INTELLIPORT II &
INTELLIPORT II EX
SUPPLEMENT
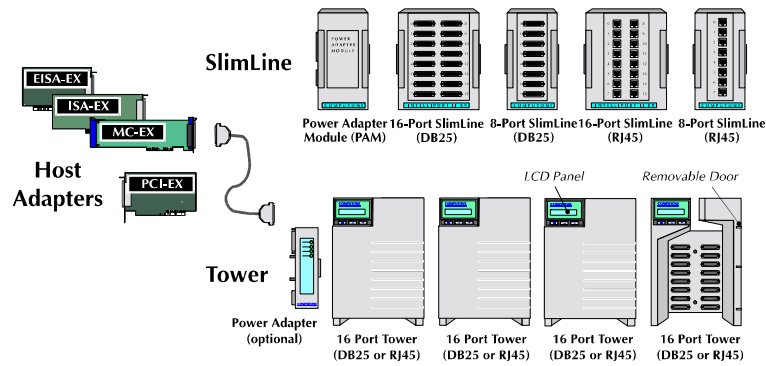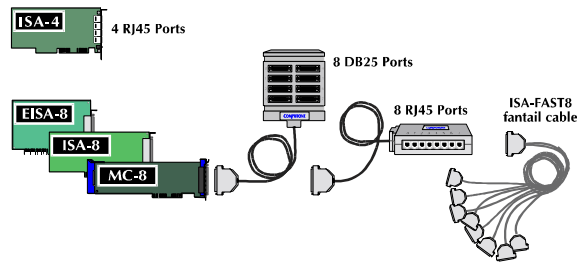
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Release Notes

IntelliPort II UNIX 3.2/XENIX Driver

Version 1.4.2

Introduction

This Release Note provides additional information for installing and using the IntelliPort II drivers on UNIX and XENIX systems. It supplements information found in the *IntelliPort II UNIX Software Reference Guide*.

If you are installing the IntelliPort II UNIX drivers for the first time, read the section "Product Installation/Removal" in this Release Note, and read the *IntelliPort II UNIX Software Reference Guide*, before you begin the installation. After installing the drivers, read the sections "Known Limitations" and "Additional Notes" in this Release Note.

If you are upgrading an existing IntelliPort II installation, read this entire Release note and the *IntelliPort II UNIX Software Reference Guide* before you begin the installation. The manual has been reorganized extensively and contains much new information.

Table of Contents

We recommend that you install the IntelliPort II software before the IntelliPort II hardware.

> **Important!** To avoid damage to hardware, always turn off the power to the system before you plug or onplug IntelliPort II cables or components.

Product Installation/Removal

Briefly, you install or update the IntelliPort II drivers using the *custom* utility (on SCO products) or the *sysadm* utility (on all other products). For detailed instructions, see Chapter 2 of the *IntelliPort II UNIX Software Reference Guide*.

While installing or removing the IntelliPort II drivers, keep the following in mind:

● Under AT&T/Interactive 3.2.2, the Editing Package as well as the kernel configuration kit must be installed.

● Under AT&T/Interactive 3.2.3, the Computone IntelliPort II Driver diskette must remain in the floppy drive during the entire installation procedure.

● During installation, you will encounter a series of menu screens. While these screens are displayed, the **F4** key returns you to the Main Menu instead of returning to the previous menu, as noted on the screen.

● You should select the "ALL" option during product installation and removal. This ensures that the file */etc/default/fip.d/FIP_NOTES* is copied onto the system. This file identifies all currently supported Computone IntelliFeatures.

Additions and Corrections

General

Installation & Setup Utilities

● We no longer lose existing board settings if the installation menu is aborted with the **F4** key.

Driver

● If a modem port was opened with O_NDELAY and the CLOCAL bit was then set with an ioctl, proper VMIN/VTIME operation was hindered and reads would return without delay.

- Setting IXANY and -IXON in previous releases would cause the XON (CTRL-Q) and XOFF (CTRL-S) characters to be removed from the input stream even though flow control was not enabled.

- Corrected problem with opens of the modem device. It was possible to succeed in the open of the modem device without DCD active if the port had previously closed while DCD was still active.

- Updated loadware to Ver. 1.6.2. Previous versions would give false failures on older boards.

- Corrected the problem of a host locking when we got a "board fatal" message from a MC board (or EISA set for level sensitive IRQ's.)

- Added code to prevent lockups when a ASIC-CEX board has 3 or more expansion boxes and sits idle for several minutes.

- Added support for write select when **osproc** is not set.

- Input data is more efficiently processed in the line disciplines.

IntelliFeatures

- Corrected problems with slow transparent printing. The IntelliPrint parameter **pause** now functions properly. In previous releases, this parameter was ignored.

- IntelliPrint profiles now default to *pause=5*. The values of **startdelay** and **pause** are in 1/10 sec. Each time the **startdelay** or **pause** expires up to 64 (if available) characters of transparent print data will be sent.

- An effort is now made to keep escape sequences sent to a transparent print device intact. They will not be broken up with screen data or printoff/printon sequences. The **escdelay** and **maxesclen** IntelliPrint profile parameters have been added in order tune this new feature.

- Added IntelliSet parameter **dsrreq**. This is used to ignore input unless DSR active.

- Corrected problem of not always clearing hardware flow control when changing IntelliSet profiles.

Cosmetic

- The installation menu now refers to the CEX type boards as "Expandable" without reference to the number of ports.

- The installation menu (specifying the number of ports per box for expandable cards) has rearranged where the board number appears.

- The I/O range and Slot Address fields in the installation menu will default to a more generic values when installing new boards.

- The driver will no longer display a warning message at boot time indicating a board is in 8-bit mode (SW-8). This message was causing concern among users of ASIC ISA-8 and ISA-4 boards. These boards appear to the driver as expandable boards with SW-8 set.

- The activity indicator will now spin counter clockwise during driver removal.

O/S Specific

SCO XENIX

- Xenix does not have the facilities to support PCI cards.

- In previous driver versions the print spooler could disable the printer after printing a job if the spool device was an IntelliPrint port.

SCO UNIX

- Additional support added for scancode mode

- Alternate screens no longer count against the max user license

- Alternate start and stop chars can now be set with TCSETA family of ioctls. (Previous versions only supported AIOCSETSS)

- Added support for PCI cards.

ISC/AT&T UNIX

- Previous releases of the IntelliPort II driver would not install properly under Interactive UNIX 4.1 because of a bug introduced with this O/S release. This version includes a work-around for this problem.

- The cton_8bit_???? entries we add to */etc/gettydefs* now include HUPCL.

- Duplicate entries for the main screen were being created in /etc/inittab during a new install. This has been fixed.

- We now have an entry (ip2_tty) in sysadm under Machine->Tty_managment to administer our ports. This is the same as typing "mkdev fip".

Default IntelliView Profiles

This section lists some of the IntelliView profiles included in the *intellicap* file and the hot-key sequences recognized by each profile. The profile names follow the convention described within the *intellicap* file itself.

Profile Name	Terminal Type	Next Screen Sequence	Screen Selection Sequences
wy60.2t	Wyse 60	[F12]	none
wy60.2pt, wy60.2pt.xon, wy60.2pt.cts	Wyse 60	[F12]	[CTRL][F1], [CTRL][F2]
wy60.3t	Wyse 60	[F12]	[CTRL][F1] - [CTRL][F3]
wy60.3pt, wy60.3pt.xon, wy60.3pt.cts	Wyse 60	[F12]	[CTRL][F1] - [CTRL][F3]
wy60_50.7p, wy60_50.7p.xon, wy60_50.7p.cts	Wyse 60	[F12]	[CTRL][F1] - [CTRL][F7]
a230.2pt, a232.2pt, tvi925.2pt	Ampex 230, Televideo 925	[SHIFT][F1]	(none)
microterm.2p	Microterm 6600	(none)	^JA, ^JB
tr170.3pt	Relisys TR170	[F12]	[CTRL][F1] - [CTRL][F3]
tv955.2p, tv955.2pt, tv955.2p.xon, tv955.2pt.xon, tv955.2p.cts, tv955.2pt.cts	Televideo 955	(none)	[SHIFT][F10], [SHIFT][F11]
dumb.8t	Dumb terminal	^A0	^A1 - ^A8

Manual Errata

On pages 3-9 and 3-13 of the *IntelliPort II Hardware Reference*, the first cable diagram (on both pages) has a wiring error. The diagram is for connecting modems to the IntelliPort II, and should look like this:
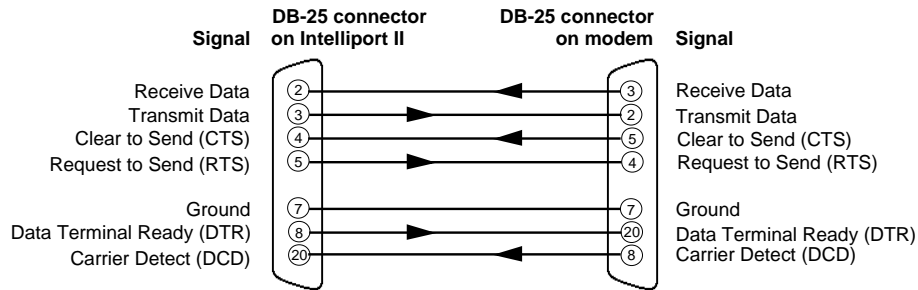
Known Limitations

The following are known limitations for using the IntelliPort II UNIX driver:

● Due to O/S limitations, PCI cards are not supported in the SCO Xenix driver.

● If you are running IntelliView and using **tab3** expansions, switching screens may cause a problem with the expansion.

● When under a heavy load, high speed input (such as 115,200 baud) may occasionally lose characters regardless of flow control settings.

● Transparent print data may be corrupted when logging off a terminal with a transparent print job active.

● Running *fip_reinit* or *mkdev fip* while flow control is continuously active on one or more ports may result in the program terminating with an error. This only happens if you run *fip_reinit* or *mkdev fip* after system initialization; the usual cause is that a printer is off-line and data is waiting to be sent to the printer.

● IntelliView and PC Term applications require 8-bit mode. However, AT&T/Interactive UNIX do not support this. Therefore we provide new *gettydefs* entries prefixed with *cton_8bit_* that can be used for this purpose. These entries do not circulate.

- Hot-key sequences (sent from the terminal to the host) are limited to seven (7) characters in length. Screen switch sequences (sent from the host to the terminal) are limited to 15 characters in length.

- If IntelliView screen switch sequences or IntelliPrint printer control sequences contain linefeed (0x0a) characters, and the port is in cooked mode, these are converted to CR/LF sequences. This does not happen when the port is in raw mode.

- IntelliSet **tab** and **onlcr** settings have no effect for Alternate screens.

- If your application turns off the cursor, some terminals do not restore the cursor when changing screens. This is a limitation of the terminal.

- Take care when using the following form of the *fipInit* command, where the environment variable TERM specifies an IntelliView profile:

```
fipInit icap_file < `tty`
```

This command changes the IntelliFeatures profile used by the current port. You would use this form of the *fipInit* command in a .login file, after a *tset* command, to assign an Intelli-Features profile to the port. This is useful mainly for dialup ports that may be used with various terminals. If you use this command, make sure any IntelliFeatures profiles that could be assigned with this command support the same number of screens or the results may be unpredictable.

Additional Notes

System Init (AT&T UNIX)

At system initialization, AT&T UNIX systems show assigned interrupt numbers in octal. For example, if you configured the IntelliPort II controllers to use IRQ 10, the system prints "irq=12" at startup.

mkdev fip

On UNIX systems, if additional (comment) information is available in the **init.d/fip** entries, this information is duplicated on all IntelliView Alternate screen entries in */etc/inittab*. This happens only if you manually edit comments into the **init.d/fip** entries.

Directly-Connected Printers

Printers connected directly to an IntelliPort II port can lose data at the end of the file. Use the IntelliSet **noflush** parameter on direct printer ports to avoid this problem.

Scan Code Applications

Many terminals using PC scan codes issue their break codes as "make+80H". But some varieties of UNIX use *gettydef* entries that default to 7-bit operation. (If the application echoes double characters from the keyboard (once on press, once on release), make sure the terminal and the getty are set up for 8-bit characters.

Flow Control Issues

Most gettydefs entries default to **ixany**. That means that if you press **Ctrl-S** to stop output, pressing any other key restarts output.

