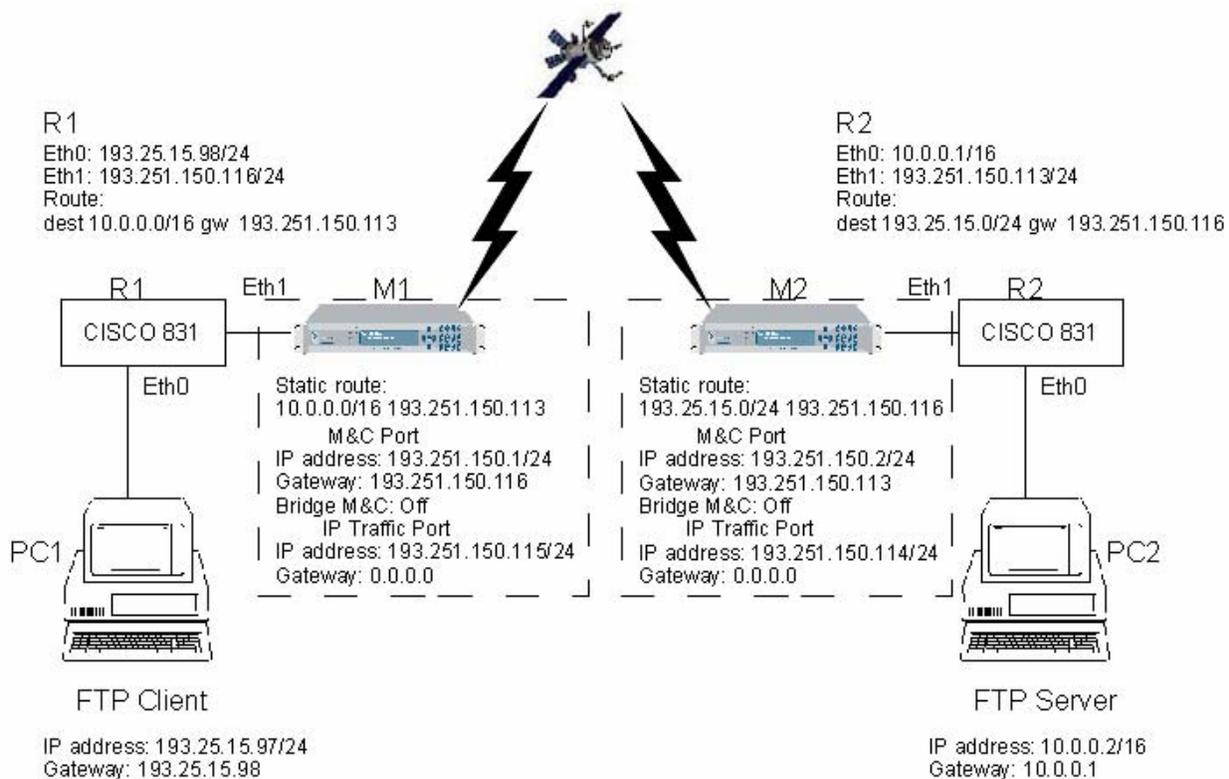## FTP File Transfer Example

Paradise Datacom's TCP Acceleration feature significantly improves satellite bandwidth utilisation when using TCP for file transfers, Internet downloads, etc. This application note describes a typical network scenario and explains how to configure each element of the system for correct operation. It covers diverse aspects of configuration including when to use static routes and set default gateways. It also covers common configuration faults.

The network scenario covered by this application note is shown below and shows an FTP client transferring files to and from a remote FTP server.

Static Route and Gateways

A *static route* defines how a network device forwards IP packets destined for a specific network. A static route involves defining an IP address and a subnet mask (which together identify the destination address of the particular packets to be routed) plus a gateway (that defines where the packets are to be sent). A *default gateway* acts as a route of last resort and is used to forward all packets that are not either bridged or handled by a static route. In TCP Acceleration mode, all UDP packets are bridged (meaning that the modem learns automatically where to send them) whereas all TCP packets must be routed if they are on a different subnet to the modem.

R1
Eth0: 193.25.15.98/24
Eth1: 193.251.150.116/24
Route:
dest 10.0.0.0/16 gw 193.251.150.113

R2
Eth0: 10.0.0.1/16
Eth1: 193.251.150.113/24
Route:
dest 193.25.15.0/24 gw 193.251.150.116

R1 — CISCO 831 — Eth1 — M1
Eth0

Static route:
10.0.0.0/16 193.251.150.113
M&C Port
IP address: 193.251.150.1/24
Gateway: 193.251.150.116
Bridge M&C: Off
IP Traffic Port
IP address: 193.251.150.115/24
Gateway: 0.0.0.0

M2 — Eth1 — R2 CISCO 831
Eth0

Static route:
193.25.15.0/24 193.251.150.116
M&C Port
IP address: 193.251.150.2/24
Gateway: 193.251.150.113
Bridge M&C: Off
IP Traffic Port
IP address: 193.251.150.114/24
Gateway: 0.0.0.0

