

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 Server Configuration

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.

DNS Server Configuration

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:-

DHCP Server	
DHCP server:	<input checked="" type="checkbox"/> Enable
Start IP address:	192.168.1.2 *
End IP address:	192.168.1.254 *
Lease duration:	<input type="checkbox"/> Permanent lease
	1 day(s) 0 hour(s)
DNS Domain:	
Primary DNS server address:	192.168.1.1
Secondary DNS server address:	192.168.1.1

DNS Server Configuration

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.

DNS Server Configuration

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:-

Name	Connection Type	Connection
nas_0_65	Bridge	Conne
nas_0_38	PPPoA	Conne

nas_0_38

WAN connection: ☒ Enable

VPI/VCI: 0 / 38

Service list: ☒ INTERNET ☒ TR069

Port binding: ☐ LAN1 ☐ LAN2
☐ SSID1 ☐ SSID2

Connection type: PPPoA

NAT: Enable

Primary DNS:

Secondary DNS:

Service type: UBR Without PCR

Encapsulation mode: VCMUX

Authentication mode: Auto

Connection trigger: AlwaysOn

DNS Server Configuration

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

WAN Connection		
Name	Connection Type	Connection
nas_0_65	Bridge	Connec
nas_0_38	PPPoA	Connec

nas_0_38	
WAN connection: <input checked="" type="checkbox"/> Enable	
VPI/VCI: 0 / 38	
Service list: <input checked="" type="checkbox"/> INTERNET <input checked="" type="checkbox"/> TR069	
Port binding: <input type="checkbox"/> LAN1 <input type="checkbox"/> LAN2	
<input type="checkbox"/> SSID1 <input type="checkbox"/> SSID2	
Connection type: PPPoA	
NAT: Enable	
Primary DNS: 8.8.8.8	
Secondary DNS: 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.

DNS Server Configuration

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:-

Product: DSL-3680

D-Link

DSL-3680 // **SETUP** **ADVANCED** MA

Port Forwarding
QoS Setup
Outbound Filter
Inbound Filter
DNS Setup
VLAN
Firewall & DMZ
Advanced ADSL
Advanced Wireless
Wi-Fi Protected Setup
Wireless Mac Filter
Advanced LAN
Remote Management

DNS SETUP

Domain Name Server (DNS) is a server that translates URL/domain
Most users will not need to change the DNS servers from default

The DDNS feature allows you to host a server (Web, FTP, Game S
have purchased (www.whateveryournameis.com) with your dyna
Internet Service Providers assign dynamic (changing) IP addresse
friends can enter your host name to connect to your game server

DNS SERVER CONFIGURATION

☒ Obtain DNS server address automatically

☐ Use the following DNS server addresses

Preferred DNS Server: 0.0.0.0

Alternate DNS Server: 0.0.0.0

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:-

Product Page : DSL-3780

D-Link®

DSL-3780 // **SETUP** **ADVANCED** MAINTENANCE

Advanced Wireless
Virtual Server
Applications
DMZ (Exposed Host)
Parental Control
Filter
Advanced ADSL
Firewall
DNS
Dynamic DNS
Network Tools
Routing
Logout

DNS

DNS server is used for translating a URL to an IP address.