If the application is sending data so fast that the terminal can not keep up, the terminal sends an XOFF to prevent its buffer from overflowing. If the operator is typing ahead in the application, the incoming keys may re-enable output inappropriately, causing loss of data. Here, it is best to specify **-ixany** in the *gettydefs* defaults. Remind users that if they press **Ctrl-S**, they must press **Ctrl-Q** to re-enable the output. Unfortunately, some applications explicitly set **ixany** at startup. You can use the IntelliSet option *outflow=xon!* to force the port to ignore changes to the flow control settings.

The IntelliPort II UNIX drivers provide for two types of hardware flow control. The incoming data-set signals CTS and DSR can provide output flow control, and the outgoing dataset signals RTS and DTR can provide for input flow control. This type of flow control can be specified by using IntelliSet entries; for example, *inflow=dtr!* or *outflow=cts!*. For SCO products, the *stty* command supports the keywords RTSFLOW and CTSFLOW to enable this flow control.

The serial hardware within the IntelliPort II can directly handle the DTR and CTS signals. However, the driver software must handle the DSR and RTS signals. This makes DTR (for input flow control) and CTS (for output flow control) more efficient for high-speed applications.

When using terminals, it is not customary to use any form of input flow control. (Notice that the normal stty settings for terminal sessions usually specify **ixon**, possibly **ixany**, but never **ixoff**.) This is because input is never expected at a high enough rate to overrun the host. When connecting a terminal using hardware flow control, you should specify CTSFLOW (*outflow=cts!*) but not RTSFLOW (*inflow=rts!, inflow=busyready!*). In some cases, you may want to connect a PC running a terminal emulator package and other software, instead of a terminal. If you are using the terminal emulator to transfer files to the host, the host application which supports this may need to invoke input flow control while the transfer is taking place.

UUCP/CU

Modem Control and TTY Selection

Incoming lines with a modem attached should use the uppercase port or the port with modem control (/dev/ttyS00 instead of /dev/ttys00). For direct connections, the lowercase port should be used on both sides of the connection. Use the -r option with *uugetty*. If the originating side of the communication is connected to a modem and the port is also enabled for login with *uugetty*, use the port with modem control (uppercase). If the port is used strictly for dial out, you can use the lowercase port. Make sure all configuration files are correct (*/usr/lib/uucp/Devices*, etc.) and that the modems are configured correctly.

Device Characteristics

The IntelliPort II driver provides a modem (uppercase) device, and a non-modem (lowercase) device. By default, the modem device reports the true state of carrier detect, while the non-modem device does not. The processes on the modem port block waiting for carrier detect while the processes using the non-modem port do not block. (For further information, see the *IntelliPort II UNIX Software Reference Guide* in the section "Modem vs Non-Modem Devices".)

IntelliFeatures and *uucp/cu*

Do not use IntelliView and IntelliPrint on ports that are to be used for *uucp*. Binary files transferred using *uucp* could conflict with IntelliPrint and IntelliView hot keys. It is best to use a "dumb" profile for *uucp* ports.

You can use IntelliSet to set RTS/CTS flow control or to lock in a data rate only if both ends of the connection are set the same.

Select an */etc/gettydefs* entry that has IXON and IXOFF enabled for dial-in/dial-out ports. If you must *cu* out a non-modem port with Alternate screens configured and logins are enabled on the corresponding modem port, disable hot-key scanning with the command */etc/fip_hot -d*.

Direct connect and *cu*

For direct serial connections between machines, use non-modem (lowercase) ports.

For UNIX, use *uugetty -r* to prevent race conditions from occurring.

uugetty/getty

For UNIX systems, any manual entry made in the */etc/inittab* file for IntelliPort II ports must also be placed in the */etc/conf/init.d/fip* file. If this is not done, the entries are replaced by whatever is in the */etc/conf/init.d/fip* file every time *mkdev fip* runs.

Selection of the proper entry in *etc/gettydefs* is critical for dial in/dial out ports. In general, you should avoid 7-bit entries and make sure that circulating entries (entries that may change the data rate of the port) are appropriate for the hardware connected to the port.

For XENIX systems, ports can be used for both originate (dial-out) and answer (dial-in) by using the modem (uppercase) port with *getty* and using the non-modem (lowercase) port with dial-out programs. Use the non-modem port name in the entries for the *Devices* file.

For SCO UNIX and Interactive UNIX, if you are using a modem on a port enabled for login, you should set up the *getty* or the *uugetty* in the */etc/inittab* file to use the modem port (i.e. ttyS00 as opposed to ttys00).

Cautions

Always turn off the power to the system and to all the IntelliPort II components before you:

● Unplug the cable from the controller or expansion module.

● Decouple expansion modules from one another.

To ensure reliable operation, use the supplied clips when connecting expansion modules together.

Remote Diagnostics

The IntelliPort II UNIX/XENIX drivers include a remote diagnostics utility. The */etc/fip_report* utility runs on the host system and displays information about specified IntelliPort II ports.

Synopsis

fip_report [**-?**] [**-m**] [**-x**] [**-i**] [**-q**] [**-u**[**k**]] [**-s**] [**-l** *sec*] [**-z** *msec*] [[[**-p** *ports*] [**-b** *boxes*] [**-c** *cards*]]|[**-d** *dev*]]

Flags

-?   Lists the available options.

-m   Displays information on IntelliView Alternate screens.

-x   Displays information on IntelliPrint screens.

-i   Displays information about the specified controller.

-q   Be quiet (print no error messages) for ports not found.

-u   Unclogs any specified port waiting on flow control. For ports using CTS flow control, *fip_report* shuts off flow control entirely until you reinitialize the port with *fip_reinit*. For ports using XON flow control, *fip_report* only deasserts flow control; subsequent XON characters have their intended effect.

-uk   Unclogs any specified port and sends a SIGKILL to the process group.

-s   Displays a port summary.

-l *sec*   Loops every *sec* seconds until you press the **DEL** key.

-z *msec*   Specify the response timeout interval for the specified controller. The default is 100 milliseconds.

-p *ports*   Specifies the ports to display. If this option (and the -d option) is omitted, *fip_report* prompts you for the ports. The argument *ports* can be a number, a range in the format *nn-nn* (where *nn* is a decimal number from 00 to 15), or the keyword *ALL*.

-b *boxes* Specifies the expansion modules to display. If this option (and the -d option) is omitted, *fip_report* prompts you for the expansion modules. The argument *boxes* can be a number, a range in the format *n-n* (where *n* is a decimal number from 0 to 3), or the keyword *ALL*.

-c *cards*   Specifies the controllers to display. If this option (and the -d option) is omitted, *fip_report* prompts you for the controllers. The argument *cards* can be a number, a range in the format *n-n* (where *n* is a decimal number from 0 to 3), or the keyword *ALL*.

-d *dev*   Specifies the port(s) by device name (*/dev/ttysnn*, *nn*, or use shell wildcard expansion). NOTE: -d must be the LAST option specified on the command line. If you use this option, do *not* specify any of the -p, -b, or -c options.

Examples

```
% /etc/fip_report -d /dev/ttys00
Valid data = Y
Card = 0  Box = 0  Port = 00 (all numbers are 0 based)

NOTE: UPPERCASE indicates the signal is active
output rs232 signals = DTR RTS
input  rs232 signals = dcd cts RI dsr
NOTE: RI (ring) is forced active on some cards (ISA4, ISA8, MC8, ...)

The char counters are 16 bit (they will wrap at 65535)
xmit char count since boot = 00053
rcv char count since boot = 00000

reasons why card is not transmitting data
>  There is no data in the card for this port.

modem and non-modem port open status
>  The local (non-modem) port is open.


% /etc/fip_report -i
Please enter a card number (default is 0) or range (0-3) 0
Information for Card 0
The card is a IntelliPort-II Expandable
Total IRQ's for all cards = 13
IRQ count (since boot) for card 0 is 13
The board and driver are using IRQ 10 (decimal)
The board is using 8 bytes of I/O address starting at 0x308
Firmware version on card is 1.0.2
Loadware version is 1.6.2
Driver Version is 1.4.2
On-board memory size is 512K
CPU speed is 20Mhz
CPU type is 80186
FIFO size is 1024 bytes
Card interface I/O width is 16 bits
The board has 1 boxes installed
Box 0 has 16 ports
The board is installed in a 16 bit slot
Total ports = 16.
The following shows the ports present (an * indicates port was found.)
0  3   7       15      23      31      39      47      55      63
+--+---+-------+-------+-------+-------+-------+-------+-------+
****************
%
```

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Release Notes

INTELLIPORT™ II
UNIX DIAGNOSTIC UTILITY
IP2_REPORT/FIP_REPORT

PART NUMBER 0–20111

INTRODUCTION

Computone IntelliPort-II drivers for UNIX operating systems now include a diagnostic utility which you can use to learn important status information about the IntelliPort-II controller itself or about specific serial ports.

The utility has two different names, depending on what version of UNIX you are running:

- Under SVR4 UNIX (UNIXWARE, etc.) and SOLARIS, the utility is called `ip2_report`.

- Under SCO UNIX/XENIX (versions prior to SCO UNIXWARE) and other UNIX V 3.2 versions, we call it `fip_report`.

On installation, the utility is copied to the `/etc` directory.

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COMPATIBILITY

Table 1 shows each supported operating system and the driver version which first supported the diagnostic utility.

TABLE 1: IP2_REPORT/FIP_REPORT AVAILABILITY

Operating System	Drivers	Utility Name
SCO XENIX (e.g. version 2.3.4) SCO UNIX (e.g. versions 3.2.4.2 and Open Server)	IntelliPort-II Drivers for UNIX/XENIX Version 1.3.2 or higher.	`fip_report`
AT&T UNIX V version 3.2 Interactive UNIX V version 3.2	IntelliPort-II Drivers for UNIX 3.2 Version 1.3.2 or higher	`fip_report`
Novell UNIXWARE (SVR4) SCO UNIXWARE	IntelliPort-II STREAMS Drivers for SVR4 Version 1.0.2 or later	`ip2_report`
Sun SOLARIS (x86)	IntelliPort-II SOLARIS Drivers Version 1.1.0 or later	`ip2_report`

> ⚠ For simplicity, the name `ip2_report` is used throughout this document. Remember to type `fip_report` if that is what *your* driver requires.
>
> The utility is installed in the `/etc` directory. This directory is usually in your *path*; if not, you must type the full path name, e.g., `/etc/ip2_report`.

SYNTAX SUMMARY

HELP SCREEN

If you type the command `ip2_report -?` a help summary similar to the one below will be displayed. If a message similar to *command not found* is displayed instead, check the following:

- Have you installed the IntelliPort-II drivers?

- Are you using the correct name? (`ip2_report` or `fip_report`, depending on the operating system).

- Is `/etc` in your execution PATH? Try typing `/etc/ip2_report -?` instead.

EXAMPLE 1: HELP SCREEN

```
ip2_report -?
```
```
# ip2_report -?
usage: ip2_report [-?] [-m] [-x] [-i] [-q] [-u[k]] [-s] [-l sec] [-z msec]
          [[[-p ports ] [-b boxes] [-c cards]]|[-d dev]]

-? :            Gives this help screen.
-m :            Gives information on multiscreens.
-x :            Gives information on transparent print.
-i :            Gives information on the card specified
-q :            Be quiet (no error messages) for ports not found.
-u :            Will unclog a port waiting on flow control (CTS, XON, ..)
-uk :           Unclog port and send a SIGKILL to the process group.
-s :            Gives a port summary.
-l sec :        Loops every  sec  seconds until the DEL key is pressed.
-z msec :       Override the 100 millisecond default response timeout for card.

-p ports :      Specifies the ports to display.
-b boxes :      Specifies the boxes to display.
-c cards :      Specifies the cards to display.

                The option argument(s) (ports, boxes, cards) can be a number,
                a range in the format  nn-nn (where  nn  is a decimal number)
                or the keyword  ALL.

-d dev :        Specifies the port(s) by device name (/dev/ttysnn, nn, or use
                shell wildcard expansion) NOTE: -d must be the LAST option.
#
```

The help screen is intended as a reminder to those who already know how the utility works but have forgotten the details.

SUMMARY OF OPTIONS

TABLE 2: ip2_report COMMAND-LINE OPTIONS

Option	Description	Comments
`-?`	Display Help Screen	No other command-line options needed.
`-m`	Display IntelliView information.	Use one of these options to determine what type of information will be displayed, or action performed
`-x`	Display IntelliPrint information.	
`-i`	Display Controller information	If none of these options is used, a full report is displayed for the specified port or ports.
`-s`	Display Port summary information.	
`-u`	Unclog the specified port or ports	If one of the *unclog* options is given, then no report is printed. If the port was unable to send data because of flow control conditions, transmission will be resumed in spite of this. These conditions include having received an XOFF (but no XON) when using XON/XOFF flow control, or CTS not being asserted when CTSFLOW is used.
`-uk`	Unclog the specified port & kill any associated processes.	
`-q`	Quiet option: No warning for ports not found.	Normally, if you specify a port that does not exist, there will be a warning displayed. This would also happen if you specified a range of ports which included some which did not exist. The **-q** option removes this warning.
`-l` *nnn*	Repeat the report every *nnn* seconds, until the operator hits `DEL`. (On some systems, you would use `ctrl-C` instead — whichever is configured as your "interrupt" key.)	Normally, the report is displayed once: then *ip2_report* exits. Use the **-l** option to repeat the report at regular intervals.

