



IP Twinax Controller

Xip

TWINAX CONTROLLER

User's Guide

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Preface

Thank you for purchasing the I-O Xip+ Twinax Controller. This guide contains information to setup and use the controller.

The guide consists of the following chapters:

- **Introduction:** Provides an overview of the product.
- **Installation:** Provides detailed information on the installation of the hardware, the installation of I-O Configuration Utility for remote management of I-O LAN based products, configuration of the controller, and configuration of the AS/400, iSeries or eServer i5 host.
- **Controller Operation:** Provides detailed instructions on the use of display and printer sessions.
- **Troubleshooting:** Provides solutions to problems that may be encountered while using the product.
- **Manufacturer's Warranty & Repair Policy:** States the warranty and how to obtain service and support.

The following symbols are used in the guide.



Caution: This symbol highlights procedures that, if not correctly performed or adhered to, could damage or corrupt the product or adversely affect the security and functionality of the product. Do not proceed beyond such points until the required conditions are fully understood and achieved.



Note: This symbol denotes useful additional information that is relevant to the procedure or feature being described.



Tip: This symbol denotes a hint, shortcut or alternate method to aid or supplement the procedure being described.

Consistent with our policy of continuous development, the product you received may have features different from those described in this guide. Please visit our web-site www.iocorp.com for current information.

Table of Contents

INTRODUCTION	6
OVERVIEW.....	6
STANDARD FEATURES	6
UNPACKING	6
ABOUT THE XIP+ TWINAX CONTROLLER	7
<i>LED Indicators</i>	7
<i>Physical Connectors</i>	8
INSTALLATION.....	9
HARDWARE INSTALLATION	9
INSTALL THE I-O CONFIGURATION UTILITY	9
<i>Linux Configuration</i>	9
CONFIGURE THE AS/400, ISERIES OR ESERVER I5 HOST	10
SELECTING THE PROTOCOL TO COMMUNICATE WITH THE CONTROLLER.....	10
CONFIGURE THE HOST TO USE TN5250E.....	12
CONFIGURE THE HOST TO USE ANYNET	13
<i>AnyNet Configuration Worksheet</i>	13
<i>Setting the Host Values</i>	15
<i>Disabling the Host's Switched Disconnect Function</i>	17
CONFIGURE THE HOST TO USE SNA.....	18
<i>SNA Configuration Worksheet</i>	18
<i>Setting the Host for Auto Configuration</i>	19
CONFIGURING THE HOST FOR IPDS PRINTING.....	20
<i>Requirements</i>	20
<i>Creating a Line Description on the AS/400</i>	20
<i>Configuring a TCP/IP Host Table Entry</i>	21
<i>Configuring V3R1 or V3R6</i>	21
<i>Configuring V3R2</i>	22
<i>Configuring V3R7 or V4R1</i>	24
<i>Configuring V4R2 and Above</i>	25
<i>Verifying the IPDS Configuration on the AS/400</i>	27
CONFIGURE THE XIP+ TWINAX CONTROLLER	28
SETTING THE GENERAL INFORMATION AND IP ADDRESS	28
SELECT THE HOST COMMUNICATION PROTOCOL	30
CONFIGURE THE CONTROLLER TO USE TN5250E.....	31
CONFIGURE THE CONTROLLER TO USE ANYNET.....	33
CONFIGURE THE CONTROLLER TO USE SNA	35
CONFIGURE THE CONTROLLER FOR IPDS PRINTING VIA PPR/PPD.....	36
CONTROLLER OPERATION.....	37
TOGGLING BETWEEN DISPLAY SESSIONS.....	37
CHANGING A DISPLAY SESSION FROM ONE HOST TO ANOTHER	37
SHARING A PRINTER WITH MULTIPLE HOSTS	37
TN5250E OPERATION.....	38
<i>Starting Display Sessions</i>	38
<i>Starting Printer Sessions</i>	38
<i>Re-Connect Sessions</i>	39
<i>Disconnect Sessions</i>	39
<i>How Telnet Names Devices</i>	39
<i>Display Emulations</i>	40
ANYNET OPERATION.....	41
<i>Starting Display Sessions</i>	41

<i>Starting Printer Sessions</i>	41
<i>Re-Connect Sessions</i>	41
<i>Disconnect Sessions</i>	41
<i>How AnyNet Names Devices</i>	42
<i>Display Emulations</i>	42
SNA OPERATION.....	43
IPDS OPERATION VIA PPR/PPD	43
TROUBLESHOOTING	44
GENERAL ERROR CONDITIONS	44
GENERAL CONTROLLER STATUS MESSAGES	46
TN5250E HOST COMMUNICATION STATUS MESSAGES	47
TN5250E PRINTER CONNECTION STATUS MESSAGE	49
ANYNET HOST COMMUNICATION STATUS MESSAGES	51
SNA HOST COMMUNICATION STATUS MESSAGES	53
IPDS ERROR CONDITIONS	56
LED INDICATORS	56
FIRMWARE UPGRADE PROCESS	58
I-O CONFIGURATION UTILITY UPGRADE PROCESS	59
UNINSTALLING THE I-O CONFIGURATION UTILITY	59
RESTORING FACTORY DEFAULTS	59
<i>Restoring Factory Defaults Using the I-O Configuration Utility</i>	59
HOST COMMUNICATION TRACE.....	60
<i>Start a Trace</i>	60
<i>End a Trace</i>	60
<i>Print a Trace</i>	60
MANUFACTURER'S WARRANTY & REPAIR POLICY	61

Introduction

This chapter provides a brief overview of the I-O Xip+ Twinax Controller.

Overview

The I-O Xip+ Twinax Controller is built on a Linux platform and designed to connect up to forty two IBM Twinax displays and printers to IBM AS/400, iSeries or eServer i5 midrange computer systems via Ethernet using industry standard TCP/IP and SNA protocols. Configuration of the controller is accomplished through I-O's simple and easy to use remote administration software, the I-O Configuration Utility.

