existing network as shown in illustration 1 as well as the additional equipment necessary to provide wireless access to race results.

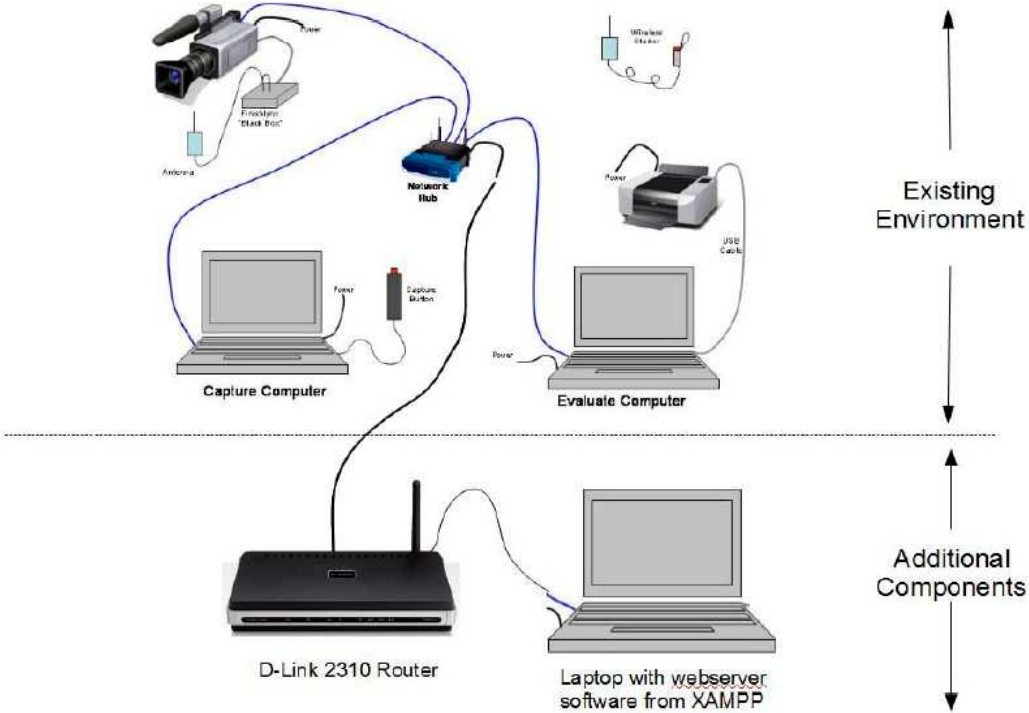


Illustration 2: The "big picture" showing additional components

Notice that the only two pieces of additional equipment are the Buffalo WHR-HP-G54 router (D-Link 2310 in Illustration 2) and a laptop or computer running the XAMPP web server package.

There are two separate network address spaces in Illustration 2. The systems in the existing network are in the 192.168.0.XXX network (Lynx & MM). The web server (and anyone connecting wirelessly) are in the 192.168.1.XXX network.

The router is connected to both networks, so it needs to have IP addresses in both network spaces.

The Physical Connections

Illustration 3 shows the rear of the Buffalo WHR-HP-G54 router (D-Link 2310 in Illustration 3 but it is obvious on the Buffalo) where the network connections are made. Notice that one port is labeled “WAN” and four ports are labeled “LAN.”

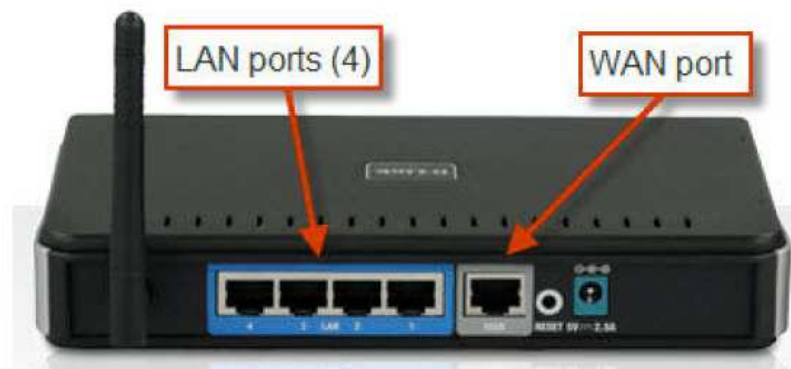


Illustration 3: WAN and LAN ports on the router

Make the following physical connections using the proper LAN cables.

- Connect the laptop running the web server software to any of the LAN ports
- Connect a LAN cable from any available port on the existing hub to the WAN port on the Buffalo WHR-HP-G54 router.

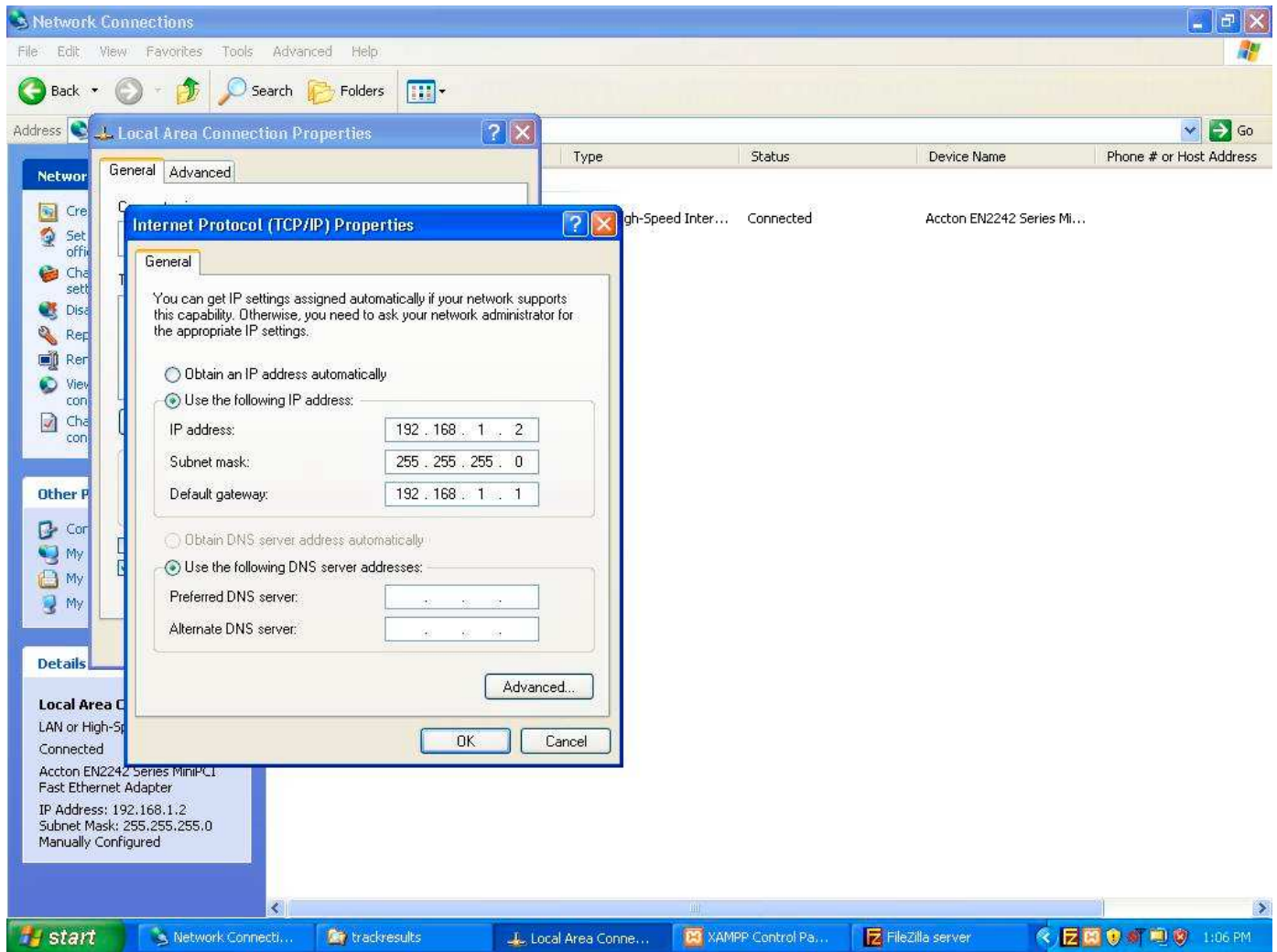
That's all there is to the physical connectivity.