Option	Description	Comments
-c *nnn*	Specify the Controller number (or range or controllers). Controllers are numbered 0–3. If you have only one IntelliPort-II controller installed, you still must specify it, and it would be controller 0.	Most reports give information on one or more ports, so you must specify which. This is usually done by specifying the controller number, the box number, and the port number on the command line., but it can also be done on the command line using the -**d** option described below.
-b *nnn*	Specify the Box number (or range of boxes). Up to four expansion boxes may be installed on a single expandable controller; they are numbered 0–3. When using non-expandable products, or have only a single box installed on a controller, you still must specify the box number: it is zero.	If you do not specify enough information one the command line, *ip2_report* will prompt you to type in the information interactively. When using the -**i** option, only the controller number needs to be supplied.
-p *nnn*	Specify the Port number (or range of ports). There are up to 16 ports on a single expansion box; they are numbered 0–15.	On the command line, or when prompted by *ip2_report*, you can supply a single number, or a range of numbers (two numbers separated by a hyphen), or the word **all**.
-d *dev*	Specify a device or devices as a target for the report. **If this option is used, it *must* be the last one on the line.**	Instead of using the -**c**, -**b**, and -**p** options to specify a port on which to report, you can also specify one or more ports using their device names directly. You can specify multiple ports using your UNIX shell's regular wildcard expansion capability. For example, you could get summary information on ports 0 and 1 by typing: `ip2_report -s /dev/ttys0[01]`
-z *nnn*	Override the default 100 mS time-out for a response from the controller.	Normally *ip2_report* will wait up to 100 milliseconds for status information from the controller. If your system or the controller is extremely busy, it may take longer.

NOTES

- If an option takes an argument, you may either separate them by a space or not. For example, you could type

        -c 0 -b 0 -p 3

    or

        -c0 -b0 -p3

- When using the -**c**, -**b**, or -**p** options to specify the controller, box, and port numbers, you may specify either a single number, a range of numbers, or the word **all**. For example:

        -c0 -b2 -p0

    specifies the first port on the third box on the first controller, but

        -c0 -b0-1 -p0-1

    specifies the first two ports on the first two boxes connected to the first controller. Finally

        -c0 -b1 -pall

    specifies *all* ports on the second box connected to the first controller.

    This is not just for the command line: you may also use ranges or **all** when *ip2_report* prompts you for the information.

- When using the -**u** or -**uk** options to unclog a port using CTS flow control, the only way to re-enable transmission is to effectively turn CTS flow control off. It remains off until explicitly turned on again, as when a dial-in port is disabled and re-enabled, when *ip2_reinit* (*fip_reinit* for SCO) is run, or when the application using that port exits and is restarted. The unclog options are intended for use in situations where a port has stopped sending data, appears to be in flow control, and other specific remedies have failed.

- In reports and when prompting for the controller number, the IntelliPort-II controller is referred to as the "card" (for brevity).

CONTROLLER INFORMATION

The **-i** option is used to display information about the IntelliPort-II controller itself, so you do not need to specify a box or port number. A controller number is needed: if you do not use the **-c** option, *ip2_report* will prompt you for a controller number. In the following example, the operator entered **0** for the controller number when asked.

```
ip2_report -i
ip2_report -i -c controller
```

```
# ip2_report -i
Please enter a card number (default is 0) or range (0-3) 0
Information for Card 0
The card is a IntelliPort-II Expandable
Total IRQ's for all cards = 175
IRQ count (since boot) for card 0 is 175
The driver is using IRQ 10 (decimal)
The EISA board is programmed for IRQ 0 (decimal)
The board is using 8 bytes of I/O address starting at 0x308
Firmware version on card is 1.0.2
Loadware version is 1.6.2
Driver Version is 1.1.0/n
On-board memory size is 512K
CPU speed is 20Mhz
CPU type is 80186
FIFO size is 1024 bytes
Card interface I/O width is 16 bits
The board has 1 boxes installed
box 0 has 16 ports
The board is installed in a 16 bit slot
Total ports = 16.
The following shows the ports present (an * indicates port was found.)
0  3  7     15      23      31      39      47      55      63
+--+---+------+-------+-------+-------+-------+-------+-------+
****************
```

- The controller type and installation details are displayed. Note that if you are using an ASIC-style IntelliPort-II **non**-expandable controller (e.g. ISA-8, ISA-4) the controller will be reported to be an "IntelliPort-II Expandable" with a single 8-port expansion box installed. The older non-expandable controllers are reported to be non-expandable. This is because the ASIC non-expandable controllers use a host interface that is identical to the original expandable controllers. Don't worry.

- For non-PCI controllers, "The driver is using IRQ *nn* (decimal)" indicates which interrupt the IntelliPort-II driver has been configured to use. All non-PCI IntelliPort-II controllers are installed to use the same IRQ. For PCI controllers, this indicates which IRQ the PCI BIOS has assigned to this board.

- "The EISA board is programmed for IRQ *n* (decimal)" appears in some versions of *ip2_report*: if present, it does not imply that the controller is actually an EISA board. If it *is*, then it gives the IRQ that was specified for this board by the EISA configuration.

- The "Total IRQ's for all cards" and "IRQ count (since boot) for card *n*" numbers are quite useful. When one of them is zero, it indicates that there may be an interrupt conflict which is preventing interrupts from the controller card being recognized by the drivers. This can be a result of specifying an inappropriate IRQ during installation, or of having later added conflicting hardware.

- The current versions of the driver, loadware, and controller firmware are displayed. If you call our technical support department, we will want to know at least the driver version, and this is one way of finding it out. (Another way is to look at the installation diskette).

- The controller's I/O address is shown. For all non-PCI controllers, this represents the I/O address you specified for the board at install time. (For EISA controllers, the I/O address is determined by the slot number you supplied.) For PCI controllers, it is the address assigned by the PCI BIOS.

PORT INFORMATION

The default report gives general information about a specific serial port. You must specify a controller, box, and port number. If you don't specify them on the command line, *ip2_report* will ask you for the missing ones. In Example 3, the operator entered **0** for the controller, box, and port number. Example 4 shows how the **-s** option can be used to provide the same information in summary form, for multiple ports.

EXAMPLE 3: BASIC PORT INFORMATION

```
ip2_report
ip2_report -cn -bn -pnn
```
```
# ip2_report
Please enter a card number (default is 0) or range (0-3) 0
Please enter a box number (default is 0) or range (0-3) 0
Please enter a port number (default is 0) or range (0-3) 0

Valid data = Y
Card = 0  Box = 0  Port = 00 (all numbers are 0 based)

NOTE: UPPERCASE indicates the signal is active
output rs232 signals = DTR RTS
input  rs232 signals = dcd cts ri dsr
NOTE: RI (ring) is forced active on some cards (ISA4, ISA8, MC8, ...)

The char counters are 16 bit (they will wrap at 65535)
xmit char count since boot = 00000
rcv char count since boot = 00000

reasons why card is not transmitting data
>  There is no data in the card for this port.

modem and non-modem port open status
>  The port is closed or closing.
```

EXAMPLE 4: BASIC PORT INFORMATION, SUMMARY FORM

```
ip2_report -s -cn -bn -pn
```
```
# ip2_report -s -c0 -b0 -p0-2
The char counters are 16 bit (they will wrap at 65535)
V C B PT output & input signals  xmit   rcv  No xmit reasons  Rx stat Open stat
+ + + ++ +-----+ +-----------+ +---+ +---+ +--------------+ +-----+ +-------+
Y 0 0 00 DTR RTS dcd cts ri dsr    0     0           noData          closed
Y 0 0 01 DTR RTS dcd cts ri dsr    0     0           noData          closed
Y 0 0 02 DTR RTS dcd cts ri dsr    0     0           noData          closed
```

- The message "Valid data = Y" indicates that *ip2_report* was able to obtain information about the port from the driver and controller card. In the summary form this is represented by column **V**.

- The controller, box and port number are displayed. On the summary form, these are the columns marked **C**, **B**, and **PT** respectively.

- The current state of all the data set signals is reported. Signals whose names are in upper case are asserted; those in lower case are not. The DSR and RI signals are only supported on IntelliPort II Expandable expansion boxes which use DB25 connectors. Non-expandable IntelliPort II products and products using RJ45 connectors do not have DSR and RI pins. On these, the DSR signal follows DCD, and RI is forced high. Data set signals which are being used for flow control will change automatically "on the fly" and may not be reported correctly.

- A "character odometer" displays the number of bytes of data sent and received from this port since the system came up. The odometer rolls over at 65536, so this is not intended for long-term measurements. It is just a rough indicator of activity. Bytes are counted by the controller when they are written to (or read from) the UART. The UART's buffer data to some extent, so at any given time the counts may not match exactly the amount of data actually transmitted and received over the RS232 interface.

- A whole lot of different technical support calls come down to the question, "Why is nothing appearing on my terminal (or printer)?" Sometimes the data is being sent, but bad cabling prevents the terminal from seeing it. Or perhaps the port is in flow control, or perhaps the application is sending data to the wrong port.

  The entry "Reasons why card is not transmitting data" (or the "No xmit reasons" column on the summary form) lists just that. If there are no reasons listed, and the count of transmitted characters increases, then we suspect the problem is with the attached device or its cabling. If there is no output because there is no data available, then you suspect that the application has not been configured correctly. Any other reasons, you can deal with.

  Table 3 on page 11 shows all the possible reasons for not transmitting.

- If the port has taken action to prevent an attached device sending data *to* the port, the reasons are listed under "Reasons why card is not receiving data" (**Rx stat** on the summary screen). Possible reasons are shown in Table 4 on page 11

- "Modem and non-modem port open status" indicates whether the port is currently open, and if so, whether it is open as a modem port (senses DCD) or non-modem port (ignores DCD). This is called **Open stat** on the summary report. Table 5 on page 12 lists the possible conditions.

TABLE 3: POSSIBLE REASONS FOR NOT TRANSMITTING DATA

Summary Report	Full Report	Comments
NoData	There is no data in the card for this port	Because the application isn't sending any data?
xoff	XON/XOFF flow control is turned on and the port has received an XOFF char.	Need to hit ctrl-Q on the terminal? Device configuration problem?
cts	CTSFLOW is turned on and the port is waiting for CTS to become active.	Check the cabling?
dsr	DSRFLOW is turned on and the port is waiting for DSR to become active.	Check the cabling?
Break	The port is in the middle of generating a break…	This condition would not be expected to last long, however.
LCD	The port is in the middle of LCD based diagnostics.	IntelliPort II EX tower enclosures have LCD displays from which you can run diagnostics on a port.
dcd	DCDFLOW is turned on and the port is waiting for DCD to become active.	Check the cabling?

TABLE 4: POSSIBLE REASONS FOR NOT RECEIVING DATA

Summary Report	Full Report	Comments
dtr	The card is blocking input with DTR because the incoming buffers are full.	If a port remains in this state, you would want to ask, "Why is the application not reading the data?" Perhaps it is not running.
rts	The card is blocking input with RTS because the incoming buffers are full.	

Summary Report	Full Report
`local` *or* `loc`	The local (non-modem) port is open.
`modemWait` *or* `modW`	The modem port is sleeping in open waiting for DCD to become active.
`modem`	The modem port is open
`closed`	The port is closed or is in the process of closing.

Under XENIX and SVR3 UNIX, attempts to open a modem port will block while the corresponding non-modem port is open. Attempts to open the local port will fail if the corresponding modem port is already open. Under SVR4, attempts to open the modem port while the corresponding non-modem port is open will fail (not block as in SVR3).

