Globalstar

Multi Channel Modem (MCM-4e)

ePipe Training Presentation

September 2006
High Level Architecture

- **Internet**
- **FTP Server**
- **HTTP Server**
- **Globalstar**
- **MCM**
- **Globalstar Gateway**
- **Internet Public Site**
- **Private Network 192.168.80.0**
- **DHCP Server**
- **VPN Tunnel**
- **Globalstar Bonding Center**
- **ML-IP E-Pipe 2202**
- **Bonding Server**
- **Firewall**
- **For future MCM-4M**

Recombines the 4 parallel data channels into original data streams sent by end user.

Can be located at customer premises.
Accessing the MCM-4e (Using TCP/IP)

Fig 1. Telnet

Fig 2. Browser
Accessing the MCM-4e (Console Port)

Fig 3. Accessing e-Pipe Console Port
Assigning an IP address to MCM-4e

Fig 4. Show Ethernet Command
Configuring DHCP

- DHCP is a protocol for configuring workstations and devices in the local LAN
- Primary role is to provide basic IP configuration information (IP addresses, gateways, DNS servers)
- MCM-4e are configured with a default subnet mask of 28 bits and 4 bits addressing
- To setup and/or change DHCP use the command line interface (not supported via GUI)

Fig 5. Show Internet DHCP Server Command
Configuring DHCP (Cont)

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Fig 6. Show Internet DHCP Server Command
MCM-4e Modem Port Configuration

To allow a connection of a modem port, use the following instructions using the GUI:

• Go to ADVANCED -> PORT
• Then configure each of the 8 available ports on the unit.
• The configuration of each of them will be:
  – Name: Port_name
  – Speed: 38400
  – Character Size: 1
  – Parity: NONE
  – Flow Control: Hardware
  – Stop Bits: 1

Figure 7 Displays an standard port setup
MCM-4e Internet Links

To setup the internet service provider account information from the GUI do the following:

- Go to ADVANCED -> LINKS
- Select New Dial Up Link
- The configuration of each of them will be:
  - Dialup Link Name: ISP_name
  - Phone Number: #777 (G* Universal Code)
  - Username: Not Needed
  - Password: Not Needed
- Click Next
- Select Obtain IP address automatically (G* Gateway will assign a dynamic IP address)
- Figure 8 and 9 Displays the two steps to setup the internet links

Fig 8. Port Configuration

Fig 9. Link Address Details
MCM-4e Internet Links (Cont)

To configure the Modem:
- Modem Type: Custom Script
- Checkbox Selected: Customer specific
- Custom Script: ate1v1q0 TIMEOUT 10
  OK-ate1v1q0-OK atz OK \c MODEMID gstar_p1 - \c ABORT BUSY ABORT
  NO\sCARRIER ABORT
  NO\sDIALTONE ABORT VOICE
  TIMEOUT 25 - atdt\T CONNECT \c SPEED-\r
- Port Number: Select the port number being configured

Click on Configure
- Then it will show the dialup link configured and the port associated to it. Repeat this procedure 8 times (8 modems)
- Figure 10 and 11 shows how to perform the modem configuration
MCM-4e Connection Bundle Setup

- Connection Bundle manager creates new bundles from groups of internet links.
- Using the GUI the configuration will be as follows:
  - Go to ADVANCED -> BUNDLE
  - then click on “Create new Bundle”
    - Add new bundle name
    - Click on bundle name and then click on “Add an existing link” as shown in fig 12
    - Click on the drop down box to choose the corresponding dialer for that link

Fig 12. Connection Bundle Manager

Fig 13. Connection Bundle Manager
MCM-4e Connection Bundle Setup (Cont)

To enable the bundle (Start dialing the #777 universal data number:

- Go to ADVANCED -> SUMMARY
- Click on the On-Off switch on the left side
- The switch will turn green and all modems will start dialing to establish simultaneous PPP connections with the G* gateway.
- Figure 14 shows how to browse the Bundle and the Internet link associated to it.

### Advanced - ePipe Configuration Summary

The Configuration Summary shows the relationship between VPN tunnels, Connection Bundles, Internet Links and Serial Ports/Ethernet.

<table>
<thead>
<tr>
<th>VPN Tunnel</th>
<th>Bundle</th>
<th>Internet Link</th>
<th>Serial Port</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>bundlatest</td>
<td>global1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>DB</td>
<td>global2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>global3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>global4</td>
<td>4</td>
</tr>
</tbody>
</table>

**Fig 14. Bundle Setup**
Configuring Site to Site VPN

- The site to site VPN feature allows multiple MCM-4e to establish virtual private networks between each others.
- This technology enables a “bundle” of modems to be used as single connection for the transmission of the VPN traffic.
- To configure a VPN go to ADVANCED -> VPN -> (if there is no VPN created the VPN wizard will ask you to create one)
  - Select an Internet connection bundle (explained in the previous slide)
  - Select logical name for the VPN
  - In the fixed IP address select the IP address of the server at the other end of the VPN tunnel
  - The TCP port by default is port 2000 and the fragmentation length is 800 (can be modified depending on the application)
  - Click on Next
Configuring Site to Site VPN (Cont)

• Then configure the VPN gateway add the addresses of the networks to be reached through the VPN tunnel.

• Figure 16 shows how to setup the internet address to be routed through the tunnel.

• The last step is to configure the security settings of the VPN Tunnel, select the local and remote SPI values as shown in figure 17.

• Click on configure.
MCM-4e Filter Setup

The traffic filter manager configure filters and allows to select the type of traffic that may traverse a network and how that traffic affects bandwidth decisions.

To configure the traffic filters click on ADVANCED -> FILTERS

- Create new filter by selecting “New Traffic Filter”
- Name the filter using a name that suites the filter’s purposes
- Select Next
- Add rules to the filter using “Add Rule” and “Advanced Rule” buttons
- Click on Configure to save the changes
- Figure 18 displays the standard traffic filter rule window

Fig 18. Traffic Filtering Rules
The MCM-4e bandwidth manager function dynamically control each satellite data modem, both to provide additional bandwidth and to remove excess of bandwidth.

To configure the dynamic bandwidth feature click on ADVANCED -> BUNDLE - > Bundle_name

- Select each of the 8 links by clicking on “Bandwidth” as shown in figure 19
- Select the Option “Only Connect this link when bandwidth is required (DYNAMIC)”
- Define the speed for 8000 bps
- Select “Use unlimited tries when attempting to connect to this link”
- Click on configure
- Figure 20 shows how to configure the bandwidth settings
MCM-4e Bandwidth Manager (Cont)

- Bandwidth Manager (cont)
  - Set the Maximum retries, stabilize time, retry time, lower and upper thresholds, and lower and upper time base
  - Figure 21 shows how to set these parameters

- To configure the link as static
  - Go to ADVANCED -> BUNDLE
  - Click on the bundle name
  - Select each of the 8 links by clicking on “Bandwidth”
  - Select the option “Connect this link regardless of whether the bandwidth is required (Static)”