Configuring the IP Address for the Web Server

Use the network control panel and set the IP address for the web server to be 192.168.1.2

The Subnet Mask is 255.255.255.0

And the Default gateway (very important) is 192.168.1.1 (address of the Buffalo router)



Configuring the Buffalo WHR-HP-G54 Router

You can purchase the Buffalo Router at Fry's or online at:
http://www.frys.com/product/4557037?site=sr:SEARCH:MAIN_RSLT_PG

You should also purchase a Hawking antenna (which will allow a good 300-400 meter radius for transmitting) also at Fry's or at:
http://www.frys.com/product/4019252?site=sr:SEARCH:MAIN_RSLT_PG

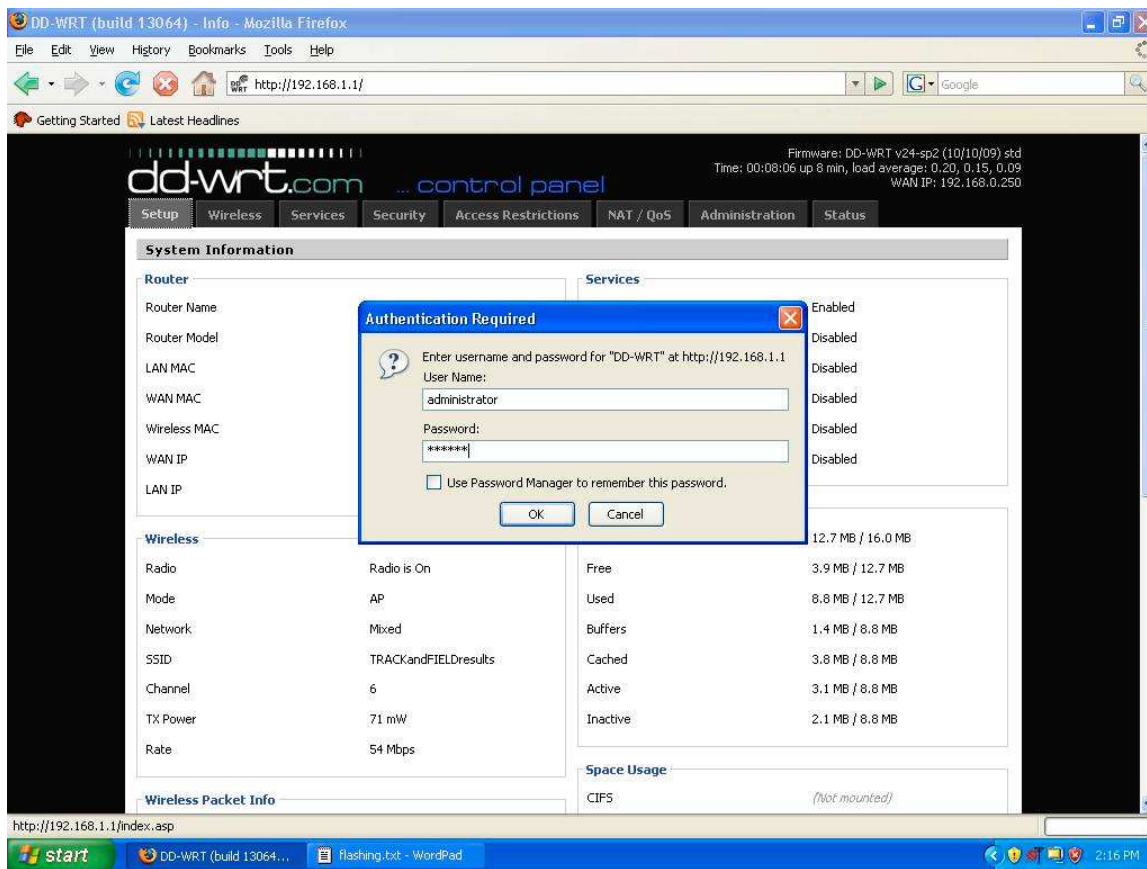
And the extension cable for the antenna:
http://www.frys.com/product/4019312?site=sr:SEARCH:MAIN_RSLT_PG

All of this added hardware will cost you about \$200.

The router should be configured with a base IP address of 192.168.1.1, so we will connect using that address. If you have not "flashed" the Buffalo router to the new firmware obtained from the dd-WRT website (<http://www.dd-wrt.com/site/support/router-database>) then you must go to the end of this section to see how to "flash" your Buffalo router before you can continue.

Step #1 (log in to router)

Start up your favorite browser and type the URL 192.168.1.1 to begin configuration of the router (pw = whatever you set it up to be): Track01



Now click on the SETUP tab and BASIC SETUP as the sub-tab and enter the values below:

Step #2 (configure router)

DD-WRT (build 13064) - Setup - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://192.168.1.1/index.asp

Getting Started Latest Headlines

dd-wrt.com ... control panel

Firmware: DD-WRT v24-sp2 (10/10/09) std
Time: 00:15:17 up 15 min, load average: 0.05, 0.09, 0.08
WAN IP: 192.168.0.250

Setup Wireless Services Security Access Restrictions NAT / QoS Administration Status

Basic Setup DDNS MAC Address Clone Advanced Routing VLANs Networking EoIP Tunnel

WAN Setup

WAN Connection Type

Connection Type: Static IP

WAN IP Address: 192, 168, 0, 250

Subnet Mask: 255, 255, 255, 0

Gateway: 0, 0, 0, 0

Static DNS 1: 0, 0, 0, 0

Static DNS 2: 0, 0, 0, 0

Static DNS 3: 0, 0, 0, 0

STP: Enable Disable

Optional Settings

Router Name: DD-WRT

Host Name:

Domain Name:

MTU: Auto 1500

Network Setup

Router IP

Local IP Address: 192, 168, 1, 1

Subnet Mask: 255, 255, 255, 0

Gateway: 0, 0, 0, 0

Local DNS: 0, 0, 0, 0

Network Address Server Settings (DHCP)

DHCP Type: DHCP Server

DHCP Server: Enable Disable

Start IP Address: 192.168.1.10

Maximum DHCP Users: 240

Client Lease Time: 40 minutes

WINS: 0, 0, 0, 0

Use DNSMasq for DHCP:

Use DNSMasq for DNS:

DHCP-Authoritative:

Time Settings

NTP Client: Enable Disable

Time Zone: UTC+01:00

Summer Time (DST): last Sun Mar - last Sun Oct

Server IP/Name:

Save Apply Settings Cancel Changes

Help

Automatic Configuration - DHCP:
This setting is most commonly used by Cable operators.

Host Name:
Enter the host name provided by your ISP.

Domain Name:
Enter the domain name provided by your ISP.

Local IP Address:
This is the address of the router.

Subnet Mask:
This is the subnet mask of the router.

DHCP Server:
Allows the router to manage your IP addresses.

Start IP Address:
The address you would like to start with.

Maximum DHCP Users:
You may limit the number of addresses your router hands out. 0 means only predefined static leases will be handed out.

Time Settings:
Choose the time zone you are in and Summer Time (DST) period. The router can use local time or UTC time.

Done

start DD-WRT (build 13064... flashing.txt - WordPad 2:25 PM

WAN Setup

WAN Connection Type

Connection Type: Static IP

WAN IP Address: 192.168.0.250 (we allow a range from 10 to 249)

Subnet Mask: 255.255.255.0

Network Setup

Router IP

Local IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Network Address Server Settings (DHCP)

Start IP Address: 192.168.1.10

Maximum DHCP Users: 240

Client Lease Time: 40 minutes

APPLY SETTINGS and SAVE

Now click on the WIRELESS tab and BASIC SETTINGS as the sub-tab and enter:

The screenshot shows the DD-WRT control panel in a Mozilla Firefox browser window. The address bar shows the URL `http://192.168.1.1/Wireless_Basic.asp`. The page title is "DD-WRT (build 13064) - Wireless - Mozilla Firefox". The browser's status bar at the bottom shows "Done" and the system tray includes the start button, taskbar with "DD-WRT (build 13064...)" and "flashing.txt - WordPad", and a clock showing "2:27 PM".