SUMMARY INFORMATION, CONTINUOUS

The **-s** and **-l** options can be used together to provide continuous status monitoring on a single port, as in the following example:

EXAMPLE 5: CONTINUOUS SUMMARY INFORMATION

```
ip2_report -s -cn -bn -pn -lnn

ip2_report -s -c0 -b0 -p5 -l5
The char counters are 16 bit (they will wrap at 65535)
V C B PT output & input signals  xmit   rcv  No xmit reasons  Rx stat Open stat
+ + + ++ +-----+ +-----------+ +---+ +---+ +---------------+ +-----+ +-------+
Y 0 0 05 DTR RTS dcd cts ri dsr   234    23              noData           local
Y 0 0 05 DTR RTS dcd cts ri dsr     0     0              noData           local
Y 0 0 05 DTR RTS dcd cts ri dsr     3     0              noData           local
Y 0 0 05 DTR RTS dcd cts ri dsr     0     0              noData           local
Y 0 0 05 DTR RTS dcd cts ri dsr    20     0              noData           local
```

In this example, **-l5** was used, so a new line would be displayed every five seconds, or until you exit (by hitting **DEL**, for example). The first line of the report gives the "odometer" values for the amount of data transmitted and received, but subsequent lines show the amount of data sent or received *since the previous line.*

INTELLIPRINT INFORMATION

Use the **-x** option to display information about the IntelliPrint profile currently assigned to this port, and whether IntelliPrinting is currently taking place.

EXAMPLE 6: INTELLIPRINT INFORMATION

```
ip2_report -x -cn -bn -pn

# ip2_report -x -c0 -b0 -p1
Transparent print open = NO
Transparent print active = NO
PrintON seq (len=0) is [   ]
PrintOFF seq (len=0) is [   ]
PrintACK seq (len=0) is [   ]
#
# ip2_report -x -c0 -b0 -p0
Transparent print open = NO
Transparent print active = NO
PrintON seq (len=3) is [0x1b 0x64 0x23]
PrintOFF seq (len=1) is [0x14]
PrintACK seq (len=0) is [   ]
```

- In the first example, the port had not been configured for IntelliPrint: the PrintON and PrintOFF sequences are blank. In the second, the port is configured as a Wyse 60.

- "Transparent print open = Yes" means that a process has the IntelliPrint device open. It may or may not be in the process of actually outputting data to it.

- "Transparent print active= Yes" means that IntelliPrint data is currently being sent to the board.

- The PrintACK sequence is currently unsupported but is reserved for future use.

INTELLIVIEW INFORMATION

The **-m** option is used to display information about a port's IntelliView profile, and information about which IntelliView screens are currently in use.

```
ip2_report -m -cn -bn -pn
# ip2_report -m -c0 -b0 -p0
open screen(s) = Main Alt1 Alt2
current screen = Main
screen switch pending = No
toggle seq for screen 0 (len=1) is [0x80]
screen switch seq for screen 0 (len=3) is [0x1b 0x77 0x30]
toggle seq for screen 1 (len=1) is [0x81]
screen switch seq for screen 1 (len=3) is [0x1b 0x77 0x31]
toggle seq for screen 2 (len=1) is [0x82]
screen switch seq for screen 2 (len=3) is [0x1b 0x77 0x32]
toggle seq for screen 3 (len=0) is [   ]
screen switch seq for screen 3 (len=0) is [   ]
toggle seq for screen 4 (len=0) is [   ]
screen switch seq for screen 4 (len=0) is [   ]
toggle seq for screen 5 (len=0) is [   ]
screen switch seq for screen 5 (len=0) is [   ]
toggle seq for screen 6 (len=0) is [   ]
screen switch seq for screen 6 (len=0) is [   ]
toggle seq for screen 7 (len=0) is [   ]
screen switch seq for screen 7 (len=0) is [   ]
#
```

The above example could be for a port configured with one of the Wyse 60 IntelliFeatures profiles.

• There are three virtual screens defined, and all three are open.

• The driver sends the escape sequence **0x1b, 0x77, 0x30** to the terminal to select the first display page, which supports screen 1. Similar sequences are sent to select the terminal's second and third pages of display. This assumes that your terminal is operating in a mode which supports at least three pages of display memory.

• On a Wyse 60 operating in 8-bit mode, **ctrl-F1** sends a single byte of value 0x80. The remaining ctrl function keys send codes of 0x81, 0x82, etc. This example shows that function key **ctrl-F1** is used to select screen1, **ctrl-F2** for screen 2, and so on.

COMPUTONE Corporation

Release Notes

INTELLIPORT™ II STREAMS DRIVER
VERSION 1.1.0
FOR UNIX™ SVR4

PART NUMBER 0-27005-4

INTRODUCTION

This release note provides additional information for installing and using the IntelliPort II STREAMS driver on Unix SVR4 systems. It supplements information found in the *IntelliPort II UNIX Software Reference Guide*.

Please read the "Product Installation/Removal" section of this release note before attempting to install the drivers.

CONTENTS

COMPATIBILITY

- These drivers are for use with UNIX System V Release 4 operating systems, including Novell UNIXWARE and SCO UNIXWARE.

- These drivers are not for SOLARIS: Use IntelliPort-II drivers for SOLARIS.

- These drivers are not for SCO UNIX 2.3.4.2, SCO Open Server. Use IntelliPort-II drivers for [SCO] UNIX 3.2/Xenix.

- These drivers allow up to four IntelliPort II controllers to be installed. All bus types are supported: ISA, EISA, Micro Channel, and PCI.

- Older motherboards using the HiNT Caesar chip set (e.g., G486HVL HiNT Super ISA and VESA Local Bus 486 Mainboard) are not completely EISA-compatible. Do not install EISA-8 or EISA-EX controllers on these motherboards: use the ISA-8 or ISA-EX instead.

PRODUCT INSTALLATION/REMOVAL

This driver is installed using SVR4's *pkgadd* utility, as described in Chapter 2 of the *IntelliPort II UNIX Software Reference Guide.*

⚠	Remember to shut down your system and **disconnect power** before: • Adding or removing controller cards. • Connecting or disconnection expansion boxes.

We recommend that you install the IntelliPort-II hardware *before* you install the drivers. Refer to the *IntelliPort II Hardware Reference Guide* for instructions on installing the various types of controllers. Points to remember:

• For ISA controllers it is important to select an I/O address which does not conflict with other hardware on your system. You must then set a DIP switch on the board to select that address. Write down the address for later.

• For Micro Channel controllers, the Micro Channel configuration utility allows you to assign an IRQ and a unique I/O address to the controller. Write down the address and IRQ assigned.

• For EISA controllers, the EISA configuration utility will assign an IRQ to a controller according to its slot number. Write down the IRQ and slot number.

• PCI controllers are assigned an IRQ and I/O address automatically, so this information is not required for installation.

During installation, you will be asked to specify an IRQ (Interrupt) for any non-PCI boards to use. If you are installing only PCI controllers, enter 0. The interrupt that will actually be used is assigned by the PCI BIOS and is out of your control.

RE-INSTALLATION

If you wish to change your hardware configuration or upgrade to a later version of the driver, repeat the installation procedure. It is better at such times that you do *not* remove the old drivers first, because the installation script will attempt to default to as many of the old settings as possible. When the drivers are removed, this default information would be lost.

When you try to re-install a new driver without removing the old one, the *pkgadd* utility may give you an error message, to the effect that only a single instance of the driver is allowed at any one time. For Solaris to allow you to re-install the driver without removing the old one, you must edit a file: **/var/sadm/install/admin/default**.

Change the line **instance=unique** to **instance=overwrite**.

When installation has completed, you can change it back.

> ⚠ After installing the drivers, you can use the ***ip2_sysadm*** utility to change IntelliFeatures profile assignments, and to enable and disable terminals and dial-in modems.
>
> The ***ip2_sysadm*** utility uses EasyInstall menus similar to ones seen when installing the driver.

DEVICE NAMES

It is customary in UNIX SVR4 operating systems to place serial devices in the **/dev/term/** directory, using names like **/dev/term/s00**, **/dev/term/s01**, and so on. Under UNIX 3.2, serial devices are stored in **/dev/**, using names **/dev/ttys00**, **/dev/ttys01**, etc.

For compatibility reasons, we create devices in both places when our drivers are installed. In these notes, we refer to devices by their UNIX 3.2-style names. Most UNIX SVR4 utilities will expect you to specify the ports using the SVR4 naming scheme, however.

USING EASYINSTALL MENUS FROM A TERMINAL

The driver installation script and the *ip2_sysadm* utility both use *EasyInstall* forms. These forms prompt you to use function keys to carry out certain actions. If you are running from the system's main console, this is generally not a problem. If you are running from a serial terminal, the function keys may not be configured to supply their standard values.

If the function keys do not perform as you would expect them to, there are alternate keys you may use instead, as shown in Table 1:

TABLE 1: ALTERNATE FUNCTION KEY

Action	Function Key	Alternate (hold down the *Ctrl* key and type the letter)
Display Help message.	*F1*	*ctrl*-**I**
Display Choices.	*F2*	*ctrl*-**O**
Select Choice. / Save Form.	*F3*	*ctrl*-**E**
Reject Form. / Quit.	*F4*	*ctrl*-**X**
Copy.	*F5*	*ctrl*-**C**
Move up one field.	*up-arrow*	*ctrl*-**U**
Move down one field.	*down-arrow*	*ctrl*-**D**
Move left one field.	*left-arrow*	*ctrl*-**L**
Move right one field.	*right-arrow*	*ctrl*-**R**
Display next page.	*Page Down*	*ctrl*-**F**
Display previous page.	*Page Up*	*ctrl*-**B**

KNOWN LIMITATIONS

The following are known limitations of the IntelliPort II STREAMS driver 1.1.0 for Solaris:

- The EasyInstall menu will support either *ttymon* (preferred) or *getty*, but not both.

- Under heavy load, ports configured for high speeds (e.g., 115,200) may lose data on input regardless of flow control settings.

- If *istrip* is set, the IntelliPort II controller automatically strips bit 8, before it performs hot-key scanning. If you are using *istrip*, do not specify IntelliView profiles that use 8-bit codes for hot keys, because the controller won't see them.

- When running IntelliView and using `tab3` expansions, switching screens while output is occurring may interfere with correct tab expansion.

- If a user logs off a terminal when an IntelliPrint job is still active, print data may be altered or lost.

- If a user logs off the main port while an alternate screen is active, flow control may be lost on the alternate screen. (That is, you shouldn't log off on the main screen when you are in the middle of something on an alternate screen).

- If IntelliView screen-switch sequences or IntelliPrint printer control sequences contain linefeed (0xA) characters, and the port is in "cooked" mode, these sequences are converted to 0xA,0xD, just as any other linefeeds would be.

- IntelliView *Hot-Key* sequences (defined in the `intellicap` file) are limited to seven bytes in length.

APPLICATION NOTES & TIPS

SCAN CODE APPLICATIONS

If a PC application that uses PC scan codes sends double characters to the screen, make sure that you configure *ttymon* (and the terminal) for 8-bit characters.

XON/XOFF FLOW CONTROL

When output is sent to a serial device (such as a terminal) faster than it can process the data, the device must somehow signal the sender to stop transmission: otherwise data will be lost.

A common method of flow control is *xon/xoff*. When the terminal wants the sender to stop sending data, it will send an *XOFF* character (corresponding to *ctrl-S* on the keyboard) to the host. When it has room for more data it tells the host to resume transmission by sending an *XON* character (corresponding to a *ctrl-Q* from the keyboard). Other data received from the terminal would have no effect on flow control.

Most *ttydefs* entries default to `ixany`. This is intended for terminals, either attached directly to the serial port, or connected via modem. This is a modified form of *xon/xoff* flow control. When `ixany` is used, the operator can suspend the output by pressing *ctrl-S*, and enable it again by pressing *any key* (including a second *ctrl-S*).

The `ixany` style of flow control is useful for terminals that will not experience true data overruns, but sometimes can be a problem. If the terminal is configured for a high baud rate, or if you are sending data to a printer attached to the terminal (via IntelliPrint or other mechanism), then the terminal may not keep up with incoming data, and it will send an *XOFF*. But what happens next? If you r operator is typing ahead, then those keys may be sent to the host, which would —gasp!—resume transmission. Even if the operator is not typing ahead, some terminals may send multiple *XOFF* characters.

To cure the problem, set the *ttydefs* to `ixon` instead of `ixany`. Operators who use *ctrl-S* to explicitly suspend output must use *ctrl-Q* to resume: other keys will have no effect.

Some applications may set `ixany` automatically at start-up. If this occurs, you can override the effects by using an IntelliFeatures profile which contains the IntelliSet `inflow=ixon!` option. IntelliFeatures profiles are contained in the `intellicap` and `icap.site` files.

CTS/RTS FLOW CONTROL

The IntelliPort-II drivers also support flow control using the CTS and RTS data set signals. When CTS is dropped, data transmission is suspended until CTS is asserted again. When incoming data threatens to overrun our buffers we drop RTS, raising it again when there is room for more data.