PC1 — FTP Client
IP address: 193.25.15.97/24
Gateway: 193.25.15.98

PC2 — FTP Server
IP address: 10.0.0.2/16
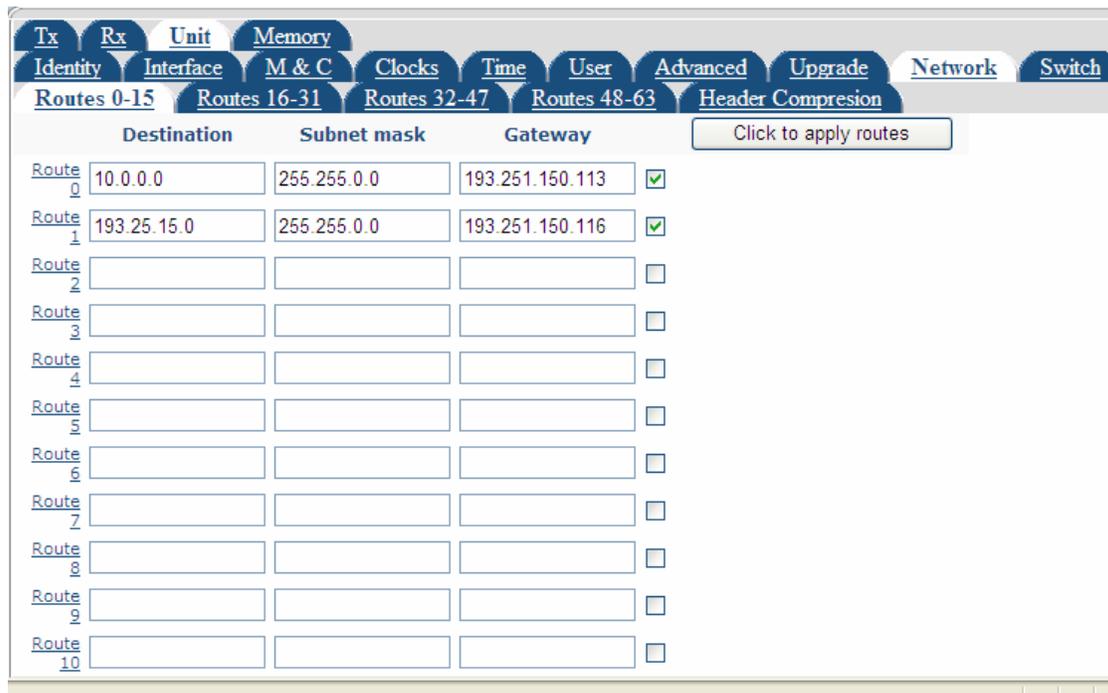Gateway: 10.0.0.1

Static Routes and Gateways (continued)

Within the Evolution Modem, two default gateways can be defined:

▶ **The Remote Control Port default gateway.** This is used to define a default gateway for the base Modem. It is used when TCP acceleration is being used on the base Modem.

▶ **The IP Traffic Port default gateway.** This is used to define a default gateway for the P3714 IP Traffic card option when this is fitted. It is used only when TCP acceleration is employed on the IP Traffic card.

A default gateway need not be defined (i.e. it can be set to 0.0.0.0) if the forwarding of all IP packets is handled by static routes. However, it can be useful as it acts as a 'catch all' for cases that the static routes are not explicitly designed to handle.

In the example shown, one static route has been defined per Modem along with a default gateway. For Modem M1, the static route tells the Modem that IP packets being sent from PC1 and destined for PC2 should be sent to Router R2, which will forward them on. Without this information, Modem M1 would have no way of knowing how to pass information on to PC2. The default gateway in Modem M1 will forward packets going in the other direction from PC2 to PC1 to Router R1. It is possible to remove the default gateway (by setting it to 0.0.0.0) and add a second static route via the web user interface on M1 to handle forwarding PC2 packets to Router R1, as shown below.