Standard Features

I-O Xip+ Twinax Controller contains the following features:

- Attaches up to 42 display and printer devices
- Connects up to a maximum of 4 hosts
- Allows up to 4 display sessions per twinax address
- Supports TCP/IP (TN5250e, AnyNet) for remote and local connections
- Supports SNA protocol for local connections. **Currently not a supported protocol.**
- Supports all 5250 twinax display stations. Display model type is matched to Telnet models: 5251m11, 5291-1, 5292-2, 3180-2, 3179-2, 3196-A1, 3477-FG, 3477-FC (InfoWindow II features are not supported).
- When using TN5250e, the host configures all SCS printers as 3812-1, the Xip+ controller converts 3812-1 commands to 4214, 5224, 5225, or 5256 depending upon the printer attached.
- When using TN5250e, SCS printer sessions allow you to select HPT (host print transform) for applications which require a work station customizing object.
- When using AnyNet, the host recognizes all SCS and IPDS printer's native model types
- Support of PPR/PPD configuration for IPDS printers with a host license for PSF/400.
- 10/100BaseT RJ45 auto-sensing connector
- Ethernet (IEEE 802.2, 802.3)
- DHCP client

Unpacking

When you receive the controller, check the packaging for water or physical damage, and notify the carrier immediately if any damage is evident. Keep the original packaging in case the interface needs to be moved or shipped. The following items are included in the package:

- An I-O Xip+ Twinax Controller
- A CD-ROM containing:
 - I-O Xip+ Twinax Controller User's Guide
 - I-O Configuration Utility
- Getting Started Guide
- Power Supply

About the Xip+ Twinax Controller




LED Indicators & Power Button on the Unit

Link	This LED will be on indicating the controller has a good link with the Ethernet LAN.
Activity	This LED will flash on and off as Ethernet packets are detected on the LAN.
Power	This LED (blue circle around power button) indicates when the controller is powered on.
Ready	<p>In the Ready state, this Host Communication Status LED can have one of three values:</p> <ul style="list-style-type: none">• Off – No host connection. The controller has no connection to any of the configured host computers.• Blinking – Some hosts are connected. The controller currently has established connections to some of the configured host computers, but not to all.• On Steady – All hosts are connected. The controller currently has established connections to all of the configured host computers. Will have a heartbeat every 5 seconds.

Line 1	<p>In the Ready state, this Twinax Cable Status LED indicates whether a twinax device is currently responding to polls on the first twinax cable.</p> <ul style="list-style-type: none"> • On with a heartbeat – Indicates that at least one printer or display is responding to polls. • Off with a heartbeat – Indicates no devices are currently responding on the cable.
Line 2 etc.	<p>In the Ready state, this Twinax Cable Status LED indicates whether a twinax device is currently responding to polls on the second twinax cable.</p> <ul style="list-style-type: none"> • On with a heartbeat – Indicates that at least one printer or display is responding to polls. • Off with a heartbeat – Indicates no devices are currently responding on the cable.

Physical Connectors

5250 Twinax	The twinax turrets, Line 1 for a 7-device controller through Line 6 for a 42-device controller are used for connecting your devices, whether through twinax cable or a star panel.
External Power Supply	<p>The power transformer is a 110 or 220 VAC to 12VDC 3.3A  switching power supply.</p>
RJ45	This RJ45 connector is where the Ethernet cable is attached. The controller will automatically link at the speed of the network.
DB15	The DB15 connector is used to attach a display for configuration purposes beyond those offered in the Configuration Utility.
USB	The USB ports are used for connecting a keyboard and USB Stick for configuration and firmware update purposes.

Installation

No special training is needed to install the I-O Xip+ Twinax Controller. There are four phases involved in setting up the controller:

1. Install the controller – see Hardware Installation in this chapter.
2. Install the I-O Configuration Utility – see Install the I-O Configuration Utility in this chapter.
3. Configure the AS/400, iSeries or eServer i5 host – see the Configure the AS/400, iSeries or eServer i5 Host chapter.
4. Configure the Xip+ controller – see the Configure the Xip+ Twinax Controller chapter.

Hardware Installation

1. Inspect the package for damage.
2. Connect each Twinax device to a Twinax cable (maximum of 7 devices on a twinax cable).
3. Set the Twinax address on each device (each device must have a different address).
4. Connect Twinax lines to the turret(s).
5. Connect the Ethernet cable.
6. Power up all Twinax devices.
7. Connect the power cord to the unit and a wall outlet.

Install the I-O Configuration Utility. Need V4.73 or higher.

The I-O Configuration Utility is used to configure the Xip+ controller. It is also used to help diagnose connection problems.

1. Insert the I-O Configuration Utility CD in the CD-ROM drive of a Windows XP or newer PC.
2. Click Start | Run, and enter “d:\configuration utility\setup.exe”, click OK.
3. Follow the on screen prompts.
4. Navigate to the I-O Configuration menu and start the I-O Configuration Utility.



NOTE: THE I-O CONFIGURATION UTILITY IS A REMOTE ADMINISTRATIVE UTILITY USED TO SETUP I-O LAN BASED PRODUCTS INCLUDING PRINT SERVERS, ETHERNET DISPLAYS, AND THE XIP+ CONTROLLER. IT IS RECOMMENDED THAT THE MOST RECENT VERSION OF THE I-O CONFIGURATION UTILITY ALWAYS BE USED. THE MOST RECENT VERSION IS AVAILABLE ON I-O'S FTP SITE, <FTP://FTP.IOCORP.COM/UTILITIES/CONFIGURATION UTILITY/>



THE XIP+ REQUIRES A DHCP SERVER TO ASSIGN AN IP ADDRESS IN ORDER FOR THE CONFIGURATION UTILITY TO SEE THE CONTROLLER. IF YOU DON'T HAVE A DHCP SERVER OR IF AN IP ADDRESS FAILS TO GET ASSIGNED, YOU WILL NEED TO CONNECT A MONITOR AND KEYBOARD TO THE VGA AND USB PORTS ON THE BACK OF THE CONTROLLER. THE CONTROLLER USES A LINUX OS, WHICH WILL TAKE A FEW MINUTES TO BOOT. AFTER BOOTING UP, PRESS ENTER TO GET A REQUEST FOR LOGIN AND PASSWORD. THE USER IS 'ROOT' AND THE PASSWORD IS 'IO-0001'.

AFTER LOGGING ON, TYPE THE COMMAND: ./SETIPADR AND FOLLOW THE PROMPTS TO ENTER THE IP ADDRESS, SUBNET MASK AND GATEWAY. ENTER THE COMMAND 'EXIT' AND REBOOT THE CONTROLLER.

AFTER REBOOTING, REFRESH THE CONFIGURATION UTILITY AND YOU SHOULD SEE THE CONTROLLER.

Configure the AS/400, iSeries or eServer i5 Host

Prior to configuring the I-O Xip+ Twinax Controller, it will be necessary to configure the AS/400, iSeries or eServer i5 host. Configuring the host involves determining which of three protocols to use for communicating with the controller, and then setting up the appropriate configuration settings on the host.