The DD-WRT control panel interface is visible, with the "Wireless" tab selected. The "Basic Settings" sub-tab is active. The "Wireless Physical Interface w10" section is expanded, showing the following configuration:

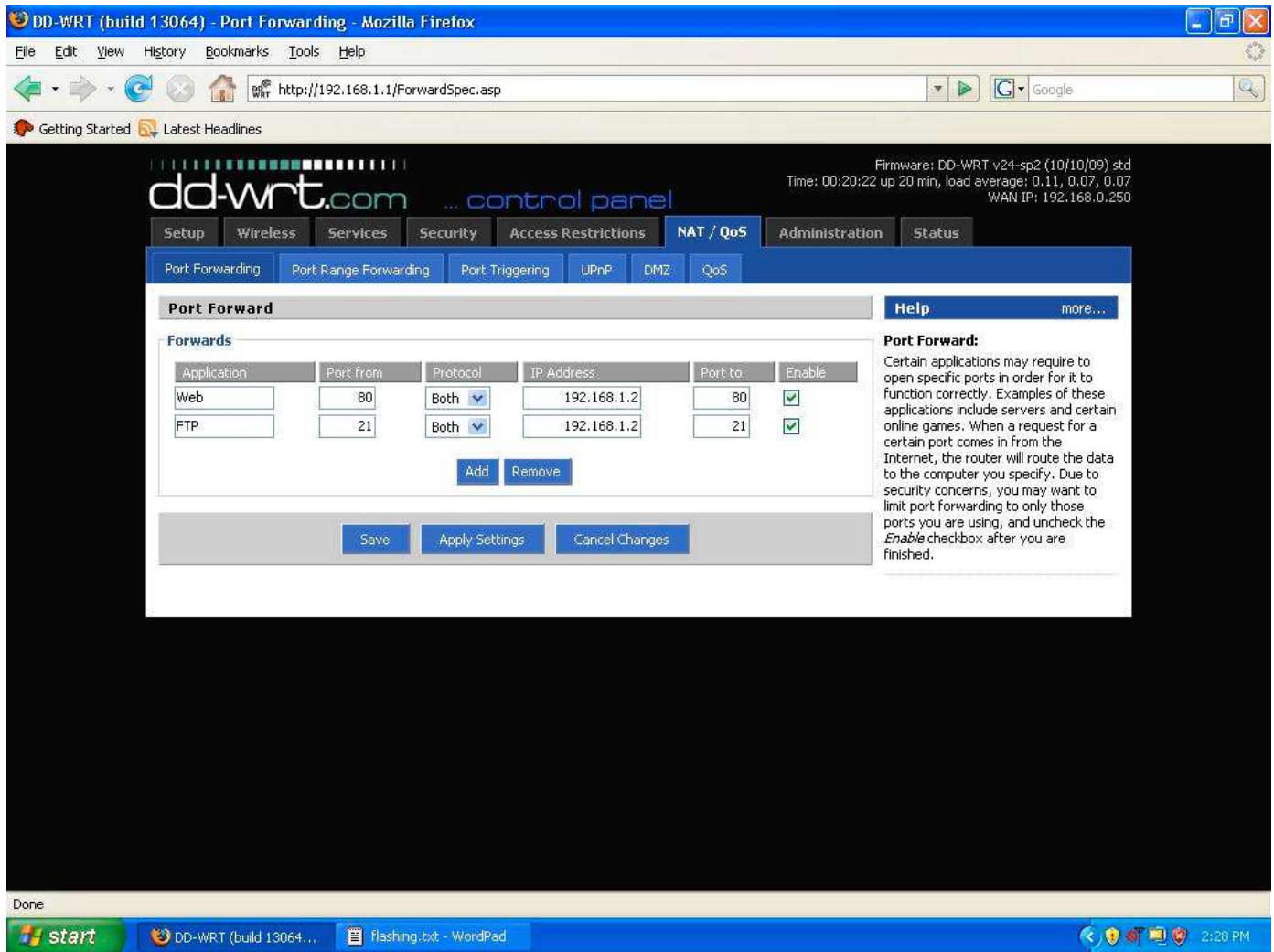
- Physical Interface w10 - SSID [TRACKandFIELDresults] HWAddr [00:24:A5:6F:2F:7C]
- Wireless Mode: AP
- Wireless Network Mode: Mixed
- Wireless Network Name (SSID): TRACKandFIELDresults
- Wireless Channel: 6 - 2.437 GHz
- Wireless SSID Broadcast: Enable Disable
- Sensitivity Range (ACK Timing): 2000 (Default: 2000 meters)
- Network Configuration: Unbridged Bridged

Below the physical interface settings is a "Virtual Interfaces" section with an "Add" button. At the bottom of the configuration area are "Save", "Apply Settings", and "Cancel Changes" buttons. A "Help" section on the right provides information about "Wireless Network Mode" and "Sensitivity Range".

Wireless Network Name (SSID) = TRACKandFIELDresults (call it something different so it doesn't conflict names with this already existing wireless network name).

APPLY SETTINGS and SAVE

Now click on the NAT/QOS tab and PORT FORWARDING as the sub-tab (if it exists) and ADD:



Application: Web
Port From: 80
Protocol: Both
IP Address: 192.168.1.2
Port To: 80
Enable: check box

Application: FTP
Port From: 21
Protocol: Both
IP Address: 192.168.1.2
Port To: 21
Enable: check box

APPLY SETTINGS and SAVE

Now click on the SERVICES tab and SERVICES as the sub-tab (if it exists) and ADD:

Services Management

Help more...

DHCP Client

Set Vendorclass
Request IP

DHCP Server

Use JFFS2 for client lease DB *(not mounted)*
Use NVRAM for client lease DB
Used Domain
LAN Domain
Additional DHCPd Options

Static Leases		
MAC Address	Host Name	IP Address
<input type="button" value="Add"/> <input type="button" value="Remove"/>		

DNSMasq

DNSMasq Enable Disable
Local DNS Enable Disable
Additional DNSMasq Options

XBOX Kaid

Start Kaid Enable Disable

SES / AOSS / EZ-SETUP / WPS Button

Use this button for turning off radio Enable Disable

RFlow / MACupd

RFlow Enable Disable
MACupd Enable Disable
Interface
Interval (in seconds)

SNMP

SNMP Enable Disable

Secure Shell

SShd Enable Disable

System Log

Syslogd Enable Disable

Telnet

Telnet Enable Disable

WAN Traffic Counter

ttraff Daemon Enable Disable

DNSMasq

Local DNS: enable

Additional DNSMasq Options: address=#!/192.168.1.2

APPLY SETTINGS and SAVE

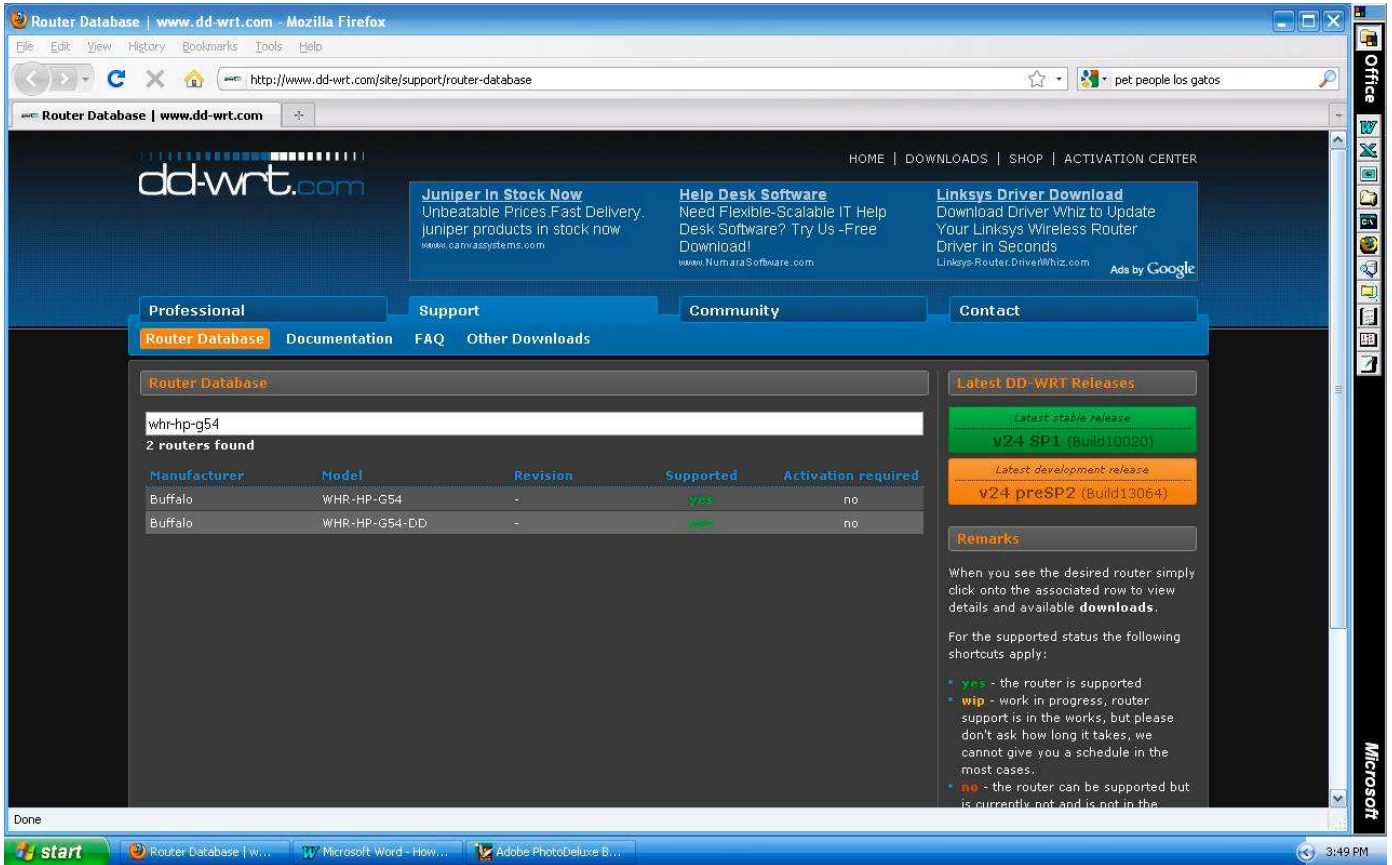
If a field was not mentioned in this document then DON'T change it.

