

APPLICATION NOTE #1

Configuring Modems with Windows NT

If you plan to use PageMate software to send messages to pagers via a commercial paging service (*e.g.*, SkyTel, Cantel, PageNet, *etc.*), you will need to have a data modem, dedicated for paging use, connected to your computer. Sites with requirements for high message volume or redundancy may use up to ten modems connected to a computer running PageMate software. If you are not using modems with PageMate, the information provided here does not apply to you.

The modems you use with PageMate need to be dedicated to paging use for two reasons:

1. PageMate uses mechanisms for optimization and arbitration in modem allocation which assume that it has exclusive control of the modem ports. The arbitration software has no knowledge of any other applications that might be attempting to use these ports, and would be likely to conflict with or disrupt any other such use.
2. Data communications systems maintained by paging service providers are based on specifications that were defined many years ago and are generally inconsistent with the default settings of modems and de facto standards for telecommunications today. In order to communicate successfully via a modem with a commercial paging service company, you need to set up the modem in a way that is unique to paging. Most paging service companies require that your modem port be set up to send and receive data with 7-bit characters and even parity at 300-1200 baud with data compression and error correction disabled.

When setting up modems for use with PageMate under Windows NT 4.0 and later, you should *not* configure your ports as modems under NT. PageMate needs to manage and control all I/O operations on these ports, without interference from Windows NT. When ports are configured as modems under Windows NT 4.0 and later, NT tries to "manage" I/O operations on the port in conflict with PageMate. This is help that we are better off without.

You should be able to make a connection via HyperTerminal to the port(s) that you will use with PageMate. And you should be able, after connecting a modem, to type "AT" and get an "OK" response from your modem. Using "AT" commands, you should be able to set the operational characteristics of your modem to match the requirements of your paging service provider. In most cases, you should set your modem to operate at 1200 baud (together with other required characteristics), and save the set of all required characteristics in NVRAM.

If you have documentation provided by your modem manufacturer and you are comfortable setting modem NVRAM characteristics, you should be able to use with PageMate any modem that supports the Hayes command set. Suggestions for modem setup are provided in the *PageMate User's Guide*. If you want a plug-and-play solution, Systemetrics sells MultiTech modems, pre-configured and tested for use with PageMate for \$200 each.

Please note that the default speed for PageMate modems and the COM port used to connect to PageMate modems, formerly 300 baud, is now 1200 baud.

Clarifying Comm Parameters

The description of *Comm Parameters* provided in Table 6-1 of *PageMate Windows Server User's Guide*, Version 2.2-3, does not clearly describe the difference between

- a) setting characteristics of the serial (COM) port on your computer system and
- b) setting characteristics that your modem will use in communication with the network.

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Some clarification about how *Comm Parameters* affects each of these follows:

- In the absence of a specification of *Comm Parameters* in character positions 85-92 of a record in `networks.dat`, the default will be 7E1200.
- Specifications for character data size and parity (e.g., 7E or 8N) in *Comm Parameters* affect both the characteristics of the serial port on your computer and the characteristics of data that your modem will use in communication with the network.
- The specification for baud rate in *Comm Parameters* affects the characteristics of the serial port on your computer only. A specification for baud rate provided here will not, in general, have any effect on the data rate used in communication between your modem and your networks (paging service providers).
- To set or change the data transmission (baud) rate used in communication between your modem and the network, you must either specify a communications baud rate saved in your modem NVRAM or provide a *Setup String* specification in character positions 101-132 of the `networks.dat` record.

Unless it is mandatory that you use different baud rates to work with different networks, we strongly urge and recommend that you select a single baud rate for all of your communications and avoid the use of setup string specifications. Higher baud rates do not equate to higher message throughput or productivity, and almost all paging networks will work at 1200 baud.

If you have any questions about options for modem support, please call us or send e-mail to support@system.com.

HyperTerminal Primer

A scenario for testing modem communications via HyperTerminal on Windows NT 4.0 is shown below.

- If the modem you plan to use with PageMate is defined under Windows NT, delete it. Check your modem definitions via **Settings**→**Control Panel**→**Modems**. If an **Install New Modem** window is displayed, you have no modems defined under Windows NT. This is goodness. Click **Cancel** in the **Install New Modem** window.
- From your taskbar, select **Programs**, then **Accessories**→**Hyperterminal**→**HyperTerminal**. You should see a display that says, "You need to install a modem before you can make a connection. Would you like to do this now?" To this question, you should answer, "No".
- You will next see a display that prompts you to specify a name and select an icon. Specify any name that you like and any icon.
- You will next see a display that prompts you to enter details for the phone number you want to dial. Select the COM port to which your modem is connected, but do not enter a phone number. Click **OK**.
- You should next see displayed a panel that allows you to specify settings for the port. Specify 1200 baud, 7 data bits, Even parity, 1 Stop bit and Xon/Xoff flow control.
- You should now be connected to the modem with a blank screen display. Type **AT<CR>** (AT followed by carriage return). If the modem is connected and powered on, you should see "OK" in reply. If you do not see an "OK" reply, there is a problem that must be corrected before you can proceed. The modem may not be powered on, or there may be a problem with the cable or connection between your computer and the modem.
- After establishing communications with your modem via HyperTerminal, you can type commands to change and save NVRAM characteristics in your modem. If you have a MultiTech modem from Systemetrics, the required characteristics have already been set and saved. If you have a MultiTech ZDX-series modem from some other source, type the following commands:

```
AT&F8&F0&W0
```

```
ATM0X0&E0&E3&E13&E14%E5$E0&D0$MB1200$SB1200$BA0&W0
```

```
ATS0=0S7=60&W0
```

After entering each command, you should see an "OK" response. Terminate each line with carriage return. Note that all "0" characters in these commands are numeric zeros (not alphabetic O).

Suggested commands for use with some Hayes and U.S. Robotics modems are provided in the *PageMate Windows Server User's Guide*. If you have a choice of brands and models for your modem, we suggest that you do not use a high speed or "top of the line" modem. The slowest, least sophisticated modem you can find will work best. In configuring a modem for use with paging services, your task and objective is to set your modem up so that it will operate like a TeleType (brand) teleprinter. If your modem has any modern convenience functions (e.g., error correction or data compression) enabled, you will not be able to use it for communications with a paging service. You must have a complete listing of commands supported by your brand and model modem. You should be able to find this listing in the User's Guide provided with your modem.

- After all commands have been entered, select **File**→**Exit**. Windows NT will prompt you to confirm that you want to disconnect. Click **Yes**. You're done.

If your modem is connected via any port other than COM1:, you will need to edit the MODEM parameter in the Windows NT Registry as described in the *PageMate Windows Server User's Guide*. Otherwise, your PageMate modem setup is complete.