Selecting the Protocol to Communicate with the Controller

Three protocols are available to connect to the AS/400, iSeries or eServer i5 host. All protocols are auto configuring on the host. Choose the protocol based upon the type of devices that are being attached and whether the Xip+ controller is being attached locally or remotely to the host.



NOTE: THE CONTROLLER WILL SUPPORT UP TO FOUR HOSTS. ON THE FIRST HOST, ANY ONE OF THE THREE PROTOCOLS MAY BE SELECTED. ON THE SECOND, THIRD AND FOURTH HOSTS, ONLY TN5250E MAY BE USED.

- **TN5250e** is a routable protocol. This means that it can be used at remote locations (or where there is a router between the controller and the host). It is the easiest protocol to setup for displays, SCS and IPDS printers. When configuring an IPDS Printer using the TN5250 protocol, you must have PSF/400 installed and manually configure the IPDS Printer on the iSeries Host. Use the IP Address of the Xip+ as the Remote Location and the proper Port Number shown on Page 26 based on the attached Line and Twinax Address of the IPDS Printer.

Non-IPDS Printers are auto configured on the host as 3812-1 SCS page printers. The controller will customize the data stream to the attached twinax printer's capability removing SCS commands the printer cannot support. This allows printers like a 4214, 5224, etc. to be attached. However, TN5250e is limited in that it does not support posting the dot-matrix form alignment message (see note) as well as the IBM dot-matrix functions of backspace, bold, underscore or overstrike.

Displays will automatically be matched to the closest TN5250e emulation by the controller. For example, a 3180 will be matched to a 3180, but a 3489 will be matched to a 3477. The display models that Telnet supports are: 5251m11, 5291-1, 5292-2, 3180-2, 3179-2, 3196-A1, 3477-FG and 3477-FC non-InfoWindow (InfoWindow II features are not supported).



TIP: TN5250E IS RECOMMENED WHEN ALL PRINTERS ARE SCS OR IPDS WITH A HOST LICENSE FOR PSF/400, ARE 3812-1 LASER PRINTERS OR DOT-MATRIX PRINTERS NOT AFFECTED BY THE BACKSPACING LIMITATIONS.



NOTE: FORMS ALIGNMENT MESSAGES ON DOT MATRIX PRINTERS CAN BE ENABLED BY CHANGING THE FORM FEED PARAMETER IN THE PRINTER CONFIGURATION TO: *CONT.

- **AnyNet** is actually SNA encapsulated in TCP/IP and is a routable protocol. It is more difficult than TN5250e to initially configure, but has the advantage of reporting to the host each twinax device's native model so the actual device will be auto configured by the host. AnyNet does not have the limitations of TN5250e in that it fully supports all SCS and IPDS printers. I-O's implementation of AnyNet supports all display functions except InfoWindow II features (like Extended Character Display and Extended User Interface).



TIP: ANYNET IS THE RECOMMENDED PROTOCOL TO USE WHEN CONNECTING IPDS PRINTERS WHEN THE HOST DOES NOT HAVE A LICENSE FOR PSF/400 OR WHERE THERE ARE IBM SCS DOT-MATRIX PRINTERS WHICH ARE PRINTING APPLICATIONS THAT REQUIRE FEATURES NOT SUPPORTED BY TN5250E.

-
- **SNA** is IBM's most robust protocol. However, SNA cannot be routed. Like AnyNet, SNA is more difficult than TN5250e to initially configure. This protocol can only be used when the Xip+ controller is located within the same Ethernet link as the host (there cannot be a router between them). Like AnyNet, each twinax device's actual model will be auto configured on the host. SNA also does not have the limitations of TN5250e in that it fully supports all SCS and IPDS printers. I-O's implementation of SNA supports all display functions except InfoWindow II features (like Extended Character Display and Extended User Interface). **Currently the SNA Protocol does not work, please use the AnyNet Protocol for features requiring SNA.**



TIP: SNA IS THE RECOMMENDED PROTOCOL TO USE FOR LOCAL CONNECTIONS WHEN PRINTING APPLICATIONS THAT REQUIRE FEATURES NOT SUPPORTED BY TN5250.

- **IPDS via PPR/PPD.** This TCP/IP protocol is used by IBM hosts to communicate with LAN attached IPDS printers. This is the preferred protocol over using AnyNet for IPDS printing when the host has a license for PSF/400.

PPR/PPD does require the configuration of host 1 with the TN5250 protocol in order for the controller to communicate with the printer. This is in addition to assigning the controller an IP Address, sub-net mask, and default router (if applicable). All other setup is done on the IBM host side.



NOTE: IBM REQUIRES A LICENSE FOR PSF/400 IN ORDER TO PRINT IPDS OVER IP. IF YOU DO NOT HAVE A LICENSE FOR PSF/400, USE THE ANYNET PROTOCOL.

Configure the Host to use TN5250e

To configure the AS/400, iSeries or eServer i5 host to support TN5250e, the host must meet the following requirements:

- Be running OS/400 V3R2 or newer, with the most recent applicable PTFs applied.
- Have the most recent version of Client Access installed on the host.
- Have the most recent version of the Telnet server installed on the host.
- Have the host's auto configuration function turned on. This is done using the host command:

CHGSYSVAL QAUTOCFG

Find the "Auto configure device" entry, and set the value to "1".

- Make certain the host can create virtual devices and there are a sufficient number of devices available to be created. This is done using the host command:

CHGSYSVAL SYSVAL(QAUTOVRT)

In the New Value field, enter the maximum number of user-created virtual devices that can be created.

- If the OS/400 version is earlier than V4R2, the Telnet server will need to be started using the host command:

STRTCPSVR SERVER(*TELNET)

V4R2 and newer versions will automatically start the Telnet server.

- Identify the host's TCP/IP address. This will be used in configuring the Xip+ controller. This is done using the host command:

CFGTCP

Take option "10. Work with TCP/IP host table entries", look for the Host Name and *record the host's TCP/IP address* as it will be used when configuring the Xip+ controller.

After these requirements are met and the host settings are completed, the AS/400, iSeries or eServer i5 host will automatically configure the 5250 display and printer sessions the first time you attempt to make a connection. The IBM host will use the Telnet device name created from the default name entered or the name manually entered when configuring the display and printer sessions.

SCS printers are auto configured on the host as 3812-1 page printers. The controller will customize the data stream sent to the attached twinax printer's capability removing SCS commands the printer cannot support, allowing printers like 4214's, 5524's etc. to be attached. If forms and alignment messaging for line and dot matrix printers is necessary, you will need to change the Form Feed option in the printer configuration to *CONT. If you are using other printing features not supported by TN5250 – use the AnyNet or SNA protocols. Also, IBM does not support IPDS printers over TN5250e.