“Flashing” the Buffalo WHR-HP-G54 router to dd-WRT firmware

Go to the dd-WRT website:

<http://www.dd-wrt.com/site/support/router-database>

and click on SUPPORT then ROUTER DATABASE and type in WHR-HP-G54, two routers will be found – you want to click on the WHR-HP-G54 one.



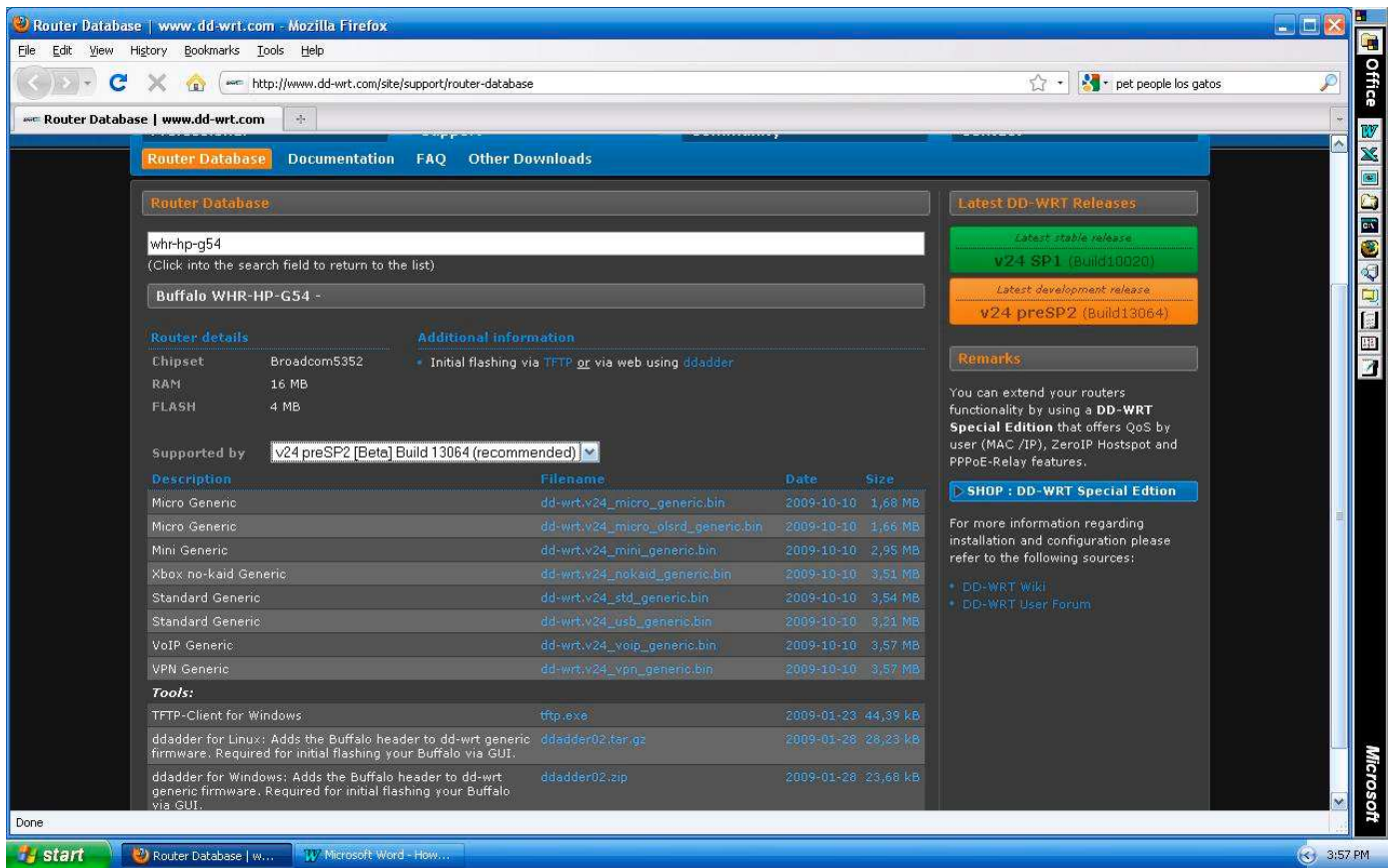
The screenshot shows the dd-wrt.com website interface. The search bar contains "wlr-hp-g54" and displays "2 routers found". A table lists the search results:

Manufacturer	Model	Revision	Supported	Activation required
Buffalo	WHR-HP-G54	-	yes	no
Buffalo	WHR-HP-G54-DD	-	wip	no

Additional features visible on the page include:

- Navigation tabs: Professional, Support, Community, Contact
- Sub-navigation: Router Database, Documentation, FAQ, Other Downloads
- Latest DD-WRT Releases: v24 SP1 (Build10020) (Latest stable release), v24 preSP2 (Build13064) (Latest development release)
- Remarks section with instructions on how to use the supported status shortcuts.

The “Supported by” drop down box should be v24 preSP2 [Beta] Build 13064 (recommended) And then you should click on the STANDARD GENERIC filename of dd-wrt.v24_std_generic.bin and save that file to your Desktop. You also will need to download the TFTP.exe file (under TOOLS).



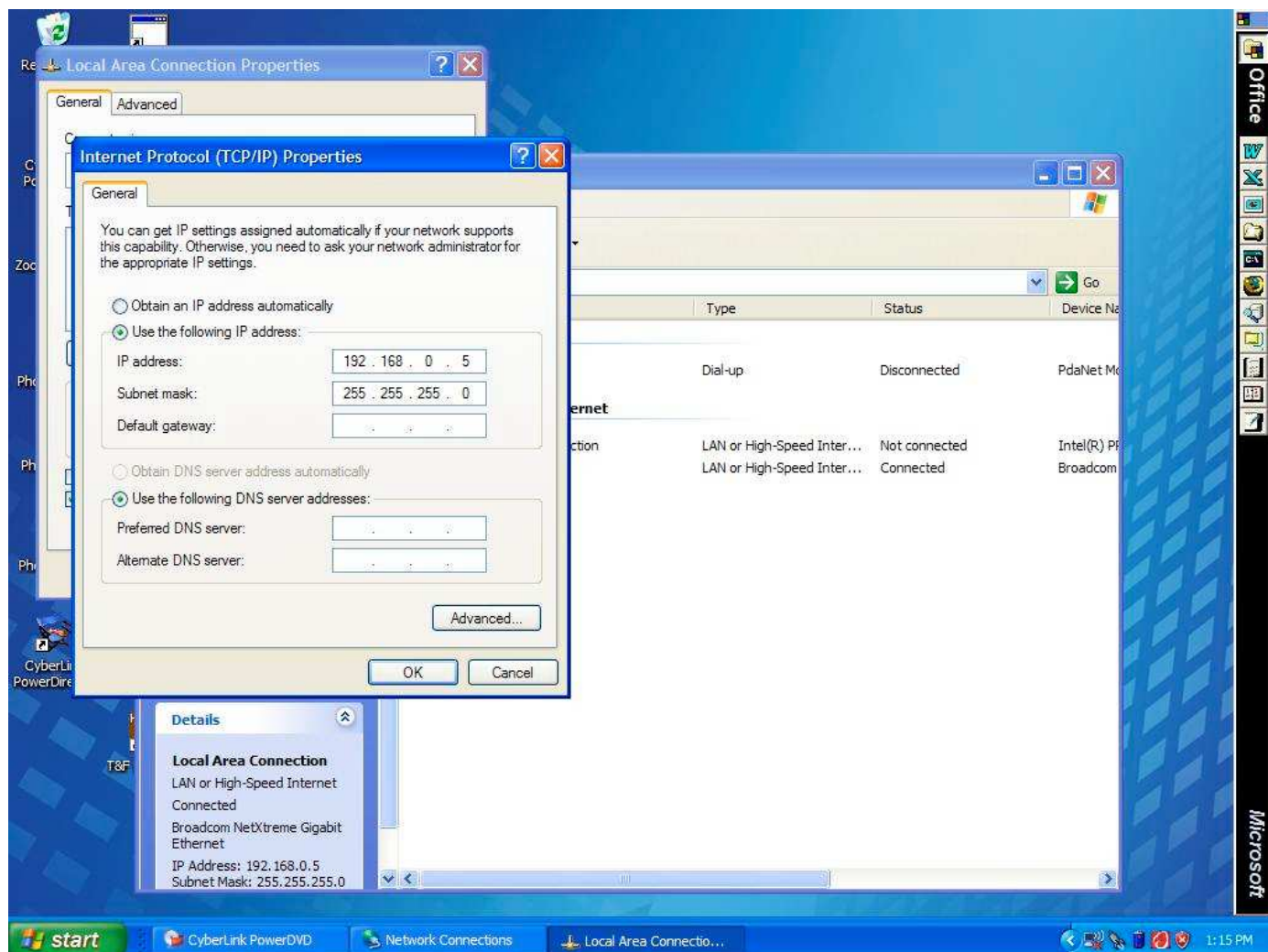
1. Once you're done downloading the .bin and TFTP files make sure that you got them and know where on your local drive the files are (this is the file you will use to flash the Buffalo drive to the new firmware and the utility you will use).
2. Now disconnect your RJ45 cable from the internet and plug it in to a LAN port of the router.
3. Your computer should be using DHCP (it may take a minute or two for the computer to Acquire a Network Address and then to be CONNECTED to the router).
4. Once connected, you'll see that the computer has an IP address of 192.168.11,137 (or some 3 digit # at the end, it may vary).
5. Using a browser, type in the URL 192.168.11.1 at which point you should now be talking to the router.
6. It will ask you for a password (default is "root").
7. Up should pop the Buffalo interface.
8. Using the IP address from above, change the LAN setup on the laptop and set it to a static IP address of <whatever was listed> and a mask of 255.255.255.0 and leave everything else blank.
9. Say OK and after a few seconds refresh the browser and go to a couple of different pages to make sure you are still talking to the router.
10. Back to Windows (leave Firefox open), run the TFTP program that you downloaded.
11. It will ask for the IP address of the server, enter the IP address of the router - 192.168.11.1 (the documentation says to do this). There's a password field – leave it blank. For the file, click on the ... field and navigate until you find the dd-wrt file that you downloaded. Change the Retry count to 35. Do NOT click OK yet.
12. Back to Firefox. Shrink the Firefox window down so you can see both Firefox and the TFTP window side-by-side (the TFTP window doesn't take up much room).

