Application Note – AN107

## DVStation-Remote and Serial Modem Dial-In

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This mechanism provides a cost effective means to connect to DVStation Remote via the serial port through an external modem.

Remote Problems, Remote Monitoring

The rising complexity of the network and its problems lies in direct conflict with the changes in organizational structure driven by economic realities. Today, the few skilled resources broadcasters are left with are being centralized to a few key locations. Problems *in the field* must often be resolved by operators on site – frequently with help over the phone from an engineer in the central office.
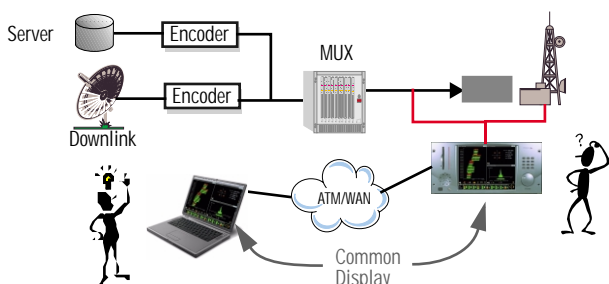
Operators with many geographically distributed facilities have additional problems where each of the many locations under remote control can have several downlinks, each with several transport streams, each possibly carrying many programs.

Performance and fault information must not be relegated to a single screen on a single device – but instead be widely available wherever it is needed. That could be from the monitoring of signals from un-staffed remote sites to the convenient control of systems in a facility through a corporate LAN, over the Internet, or even via dial-up analog modem.

Remote control should also be possible via SNMP-based network management systems such as CA Uni-center, SA/ Barconet's ROSA, or Hewlett-Packard's OpenView. All geographic boundaries must be removed for effective monitoring.


Remote Monitoring Strategies

To make network fault and performance alerts accessible at not only at the monitoring system itself but at the locations and in the form appropriate to the work flow of the organization *connectivity* to the remote systems and *user or machine* interfaces must be available.

Both configuration and results must be available. This control can be via direct user control – for example using a web browser, X-window client, or VNC client – or via direct control from a computer.

To maintain flexibility with the myriad of diverse systems now in operation, DVStation has been designed to quickly and easily integrate with both human-control and computer-control systems.
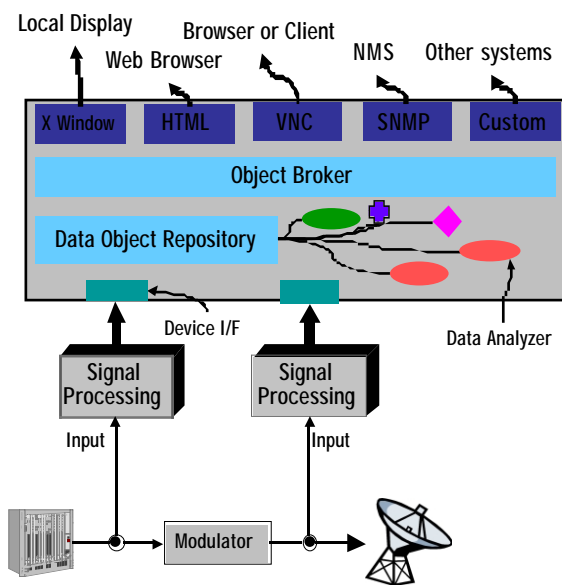
Unfortunately, because there still exists a wide gap in the level of network interconnection between sites — some companies may have high speed optical fiber or ATM connections, while other facilities are limited to dial-up connections, or even an occasional use data link via a cell phone.

This application note focuses on low speed data connections to remote sites using conventional dial-up modems.

Background

Both the 21-slot DVStation and the four-port DVStation-Remote has a serial port for remote user access via an external serial modem.

To connect to DVStation Remote, remotely located PC users can use Microsoft *Dial-up Networking* while Mac users can use the Apple *Remote Access* facility.

When a user dials in to the DVStation Remote, the modem connected to the DVStation will answer the phone and be connected automatically.

Internal to the Linux-based DVStation, software processes are started to validate the user login (authentication), and establish a PPP (Point-to-Point Protocol) link between the two systems.

Hardware Architecture

The DVStation-Remote hardware is built around a multi-purpose 1RU rack mount Pentium computer with a specially built controller board which provides a communication path to the external interface Pods, optional GPS antenna, and serial port.

Physically, the serial port is a 9pin D male connector mounted on the front panel.
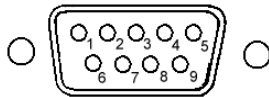
Pixelmetrix has tested and qualified the Aztech 56K external serial modem model number EM3900-U. However, modem support within Linux is quite extensive, so most Hayes compatible modems should work.

Software Components

All communication between the remote DVStation and the PC is done with the standard TCP/IP protocol. The connection mechanism is identical to your PC dialing into an internet service provider – login is first authenticated, and the TCP/IP data is conveyed with the PPP protocol.

Linux systems use a program called mgetty to monitor a serial port for incoming transactions. When a call is detected, mgetty then calls another program, login, which authenticates the user and allows access.

Once access has been granted, normal terminal users are passed to a command line shell. For remote control of DVStation, instead the PPP protocol is started which then allows full TCP/IP communication with the machine.

From that point, a web browser can be used to remotely monitor and control operations.

The following procedure describes how to enable login and authentication.

DVStation Settings

Note: It is strongly advisable to make a to backup copy of original configuration files before making any changes.

There are three files which require modification:

/etc/inittab

1. Open the file and locate the line which contains:

    5:2345:respawn:/sbin/mingetty tty5

    After that line, add the following new line:

    S0:2345:respawn:/sbin/mgetty ttyS0

/etc/mgetty+sendfax/login.config

1. Add the following line to the file:

    /AutoPPP/ -- /usr/sbin/pppd
2. Enable global debugging. Add these two lines:

    # set the global debug level
    debug 4
3. Locate and comment out the following line by adding "#" in front of the statement:

    #fax-id 49 115 xxxxxxxx

/etc/ppp/options.ttyS0

1. Assign an IP address to the remote PC by creating this file if it file doesn't exist and adding the following command to the file:

    <DVStation Remote ip address>: client PC/MAC ip address

    eg.
    192.168.1.1:192.168.1.100

Client PC/Mac Settings

Client configuration is almost identical to the procedures required to connect to an ISP.

PC Users (Win XP & Win 2000 Pro):

1. create a new connection from Dial-up Networking.
2. Choose the type of server as PPP.
3. Disable LCP Extensions.

Mac Users (OS 9.2 & above)

1. run remote access
2. select use TCP header Compression & Allow Error correction & compression in modem
3. uncheck connect to a command line host

When connected, a log in screen with prompt for username and password will appear. Log in as dvstation and password dvstat10n.

Upon successful verification of the user name, PPP will run automatically. After which you can launch your web browser to remotely monitor DVStation Remote.