Displays will automatically be matched to the closest TN5250e emulation by the controller. For example, a 3180 will be matched to a 3180, but a 3489 will be matched to a 3477. The display models Telnet supports are: 5251m11, 5291-1, 5292-2, 3180-2, 3179-2, 3196-A1, 3477-FG and 3477-FC non-InfoWindow (InfoWindow II features are not supported).

Configure the Host to Use AnyNet

The process of configuring the AS/400, iSeries or eServer i5 host includes:

1. Fill out the AnyNet Configuration Worksheet that will be used when configuring the Xip+ controller.
2. Setting the host values so the host will auto configure the controller and its attached devices when the Xip+ controller is brought on line.
3. After the Xip+ controller is brought on line, disable the host's Switched Disconnect function in the 5494 Controller description.



CAUTION: IT IS ABSOLUTELY NECESSARY THAT THE HOST'S SWITCHED DISCONNECT FUNCTION BE DISABLED OR ANYTIME A DEVICE ATTACHED TO THE XIP+ CONTROLLER IS POWERED DOWN, THE HOST WILL DROP SOME OR ALL OF THE DEVICES ON THE CONTROLLER.

AnyNet Configuration Worksheet



TIP: PRINT THIS WORKSHEET AND FILL IN THE REQUIRED VALUES. YOU WILL USE THIS INFORMATION WHEN SETTING UP THE CONTROLLER.

Host TCP/IP Address

The AS/400, iSeries or eServer i5 host's Local Adapter Address is: ____ . ____ . ____ . ____

1. On the host command line, enter **CFGTCP**, press ENTER.
2. Select Option 10 – Work with TCP/IP Host Table Entries, press ENTER. Scroll down until you find an entry with the host's name (the Local Control Point name). Write the IP address in the blank above.
3. As an alternate to step 2, select Option 1 – Work with TCP/IP Interfaces, press ENTER. The IP address will be shown on the entry with a line type of "**ELAN". Write the address in the blank above.

Host Control Point Name

The AS/400, iSeries or eServer i5 host's Host Control Point Name is: _____

1. On the host command line, enter **DSPNETA**, press ENTER.
2. Locate the **Local Control Point Name**. Write the name in the blank above.

Host Network ID

The AS/400, iSeries or eServer i5 host's Host Network ID is: _____

1. On the host command line, enter **DSPNETA**, press ENTER.
2. Locate the **Local Network ID** field. Write the name in the blank above.

Interface Control Point Name

The Interface Control Point name the host will use is: _____

This name must be unique and meet the following requirements:

- The name can be no shorter than two characters and no longer than eight characters in length.
- The name must start with an alpha character (A-Z).
- The name must contain only alpha-numeric characters (A-Z, 0-9).
- The first four characters must uniquely identify the Xip+ controller, since the controller will automatically create printer and display devices on the host using the first four characters of this name followed by five additional host assigned characters. If using a host naming scheme, the first three characters can be the same with the fourth being different.

AnyNet Controller and Remote Control Point Names

The AnyNet Controller Name is: _____

The AnyNet Remote Control Point Name is: _____



NOTE: IF THERE IS NOT AN ANYNET CONTROLLER ALREADY CONFIGURED ON THE HOST, YOU WILL HAVE TO CREATE ONE. THEN COME BACK TO THIS WORKSHEET AND FILL IN THE BLANKS USING THE INSTRUCTIONS BELOW. REFER TO THE CREATING AN ANYNET CONTROLLER SECTION FOR INSTRUCTIONS ON CREATING A NEW CONTROLLER.

Generally, it is recommended that one AnyNet controller on the host be shared with all Xip+ controllers. When configuring the AnyNet Controller and Remote Control Point names on the host, the same name may be used for both. This name is different from the Interface Control Point Name for the Xip+ controller.

However, if your host supports more than 254 AnyNet devices, configure one AnyNet controller for each Xip+ controller. In this case, the AnyNet Controller Name, the AnyNet Remote Control Point Name and the Interface Control Point Name for the Xip+ controller must be the same name.

If there is already an AnyNet Controller defined on the host and you plan to use the Xip+ controller under the host's AnyNet controller, do the following:

1. On the host command line, type **WRKCTLD**, press ENTER.
2. Locate the AnyNet Controller (it will have a Type of ****APPC**), enter the value **"5"** in front of that controller. Press ENTER.
3. Locate the Link Type field. If it has a value of ****ANYNW**, continue to the next step. Otherwise, press F12, and repeat steps 2 and 3 on each AnyNet Controller until the right controller is found.
4. Locate the Controller Description field and write the name in the blank for the AnyNet Controller Name above.
5. Locate the Remote Control Point name and write the name in the blank for the AnyNet Remote Control Point Name above.

Setting the Host Values

Before installing the Xip+ Controller the host's system values must be set to allow AnyNet Communication and auto configuration of devices.



TIP: USE THE INFORMATION ON THE ANYNET WORKSHEET IN SETTING THE HOST VALUES IN THIS SECTION.

Enabling AnyNet

AnyNet support must be enabled on the host. Check the current setting by doing the following:

1. On the host's command line, enter **DSPNETA**, press ENTER.
2. Scroll down to the last page of the available parameters. If the Allow AnyNet Support value is set to *No, return to the command prompt (press the CMD3 key).
3. On the host's command line, enter:

CHGNETA ALWANYNET (*YES)

Enabling Auto Configuration

Make certain that the AS/400, iSeries or eServer i5 host is set up for auto-configuration of new devices by doing the following:

1. On the host command line, enter **CHGSYSVAL SYSVAL(QAUTOCFG) VALUE('1')**, press ENTER.
2. On the host command line, enter **CHGSYSVAL SYSVAL(QAUTORMT) VALUE('1')**, press ENTER.
3. On the host command line, enter **CHGSYSVAL SYSVAL(QAUTOVRT) VALUE('512')**, press ENTER. The Number of devices to auto configure should be large enough to account for all virtual (APPC) devices on your network. If you are unsure, you may want to increase this number by using the CHGSYSVAL command.
4. On the host command line, enter **WRKLIND**, press ENTER. Enter a 2 to change or 5 to display in front of the line the Xip+ controller is attached to. Press ENTER several times until Autocreate controller is displayed in the lower section of the menu options. Verify that the **Autocreate controller** parameter is set to ***Yes**.

Creating an AnyNet Controller



NOTE: IF YOU ALREADY HAVE AN ANYNET CONTROLLER DEFINED ON YOUR HOST, SKIP TO THE SECTION, VARYING ON THE ANYNET CONTROLLER.

