DNS Server Configuration

Introduction

The internet has a tree like network of DNS servers, which are responsible for converting a URL (e.g. www.google.com) to an IP address. The root DNS server shares it's database with all of the outlying DNS servers. A broadband router contains a DNS server, which needs to communicate with one of these DNS servers (such as the ones provided by the ISP).

Operation

For details of DNS operation, please see my technical blog on this subject:-

http://community.talktalk.co.uk/t5/Skill-Share/DNS-Operation/m-p/1600133#U1600133

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DNS failure error

A DNS failure error can be misleading. Often the problem is that there is no internet connection rather than a specific DNS issue. Your browser requests a webpage and queries the DNS server, but because there is no internet connection, the browser can't contact the DNS server and so gives a DNS error.

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Configuration

Note: I am only a TalkTalk customer & have no routers other than my own one to get screenshots from. These are from a Huawei HG523a router, most other routers are similar.

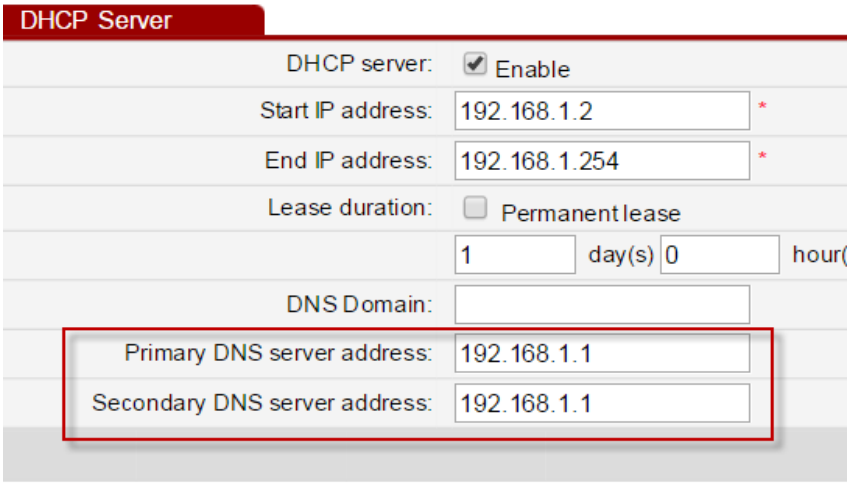
First the DHCP Server settings, this is where the DHCP protocol allocates the clients a DNS server(s) of 192.168.1.1. If you want to use anything other than the allocated TalkTalk network DNS servers, ***do not*** enter them here. These should always be the same IP address as the router.

Otherwise the time taken to contact the network servers if handed out by the DHCP offer, will be greater than that of a DNS server on the local subnet (local network) and thus increase the latency to display a website in the user's browser.

Once in Advanced mode, go to:-

Basic > LAN

Go down to the "DHCP Server" section:-



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Alternative DNS servers
These can be used as an alternative to the TalkTalk dynamically allocated network DNS servers.

openDNS:-
208.67.222.222
208.67.220.220

Google:-
8.8.8.8
8.8.4.4

The rest of this document is based around the HG523a & other Huawei routers, but not the HG633 or HG635.

Other routers are also covered but in less detail.

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Huawei routers not HG635 (inc some DSL3780s)

Now to setup the router to communicate with the “network” DNS Servers on the internet. There are two ways to do this:-

1. Use the dynamically allocated DNS servers from the TalkTalk network
2. Use statically assigned DNS servers, such as Google or openDNS