13. Using Firefox, surf around a bit until you find a link that said something like "initialize" – sorry I can't be more specific, I can't remember. It should take you to a page and there are two options on that page - the second one was to reset the router to factory defaults, and the first was to restart the router.
14. Click on the "restart" button in Firefox and it will say something like "restart will take about 80 seconds..." or something like that.
15. Wasting no time, click on the "Upgrade" button in the TFTP window.
16. Wait maybe 10 seconds and the file transfer should start, takes about 20 seconds and should be done.
17. Go back to Windows and change the IP address back to DHCP.
18. Wait about a minute and the laptop should be assigned the IP address of 192.168.1.2.
19. In Firefox, go to 192.168.1.1 and the first thing it prompts you for is a new user name and password. I used "administrator" and "track"
20. Up should pop the dd-wrt interface instead of the Buffalo interface. Done!
21. Now go back to where you will configure your Buffalo router with the new firmware that has just been installed.

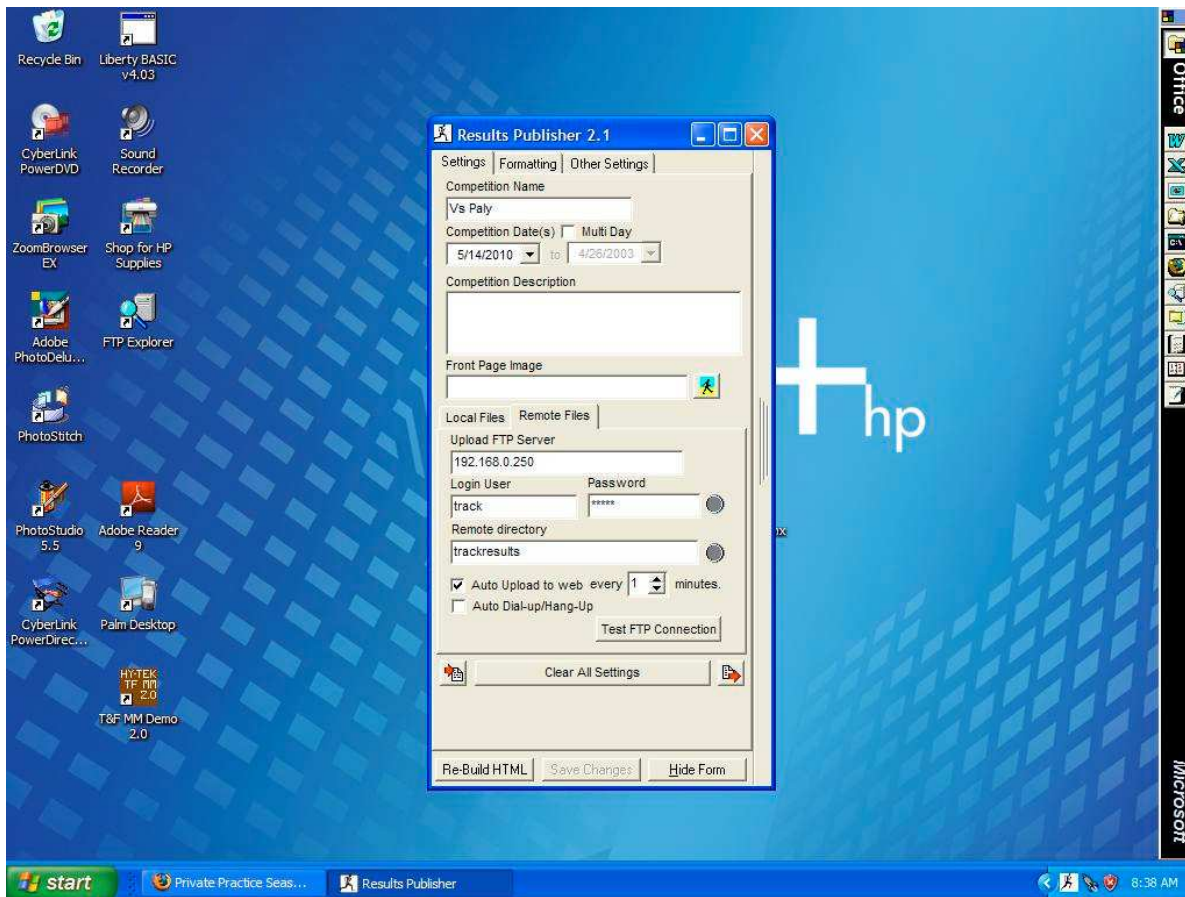
Note: You can also upgrade the firmware to a different version of dd-wrt by clicking on the ADMINISTRATION tab, and the sub-tab FIRMWARE UPGRADE. Then browse for the file to upgrade to and decide if you want to reset to default settings (recommended but write down all of your changes first) or Don't Reset. Be patient – go have a beer. When you come back, it should be all done and at the CHANGE PASSWORD SCREEN.