I-O recommends only one AnyNet APPC Controller on the host. However, this limits the maximum AnyNet devices to 254. If there are more than 254 AnyNet devices on the host I-O recommends creating one AnyNet controller for each Xip+ controller.

To Create a "Global" AnyNet Controller

1. On the host command line, enter **CRTCTLAPPC**, press F4.
2. In the Controller Description field, enter the name of your choice. I-O recommends "ANYNET".
3. In the Link Type field, enter ***ANYNW**.
4. Press ENTER.

-
5. In the Remote Net ID field, enter ***NETATR**.
 6. In the Remote Control Point Name, enter the name of your choice. I-O recommends "AnyNet".
 7. Press ENTER.

To create one AnyNet Controller for Each Xip+ Controller

It is possible to create an individual AnyNet controller for every Xip+ controller attached to the host. However, this approach can be confusing since any programmable AnyNet APPC device will randomly configure under the different APPC controllers. Although this does not affect operation, it does make it more difficult to locate and administer the various AnyNet APPC devices.

1. On the host command line, enter **CRTCTLAPPC**, press F4.
2. In the Controller Description field, enter the Xip+ Controller Name from the AnyNet Worksheet.
3. In the Link Type field, enter ***ANYNW**.
4. Press ENTER.
5. In the Remote Net ID field, enter ***NETATR**.
6. In the Remote Control Point Name, enter the Xip+ Controller Name from the AnyNet Worksheet.
7. Press ENTER.

Varying on the AnyNet Controller

Vary On the AnyNet controller by typing the following on the host command line:

1. **WRKCFGSTS *CTL** [AnyNet Controller Name]
2. Press ENTER.
3. Type a "1" in front of the APPC controller, press ENTER

Adding the Xip+ Controller to the TCP/IP Host Table



NOTE: THIS PROCESS WILL NEED TO BE COMPLETED AFTER THE XIP+ CONTROLLER'S IP ADDRESS HAS BEEN ASSIGNED.



CAUTION: MAKE SURE THE TCP/IP ADDRESS BEING ASSIGNED TO THE XIP+ CONTROLLER IS NOT BEING USED BY ANOTHER DEVICE. TO DETERMINE IF ANOTHER DEVICE IS USING THE IP ADDRESS, WITH THE XIP+ CONTROLLER POWERED OFF, PING THE IP ADDRESS. IF THERE IS A RESPONSE, THEN THE IP ADDRESS IS BEING USED BY ANOTHER DEVICE.

1. On your host's command line, enter **CFGTCP**, press ENTER.
2. Select 10 Work with TCP/IP host table entries.
3. Scroll down and make sure the IP address being assigned to the Xip+ Controller is not already in use. Then return to the top of the list.
4. Place a "1" on the blank line on top of the list to add a TCP/IP device, press ENTER.
5. Enter the TCP/IP address of the Xip+ controller in the Internet address field.
6. In the Host names field, enter the following: [Interface Control Point Name from the AnyNet Worksheet].[Host Network ID].SNA.IBM.COM

For example: if the Interface Control Point Name is IO5794 and the Host Network ID is APPN, the value entered would be "IO5794.APPN.SNA.IBM.COM".
7. If desired, enter an additional description for the Xip+ controller in the Text description field.

-
8. Press ENTER.

Changing the AS/400, iSeries or i5's APPN Remote Configuration List

When using one AnyNet APPC controller for all AnyNet APPC devices, each Xip+ controller needs to be added to the host's APPN remote configuration list. To accomplish this, follow these steps:

1. On the host command line, type **CHGCFGL *APPNRMT**, press ENTER.
2. Scroll to the bottom of the displayed list and enter the following required information directly from the AnyNet worksheet:

Remote Location:	Interface Control Point Name
Remote Network ID:	Host Network ID
Local Location:	Host Control Point Name
Remote Control Point:	AnyNet Remote Control Point Name
Control Point Net ID:	Host Network ID

3. Press ENTER.

Disabling the Host's Switched Disconnect Function



CAUTION: IT IS ABSOLUTELY NECESSARY THE HOST'S SWITCHED DISCONNECT FUNCTION BE DISABLED OR ANYTIME A DEVICE ATTACHED TO THE XIP+ CONTROLLER IS POWERED DOWN, THE HOST WILL DROP SOME OR ALL OF THE DEVICES ON THE CONTROLLER.

After the Xip+ controller has been configured and is on-line, the Switched Disconnect function **must** be set to **"*NO"**.

To disable the Switched Disconnect function:

1. On the host command line, type **WRKCTLD**, press ENTER.
2. Locate the controller that was just created. It will be a Type of "5494" and have a name that consists of the first five characters of the Interface Control Point Name plus "RMT. For example, if the Interface Control Point Name was EXAMPLE, then the controller name would be "EXAMPRMT"
Enter the value "8" in front of the controller, press ENTER.
3. The controller and its attached devices will be displayed. Vary off the controller by entering the value "2" in front of the controller. After the controller and its devices have been varied off, press F12.
4. Enter the value "2" in front of the controller. Press ENTER.
5. Locate the Switched Disconnect field, and change the value to **"*NO"**. Press ENTER.
6. Enter the value "8" in front of the controller. Vary on the controller by entering the value "1" in front of the controller. After the controller and its devices have been varied on, press F3.

Configure the Host to Use SNA

The process of configuring the AS/400, iSeries or eServer i5 host includes:

1. Complete the SNA Configuration Worksheet.
2. Set the host values so the host will auto configure the devices attached to the controller.

Currently the Xip+ does not support the SNA protocol, configure using Anynet if you need the functionality SNA gives you.

SNA Configuration Worksheet



TIP: PRINT THIS WORKSHEET AND FILL IN THE REQUIRED VALUES. YOU WILL USE THIS INFORMATION WHEN SETTING UP THE CONTROLLER.

Host Local Adapter Address

The AS/400, iSeries or eServer i5 host's Local Adapter Address is: ____ : ____ : ____ : ____ : ____ : ____

1. On the host command line, enter **WRKLIND**, press ENTER.
2. Scroll down until the Ethernet line is shown where the Xip+ controller will be attached.
3. Enter "5" for Display in the Opt column.
4. Scroll down until the **Local Adapter Address** field is shown. Write the address in the format of XX:XX:XX:XX:XX:XX in the blank above.

Host Control Point Name

The AS/400, iSeries or eServer i5 host's Host Control Point Name is: _____

1. On the host command line, enter **DSPNETA**, press ENTER.
2. Scroll down until the **Local Control Point Name** is shown. Write the name in the blank above.