To configure an IntelliPort-II port for CTS/RTS flow control, you can use the UNIX standard `stty` command-line options:

- The option `rtsxoff` selects RTS flow control to prevent input overruns.

- The option `ctsxon` selects CTS flow control to prevent overrunning the serial device.

You can also force a port to use these forms of flow control by using the IntelliSet `inflow=rts!` and `outflow=cts!` options. When flow control has been defined in this way, it will remain in force regardless of any attempt by an application or stty to change it.

Make sure your cabling supports all the necessary signals. For bi-directional data transfer between two IntelliPort-II ports, your cable would include a connection between each port's RTS and the other port's CTS signal.

Many terminals use DTR instead of RTS for flow control purposes. In that case you would configure the terminal for DTR flow control, and connect the IntelliPort's CTS to the terminal's DTR.

MODEM VS. NON-MODEM PORTS

When the IntelliPort-II drivers are installed, each IntelliPort-II port is assigned two names:

- A modem device name, e.g. `ttyS00` — the letter after `tty` is upper case.

- A non-modem device name, e.g. `ttys00` — the letter after `tty` is lower case.

The differences between these two devices are explained in the *IntelliPort II UNIX Software Reference Guide*, under "Modem vs. Non-Modem Devices". But here is the difference in a nutshell:

- Modem devices report the true state of the DCD (Carrier Detect) data-set signal. Applications which use modem devices will generally wait for carrier to be present before they start to use the device. If carrier drops, a *hangup* signal is sent to the application, generally causing it to terminate.

- Non-modem devices pretend that DCD (Carrier Detect) is always asserted, regardless of what is really happening.

When should you use a modem port (e.g., `ttyS00`)?

- You are attaching a terminal and want it to automatically log off when the terminal is turned off.

- You are attaching a modem which is used for both dial-in and dial-out. Incoming calls would receive a login prompt, and when the modem is idle the port is available for dialing out using *cu* or *uucp*.

- You are attaching a modem and the port is enabled for login via *uugetty*.

When should you use a non-modem port (e.g., `ttys00`)?

- You are attaching a terminal and do *not* want to automatically log off when the terminal is turned off.

- You are using the serial port as a direct connection to the serial port on another computer (for example, to transfer files via *uucp*).

- You are attaching a modem to be used for dial-out exclusively. (A modem port can also be used in this case.)

CONFIGURING A TERMINAL OR DIAL-IN MODEM

When you install the drivers, you are asked whether you are using *getty* or *ttymon* to control terminal logins. *Ttymon* is preferred.

When using */etc/getty* you are actually using *ttymon* in a compatibility mode. A local connect terminal is configured by default in *ip2_sysadm* when a port is enabled (setting Logins to *Main*). Selecting Modem=*Yes* configured everything necessary for a modem or a directly connected terminal with carrier connected.

When using *ttymon*, there are additional options. Selecting Modem=*Yes* in *ip2_sysadm* informs *ttymon* to use the modem device and enable the connect-on-carrier option. This causes a separate *ttymon* process to be created for each port, and no */etc/issue* is generated.

If you specify Modem=*No*, a the non-modem device is used, and carrier will be ignored. We do not recommend using this setting with dial-in modems, because a login prompt would be sent to the modem while it is still on-hook. Some modems may interpret the login prompt as a command and become misconfigured.

CONFIGURING A DIAL-OUT MODEM

A dial-out modem does not have a ttymon or getty configured to give a login prompt. In *ip2_sysadm* you should disable the port by setting Logins=*None*. You can then add entries to your **/etc/uucp/Devices** file. In this example, we will be using port 1:

```
ACU ttyS01,M - 9600 hayes \T

Direct ttyS01,M - 38400 direct
```

You may need to change the device permissions using the **chown** and **chmod** commands:

```
chown uucp /dev/ttyS01

chmod 666 /dev/ttyS01
```

This should allow you to test using:

```
cu -l ttyS01
```

If this works, you can now configure the **/etc/uucp/Systems** file as needed.

CONFIGURING DIAL-IN/DIAL-OUT MODEMS

First, configure the port as a dial-in modem as described in the above section. Enable the port by specifying Logins=*Main* and Modem=*Yes*.

If you are using getty, you must now edit two files: **/etc/inittab** *and* **/etc/conf/init.d/ip2**. Change **/etc/getty** to **/usr/lib/uucp/uugetty** on the line corresponding to the port you are configuring. For example,

```
cs03:234:respawn:/etc/getty ttyS03 cton_8bit_9600
```

would become

```
cs03:234:respawn:/usr/lib/uucp/uugetty ttyS03
cton_8bit_9600
```

In some versions of UNIX, **uugetty** is not present; its features have been absorbed into **getty**. Consult your UNIX documentation for up-to-date information.

INTELLIFEATURE NOTES

- The IntelliView and IntelliPrint features are intended for use on ports attached to terminals, or attached to modems into which a terminal would be dialing in. This includes PC's running appropriate terminal emulation software.

  You should *not* use an IntelliFeatures profile that contains IntelliView or IntelliPrint features if you are using the port to support file transfers. This includes transfers using *cu* and *uucp*, as well as upload/download capabilities supplied by third party applications and *zmodem*-style file transfer capabilities provided with PC terminal emulation software.

  Why? IntelliView scans the incoming data stream for *hot key* sequences which are presumed to have been sent from one of the terminal's function keys. Also, both IntelliView and IntelliPrint cause additional control sequences to be sent to the terminal. Each action interferes with the contents of the data being sent to or from the port and therefore can interfere with transferring a file correctly.

  If you must use an IntelliView-configured port for file transfer, you can use the `ip2_hot` utility to temporarily disable hot key scanning, and to re-enable it afterward. However, it is easy to forget to do this, so we recommend you do not tempt fate.

- Remember that when you use IntelliSet features to specify a type of flow control or to lock in a baud rate, this prevents an application from later changing your choice. This is a two-edged sword: It can prevent an application from turning off hardware flow control and allow you to specify a baud rate that would otherwise be unsupported in UNIX. But it will also prevent an application from intentionally making these changes when it would be necessary.

- Whenever possible, specify the IntelliFeature profile *dumb* for any ports you will be using for *uucp*, *cu*, or other file-transfer and communications software.

- IntelliSet `tab` and `onlcr` settings have no effect on IntelliView's alternate screens.

- If an application turns off the cursor, some terminals may not restore the cursor when the user changes screens. This is a limitation of the terminal.

STANDARD INTELLIVIEW PROFILES

Here are some of the IntelliFeatures profiles which support IntelliView. They are all provided in the **intellicap** file at install time and will appear among the profile choices during installation and when using *ip2_sysadm*.

Profile Name	Terminal Type	Function Key to select Next Screen	Function Key to Select Specific Screens.
`wy60.2t`	Wyse 60 (supports two pages of display in most modes)	*F12*	*none*

`wy60.2pt`
`wy60.2pt.xon`
`wy60.2pt.cts`
		F12	*ctrl*-*F1*, *ctrl*-*F2*

`wy60.3t, wy60.3pt`
`wy60.3pt.xon`
`wy60.3pt.cts`
	Wyse 60 (in Econ-80 mode)	*F12*	*ctrl*-*F1*, *ctrl*-*F2*, *ctrl*-*F3*

`wy60_50.7p`
`wy60_50.7p.xon`
`wy60_50.7p.cts`
	Wyse 60 using Wyse-50 emulation, Econ-80 mode	*F12*	*ctrl*-*F1*, *ctrl*-*F2*…*ctrl*-*F7*

`a230.2pt, a232.2pt` `tvi925.2pt`	Ampex 230, Televideo 925	*shift*-*F1*	*none*
`microterm.2p`	Microterm 6600	*none*	*ctrl*-**J A**, *ctrl*-**J B**
`tr170.3pt`	Relisys TR170	*F12*	*ctrl*-*F1*, *ctrl*-*F2*, *ctrl*-*F3*

`tv955.2p, tv955.2pt`
`tv955.2p.xon`
`tv955.2pt.xon`
`tv955.2p.cts`
`tv955.2pt.cts`
	Televideo 955	*none*	*shift*-*F10*, *shift*-*F11*

`dumb.8t`	Generic terminal without multi-page display support (for demonstration purposes).	*ctrl*-**A 0**	*ctrl*-**A 1**, *ctrl*-**A 2**…*ctrl*-**A 8**

Bug fixes and Enhancements

Version 1.1.0 Enhancements

• Support for the PCI-EX IntelliPort-II controller was added with version 1.1.0.

Version 1.1.0 Bug Fixes

With **earlier** versions of the driver…

• Running `ip2_report` could cause the operating system to halt with an error message on the console.

• If a process were waiting for DCD (Carrier Detect), it could not be killed unless DCD were first supplied.

• DTR would not always be dropped when the port was closed, even when it had been configured to do so.

• When using IntelliPrint on an extremely active terminal, output to the printer would sometimes stop, and not *ever* resume until the system were re-booted.

These should all work properly under the current version of the drivers, 1.1.0

Earlier Enhancements & Fixes

Version 1.1.0 contains all the improvements which were added in 1.0.2, including the following:

• Support was added for baud rates above 115,200 via the IntelliSet `custom1` and `custom2` parameters

• CPU load under continuous input was reduced by up to 50%.

• Support was added for the diagnostic utility `ip2_report`, which is supplied with the drivers. See the release note *IntelliPort II UNIX Diagnostic Utility — ip2_report/fip_report* included in this package.

• Support was added for the `TERMIO(7)` ioctl `TIOCMGET`. This is used by some application software to query the state of data set signals. See your UNIX documentation for details. Note that data set signals used for input flow control (e.g., RTS) may fluctuate automatically, so the state of these signals may not be reported correctly.

• During installation, you must specify a board type: earlier versions defaulted to an ISA-8 unless you changed it. Too many people installing a different kind of board were incorrectly leaving it at the default value.

- *ip2_reinit* lockups and intermittent port lockups during heavy load were fixed.

- IntelliPrint lockups when used with the print spooler were fixed.

- The HUPCL parameter was added to the `cton_8bit_xxx` entries we add to */etc/ttydefs*.

- Reinstallation over an existing driver no longer disables previously enabled ports, and the controllers' I/O addresses are remembered.

- DOS Merge remapping of XON/XOFF characters on alternate screens now works. Note that when using the `wy60pc` terminfo entry for DOS Merge, the terminal is automatically set to screen page 0 when Merge is started up. After exiting Merge, use the toggle key (F12) a couple of times to re-sync the terminal and IntelliView.

COMPUTONE Corporation *Release Notes*

INTELLIPORT™ II DRIVER
VERSION 1.3
FOR WINDOWS NT™ 4.0

PART NUMBER 0-13100-2

INTRODUCTION

These release notes explain how to install and use the IntelliPort II Driver version 1.3, under:

* Windows NT version 4.0

* Windows NT version 3.51

CONTENTS

COMPATIBILITY

WHICH INTELLIPORT II CONTROLLERS ARE SUPPORTED?

These drivers support all IntelliPort II ISA and PCI expandable and non-expandable controllers, including the following:

- IntelliPort II ISA-4

- IntelliPort II ISA-8

- IntelliPort II ISA-EX

- IntelliPort II PCI-EX

IntelliPort II controllers for Micro Channel and EISA buses (e.g., MC-8, MC-EX, EISA-8, and EISA-EX) are **not** supported by these drivers.

WHICH VERSION OF WINDOWS NT ARE YOU RUNNING?

Your installation disk contains two different versions of the setup software and drivers: one for Windows NT 4.0 and another for Windows NT 3.51.

Installation under Windows NT 3.51 is almost the same as under 4.0, with two main differences:

- Windows NT 3.51 screens have a different "look" from 4.0, and the method of navigation is different. These are generic differences between the two operating systems, and not specific to the driver.

- Our setup software and driver for Windows NT 3.51 are stored in a separate subdirectory on the installation diskette. Its main directory contains the software and driver for Windows NT 4.0. When installing under 3.51, you **must** specify this subdirectory as the source of the installation software, otherwise the wrong driver will be installed, and your system will not run properly.

If you are running Windows NT 4.0, just follow the instructions in the main body of these release notes, and the proper software and driver will be installed.

If you are running Windows NT 3.51, read "Notes for Windows NT 3.51 Users" on page 20, so that you will understand ahead of time what you must do differently.

DOES THE EXPANSION BOX MATTER?

Some software available under Windows NT expects a full set of data set signals, including DSR and RI. Not all IntelliPort II expansion boxes support these signals, however, so if you are using such software it is important that you are using an appropriate box.