DNS SERVER CONFIGURATION

☒ Obtain DNS server address automatically

☐ Use the following DNS Server address

Preferred DNS server : 10.244.1.10

Alternate DNS server : 10.244.1.10

Add/Apply

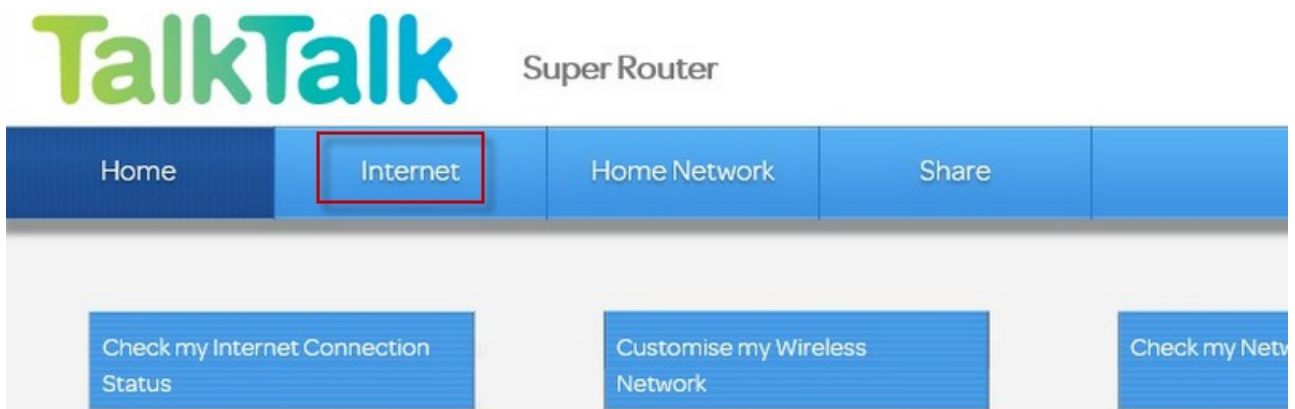
DNS Server Configuration

HG633 & HG635 routers

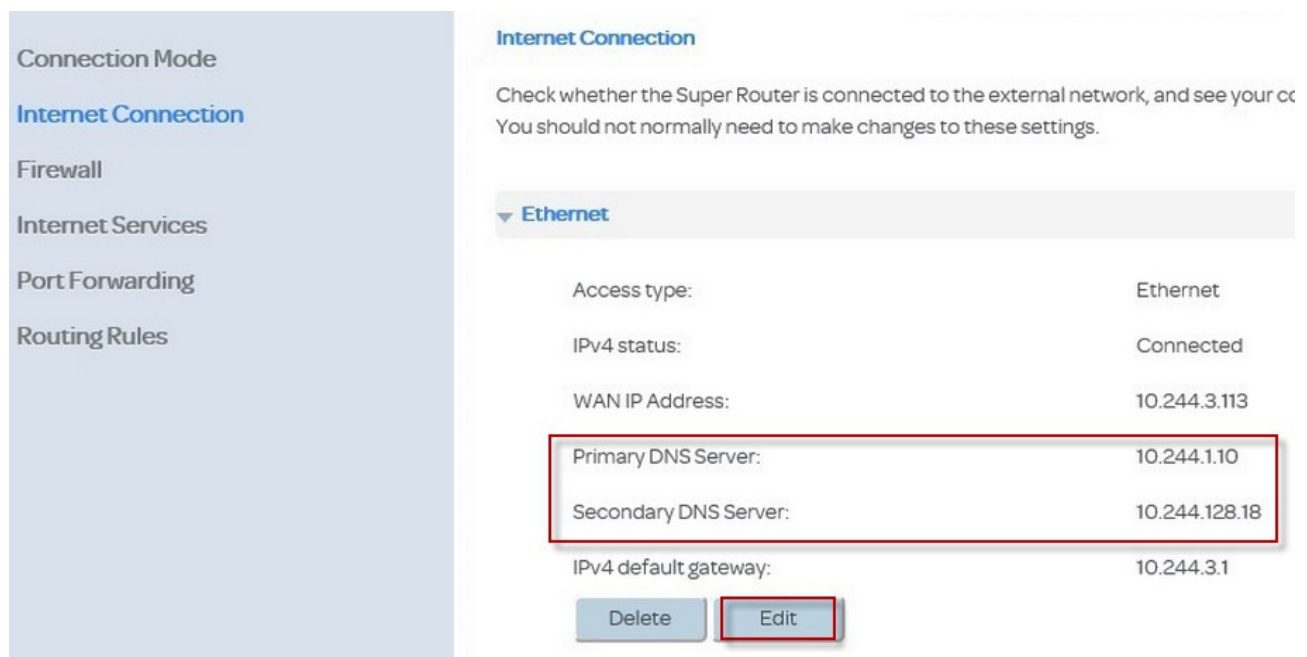
Note: if these are entered under the DHCP config, the router will automatically delete them, as it is the wrong place to hand out network DNS servers. To understand the reasons behind this, please see my technical blog on this subject:-

