



BAS Dealer Information Note 06/15/98

Computer Hardware Configuration for BAS Sites

This Information will discuss the minimum acceptable hardware configuration for PCs used at BAS sites. Some common hardware problems and their causes are also discussed.

System Requirements

1. 133 MHz Pentium (66 MHz 486/DX2 is the minimum acceptable)
2. 16 Mb RAM (more if any other applications will be run along with BAS)
3. 1.2Gb hard disk
4. 3.5" 1.44 Mb floppy disk drive
5. 8x CD-ROM drive (Only required for installation of operating system software. Not used by BAS.)
6. 15" VGA color monitor (Bigger is always better. 14" is OK on sites not using Graphics Viewer.)
7. PS2 Mouse (Bus mouse OK, serial mouse is not.)
8. US Robotics 56K external modem connected to a comm port that uses a 16550 UART. (An internal modem will work fine in most cases but we have been able to improve reliability at most of our sites by switching to external modems. Modem speeds down to 14.4K deliver acceptable performance. Many other brands work fine as long as we list them in our modem configuration dialog. Whatever modem is used, it must not be configured for Plug-and-Play.)
9. 1 free comm port using a 16550 UART.
10. Windows 95 or Windows 98 operating system (Windows for Workgroups 3.11 works OK).

Comm Port Issues

One of the biggest problems with PC hardware on BAS sites is the Comm Ports. There are three causes for this:

1. Only two interrupts are generally available for Comm Ports on a PC. If more Comm Ports are installed, they must share an interrupt. This can cause problems if software tries to actually communicate with Comm Ports using shared interrupts.
2. If the system is using Windows 95/98 and the Comm Ports and/or modem are configured for Plug-and-Play, Windows will sometimes shift the interrupt being used by the device. This will not work for BAS.
3. All Comm Ports should have 16550 UARTs. The 16550 UART has a small built-in data buffer that prevents loss of data on multi-tasking operating systems. This has been strongly recommended by Microsoft since at least 1991 for any computer running Windows. We have recently seen several new Pentiums using 8250 UARTs. This is the original UART from the IBM-PC XT and has no buffer.

Resolving Comm Port Problems

To resolve Comm Port problems, take the following steps:

1. Limit the system to 2 Comm Ports, 1 for the modem and 1 for the trunk. This eliminates the use of a serial mouse. More than 2 Comm Ports can be safely used only if provided by a plug-in board made for that purpose with the appropriate Windows drivers.
2. Disable Plug-and-Play on the Comm Ports and/or modem. For Comm Ports integrated with the motherboard, this is generally done in the BIOS setup. Plug-and-Play on internal modems usually requires a change in jumper settings on the modem. Use the following settings: COM1 - IRQ4/IO=03F8-03FF, COM2 - IRQ3/IO=02F8-02FF.
3. Use an external modem. There is very little difference in price and a big improvement in reliability.

4. Replace any 8250 or 16450 Comm Ports with 16550 Comm Ports. A plug-in board with 16550 UARTs can be found for as little as \$10/each in single port and \$70/each in dual port configurations.

Preventing Comm Port Problems

For foolproof installations with the minimum hassle, take these steps:

1. Disable all Comm Ports provided with the PC.
2. Install an after-market plug-in 2 Port Serial Board that uses 16550 UARTs.
3. Set the 2 Port Serial Board to COM1 - IRQ4/IO=03F8-03FF, COM2 - IRQ3/IO=02F8-02FF.
4. Connect the trunk line to COM1.
5. Install a US Robotics Sportster 56K external modem on COM2.