Setting up RP to Transfer data to server

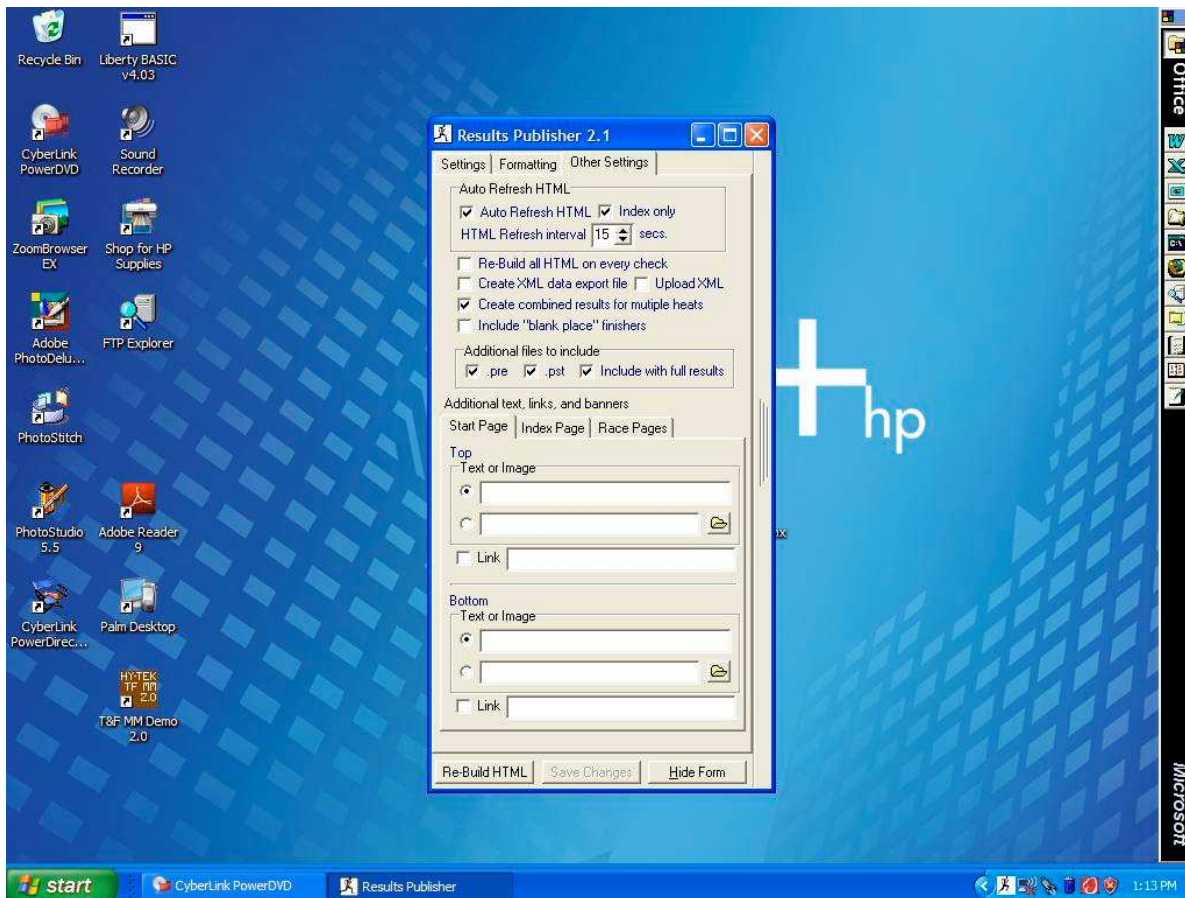
On the Lynx/MM/RP side of your network, the computer IP address and mask should be the following:



The RP system/network connects to the WAN port of the Buffalo router. With RP running on either the same system as Lynx or just within the same network, your RP configuration should be:



with a password of “track”. Below are the “Other Settings” as well for RP:



In RP, the AUTO UPLOAD needs to be checked.

The XAMPP server plugs in to one of the LAN ports on the Buffalo router.

Since the router intercepts any URL the user types in to their browser and redirects to the XAMPP server, it expects an INDEX.HTML file to be in the c:\xampp\trackresults\trackresults directory. MM creates an INDEX.HTML file automatically where RP creates a file with the name of the event. For example, if event name in RP is CCS Finals then RP creates as its INDEX file the file named CCS_Finals.htm. In order for this to work, you need to create an INDEX.HTML file that exists in the trackresults directory and, using CCS Finals as the example, has the following data in it:

```
<HTML><HEAD><TITLE>CCS Finals</TITLE>
</HEAD>
<FRAMESET cols=310,* rows="*"><FRAME name=index src="CCS_Finals_index.htm">
<FRAME marginHeight=1 name=main
src="CCS_Finals_start.htm"></FRAMESET><noframes></noframes></HTML>
```

This will take care of the issue of you needing an INDEX.HTML file on the XAMPP server.

The Frameset (310 in this example) needs to be changed in the INDEX.HTML file if you want the frame sizes to be different. Changing the "Race Index Frame Size" within RP will have no effect, it must be manually changed in the INDEX.HTML file to what you want.

Configuring Meet Manager for the Web Server

The final step is to configure Meet Manager so that it can upload the results to the web server.

In Meet Manager, go to the “Run” screen. To do this, click on “Run” from the main menu. The Run menu will look similar to the illustration below.

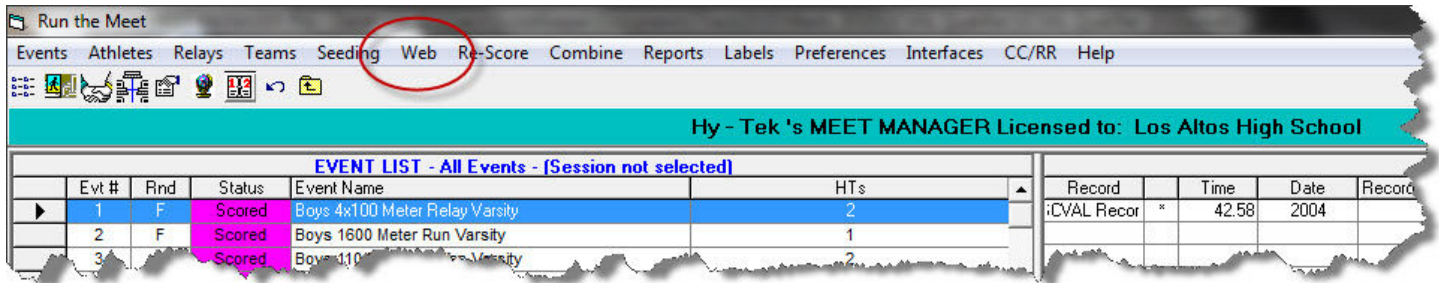
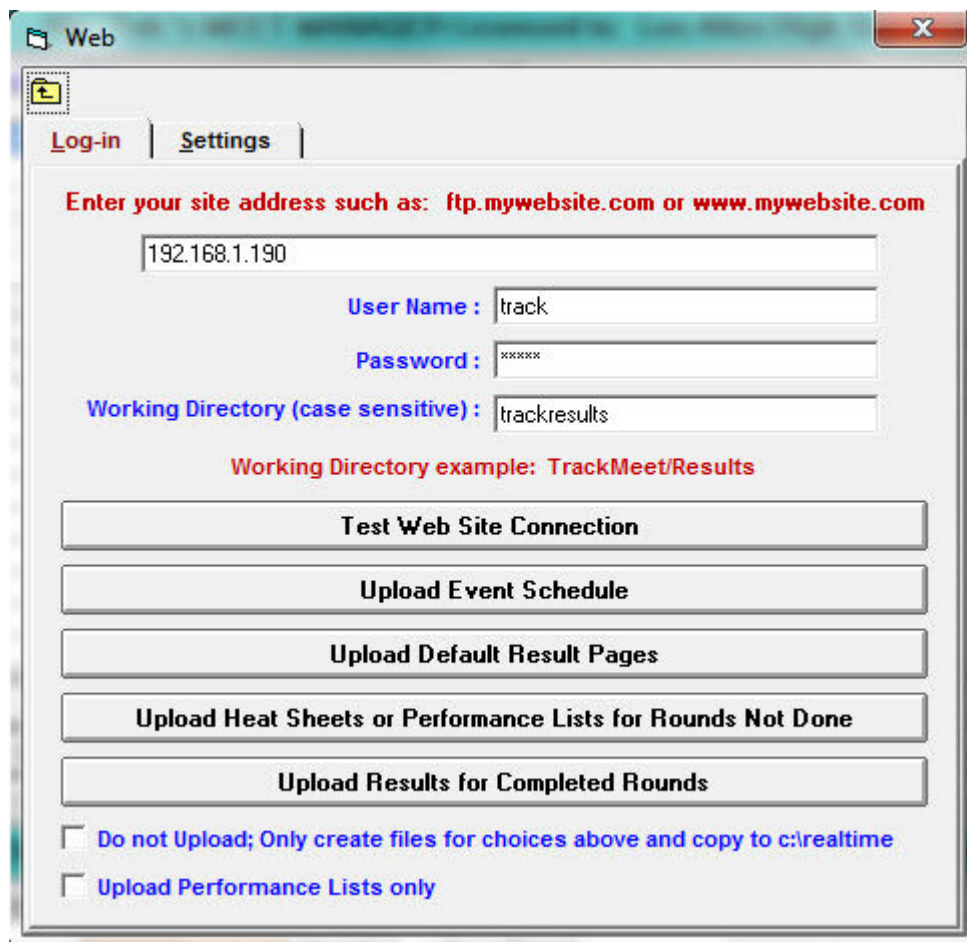


Illustration 6: Meet Manager's Run screen

To access the web screens, click on “Web” in the menu bar, as indicated in the above illustration. If your copy of Meet Manager does not have “Web” as an option, it means that you do not have the “Pro” option.