A similar change can be made for Modem M2. It is also possible to define a default gateway in addition. This is useful for handling packets destined for other networks, e.g. Internet traffic.
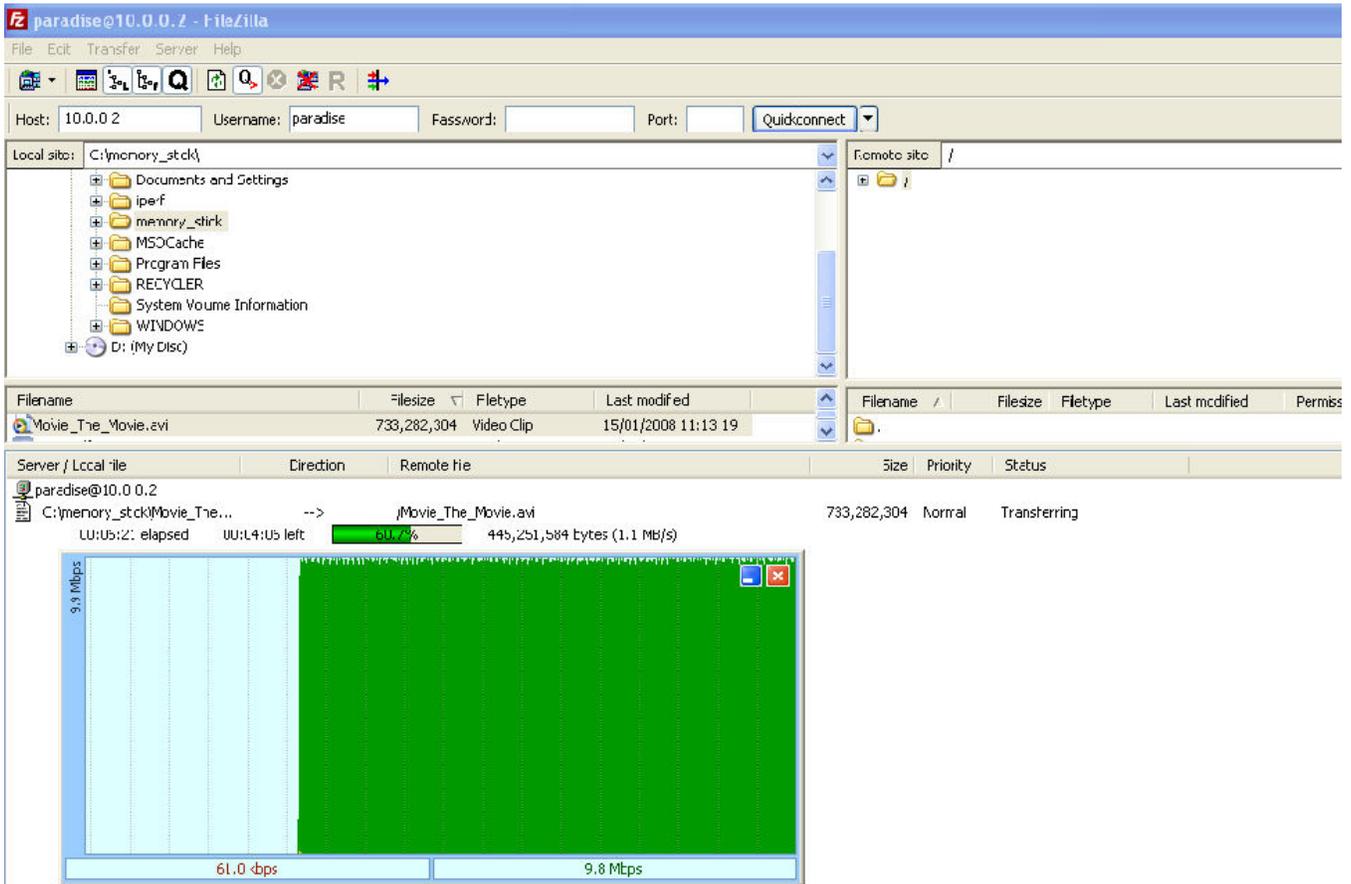
	Destination	Subnet mask	Gateway	
Route 0	10.0.0.0	255.255.0.0	193.251.150.113	☑
Route 1	193.25.15.0	255.255.0.0	193.251.150.116	☑
Route 2				☐
Route 3				☐
Route 4				☐
Route 5				☐
Route 6				☐
Route 7				☐
Route 8				☐
Route 9				☐
Route 10				☐

Tabs: Tx | Rx | Unit | Memory / Identity | Interface | M & C | Clocks | Time | User | Advanced | Upgrade | Network | Switch / Routes 0-15 | Routes 16-31 | Routes 32-47 | Routes 48-63 | Header Compresion | Click to apply routes

Adding a Second Static Route to Modem M1

FTP Application

In this case FileZilla was used as the FTP client and server, by way of example. DU Meter was used to monitor throughput performance. The results are shown below.

Common Configuration Faults

▶ Ensure that any firewall is either disabled or is set to pass traffic correctly. From each PC you should be able to ping each IP address in turn starting with the local router and then the Modems, the far router and the other PC. Often it is a firewall that prevents the pings from succeeding.

▶ Make sure that the static routes are valid. For example, a static route IP address of 10.0.0.2 and net mask of 255.255.0.0 is invalid and should be specified as 10.0.0.0 and 255.255.0.0 for this example (or as 10.0.0.2 and 255.255.255.255).

▶ Ensure there are correct file permissions to allow the FTP transfers to succeed using the options under FileZilla server Edit/Users/Shared Folders. Ensure also that the transfer file is not still open at the server as the result of a previous failed transfer attempt.

▶ If specifying a default gateway for a Modem, ensure that you use the Remote M&C Port default gateway when using base Modem TCP acceleration and the IP Traffic Port default gateway when using the P3714 IP Traffic card.

▶ If acceleration does not work, switch the IP mode on both Modems to Bridge mode and attempt a file transfer. If this works then it indicates that a static route or gateway is incorrectly defined. If the FTP application indicates that a connection request has been refused, this also indicates an incorrect route or gateway definition.