*   All IntelliPort II products, expandable or non-expandable, support TxD, RxD, CTS, RTS, DCD, and DTR.

*   All IntelliPort II EX expansion boxes which use DB25 connectors also support DSR and RI. Remember these female DB25 connectors use a special pinout: refer to the diagrams in your *IntelliPort II Hardware Reference* for the locations of these signals.

*   IntelliPort II non-expandable products do not support RI and DSR.

*   IntelliPort II products using 8-pin RJ45 connectors do not support RI and DSR.

On products which do not support RI and DSR, the software reports RI as always asserted, and reports DSR as being identical to DCD.

SYSTEM PREREQUISITES

*   The drivers are installed via the *Network* icon under the *Control Panel*. If the *Network* icon is missing, you have not installed the network portion of Windows NT. Install the necessary software, and then install our drivers.

*   The examples shown assume that your Windows NT system is using a default desktop configuration. If you have customized your desktop by adding shortcuts and modifying menus, there will be cosmetic differences, and you may start up utilities differently, but the general procedure is the same.

HARDWARE INSTALLATION

Under Windows NT, it does not really matter whether you install the hardware before or after the software and driver. The software installation phase does not provide any information that would facilitate hardware installation later, nor does the hardware installation provide any information that would facilitate software installation.

After you install the software, you are prompted that you must shut down and restart Window NT before the driver will be usable. Since you have to restart anyway, it might be convenient to shut down completely, power down, and install the hardware at that time as well.

> ⚠ Remember to shut down your system and **disconnect power** before:
>
> • Adding or removing controller cards.
>
> • Connecting or disconnection expansion boxes.

Refer to the *IntelliPort II Hardware Reference Guide* for instructions on installing the various types of controllers. Points to remember:

• For ISA controllers it is important to select an I/O address which does not conflict with other hardware on your system. You will need to supply this address when you install the driver, *and* you must set a DIP switch on the board to select that address, before you install the hardware. The address you supply at installation needs to match the one you have chosen in the DIP switches.

• For ISA controllers, you must also select an IRQ (interrupt request line). If you are installing several IntelliPort II ISA controllers, they will share the same IRQ, but since many ISA products do not support interrupt sharing, we do not recommend trying to share an interrupt with other devices.

• When using ISA controllers in a host with PCI and ISA slots, you may need to configure your host's BIOS to allow ISA adapters to use the desired interrupt; otherwise the BIOS may reserve it for PCI adapters.

• PCI controllers are assigned an IRQ and I/O address automatically, so this information is not required for installation.

• These drivers don't support EISA or Micro Channel IntelliPort II controllers.

INSTALLING THE DRIVER

The IntelliPort II driver is installed, removed, updated, or reconfigured via the *Network* icon found on the *Control Panel*.
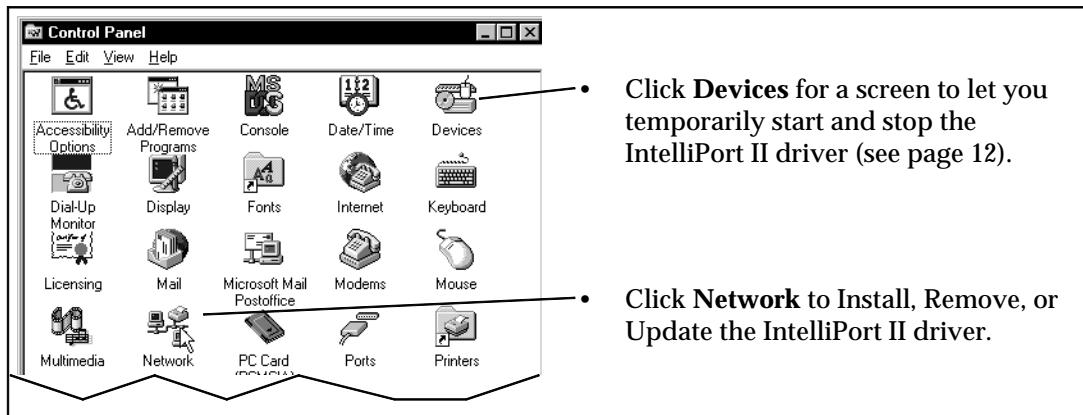
1. To find the *Control Panel,* bring up the Windows NT menu by clicking **Start**; then select **Settings**, and finally **Control Panel**. Alternately, you can double-click on the *Control Panel* icon found under *My Computer,* as shown in Illustration 1 below.

ILLUSTRATION 1: FINDING THE CONTROL PANEL
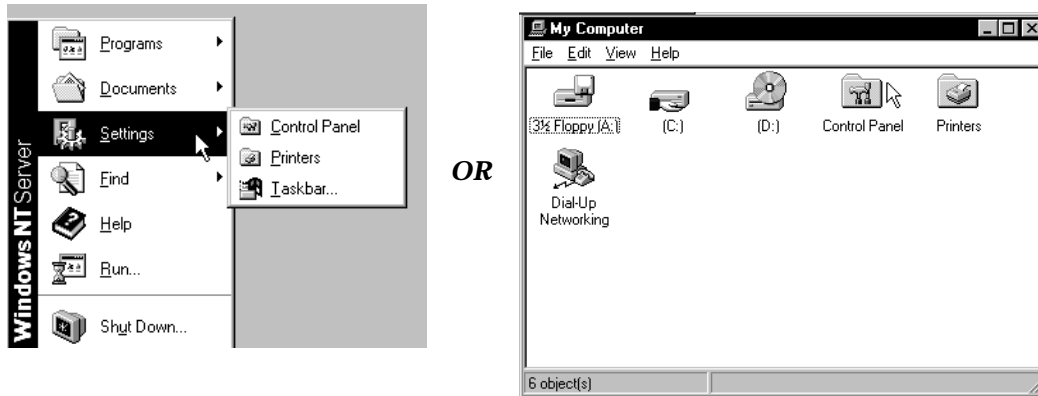
2. From the *Control Panel*, double click on the *Network* icon:

ILLUSTRATION 2: CONTROL PANEL

• Click **Devices** for a screen to let you temporarily start and stop the IntelliPort II driver (see page 12).

• Click **Network** to Install, Remove, or Update the IntelliPort II driver.

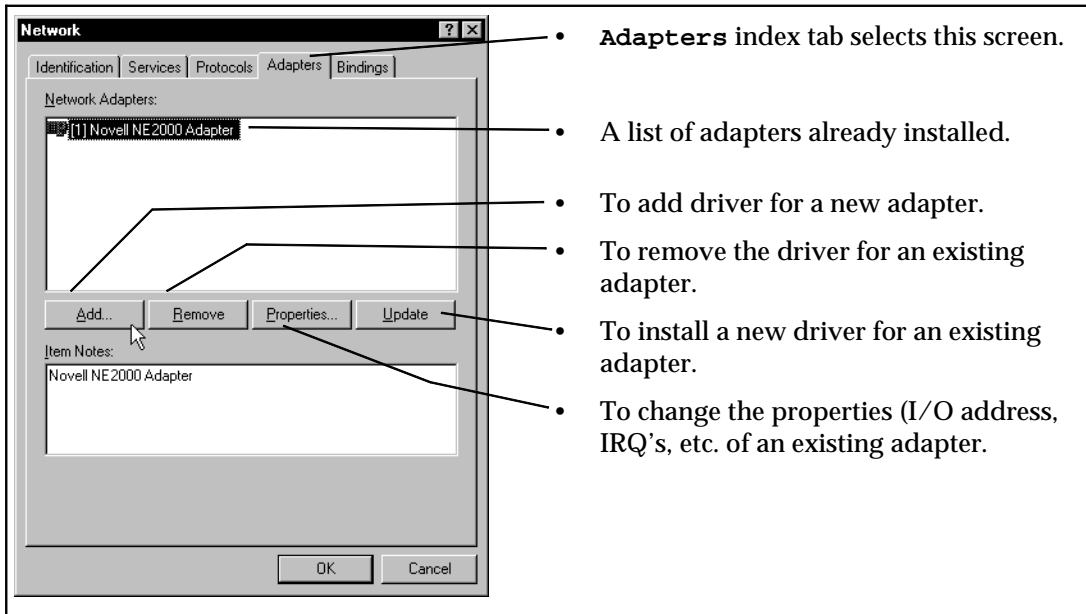3. In Windows NT parlance, the IntelliPort II multi-port serial card is an "adapter".

Click on the **Adapters** tab at the top of the *Network* screen, and you will see something similar to Illustration 3 below.

If you are installing the IntelliPort II driver for the first time, they will not be listed among the network adapters already installed. Click **Add**.

If you were upgrading (Installing a newer version of an existing driver) then *Computone IntelliPort II* would appear on the list: you would click on it to select it, then click **Update**.

Other selections are available to remove or to reconfigure an existing driver — change the number of boards, their I/O addresses, IRQ selection, and number of ports installed.

ILLUSTRATION 3: NETWORK (ADAPTERS) SCREEN

- **Adapters** index tab selects this screen.

- A list of adapters already installed.

- To add driver for a new adapter.

- To remove the driver for an existing adapter.

- To install a new driver for an existing adapter.

- To change the properties (I/O address, IRQ's, etc. of an existing adapter.

4. Windows NT is shipped with a number of drivers available for installation but not yet installed. These are listed as shown in Illustration 4. But you aren't using any of those: you have our installation diskette. **Insert the installation disk into your floppy drive,** and select *Have Disk* as shown.

ILLUSTRATION 4: SELECTING AN ADAPTER TO INSTALL
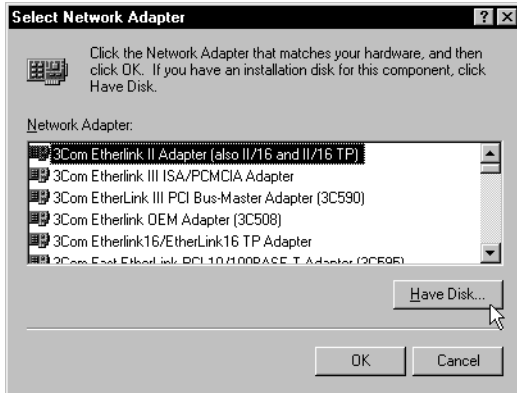
5. Next you must specify where the installation files are to be found. When installing under Windows NT 4.0, the installation files are found in the main directory of the diskette. If your diskette drive is **A** then your screen should look like the left side of Illustration 5. Click **Ok** to continue. You are then asked to select which software to install: there is only one choice. Choose it and click **Ok** to continue.

ILLUSTRATION 5: WHERE ARE THE INSTALLATION FILES?
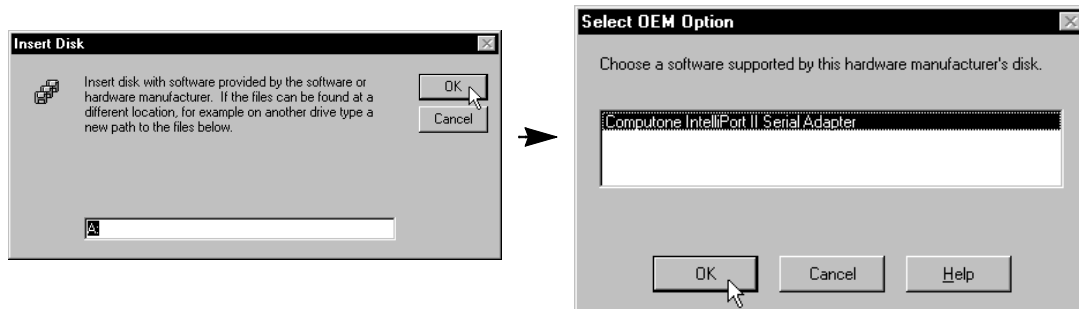
6. Now you should see the IntelliPort II Configuration Menu. Illustration 6 shows how the screen will appear if you are installing the IntelliPort II driver for the first time.

ILLUSTRATION 6: INTELLIPORT II CONFIGURATION MENU

- **Bus type:** If a board is installed, indicates whether it is **ISA** or **PCI**.

  If the board is **PCI**, the IRQ and IO Address are left blank. If fewer then four boards are installed, the unused boards are marked **None**.

- **IRQ and IO address** must be supplied for any ISA controller installed. For PCI cards, this information is assigned automatically. ISA cards will always share a single IRQ.

- The device and logical name suffixes will generally default to 3, and this value is usually what you will want to use: the first serial port on the first board will be called *serial3* or COM3.

- You must indicate how many serial ports are attached to each controller: this can be as few as four (for an ISA-4) or as many as 64 (for an expandable with four 16-port expansion boxes).