Host Network ID

The AS/400, iSeries or eServer i5 host's Host Network ID is: _____

1. On the host command line, enter **DSPNETA**, press ENTER.
2. Scroll down until the **Local Network ID** field is shown. Write the name in the blank above.

Interface Control Point Name

The Interface Control Point name the host will use is: _____

This name must be unique and meet the following requirements:

- The name can be no shorter than two characters and no longer than eight characters in length.
- The name must start with an alpha character (A-Z).
- The name must contain only alpha-numeric characters (A-Z, 0-9).
- The first four characters must uniquely identify the Xip+ controller, since the controller will automatically create printer and display devices on the host using the first four characters of this name followed by five additional host assigned characters.

Setting the Host for Auto Configuration

Make certain the AS/400, iSeries or eServer i5 host is set up for auto-configuration of new devices by doing the following:

1. On the host command line, enter **CHGSYSVAL SYSVAL(QAUTOCFG) VALUE('1')**, press ENTER.
2. On the host command line, enter **CHGSYSVAL SYSVAL(QAUTORMT) VALUE('1')**, press ENTER.
3. On the host command line, enter **CHGSYSVAL SYSVAL(QAUTOVRT) VALUE('512')**, press ENTER. The Number of devices to auto configure should be large enough to account for all virtual (APPC) devices on your network. If you are unsure, you may want to increase this number by using the CHGSYSVAL command.
4. On the host command line, enter **WRKLIND**, press ENTER. Enter a 5 to display, or 2 to change in front of the line the Xip+ controller is attached to. Press ENTER several times until Autocreate controller is displayed in the lower section of the menu options. Verify that the **Autocreate controller** parameter is set to ***Yes**.

Configuring the Host for IPDS Printing

Several steps are required to configure the IBM host system to enable IPDS printing to a twinax IPDS printer. These include ensuring that PSF/400 is installed, that your AS/400 has the required PTF's installed and configured properly to support TCP/IP printing, verifying that line descriptions and host TCP/IP table entries are made, creating the PSF object, and configuring printer devices for use with PSF/400. **See the appropriate configuration instructions for the OS Version of your iSeries listed below on the next several pages.**

Requirements

Make sure the AS/400 host is running a version of OS/400 that supports TCP/IP, has PSF/400 installed, and that the most recent PTF's are installed and configured.

The PTF information presented below may have been superceded with more recent releases. For versions not shown below, check with IBM for the appropriate PTF information. Additional information about PTF's to use can be obtained from IBM's AS/400 service Web site:
<http://as400service.rochester.ibm.com>.

OS/400 V3R1

General	C6198310 Cumulative tape or later SF35164 TCP/IP for PSF/400 (order cover letter only) SF24140 IPDS pass through (order cover letter only)
Sockets	SF30018
WRKAFFP2	SF40039
PSF/400	APAR SA44304

OS/400 V3R2

PSF/400	APAR SA44304
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OS/400 V3R6

General	C5346360 Cumulative tape or later SF45620 TCP/IP for PSF/400 (order cover letter only) SF45624 IPDS pass through
Sockets	SF30508
WRKAFFP2	SF31461
PSF/400	APAR SA44304

OS/400 V3R7

PSF/400	APAR SA44304
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Creating a Line Description on the AS/400

If the controller and the AS/400 host are not on the same LAN segment, have the system administrator verify there is a route defined in the TCP/IP route List. If there is not a route defined, use the AS/400 **ADDTCPRTE** COMMAND to create a route definition.

Also, verify if a line description has been created for the line to which the controller will be attached. If there is not a line description, have the system administrator use the AS/400 **CRTLINETH** to create an Ethernet line description.

Configuring a TCP/IP Host Table Entry

This step is optional – IBM suggests that a host entry may be created in the TCP/IP table. Have the system administrator use the AS/400 **CFGTCP** command to add the host name and TCP/IP address of the printer's Ethernet connection.

Configuring V3R1 or V3R6

PSF/400 for V3R1 or V3R6

The following instructions are used to create a printer device description:

1. At the AS/400 command line, enter the command **CRTDEVPRT**.
2. Press the F11 key to display the keywords.
3. In the "Device Description" (**DEV**D) field, enter the name of the printer. The name may be comprised of the letters A-Z and numerals 0-9. It must begin with a letter, and a maximum of 10 characters is allowed.
4. In the "Device Class" (**DEV**CLS) field, enter ***RMT**.
5. In the "Device Type" (**TYPE**) field, enter ***IPDS**.
6. In the "Device Model" (**MODEL**) field, enter **0**.
7. In the "Advanced Function Printing" (**AFP**) field, enter ***YES**.
8. In the "AFP Attachment" (**AFP**ATTACH) field, enter ***APPC**.
9. In the "Font" (**FONT**) field, enter an appropriate value such as **11**.
10. In the "Form Feed" (**FORM**FEED) field, enter ***AUTOCUT**.
11. In the "Remote Location" (**RMT**LOCNAME) field, enter **TCPIP**.

AFP for V3R1 or V3R6

The following instructions are used to create a data area that is used by PSF/400:

1. At the AS/400 command line, enter the command **WRKAFP2**.
2. Press the F11 key to display the keywords, then press F10 to display additional values.
3. In the "Printer Device Name (**DEV**D)" field, enter the name of the printer. This name must be identical to the name entered for the device name in the **DEV**D field in the **CRTDEVPRT** command.
4. In the "IPDS Pass Through" (**IPDS**PASTHR) field, enter ***NO**.

You may want to set this value to ***YES** if you have applications that generate SCS or IPDS data streams that are printed to an AFP printer if the following uses apply: 1) An application like Business Graphics Utilities, GDDM, or Virtual Print that does not support AFPDS is used; or 2) The SCS or IPDS application does not contain any reference to overlay page segments or host font character sets. Certain limitations and other configuration considerations are discussed in IBM's *Printer Device Programming Version 5 (SC41-5713-05)* publication.

5. In the "TCP/IP Support" (**TCPIP**) field, enter ***YES**.

6. In the “Remote System” (**RMTSYS**) field, enter the TCP/IP address of the Xip+ Controller. You may also enter the host name if you used the optional CFGTCP command to create a TCP/IP Host Table entry.
7. In the “Port” (**PORT**) field, enter a port number based upon which twinax address and which line on the controller the IPDS printer is attached. Use the following table to assign the port:

Twinax Address	Line1 Port #	Line 2 Port #	Line 3 Port #	Line 4 Port #	Line 5 Port #	Line 6 Port #
0	5001	5008	5015	5022	5029	5036
1	5002	5009	5016	5023	5030	5037
2	5003	5010	5017	5024	5031	5038
3	5004	5011	5018	5025	5032	5039
4	5005	5012	5019	5026	5033	5040
5	5006	5013	5020	5027	5034	5041
6	5007	5014	5021	5028	5035	5042

For example, if the IPDS printer were attached to Line 2 and had a twinax address of 5, then the value to enter in the Port field would be 5013.

