

An Example of Using Dynamic DNS with a Geist Technology Web Server

By Bob Walsh

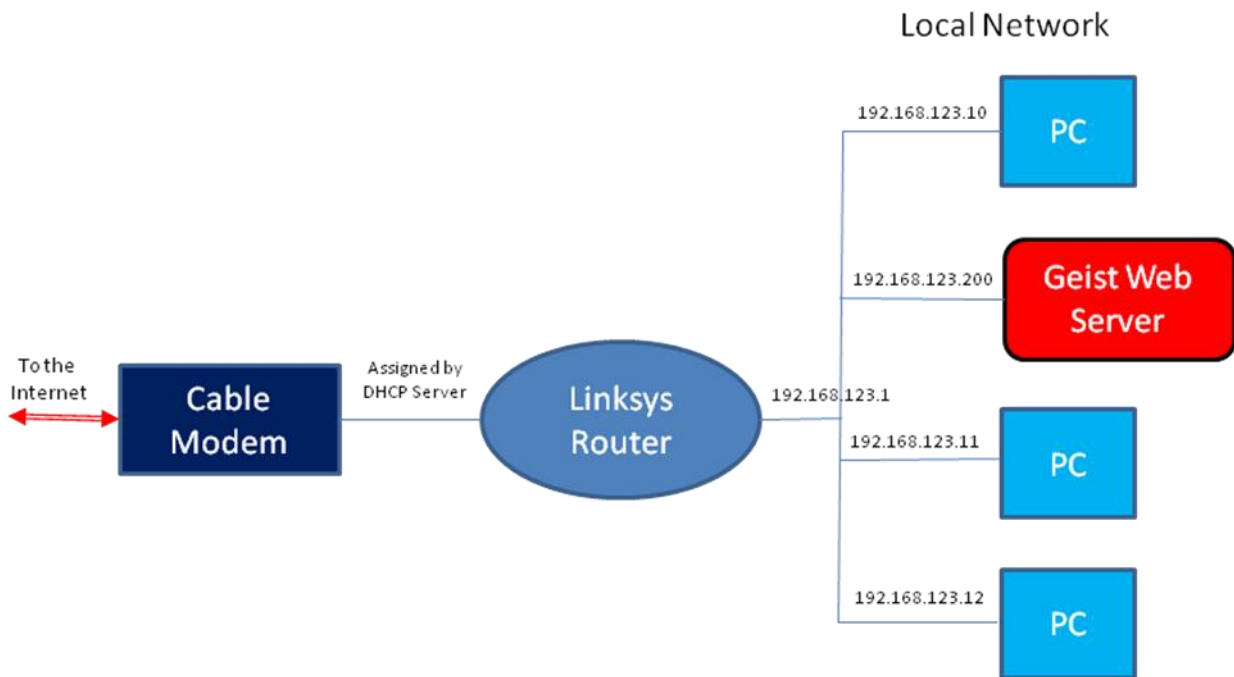
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This note describes a specific solution to the problem of allowing access to a Geist Technology web server that does not have a static public IP address. This note will describe how to use the dynamic DNS service offered by www.dyndns.com along with a Linksys WRT54G Router to allow external users to access the web server. Other services and other routers will use a similar procedure.

The setup I will describe is typical of a home or small office installation. Internet service is provided by a telephone or cable company using a DSL modem or a cable modem. The modem is connected to the Linksys router using 10baseT or 100baseT Ethernet. Local machines including the Geist server are in turn connected to the router using Ethernet as well.



The local machines, including the local port of the router, are assigned addresses in a private domain such as 192.168.123.XXX. The external port is assigned a dynamic address by the Internet provider's Distributed Host Configuration Protocol (DHCP) server.

The dynamic IP address works fine for most typical applications that might be run in a home or small office environment, such as web surfing or checking email, but it presents a problem when using a server. If people want to connect to the server from somewhere on the public Internet they need to

know an IP address that they can use to reach it. Normally they find this address using the Internet's Domain Name Service (DNS). But if our server's address changes whenever the DHCP server changes it, then the regular DNS service can't keep up with it.

www.dyndns.com offers a service that will solve this problem. What Dyndns does is allow you establish a URL in one of their domains, and they keep up with changes to your IP address. Your URL is something like www.myUrl.dyndns.biz. When you enter that into a browser Dyndns redirects the request to your current IP address. In order for this to work you have to have a client program on your device that updates Dyndns whenever your provider changes your IP address.

In the local network pictured above, we want to be able to reach the Geist Web Server from the public Internet. There are two problems:

- 1) The Web Server is behind a local router, and has an "unrouteable" IP address.
- 2) The IP address of the router is assigned by the Internet Provider's DHCP server, and thus may change without warning.