The configuration menu defaults to a single ISA controller, using the default IRQ of 10 and I/O address of 308.

7. For each IntelliPort II controller you are installing, change the *Bus Type* from **None** to **ISA** if it is an ISA controller or to **PCI** if it is a PCI board. If you are installing just one board it should be *Board 1*; if two, they should be *Board 1* and *Board 2* — don't leave gaps.

8. For each ISA controller, you must specify an IRQ. Click on the arrow next to the window and a scroll list of choices is presented. Since our ISA controllers were designed to share a single IRQ among themselves, the configuration form will **force** all our ISA controllers to share — If you set one board's IRQ differently, all the others are changed to use the IRQ you just selected. Many *other* ISA adapters are not designed to share interrupt, so you must select an IRQ that no other product is using.

9. For each ISA controller, you must specify an I/O address. Click on the arrow next to the window, and a scroll list of choices is presented. You are responsible for choosing one that does not conflict with other hardware that has been installed on your system. Each

IntelliPort II ISA controller uses a block of eight I/O addresses starting at the specified base address. For example, a board starting at I/O address 308 occupies addresses 308–30F inclusive.

The IRQ and I/O address for PCI controllers are assigned automatically by the PCI BIOS, and this information is passed to the IntelliPort II driver when the system boots. For PCI boards, the IRQ and I/O address windows remain blank.

10. For each board installed, you must indicate the number of ports which are attached to the controller. A port is counted if it is present on the expansion box, even if no device is connected to it. For example, if you are installing an ISA–8, you must specify that there are eight ports. If you are installing a PCI–EX with two 16-port expansion boxes, you say there are 32 ports.

   Make sure you specify the correct number here: the driver uses the information to properly allocate system resources for each port.

11. Windows NT gives each port a name according to the *Device Name Suffix* and *Logical Name Suffix* you specify. The installation menu looks for any serial ports which are already registered and defaults to a starting number higher than any already in use.

   A typical system will have two COM ports already, to which Windows NT has assigned the device names **serial1** and **serial2**, and the logical names **com1** and **com2**. In that case, the device and logical name suffixes will each default to **3**. This means that the first port on the first IntelliPort II board would be called **serial3** or **com3**, and the rest of the ports are named sequentially. The first port of the second board immediately follows the last port of the first board.

   Usually you will want to accept the default values, but there is one situation where you should not: if you were to remove and re-install the IntelliPort II driver, the reinstallation can occur at a time before all the old IntelliPort II devices were completely removed. This causes it to default to a higher starting number than is necessary, because it is trying to skip the numbers which were previously used by the driver you just removed. Should that occur, feel free to reset the numbers to what you had been using previously, or you can restart Windows NT once more: this additional restart allows the remains of the old driver to be completely purged.

   Use caution when installing the IntelliPort II boards along with other multi-port serial boards. **We will always assign the port numbers sequentially, starting with the Device & Logical Name suffixes you define**. Say you installed a single eight-port IntelliPort II card first, and our devices were COM3–COM10. So far so good. Then you install a serial board from a different vendor: it uses COM11–18, say. Now you buy another IntelliPort II board, and reconfigure the drivers. If the *Device & Logical Name suffix*'s remain 3, then our drivers will attempt to assign COM3–COM18 to our sixteen ports, but the last eight names

have already been assigned to a different device. The workaround? Remove the other drivers to allow the IntelliPort II drivers to have sufficient consecutive devices, or temporarily remove both drivers, install the other product first, and then install our product where the other leaves off.

12. When everything is set as you like it, click **Ok**.

13. When installation is complete, you will see a message similar to Illustration 7. The driver cannot be used until after Windows NT has been shut down and restarted. If the hardware has already been installed, you can just shut down and restart without powering down. If the hardware is not installed yet, you can allow Windows NT to shut down completely, and then power down the system, install the hardware, and restart.

ILLUSTRATION 7: YOU MUST RESTART WINDOWS NT
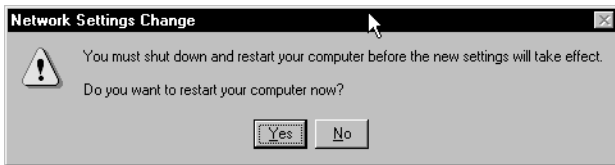
When the system re-boots, the driver should start automatically, and the new serial ports will be usable.

REMOVING THE DRIVER

To remove the IntelliPort II driver:

1. On the *Network Adapter* Menu (Illustration 3 on page 6) locate and highlight the *Computone IntelliPort II* selection in the list of installed adapters.

2. Click on the **Remove** button.

3. Windows NT will ask you to verify that you want to remove the driver. After you do so, the driver and associated files are *marked* for deletion; they will be actually removed the next time Windows NT is rebooted.

RECONFIGURING THE DRIVER

After the driver has been installed, you may wish to:

• Add additional IntelliPort II controller boards.

• Change the IRQ or I/O address of existing ISA controllers.

- Add or replace expansion boxes, changing the number of ports on some controllers.

Any of these changes requires that you change some of your answers on the IntelliPort II Configuration Menu. Does this mean you must re-install the driver? No! Here's all it takes:

1. On the *Network Adapter* Menu (Illustration 3 on page 6) locate and highlight the *Computone IntelliPort II* selection in the list of installed adapters, and click on the **Properties** button.

2. This brings you to the configuration menu shown in Illustration 6 on page 8. Fill in the new information as appropriate and click **Ok** when everything is correct. As with installation, the changes do not take effect until after the system has been rebooted.

UPGRADING

If you wish to replace existing IntelliPort II driver with a newer version, you proceed exactly as if you were installing the driver for the first time, with three differences:

- On the *Network (Adapters)* menu (Illustration 3 on page 6) select the IntelliPort II driver from the list of drivers already installed, and click **Update**.

- You will be asked to provide the path (diskette letter and directory) where the new driver is to be found.

ILLUSTRATION 8: WHERE IS THE UPGRADE SOFTWARE?
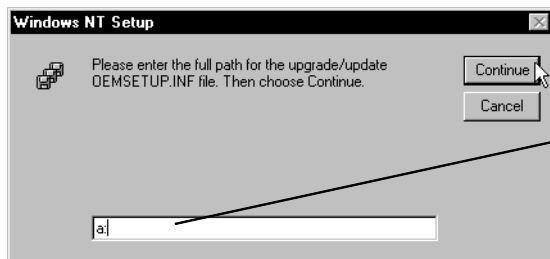
- Check the path carefully. Make sure you specify the floppy where the new driver is to be found. Don't trust the default to be correct.
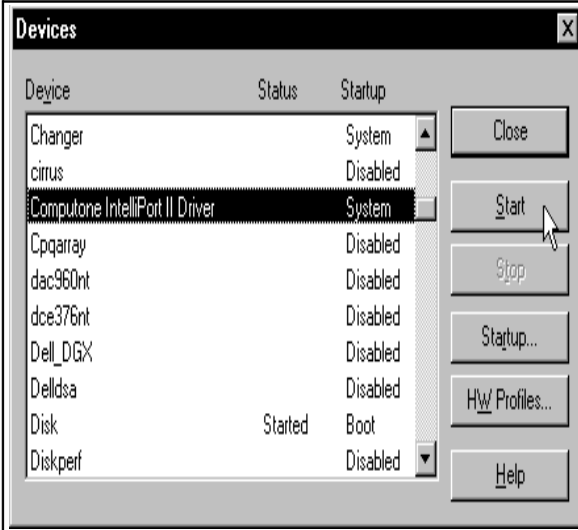
- After all appropriate confirmations, the new software and driver will be copied to your system. Unlike the original installation, you will not see the IntelliPort II Configuration menu (Illustration 6 on page 8) because the hardware configuration is presumed to be the same. If you are also making hardware changes at the same time, you can reconfigure by clicking on the **Properties** button as explained on page 10.

As with installing, removing, and reconfiguring, the changes do not take effect until after Windows NT is restarted.

STARTING & STOPPING THE DRIVER

By default, the IntelliPort II driver will start up automatically when the system is booted. You may manually stop and restart the driver as well.

ILLUSTRATION 9: DEVICES (FROM CONTROL PANEL)

1. Select *Devices* from the *Control Panel* shown in Illustration 2 on page 5.

2. Locate *Computone IntelliPort II Driver* in the list of devices.

3. If the driver is already running, the **Stop** button will be available: click on it to stop the IntelliPort II driver.

4. Contrariwise, when the driver is not running, the **Start** button will start them again.

5. Select **Startup** for a window that will let you control whether the driver will load automatically at startup.

By default, the driver is configured as startup type *system.* This allows any other Windows NT services to make best use of the ports. Don't change the **Startup** type unless you have a good reason.

TROUBLESHOOTING

WINDOWS NT WON'T BOOT?

If Windows NT won't boot properly after an IntelliPort II ISA controller or driver has been installed, the most likely cause is an IRQ or I/O address conflict between the IntelliPort II hardware and other installed.

- Try rebooting with the IntelliPort II hardware physically removed from the system. If Windows boots properly, reconfigure the driver and board to use a different I/O address or IRQ.

- Another experiment is to change the *startup* setting to **manual** (see Illustration 9 on page 12) so that the driver won't start automatically. If Windows NT reboots properly, start up the driver manually and see if there is a problem then.
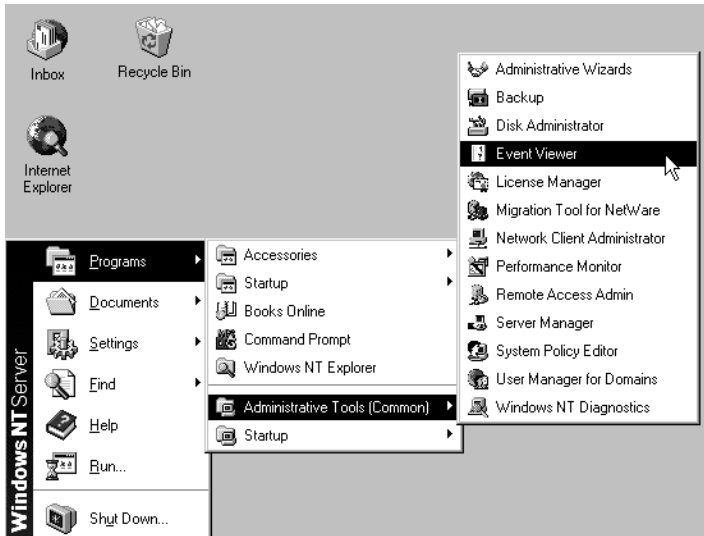
NO INTELLIPORT II SERIAL PORTS WORK?

- Check the configuration of whatever software is supposed to be using these ports. Make sure you have associated the correct port name with the correct port. If your computer has a built in COM1 or COM2 port that you are not already using, attempt to configure your software to use one of those ports. If the problem persists, it is a software configuration problem, not an IntelliPort II problem.

- Check the Event Log. If the IntelliPort II driver detects a problem during initialization, it sends messages to the Event Log. Applications attempting to use the serial ports may also send such messages. Illustration 10 on page 14 shows how to start the event log viewer; refer to your Windows NT documentation for instructions on its use.

  Error messages will be sent to the event log if the driver cannot find an IntelliPort II controller board at its expected address, if there are fewer serial ports installed than expected, or if Windows NT does not have sufficient resources (e.g., memory) to load the driver. By manually editing the *Registry* (see "The Registry" on page 15) the driver can be instructed to send additional information.

- Check the LED's on each IntelliPort II controller. These are found on the controller card next to the external connector, so they are visible even when the cover is on your computer. Normally they will blink green. If they are blinking amber, it indicates that the driver has not loaded or has not completely initialized the controller. Any pattern containing red indicates an error condition: write down the pattern so it will be available when you talk to one of our tech support representatives.

SOME APPLICATIONS DON'T WORK?

Some applications are able to use IntelliPort II serial ports, while others are not?

• Check the event log for messages which the failing application might have sent.

• Attempt to configure the application to use an unused built-in COM port.

• If you are having trouble accessing ports above COM9, try using the following naming convention: `\\.\com`*nn* where *nn* is the corresponding COM number.

THE REGISTRY

Under Windows NT, the configuration information for all device drivers is stored in a database called the *Registry*. Normally, you don't need to know that the registry exists because the information it contains is automatically maintained by the configuration utilities, and silently queried by the device drivers and other software.

For troubleshooting purposes, it is sometimes useful to view and edit this information in its raw form:

• The registry contains version information which is not otherwise visible.