8. In the “Activation Timer” (**ACTTMR**) field, enter ***NOMAX**. This will cause PSF/400 to wait indefinitely for a response to an activation request.
9. In the “Inactivity Timer” (**INACTTMR**) field for V3R1, or “Release Timer” (**RLSTMR**) field for V3R6, enter ***SEC15**. This parameter should be set to a value less than the timeout value on the printer. This is the time PSF/400 will maintain a session with the I-O Printer while there are no spooled files with a status of RDY.

Configuring V3R2

PSF/400 for V3R2

The following instructions are used to create a printer device description:

1. At the AS/400 command line, enter the command **CRTDEVPRT**.
2. Press the F11 key to display the keywords.
3. In the “Device Description” (**DEVVD**) field, enter the name of the printer. The name may be comprised of the letters AZ and numerals 0-9. It must begin with a letter, and a maximum of 10 characters is allowed.
4. In the “Device Class” (**DEVCLS**) field, enter ***RMT**.
5. In the “Device Type” (**TYPE**) field, enter ***IPDS**.
6. In the “Device Model” (**MODEL**) field, enter **0**.
7. In the “Advanced Function Printing” (**AFP**) field, enter ***YES**.
8. In the “AFP Attachment” (**AFPATTACH**) field, enter ***APPC**.
9. In the “Font” (**FONT**) field, enter an appropriate value such as **11**.
10. In the “Form Feed” (**FORMFEED**) field, enter ***AUTOCUT**.
11. In the “Remote Location” (**RMTLOCNAME**) field, enter **TCPIP**.

AFP for V3R2

The following instructions are used to create a data area that is used by PSF/400:

1. At the AS/400 command line, enter the command **CRTPSFCFG**.
2. Press F11 to display the keywords, then press F10 to display additional values.
3. In the "PSF Configuration" (**PSFCFG**) field, enter the name of the printer.
4. In the "Library" field, enter **QGPL**.
5. In the "IPDS Pass Through" (**IPDSPASTHR**) field, ***NO**.

You may set this value to ***YES** if you have applications that generate SCS or IPDS data streams that are printed to an AFP printer if the following uses apply: 1) An application like Business Graphics Utilities, GDDM, or Virtual Print that does not support AFPDS is used; or 2) The SCS or IPDS application does not contain any reference to overlay page segments or host font character sets. Certain limitations and other configuration considerations are discussed in IBM's *Printer Device Programming Version 5 (SC41-5713-05)* publication.

6. In the "Activation Release Timer" (**ACTRLSTMR**) field, enter ***NORDYF**. This will cause PSF/400 to print all spooled files with a status of RDY before releasing the session (which does not terminate the writer).
7. In the "Release Timer" (**RLSTMR**) field, enter ***SEC15**. This parameter should be set to a value less than the timeout value on the printer. This is the time PSF/400 will maintain a session with the printer while there are no spooled files with a status of RDY.
8. In the "Remote Location Name or Address" (**RMTLOCNAME**) field, enter the TCP/IP address of the Xip+ Controller. You may also enter the host name if you used the optional CFGTCP command to create a TCP/IP Host Table entry.
9. In the "Port" (**PORT**) field, enter a port number based upon which twinax address and which line on the controller the IPDS printer is attached. Use the following table to assign the port:

Twinax Address	Line 1 Port #	Line 2 Port #	Line 3 Port #	Line 4 Port #	Line 5 Port #	Line 6 Port #
0	5001	5008	5015	5022	5029	5036
1	5002	5009	5016	5023	5030	5037
2	5003	5010	5017	5024	5031	5038
3	5004	5011	5018	5025	5032	5039
4	5005	5012	5019	5026	5033	5040
5	5006	5013	5020	5027	5034	5041
6	5007	5014	5021	5028	5035	5042

For example, if the IPDS printer were attached to Line 2 and had a twinax address of 5, then the value to enter in the Port field would be 5013.

10. In the "TCP/IP Activation Timer" (**ACTTMR**) field, enter ***NOMAX**. This will cause PSF/400 to wait indefinitely for a response to an activation request.

Configuring V3R7 or V4R1

AFP for V3R7 or V4R1

1. At the AS/400 command line, enter the command **CRTPSFCFG**.
2. Press Enter or F4 to display the keywords.
3. In the “PSF Configuration” (**PSFCFG**) field, enter the name of the printer. Remember this name as it will also be entered in the User-Defined Object (USRDFNOBJ) field in the printer device description that will be created in the next section.
4. In the “IPDS Pass Through” (**IPDSPASTHR**) field, enter ***NO**.

You may set this value to ***YES** if you have applications that generate SCS or IPDS data streams that are printed to an AFP printer if the following uses apply: 1) An application like Business Graphics Utilities, GDDM, or Virtual Print that does not support AFPDS is used; or 2) The SCS or IPDS application does not contain any reference to overlay page segments or host font character sets. Certain limitations and other configuration considerations are discussed in IBM's *Printer Device Programming Version 5 (SC41-5713-05)* publication.

5. In the “Activation Release Timer” (**ACTRLSTMR**) field, enter ***NORDYF**. This will cause PSF/400 to print all spooled files with a status of RDY before releasing the session (which does not terminate the writer).
6. In the “Release Timer” (**RLSTMR**) field, enter ***SEC15**. This parameter should be set to a value less than the timeout value on the printer. This is the time PSF/400 will maintain a session with the printer while there are no spooled files with a status of RDY.