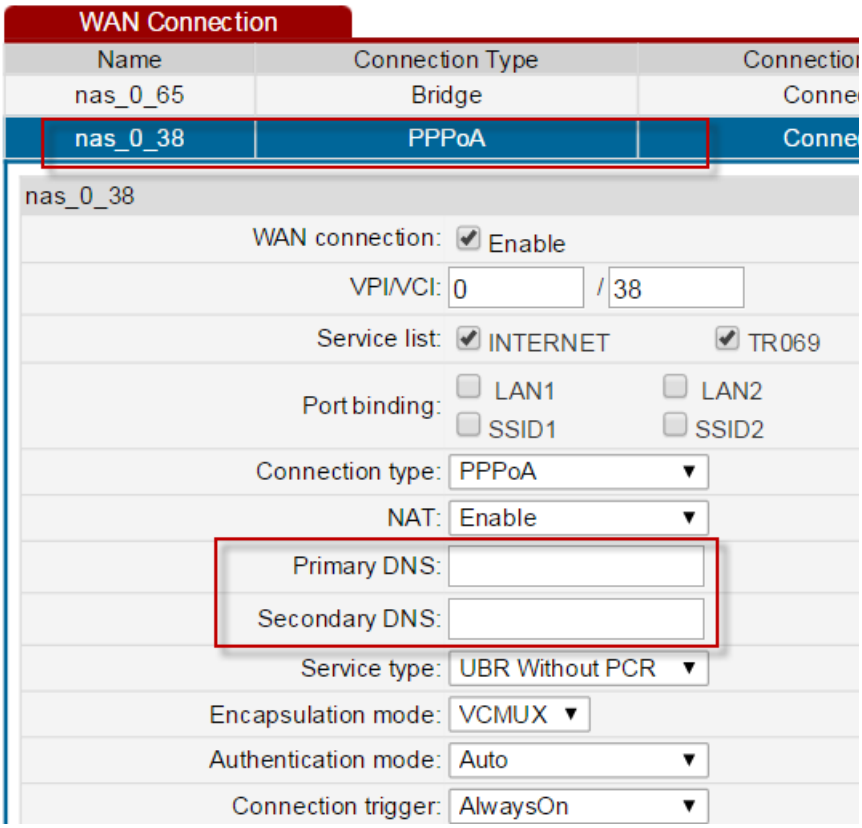
In both cases go to:-

Basic > WAN

Dynamically allocated TalkTalk DNS servers

Leaving the DNS server entries below blank, forces the router to use the dynamically allocated DNS Servers. To see these look at your router's “Internet Summary” page.

Note you may well have more than one WAN "interface", you want the “0_38” one highlighted with a red box:-



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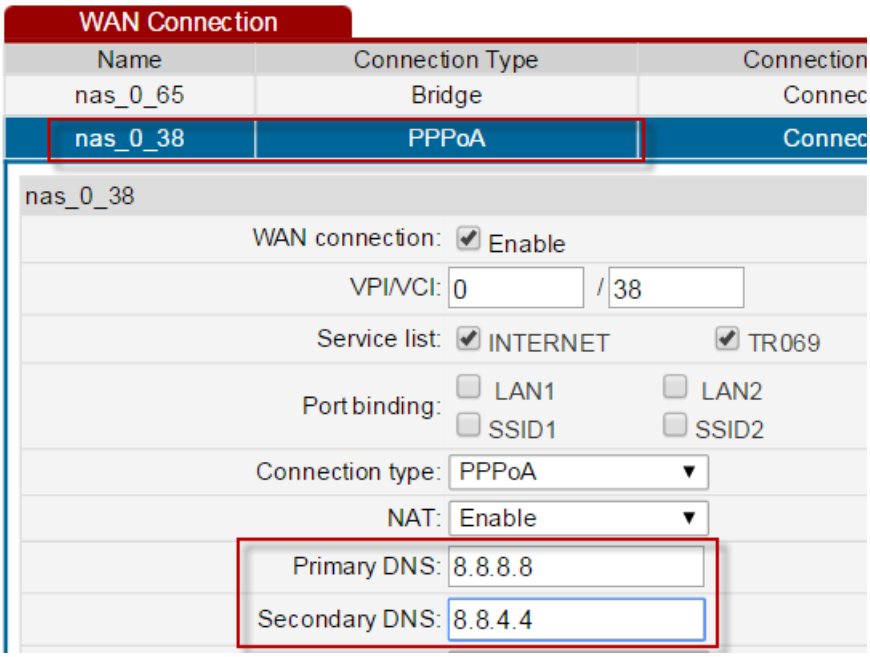
Statically assigned DNS servers