There are three things that have to be done to solve the problem. The first is to use the Dyndns service to make the IP address of the router available to users on the public Internet. The second is to program the router to forward requests for web pages to the Geist web Server, and the third is to configure the Geist server.

To set up the Dyndns service, go to www.dyndns.com, preferably from a PC on the same subnet as the Geist web server you want to access from the Internet. Under the "Services" heading select "Free Dynamic DNS". Select "Get Started", and create a new account. Select one of their domains, such as www.dyndns.biz and select a hostname for your router, such as "myRouter". If you do this from a PC on the same subnet as your Geist web server Dyndns will pick up your router's current IP address automatically. Once you complete this process Dyndns will be ready to forward users to your server.

Once you have Dyndns set up, you need to set up your router. Consult the manual for the Linksys router for instructions on how to log in to the Admin account. The Linksys software includes the client utility it needs to connect to Dyndns. On the "Setup" screen, choose the "DDNS" tab. Pull down "Dyndns.org" as the service you want to use. You will be prompted to enter the userid and password you set up, as well as the hostname you assigned to your router. The router should connect to Dyndns at this point. If it cannot, you may have not set your account up properly, or entered the wrong userid or password.



The next thing you must do is set up something called “port forwarding”. DynDNS will forward a user’s request to the router; you need the router to forward the request to your Geist server. Go to the router’s “Applications and Gaming” tab. This page tells the router to forward requests that come to it using certain protocols on certain ports to be forwarded to specific machines on the local network. You need to forward http and https to your Geist server. On the first line under “Application” enter http. The default port number for http is 80. Enter the IP address of the Geist server on your network. In the example network shown on the first page this address is “192.168.123.200”. (You will assign this address to the Geist server when you set it up). On the second line enter “https” (secure http). The default port for https is 443. Again, enter the IP address of the Geist server. Be sure and save the settings before you exit.

LINKSYS[®]
A Division of Cisco Systems, Inc. Firmware Version: v2.04.4

Wireless-G Broadband Router **BobsRouter**

Applications & Gaming | Setup | Wireless | Security | **Access Restrictions** | Applications & Gaming | Administration | Status

Port Range Forward | Port Triggering | DMZ | QoS

Port Range Forward

Port Range					
Application	Start	End	Protocol	IP Address	Enable
http	80	to 80	Both	192.168.0.123	<input checked="" type="checkbox"/>
https	443	to 443	Both	192.168.0.123	<input checked="" type="checkbox"/>
	0	to 0	Both	192.168.0.0	<input type="checkbox"/>
	0	to 0	Both	192.168.0.0	<input type="checkbox"/>
	0	to 0	Both	192.168.0.0	<input type="checkbox"/>
	0	to 0	Both	192.168.0.0	<input type="checkbox"/>
	0	to 0	Both	192.168.0.0	<input type="checkbox"/>
	0	to 0	Both	192.168.0.0	<input type="checkbox"/>
	0	to 0	Both	192.168.0.0	<input type="checkbox"/>
	0	to 0	Both	192.168.0.0	<input type="checkbox"/>

Port Range Forwarding:
Certain applications may require to open specific ports in order for it to function correctly. Examples of these applications include servers and certain online games. When a request for a certain port comes in from the Internet, the router will route the data to the computer you specify. Due to security concerns, you may want to limit port forwarding to only those ports you are using, and uncheck the **Enable** checkbox after you are finished.
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Save Settings | Cancel Changes

Note: some ISPs block access to port 80. If yours is one of them, you'll need to use some other port. Valid port numbers are in the range 0 to 65535, but to be totally compliant with the rules of the Internet you should pick a number between 49152 and 65535. This reduces the chance that some other service is also using the same port that you pick. If you do pick a number besides 80, you must configure the Geist server to listen on the same port number, and to reach the Geist server from the internet you will have to append the port number you chose to the URL, as in <http://myRouter.dyndns.biz:49152>.

Lastly you must configure your Geist server. Follow the instructions that came with it to connect to it, and navigate to the "Config" page. Scroll down to the "Network" section, and assign the same IP address that you entered on the port forwarding page. The Gateway needs to be set to the IP address of the router (192.168.123.1 in our example). In the "Web Server" section, set the ports for http and https. Again, the defaults are 80 and 443, but if you selected different port numbers when you

configured your router, enter the same numbers you selected there. Again, be sure to click on “Save Changes”.

Once you have completed these steps, your server should be reachable from the public Internet. Note that the URL is <http://myRouter.dyndns.biz>, NOT <http://www.myRouter.dyndns.biz>. Do not include the “www” in the address, that is not correct.