The “Web” menu looks like this:



The required parameters on this page are:

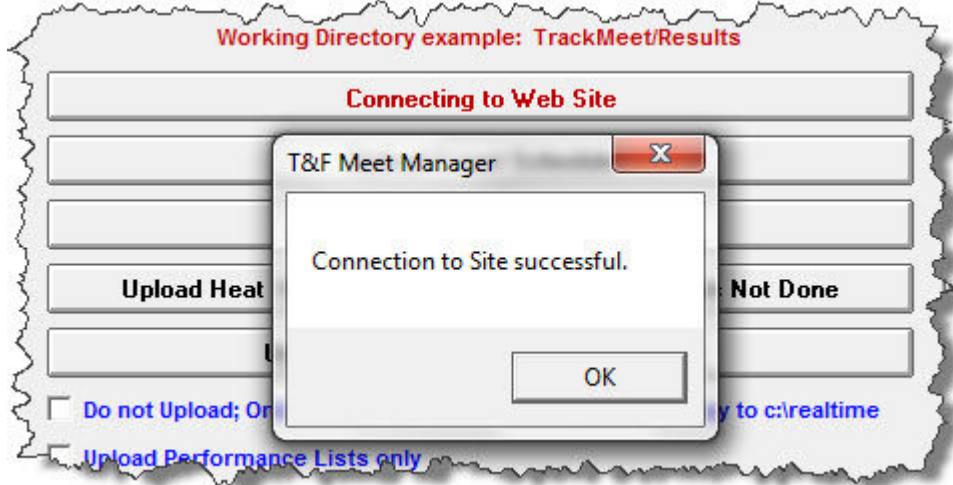
- IP Address for the website: 192.168.1.250 – note that this is the same IP address that was assigned to the

WAN/Internet port on the router earlier in this document.

- User name: track
- Password: track
- Working directory: trackresults

The user name, password and working directory entries are all case-sensitive. Be sure to enter them in lower case. Also notice that there is no “Save” button on this screen – changes that you make are automatically saved.

After you have entered the above parameters, click on the “Test Website Connection” box. You should see a confirmation that connecting to the web site was successful, as shown in this illustration:



If you do not see the above confirmation message, review all of the configuration values – something isn't configured correctly.

Click on the “Settings” parameter on the web menu. A window such as the one below will be displayed:

Web

Log-in Settings

Seconds delay for heat refresh : 30

Seconds delay for event results refresh : 60

Event Sort

Session

Event Number

Publication

Mode

Passive FTP (best)

Active FTP

Index Page **Heat/Perf Page** **Results Page**

Background Color : Light Blue Light Gray Light Yellow

Text Color : Black Black Black

Enable F10, F11, F12 from Run Include Link to Picture Files

Include Link to Home Page Include Session Title if Sort by Session

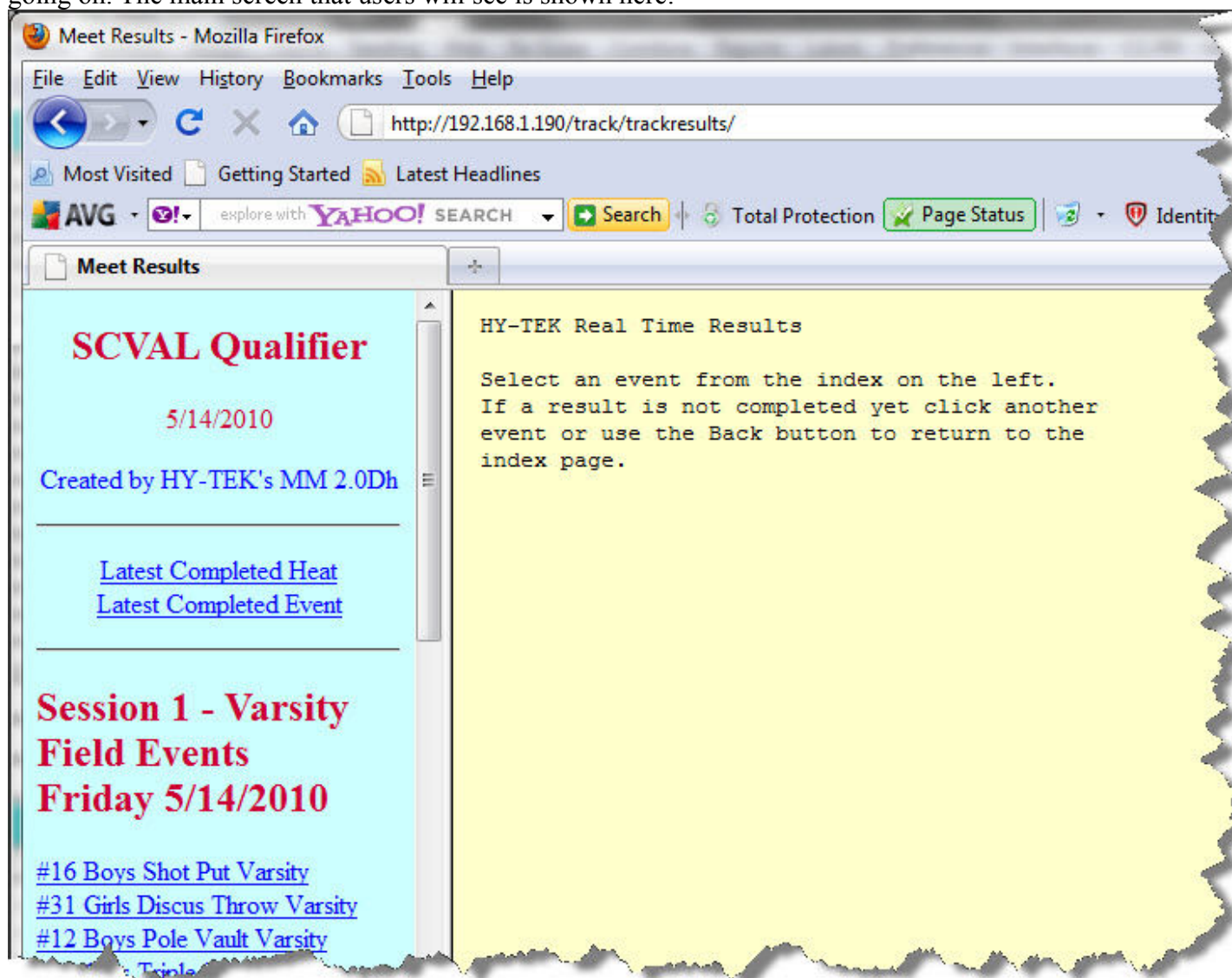
Include Print Button with Results

The only parameter that is important on this screen is the “Enable F10, F11, F12 from Run” These function keys allow you to upload results on an event-by-event basis. F11 will upload for the current heat, F12 will upload results for the current event, including all heats. More information can be found in the Meet Manager help menu under the heading “Pro Option.”

Once you are satisfied with these settings, go back to the “Log-In” tab and click on the following entries:

- Upload Event Schedule
- Upload Default Result Pages
- Upload Heat Sheets of Performance Lists for Rounds Not Completed

These steps will generate the basic files for your race, enough that people can access the site and see what's going on. The main screen that users will see is shown here:



As the meet progresses and results are input into Meet Manager, you can do the following:

- After you have entered results for a heat of a multi-heat event, press F11 to upload that heat's results. These results will be available using the “Latest Completed Heat” link as shown above.
- After you have entered and scored an entire event, press F12 to upload that event's information. This will be available by the “Latest Completed Event” link as shown above.
- At any time, click on the “Web” menu bar item and click on “Upload Results for Completed Rounds”. This will re-upload results for all heats and events, including any that you may have missed individually.

At this point you are ready to run the meet and provide information online. Good luck!

Installing and Configuring XAMPP Software

XAMPP, available through the Apache Friends website (www.apachefriends.org/en/xampp.html), is a combination of several open-source web services that help us provide information to the spectators. While several utilities and tools have been bundled into the XAMPP, we are interested in only two of the utilities:

- Apache Web Server – this is the package that makes the pages available via a web browser.
- FileZilla FTP Server – this is the package that lets Meet Manager transfer the results to the web server.

When looking at the XAMPP page at the Apache Friends website, you will notice that it is available for many platforms such as Window, Linux and more. Additionally, there are two main versions of XAMPP – the full version and “XAMPP Lite” which load a smaller number of utilities. For our purposes we will load the XAMPP for Windows package. Do not use the XAMPP Lite package – it does not contain the FileZilla package.

Download and save the XAMPP for Windows installation package. This is a large download, so allow plenty of time. Once the download is complete, double-click on the .EXE file to start the installation process. The easiest and simplest way to install the package is to accept all of the recommended defaults. If you notice something in the installation process that you want to change, don't worry – simply click on the “uninstall” option under Start->Programs->XAMPP for Windows” and start over. It's that simple.