Now to force the router's DNS server to communicate with a dedicated DNS server such as openDNS or Google etc, enter the relevant IP addresses as shown below.

openDNS uses:-
208.67.222.222
208.67.220.220

Google uses:-
8.8.8.8
8.8.4.4



Irrespective of the method used to assign the network DNS server, the DHCP "offer" from the router's DHCP server to any client would still contain the local DNS server:-

IP address : 192.168.1.x
Subnet mask : 255.255.255.0
Default gateway : 192.168.1.1
DNS Server(s): 192.168.1.1

In this example, the main DNS server that the router's one would make recursive queries back to when it does not hold the relevant IP address for would be Google.

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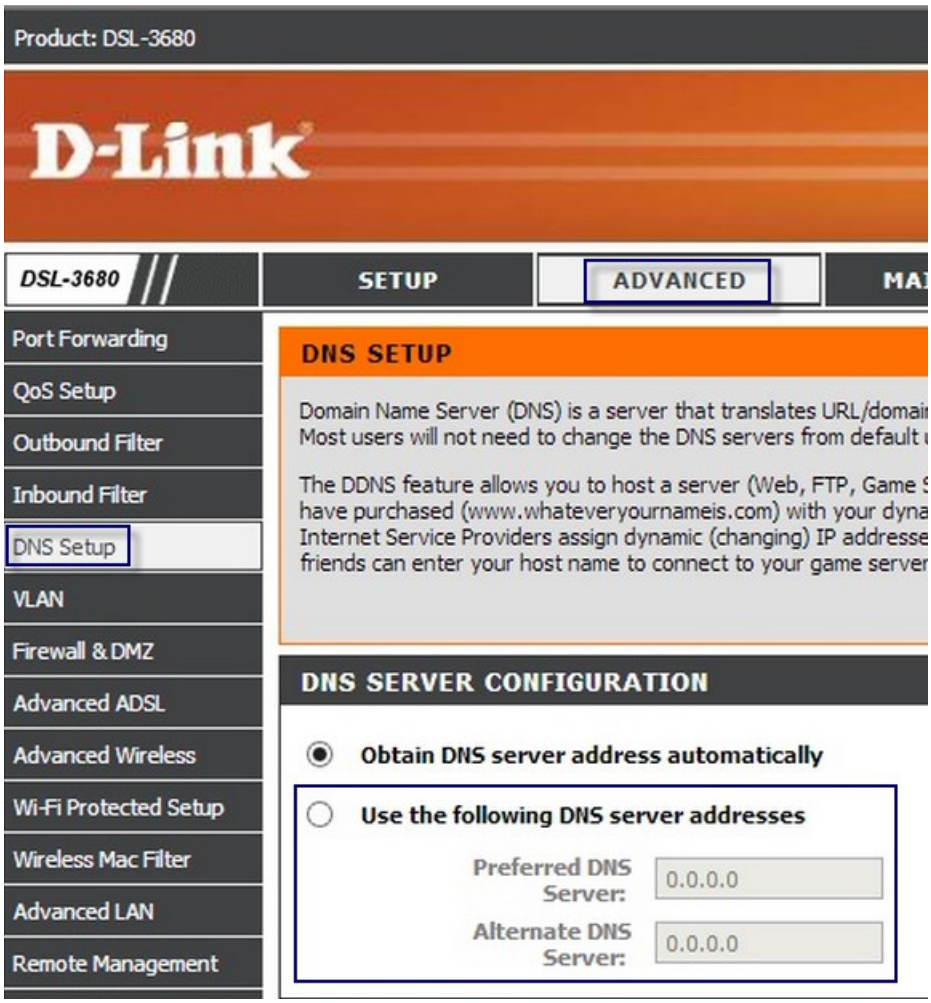
Other routers

