



Correctly Configuring DNS + NTP for Diplomatic Centers of Nations like Embassys + Consulates

Authored by: Dr. Simon A. Roberts <wishcraft@users.sourceforge.net>

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Requirements for Local Site's Networks + WIFI

You will require two physical machines, I am suggesting you look at using an ARM Processor which is the same as in modern phones and conveniences, there is one which comes loaded with what is needed called a: Raspberry Pi which you will need two of these with wifi USB Key as well as USB Memory Stick for any storage purposes.

These in the local site are good cause they produce little or any heat, you can put it in the roof where it can be connected too the mains power, the devices both of them are put on fixed IP Address with the router and the site wifi with the mac network addresses of each enabled in the router as well, as these two IP Addresses for each Raspberry Pi become the primary and secondary DNS in the site routers.

Configuration of each one would be similar configuring as seen in the document here as primary and secondary DNS in this document:

<https://sourceforge.net/projects/chronolabs-cooperative/files/Documents/Creating%20NTP%20DNS%20Nodes/>.

One you have established that you would enable PNP or set up port forward to the IP with port 53 → 53 + 123 → 123 + 80 → 8880 for raspberry pi one → port forwarded and for device two of the raspberry pi → port on router would be 53 → 54 + 123 → 124 + 80 → 8881 you would then arrange the dynamic DNS Script on each one as seen here:

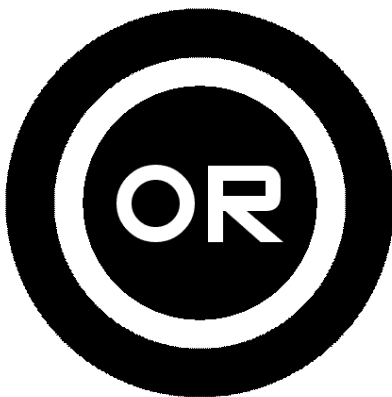
<https://github.com/Chronolabs-Cooperative/Zones-API-PHP/wiki/Example-PHP-Script-for-a-Dynamic-DNS> where you would change the defines the first five to something like this in the first raspberry pi:-

```
define('API_URL', 'https://zones.routes.gov.uk');  
define('API_USERNAME', 'fco.gov.uk-username');  
define('API_PASSWORD', 'fco.gov.uk-password');  
define('API_DOMAIN', 'routes.gov.uk');  
define('API_SUBDOMAIN', '1.paris.consulates.routes.gov.uk');
```

you would then change the defines the first five to something like this in the second raspberry pi:-

```
define('API_URL', 'http://zones.routes.gov.uk');  
define('API_USERNAME', 'fco.gov.uk-username');  
define('API_PASSWORD', 'fco.gov.uk-password');  
define('API_DOMAIN', 'routes.gov.uk');  
define('API_SUBDOMAIN', '2.paris.consulates.routes.gov.uk');
```

This would be say in the france paris british embassy and high commission as a consulate site in example; below I will discuss doing the port forwarding within the router itself without setting hardwired within it with 'iptables' in ubuntu with UPNP Networking



Auto Setting Local Area Network with UPNP

Below is a PHP Script that uses ubuntu IPTables with UPNP on your router to forward some common ports to the local network device.

```
<?php
```

```
// sudo apt-get install iptables iptables-persistent ifconfig
define('HTTP_PORT_EXTERNAL', 8880);
define('DNS_PORT_EXTERNAL', 53);
define('NTP_PORT_EXTERNAL', 123);
define('SSH_PORT_EXTERNAL', 21);
define('HTTP_PORT_INTERNAL', 80);
define('DNS_PORT_INTERNAL', 53);
define('NTP_PORT_INTERNAL', 123);
define('SSH_PORT_INTERNAL', 21);
define('INTERNAL_IPMASK', '192.168');

$output = array();
exec('ifconfig', $output);
foreach($output as $line) {
    $parts = explode(' ', $line);
    $parts = array_unique($parts);
    foreach($parts as $element) {
        if (substr($element, 0, strlen(INTERNAL_IPMASK)) == INTERNAL_IPMASK)
            define("IPADDRESS", $element);
        if (defined('IPADDRESS'))
            continue;
    }
    if (defined('IPADDRESS'))
        continue;
}

shell_exec('iptables -t nat -A PREROUTING -i lo+ -p tcp --dport ' .
HTTP_PORT_EXTERNAL . ' -j DNAT --to-destination
'.IPADDRESS.':'.HTTP_PORT_INTERNAL);
shell_exec('iptables -t nat -A PREROUTING -i lo+ -p tcp --dport ' .
DNS_PORT_EXTERNAL . ' -j DNAT --to-destination
'.IPADDRESS.':'.DNS_PORT_INTERNAL);
shell_exec('iptables -t nat -A PREROUTING -i lo+ -p tcp --dport ' .
NTP_PORT_EXTERNAL . ' -j DNAT --to-destination
'.IPADDRESS.':'.NTP_PORT_INTERNAL);
shell_exec('iptables -t nat -A PREROUTING -i lo+ -p tcp --dport ' .
SSH_PORT_EXTERNAL . ' -j DNAT --to-destination
'.IPADDRESS.':'.SSH_PORT_INTERNAL);
```

```
?>
```

With this piece of script it will forward with UPNP Network the ports from internal to external the routing NAT Translation Table on the Internal Local Network.

Setting up the Primary NTP Service

You then need to set up the primary NTP Service using the library for <http://ntp.snails.email> you find on our github.com as well as gits on sourceforge.net you put all the dynamic host names in the embassy fallout on an independent machine on the route: ntp.consulates.routes.gov.uk listing in /etc/ntp.conf things like:

```
pool 1.paris.consulates.routes.gov.uk:123 iburst
pool 2.paris.consulates.routes.gov.uk:124 iburst
pool 1.newyork.consulates.routes.gov.uk:123 iburst
pool 2.newyork.consulates.routes.gov.uk:124 iburst
pool 1.canberra.consulates.routes.gov.uk:123 iburst
pool 2.canberra.consulates.routes.gov.uk:124 iburst
server ntp.routes.gov.uk
```

Once you have ntp.consulates.routes.gov.uk running in the embassy site the router time is set to this address, not the primary overall ntp.routes.gov.uk which is a separate machine which would be all the external basis of time even mirrors from ntp.snails.email

Setting up the Primary + Secondary DNS Services

Say your setting up PowerDNS on your primary and secondary DNS, you put for supermasters all the 1.paris.consulates.routes.gov.uk:53 + 1.paris.consulates.routes.gov.uk:54 as well as your providers ones for ns1 - ns8 .routes.gov.uk which can also have names you will never need more than 8 DNS Providers at anyone time...