After the installation is complete, there are two more steps necessary – configuring the Apache web server and configuring the FileZilla FTP Server.

Configuring the Apache Web Server

There are three configuration files that need to be updated. They are:

- c:\xampp\apache\conf\httpd.conf - the default configuration file for the Apache web server.
- c:\xampp\apache\conf\extra\httpd-userdir.conf – configuration file to hold user-defined configurations.
- C:\xampp\htdocs\index.php – the first page accessed by web users on our system.

Both of these files are simple text files that can be edited with any regular text editor. Textpad is recommended for this purpose.

Editing the httpd.conf file

Using your favorite text editor, open the default configuration file – httpd.conf. Search for a line that is similar to this string:

```
#LoadModule userdir_module modules/mod_userdir.so
```

If there is a # at the beginning of the line, delete the # and save the file. This enables the userdir.conf file that you will edit shortly. Removing the # at the beginning enables this command – the # in front means that the line is a comment and is to be ignored by the web server software. Be sure to save the file.

Editing the httpd-userdir.conf file

Using your favorite editor, open the httpd-userdir.conf file.

The last line of the file should be the following:

```
</IfModule>
```

Just before that line, insert the following:

```
Alias /track "c:/xampp/trackresults"
```

```
<Directory "C:/xampp/trackresults">
    Options Indexes MultiViews
    AllowOverride none
    Order allow,deny
    Allow from all
</Directory>
```

Spacing/indenting is not that important, but spelling and the sequence of statements is. If anything is out of place, the web server software will fail to start.

What This Does

The above statements create an alias which can be thought of as a short cut for your web users. They can specify the alias name instead of having to know the exact path on your system to the files. In this situation, the alias name is “track” and it points to the directory c:\xampp\trackresults.

Editing the index.php file

Using your favorite editor, open the c:\xampp\htdocs\index.php file. The file is shown below:

```
<?php
if (!empty($_SERVER['HTTPS']) && ('on' == $_SERVER['HTTPS'])) {
    $suri = 'https://';
} else {
    $suri = 'http://';
}
$suri .= $_SERVER['HTTP_HOST'];
// header('Location: '.$suri.'/xampp/');
header('Location: '.$suri.'/track/trackresults/'); ←
exit;
?>
Something is wrong with the XAMPP installation :-(
```

Illustration 7.1: The index.php file after changes

Two changes are required to this file:

1. Insert // at the beginning of the line as specified. This turns this line into a comment.
2. Insert the next line of text as indicated by the red arrow.

Save the file.

What This Does

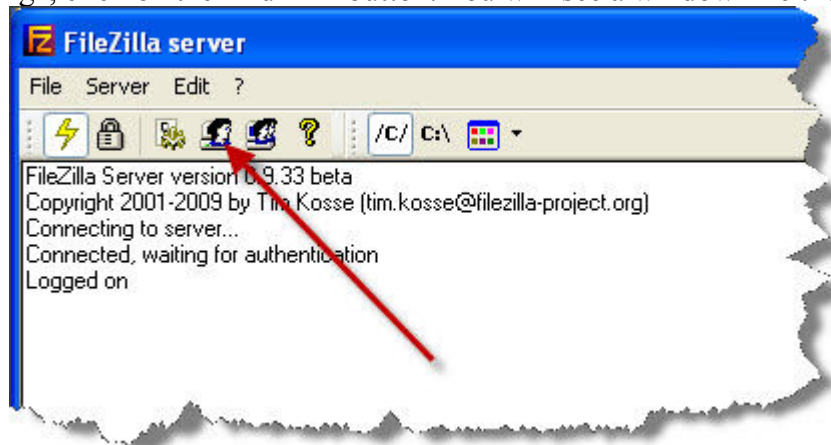
These changes simplify things for our users by re-directing their browser to the correct place to view the results.

With these changes, the user only has to run their web browser; the above changes will redirect their browser to the c:/xampp/trackresults/trackresults directory, which is the same place where Meet Manager is uploading all the results.

Configuring FileZilla FTP Server

FileZilla is used by Meet Manager during the upload process. FileZilla takes the files from Meet Manager and stores them in a specific place for us.

On the XAMPP Control Panel, make sure that FileZilla is running. If it is not, click on “Start.” Once its status has changed to “Running”, click on the “Admin” button. You will see a window like the one below:



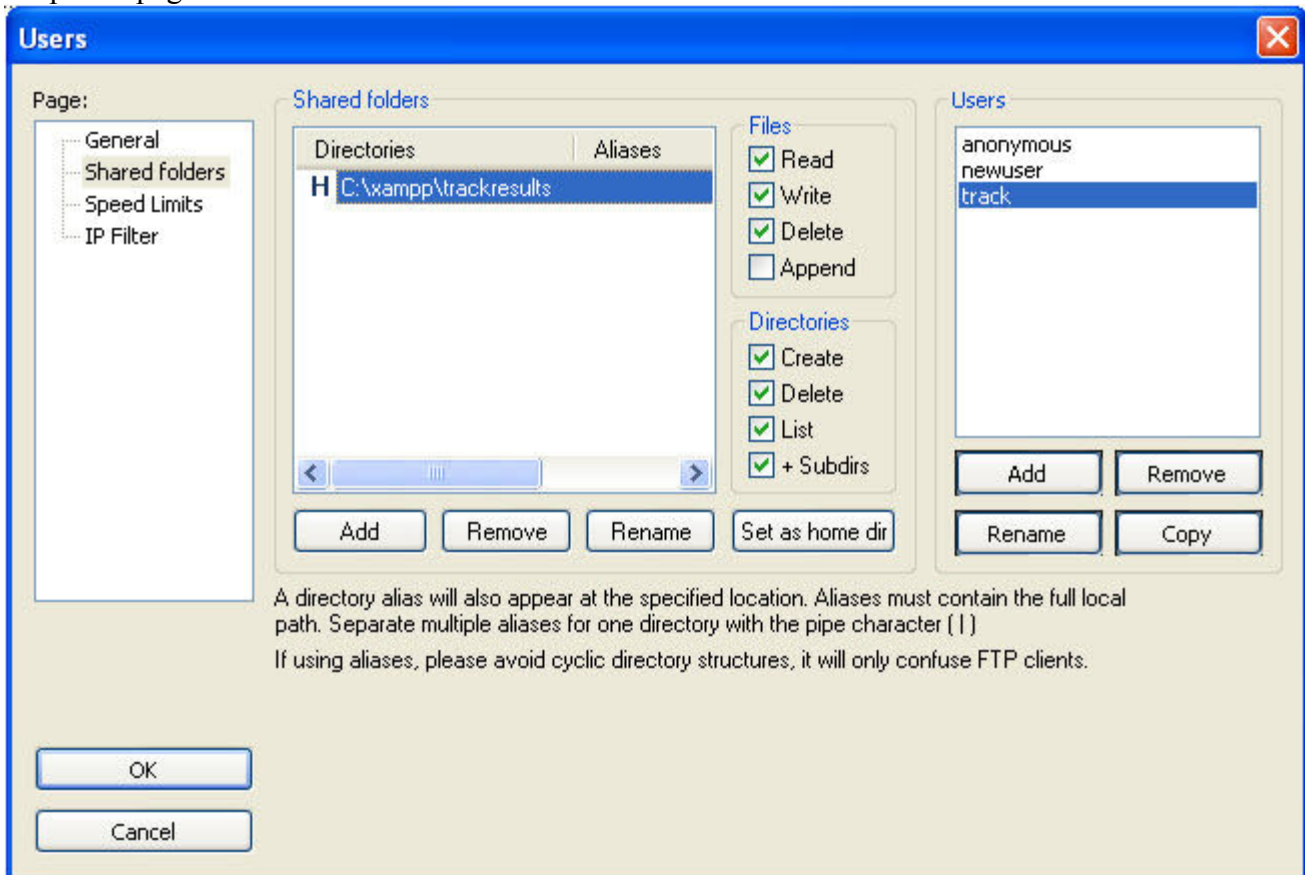
Click on the “Users” icon as indicated by the red arrow above. On the user screen, click on “Add” and create a new user named “track”. Click OK.

Highlight the “track” user and make the following changes:

On the “General” page, make sure the account is enabled, and set the password to “track”

On the “Shared folders” page, add the folder c:\xampp\trackresults as a shared folder. Under the Files and directory permissions, check everything “Read, Write, Delete, etc.)

The completed page should look like this:



Click OK to save your changes..

What This Does

This creates a user named “track” with the password of “track” on the system. Using FTP, a user can connect to the system using this name and password and they can read/write/delete/store files in the c:\xampp\trackresults directory on the system.