- D-Link DSL routers
- DSL 3780 with “D-Link interface style”
- Huawei HG633 & HG635 routers

D-Link routers

Go into “Advanced” mode & then click on “Advanced” along the top and “DNS Setup” down the left. Enable the option “Use the following DNS Server address” and put the required ones in there. Finally click the “Add/Apply” button:-



DNS Server Configuration

DSL-3780s with "D-Link interface style"

Go into "Advanced" mode & then click on "Advanced" along the top and "DNS" down the left. Enable the option "Use the following DNS Server address" and put the required ones in there. Finally click the "Add/Apply" button:-

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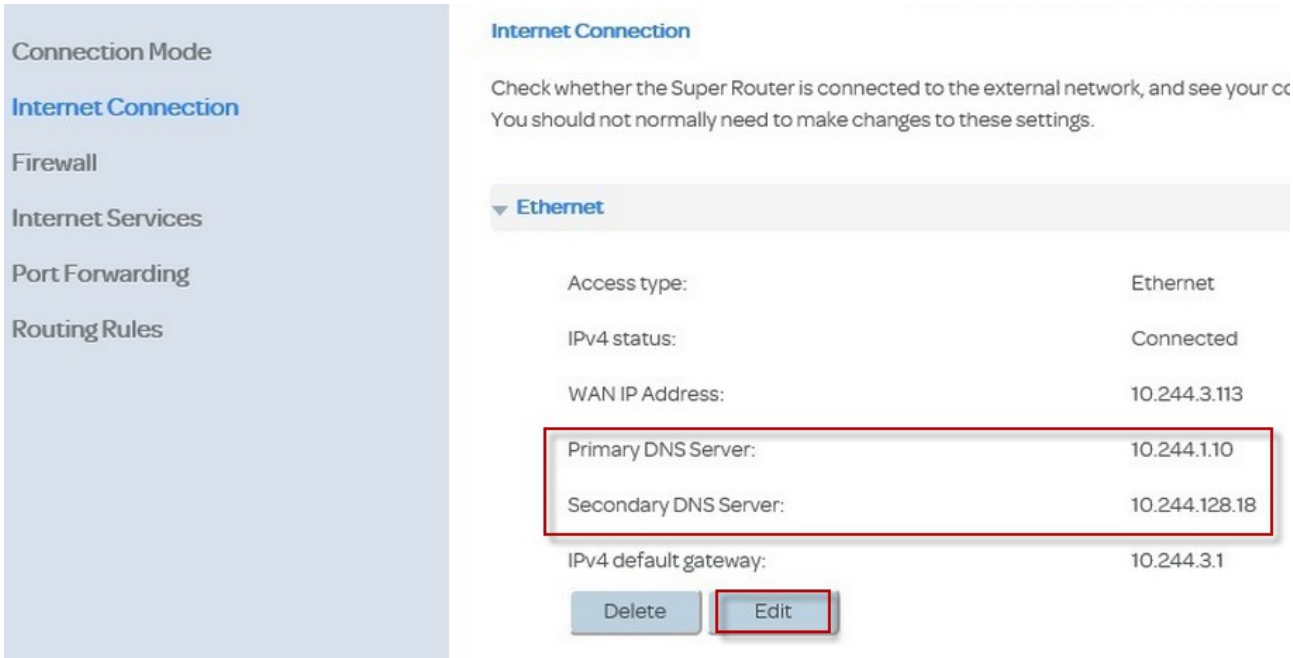
HG633 & HG635 routers

Note: if these are entered under the DHCP config, the router will automatically delete them, as it is the wrong place to hand out network DNS servers. Tounderstand the reasons behind this, please see my technical blog on this subject:-

http://community.talktalk.co.uk/t5/Skill-Share/DNS-Operation/m-p/1600133#U1600133

The router's interface is a bit more complex than most, but logon to the router & click on "Internet":-

Then click on "Internet Connection on the left hand side. This will show the DNS servers you are currently using, to change these, click the "Edit" button:-