• By manually adding certain entries to the registry, you can access advanced driver debugging features. For example, the IntelliPort II driver can be made to send additional information to the Event log during initialization.

THE REGISTRY EDITOR

The registry database is viewed and maintained using the *registry editor*. To start the registry editor:

1. Click **Start**, then **Run**.

2. Enter the program name `regedt32`.

Illustration 11 shows what the registry editor looks like. The registry contains configuration information for *everything*, very little of which has to do with the IntelliPort II product, so use *extreme* care not to change something unintentionally.

ILLUSTRATION 11: THE REGISTRY EDITOR
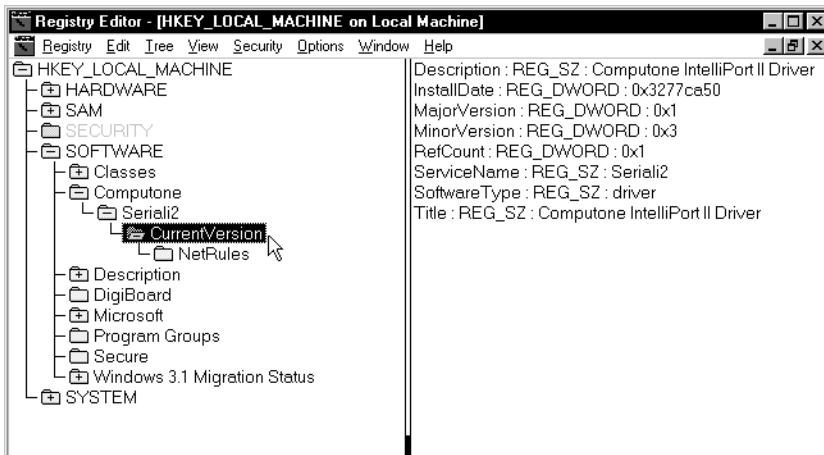
On the left side you find a branching tree-like structure which you use to find the specific area you are interested in. Levels expand into sub-levels, which in turn expand into lower levels. The levels look like the way folders (directories) are displayed using the NT Explorer, and the navigation is about the same.

When you have selected an area of the registry on the left side, a list of its associated properties appears on the right.

WHAT VERSION OF THE DRIVER IS RUNNING?

Illustration 11 on page 15 shows how you would determine the IntelliPort II driver's version number:

- Starting at the top level, **HKEY_LOCAL_MACHINE**, we clicked on the file folders to expand levels when necessary…

- Under **HKEY_LOCAL_MACHINE** we found and expanded **SOFTWARE**, and under that we found **Computone**.

- Under **Computone** we found a single product, **Seriali2**, and under that we found **CurrentVersion**.

- Selecting **CurrentVersion**, we find the information we seek on the right. Each piece of information or *property* consists of a name, a data type, and a value.

- You can see in this example that **MajorVersion** is **0x1**, and **MinorVersion** is **0x3**. The **0x** prefix indicates that the number are represented in *hexadecimal* notation, but otherwise can be ignored. These numbers correspond to driver version 1.3 as described in these release notes.

## HOW CAN I GET MORE CLUES IN THE EVENT LOG?

If the IntelliPort II driver is not starting up properly, it is possible to have them send additional information to the Event Log. To do this, you must add a new property to the registry.

- Under **HKEY_LOCAK_MACHINE**, select **SYSTEM**, then **CurrentControlSet**.

- Under **CurrentControlSet**, select **Services**, and under that, **Seriali2**.

You should then see something very much like Illustration 12 on page 17. The right side of the screen will list properties like **DisplayName**, **ErrorControl**, **Group**, and so on as shown.

There will probably *not* be a property called **LogLevel**, unless someone has already added it manually. You will increase the amount of Event Log messages by adding this property and then assigning an appropriate value to it.
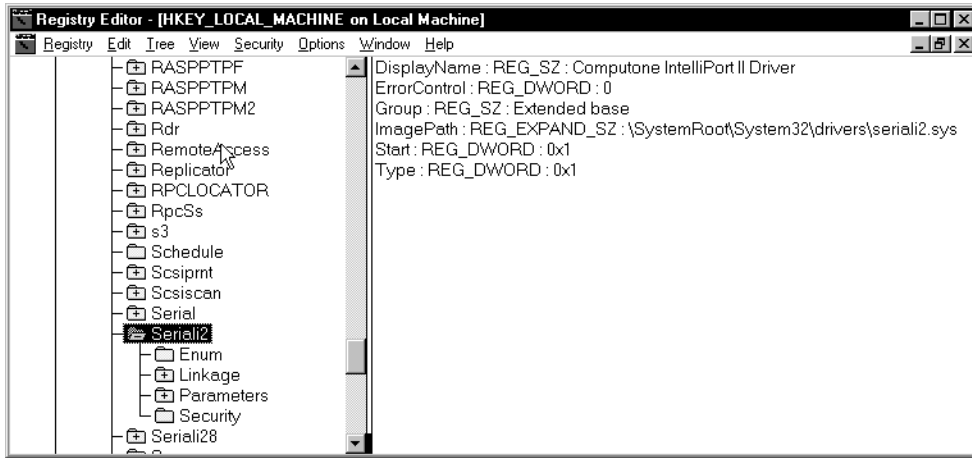
To add a new property:

*   Click **Edit**.

*   Click **Add Value**.

*   The name of the value should be `LogLevel` (use upper and lower case as indicated).

*   The data type must be `REG_DWORD`.

*   The value to assign depends on the amount of output you want:

TABLE 1: LOGLEVEL VALUES

Value in hexadecimal	Result
LogLevel is not present	No additional output
0x0	
0x3	Logs the driver version number when it starts up.
0x7	The above, plus logs IRQ and I/O address information about each board as it is determined.
0xf	The above, plus logs a trace of activity during the driver initialization phase.

If the `LogLevel` property exists already, double click on it, and you are prompted for its new value.

The new registry values are used the next time the driver is started. (See page 12).

ADDING A PRINTER

One common use for serial ports is to connect serial printers. Suppose one of the IntelliPort II ports is called COM8 and you have it connected to a serial printer. Before Windows NT can use the printer, we must tell the operating system that there is a printer there, and what kind it is.

Before you try to configure any of our ports to be used with printers, or for any other use, you need to have restarted Windows NT, as prompted at the end of driver installation (see page 10).

Under Windows NT 4.0, the process of adding a printer goes like this:

1. From Windows NT *Start*, click on **Settings**, then **Printers**.

2. From the *Printers* screen, click on the *Add Printers* icon. This brings up a series of panels entitled *Add Printer Wizard*.

3. Specify that the printer is on "My Computer", and click on **Next**: you will be shown a list of devices to which the printer might be attached: parallel ports, built-in COM ports, and COM ports which were assigned to the IntelliPort II.

4. Select one of our serial ports from the list, and click on **Configure Port**. This will bring up a list of ports: re-select the one you want to configure, and you will be given a port configuration menu. This menu allows you to specify the baud rate, protocol, and flow control you want to use for the port. The key point here is that these settings need to match whatever serial settings your printer is configured for, so check your printer manual as necessary. Also, your RS232 cable must carry the proper signals to support the flow control you have chosen. Consult the *IntelliPort II Hardware Reference Guide* for cabling advice.

5. Once the port is configured, click **Ok**…**Close** and you are back to the *Add Printer Wizard* panel: click **Next**, and subsequent panels will ask you to specify the kind of printer you will be using. From here on the steps are just the same regardless of where the printer is connected. Consult your Windows NT documentation for details.

6. **Caution:** In step 4, you were shown a list of ports, and you clicked on **Configure Port**. There is another button on the same screen labeled **Add Port**. *Don't press that button!* What that button does, is to configure the built-in serial drivers (which we presume support COM1 and COM2) to handle additional COM-compatible hardware, for which you would then supply an I/O address, etc. So the button has its uses, but *not* when you have specified a COM port already assigned to the IntelliPort II driver.

REMOTE ACCESS (RAS) NOTES

Configuring Remote Access Services (RAS) to use an IntelliPort II port is really the same as configuring it to use any other port, and your Windows NT documentation will be the most authoritative source of information on this.

There are really four steps:

1. You must have installed our driver, and since restarted Windows NT so that our ports will be available for configuration and use. Whatever ports you will configure to be used with Remote Access are *dedicated* to this purpose: you cannot use the same port for a printer or any other application just because such a port happens to be idle. When a port is so configured, Remote Access keeps it "reserved".

2. Almost always, Remote Access will involve the use of modems. Later steps will want to *know* about these modems, so you must first define them to the system: this is done through the *Control Panel*: click on the *Modem* icon and follow the instructions.

3. Once modems are defined, you are ready to specify what ports RAS would use. This is done from the *Network* menu (Illustration 3 on page 6) but you will click on the **Services** tab (instead of **Adapters** as during installation). You are given a list of services: select **Remote Access**, and follow the instructions from there.

4. If the port is only used for dial-in access, you can skip this step: If the port will sometimes be used for dial-out, you need to set up dialer scripts, phone numbers, etc. to allow you to place a call and access the other machine. These are set up using *Dial Up Networking*, which is reached by clicking on **Start**, **Programs**, then **Accessories**.

NOTES FOR WINDOWS NT 3.51 USERS

Windows NT versions 3.51 and 4.0 use different drivers and setup utilities. The driver and setup software for 4.0 is stored in the main directory of the installation diskette, so they are what will be installed by default.

The driver and installation utility for Windows NT 3.51 are also stored on our installation diskette, but in a subdirectory — **\winnt351**.

INSTALLATION

The procedure for installing the driver under 3.51 is almost the same as for 4.0. Aside from the strictly cosmetic, here are the differences:

- To reach the *Control Panel* under Windows NT 3.51, click on the *Control Panel* icon found under *Main*.

- You still click on the *Control Panel*'s *Network* icon to add, remove, or update adapters, but the resulting *Network Settings* dialog box looks superficially very different from the one shown in Illustration 3 on page 6. On closer inspection, everything we need is there:

TABLE 2: NETWORK DIALOG BOX COMPARISON

Windows NT 4.0	Windows NT 3.51
Selecting the *Adapters* tab (see page 6)	Portions of the Network Settings box.
Network Adapters (list)	Network Software and Adapter Cards
Add	Add Adapter (*not* Add Software*)*
Remove	Remove
Update	Update
Properties	Configure
Have Disk (see page 7)	<Other> Requires Disk from Manufacturer (selection in the *Add Network Adapter* box)
A: (where to find the files — see page 7)	**A:\winnt351** (files are in a subdirectory!)

- So, for Windows NT 3.51, you will click on **Add Adapter** in the *Network* dialog box, then select **<Other>** **Requires disk…**, choose the product to install (there is just the one), and then there will be a screen to prompt you for the location where the installation files are to be found.

> For 3.51, remember to specify `a:\winnt351` as the path (assuming drive A is your diskette drive.
>
> If you use the default of `a:\` the **wrong driver** (the ones for NT 4.0) will be installed, and that would be a Bad Thing.

As you can see from Table 2 on page 20, reconfiguring and upgrading the drivers for 3.51 parallels the process for 4.0, with slight cosmetic differences. With upgrades, remember to specify the right path.

PRINTER SETUP

The basic steps are similar to Windows NT 4.0:

- Go to the *Print Manager* by clicking on the *Printers* icon in the *Control Panel.*

- Pull down the **Printer** menu bar and click on **Create Printer…** This brings up a *Create Printer* dialog box.

- Select the device (presumably one of ours), click on **Settings…** to configure it

- Configure the port as needed, click **Ok** to return to *Create Printer*, and **Ok** in that screen, to proceed with the remainder of setup: specifying what type of printer is to be connected, and so on.

Feature: IntelliPort II products are equipped with a 80C186 CPU, 128KB RAM,   and Cirrus Logic CD-1400 quad UXARTs for sustained baud rates up   to 200Kbps.
Benefit: Outstanding reliability and maximum performance.

Feature: IntelliPort II host adapters include up to 20MHz CPU and 512K RAM
Benefit: Maximum throughput!

Feature: Uses a unique I/O-mapped, bi-directional FIFO architecture.
Benefit: Eliminates the need for any host system DMA or memory address   space, ensuring 100% compatibility with host caching and traditional
            memory-mapped devices.

Feature: Incorporates advanced surface mount technology, custom high-density
            ASIC (application specific integrated circuit) chips, and imbedded   surge/spike protection circuitry on all RS-232 signals.
Benefit: For years of reliability and error-free operation.

Feature: The expandable version of IntelliPort II is expandable up to **64 ports!**
Benefit: Custom multi-port subsystems with modular expandability.

INTELLIPORT II & INTELLIPORT II EX