

Configure Multiple Gateways *Example*

The basic network configuration tools in Linux provide the ability to configure a maximum of one default gateway. However, with advanced routing techniques, specifically static routes, you can configure multiple gateways.



The purpose of this document is to provide an example for adding static routes to the network configuration of EndRun Time Servers. Required syntax of the `route` command as well as the basic configuration needed to support static routes will be covered. All EndRun products with dual Ethernet ports support advanced routing – namely, Sonoma Network Time Servers, the Tycho II and Meridian II Precision TimeBases and the RTM3205 Precision Timing Module.

OVERVIEW

In this example, static routes must be added to one of the time servers because two gateways are required. A description of the application including a system diagram and the network configuration of each client and server

is covered in the Example section. The Instructions section shows how to configure and test two EndRun Time Servers and a Linux Client to achieve the results as shown in the Example.

EXAMPLE

The objective of this system is to serve time on two routable networks from one Sonoma D12. See Figure 1 on next page.

Network 1:

Stratum 1 Time Server (Sonoma D12 GPS)

eth0:

IP: 192.168.1.6

Netmask: 255.255.255.0

GW 192.168.1.1

Linux Client (Dell PC running Slackware 13.1 distribution)

eth0:

IP: 192.168.2.7

Netmask: 255.255.255.0

GW 192.168.2.1

Network 2:

Stratum 1 Time Server (Sonoma D12 GPS)

eth1:

IP: 10.5.1.3

Netmask 255.255.255.0

GW 10.5.1.1

Stratum 2 Time Server (Sonoma D12 GPS with antenna disconnected)

eth0:

IP: 10.5.2.4

Netmask: 255.255.255.0

GW 10.5.2.1



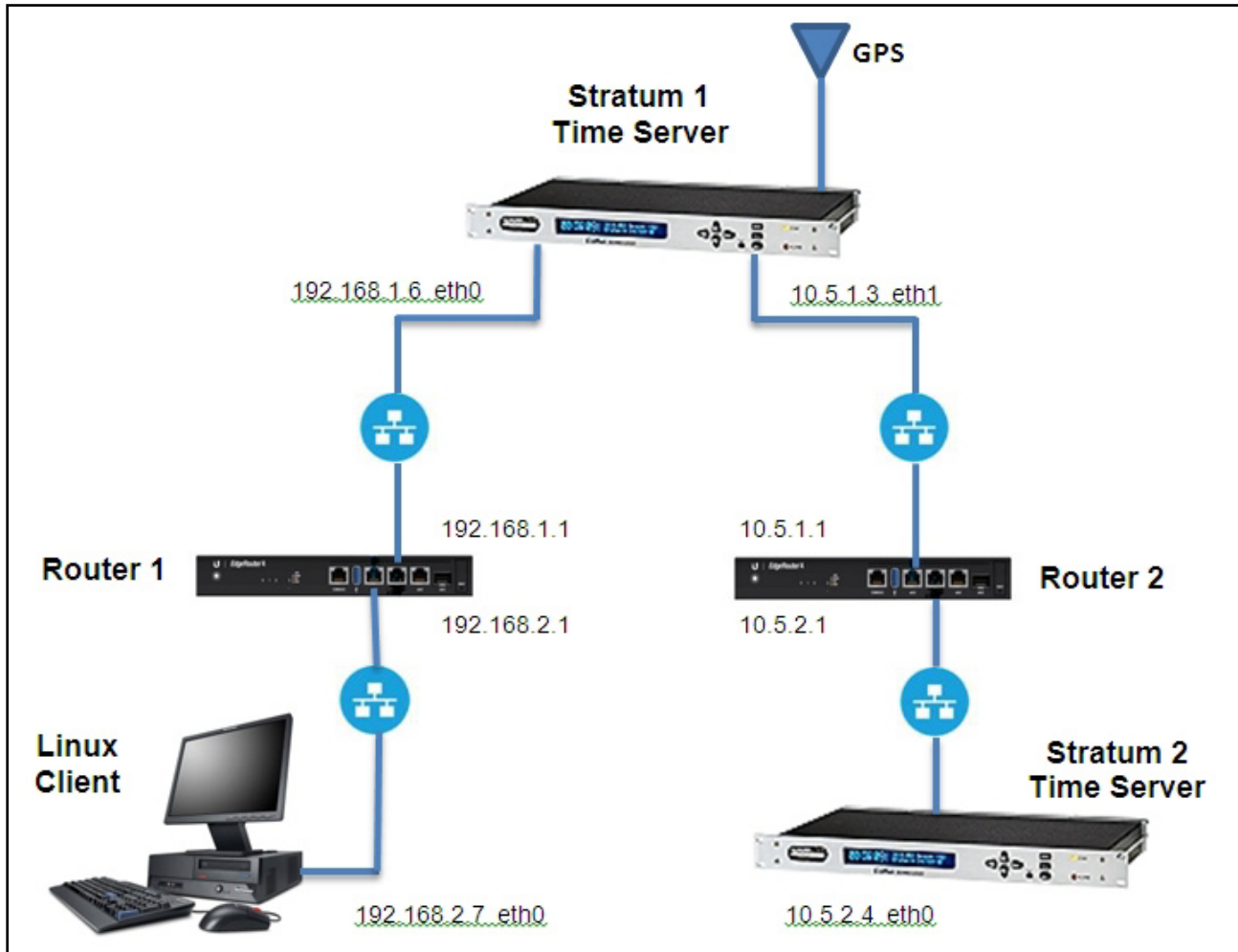


Figure 1. Example Network Diagram

INSTRUCTIONS

Perform the steps below to configure the Stratum 1 Time Server, Stratum 2 Time Server and Linux Client for operation as shown in Figure 1.

Configure Stratum 1 Time Server

1. Use the interactive script

```
netconfig
```

or front-panel keypad to setup IPv4 configurations as shown below. Notice how the default gateway is not configured.

```
eth0: IP = 192.168.1.6, Netmask = 255.255.255.0, Default Gateway = None (000.000.000.000)
eth1: IP = 10.5.1.3, Netmask = 255.255.255.0, Default Gateway = None (000.000.000.000)
```

2. In your editor of choice ("Joe's Own Editor" or "vi") open the file `/etc/rc.d/rc.M` and find the following comment banner:

```
#####
#                               ATTENTION
# This is where you should add any IP aliases or static routes,
# before the various daemons are started...
#####
```

-
3. Immediately below the banner found in the previous step, add the following static route commands. These commands will run each time the EndRun Time Server is powered up or rebooted:

```
/sbin/route add -net 192.168.2.0 netmask 255.255.255.0 gw 192.168.1.1  
/sbin/route add -net 10.5.2.0 netmask 255.255.255.0 gw 10.5.1.1
```

4. Save the changes made in the previous step and exit the editor. Then make the changes persistent by sending the command:

```
cp -p /etc/rc.d/rc.M /boot/etc/rc.d
```

5. Reboot the unit by sending command:

```
reboot
```

Configure Linux Client

The network interface for the Linux Client should be setup as follows:

IP = 192.168.2.7 Netmask = 255.255.255.0 Default Gateway = 192.168.2.1

Configure Stratum 2 Time Server

Use the interactive script

```
netconfig
```

or the front-panel keypad to setup IPV4 configuration as follows:

eth0: IP = 10.5.2.4, Netmask = 255.255.255.0, Default Gateway = 10.5.2.1

Test the Routes

Test the routes by pinging across networks in both directions and sending the `route` command. If all goes well, the Stratum 1 Time Server should be ready to serve time on both networks.

Ping Between Stratum 1 Time Server eth0 and Linux Client eth0

1. Enter command from Stratum 1 Server command line:

```
ping 192.168.2.7
```

2. Enter command from Linux Client (Dell PC) command line:

```
ping 192.168.1.6
```

Ping Between Stratum 1 Time Server eth1 and Stratum 2 Time Server eth0

1. Enter command from Stratum 1 Time Server command line:

```
ping 10.5.2.4
```

2. Enter command from Stratum 2 Time Server command line:

```
ping 10.5.1.3
```

Send Route Command from Stratum 1 Time Server

Enter command from Stratum 1 Time Server command line:

```
route -n
```

Expected results are in the routing table below.

Kernel IP routing table

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
localnet	*	255.255.255.0	U	0	0	0	eth1
10.5.2.0	10.5.1.1	255.255.255.0	UG	0	0	0	eth1
loopback	*	255.0.0.0	U	0	0	0	lo
localnet	*	255.255.255.0	U	0	0	0	eth0
192.168.2.0	192.168.1.1	255.255.255.0	UG	0	0	0	eth0