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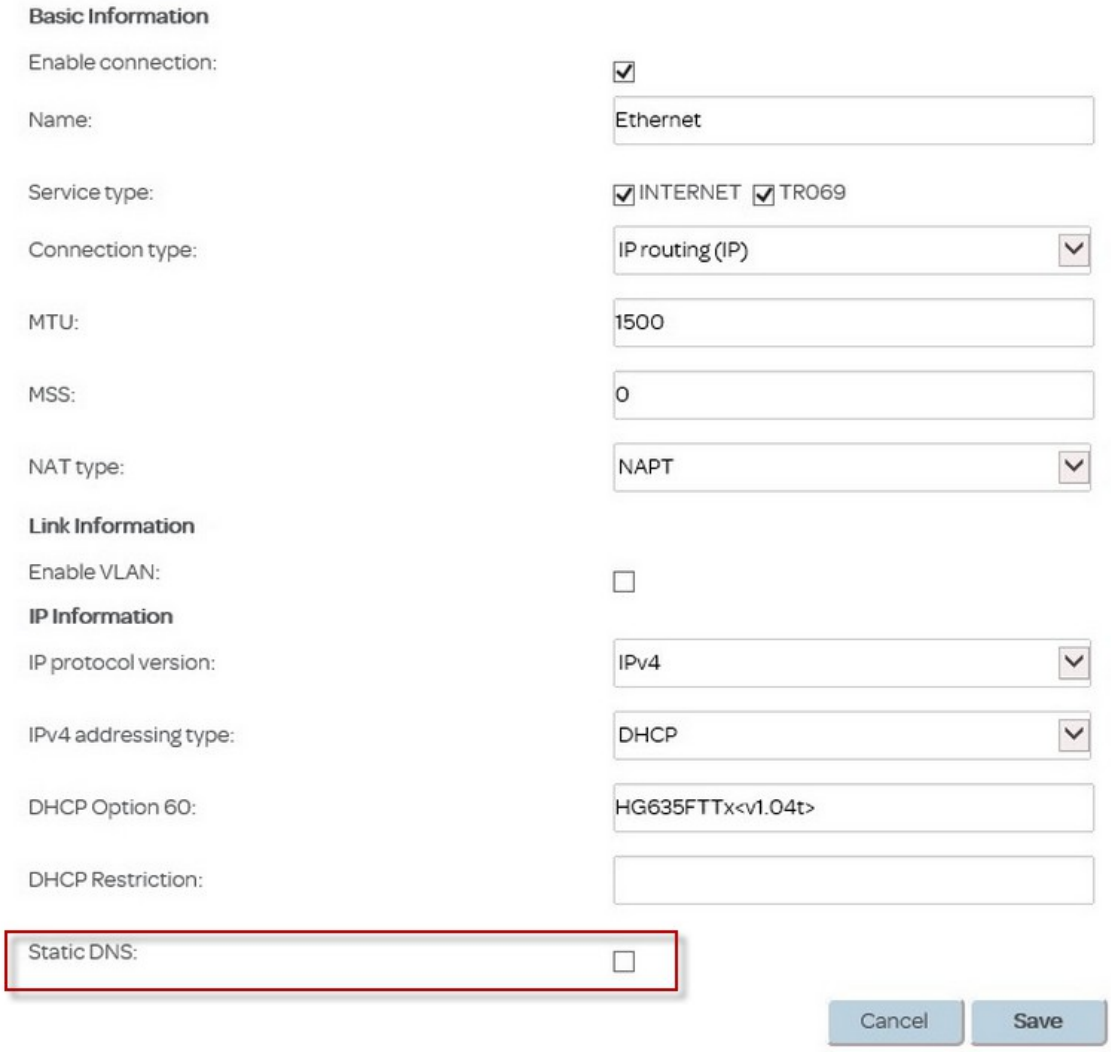
When the page expands, tick the “Static DNS checkbox:-



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Now put the DNS servers you want to use in the latest part of the expanded page & click “Save”:-