<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:-



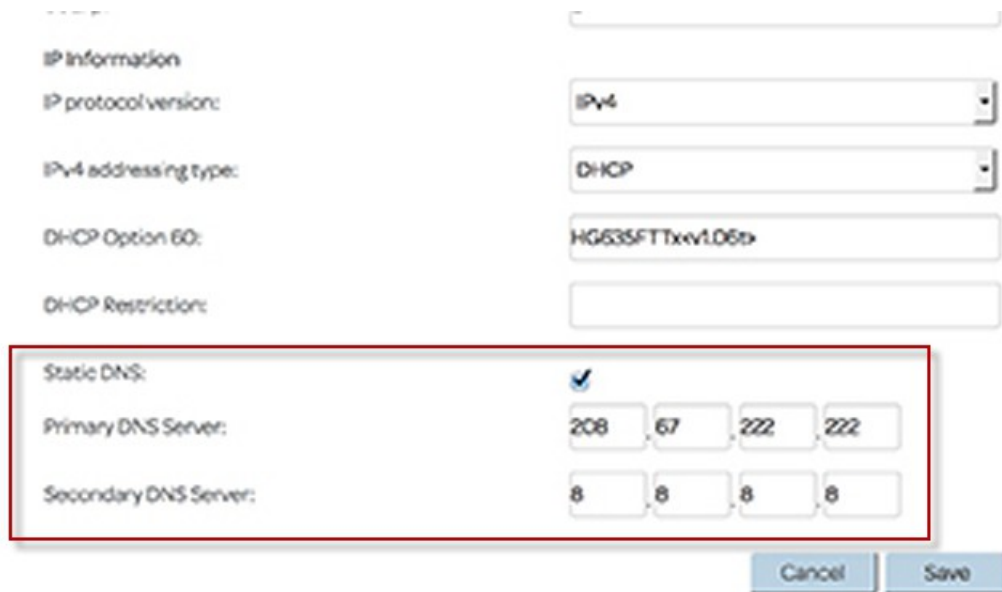
DNS Server Configuration

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

Basic Information	
Enable connection:	<input checked="" type="checkbox"/>
Name:	Ethernet
Service type:	<input checked="" type="checkbox"/> INTERNET <input checked="" type="checkbox"/> TR069
Connection type:	IP routing (IP) <input type="button" value="v"/>
MTU:	1500
MSS:	0
NAT type:	NAPT <input type="button" value="v"/>
Link Information	
Enable VLAN:	<input type="checkbox"/>
IP Information	
IP protocol version:	IPv4 <input type="button" value="v"/>
IPv4 addressing type:	DHCP <input type="button" value="v"/>
DHCP Option 60:	HG635FTTx<v1.04t>
DHCP Restriction:	
Static DNS:	<input type="checkbox"/>

DNS Server Configuration

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



The screenshot shows a configuration form for DNS settings. The form includes several input fields and a section for static DNS configuration. The 'Static DNS' section is highlighted with a red border. The 'Primary DNS Server' is set to 208.67.222.222 and the 'Secondary DNS Server' is set to 8.8.8.8. The 'Save' button is visible at the bottom right.

IP Information	
IP protocol version:	IPv4
IPv4 addressing type:	DHCP
DHCP Option 60:	HG635FTTxv1.06tr
DHCP Restriction:	
Static DNS:	<input checked="" type="checkbox"/>
Primary DNS Server:	208.67.222.222
Secondary DNS Server:	8.8.8.8

Cancel Save