PSF/400 for V3R7 or V4R1

The following instructions are used to create a printer device description:

1. At the AS/400 command line, enter the command **CRTDEVPRT**.
2. Press the F4 key to display the keywords.
3. In the “Device Description” (**DEVDD**) field, enter the name of the printer. The name may be comprised of the letters A-Z and numerals 0-9, must begin with a letter, with a maximum of 10 characters allowed.
4. In the “Device Class” (**DEVCLS**) field, enter ***LAN**.
5. In the “Device Type” (**TYPE**) field, enter ***IPDS**.
6. In the “Device Model” (**MODEL**) field, enter **0**.
7. In the “LAN Attachment” (**LANATTACH**) field, enter ***IP**. Then press F10.
8. In the “Advanced Function Printing” field, enter ***YES**.
9. In the “Port” (**PORT**) field, enter a port number based upon which twinax address and which line on the controller the IPDS printer is attached. Use the following table to assign the port:

Port	Line	Twinax Address	Port	Line	Twinax Address
5001	1	0	5008	2	0
5002	1	1	5009	2	1
5003	1	2	5010	2	2
5004	1	3	5011	2	3
5005	1	4	5012	2	4
5006	1	5	5013	2	5
5007	1	6	5014	2	6

For example, if the IPDS printer were attached to Line 2 and had a twinax address of 5, then the value to enter in the Port field would be 5013.

10. In the “Font” (**FONT**) field, enter an appropriate value such as **11**.
11. In the “Form Feed” (**FORMFEED**) field, enter ***AUTOCUT**.
12. In the “Activation Timer” (**ACTTMR**) field, enter ***NOMAX**. This will cause the AS/400 host to wait indefinitely for a response to an activation request.
13. In the “Remote Location” (**RMTLOCNAME**) field, enter the TCP/IP address of the Xip+ Controller. You may also enter the host name if you used the optional CFGTCP command to create a TCP/IP Host Table entry.
14. In the “User-Defined Object” (**USRDFNOBJ**) field enter the printer name you entered in the PSF Configuration (PSFCFG) field when setting up AFP (section 3.1.6.1, step 3 above). This is the PSF configuration object that is used internally by the AS/400 when referring the I-O Print Server.

Leave the “Library” blank unless you know its name.

Enter ***PSFCFG** as the “Object Type”.

Configuring V4R2 and Above

AFP for V4R2 and Above

1. At the AS/400 command line, enter the command **CRTPSFCFG**.
2. Press Enter or F4 to display the keywords.
3. In the “PSF Configuration” (**PSFCFG**) field, enter the name of the printer. Remember this name as it will also be entered in the User-Defined Object (USRDFNOBJ) field in the printer device description that will be created in the next section.
4. In the “IPDS Pass Through” (**IPDSPASTHR**) field, enter ***NO**.

You may set this value to ***YES** if you have applications that generate SCS or IPDS data streams that are printed to an AFP printer if the following uses apply: 1) An application like Business Graphics Utilities, GDDM, or Virtual Print that does not support AFPDS is used; or 2) The SCS or IPDS application does not contain any reference to overlay page segments or host font character sets. Certain limitations and other configuration considerations are discussed in IBM's *Printer Device Programming Version 5 (SC41-5713-05)* publication.
5. In the “Activation Release Timer” (**ACTRLSTMR**) field, enter ***NORDYF**. This will cause PSF/400 to print all spooled files with a status of RDY before releasing the session (which does not terminate the writer).
6. In the “Release Timer” (**RLSTMR**) field, enter ***SEC15**. This parameter should be set to a value less than the timeout value on the printer. This is the time PSF/400 will maintain a session with the printer while there are no spooled files with a status of RDY.
7. In the “Automatic Session Recovery” field, enter ***YES**. This causes the PSF/400 to automatically attempt to resume printing when a session has been unexpectedly ended.
8. In the “Acknowledgement Frequency” field, enter **“10”**. This value is the frequency, in number of pages, that the AS/400 sends an acknowledgement request to the printer for status of pages printed. This value is used to determine where to restart printing after a connection has been lost and re-established. However, if acknowledgement frequency requests are made with great frequency, such as once per page, performance degradation may be noticed.
9. Optional selection – In the “Page Size Control” field, enter ***YES**. This causes PSF/400 to set the page size (forms) in lieu of using the printer's default size. Generally this parameter is used when a 4028 printer emulation is selected.
10. Optional Selection – In the “Edge Orient” field, enter ***YES**. When the page rotation value of a spooled file is ***COR** or ***AUTO** and the system rotates the output, 90 degree rotation is normally

used. When this parameter is *Yes, PSF/400 rotates the output 270 degrees instead of 90 degrees.

11. APPC and TCP/IP Retry Count – In the “Retry” field, enter *NOMAX. This causes the host to continually attempt to reconnect to the device.

PSF/400 for V4R2 and Above

The following instructions are used to create a printer device description:

1. At the AS/400 command line, enter the command **CRTDEVPRT**.
2. Press the F4 key to display the keywords.
3. In the “Device Description” (**DEVDD**) field, enter the name of the printer. The name may be comprised of the letters A-Z and numerals 0-9, must begin with a letter, with a maximum of 10 characters allowed.
4. In the “Device Class” (**DEVCLS**) field, enter *LAN.
5. In the “Device Type” (**TYPE**) field, enter *IPDS.
6. In the “Device Model” (**MODEL**) field, enter 0.
7. In the “LAN Attachment” (**LANATTACH**) field, enter *IP. Then press F10.
8. In the “Advanced Function Printing” field, enter *YES.
9. In the “Port” (**PORT**) field, enter port number based upon which twinax address and which line on the controller that the IPDS printer is attached. Use the following table to assign the port:

Twinax Address	Line 1 Port #	Line 2 Port #	Line 3 Port #	Line 4 Port #	Line 5 Port #	Line 6 Port #
0	5001	5008	5015	5022	5029	5036
1	5002	5009	5016	5023	5030	5037
2	5003	5010	5017	5024	5031	5038
3	5004	5011	5018	5025	5032	5039
4	5005	5012	5019	5026	5033	5040
5	5006	5013	5020	5027	5034	5041
6	5007	5014	5021	5028	5035	5042

For example, if the IPDS printer were attached to Line 2 and had a twinax address of 5, then the value to enter in the Port field would be 5013.

10. In the “Font” (**FONT**) field, enter an appropriate value such as 11.
11. In the “Form Feed” (**FORMFEED**) field, enter *AUTOCUT.
12. In the “Activation Timer” (**ACTTMR**) field, enter *NOMAX. This will cause the AS/400 host to wait indefinitely for a response to an activation request.
13. In the “Remote Location” (**RMTLOCNAME**) field, enter the TCP/IP address of the Xip+ Controller. You may also enter the host name if you used the optional CFGTCP command to create a TCP/IP Host Table entry.
14. In the “User-Defined Object” (**USRDFNOBJ**) field, enter the printer name you entered in the PSF Configuration (PSFCFG) field when setting up AFP (section 3.1.7.1, step 3 above). This is the PSF configuration object that is used internally by the AS/400 when referring the I-O Print Server.

Leave the “Library” blank unless you know its name.

Enter *PSFCFG as the “Object Type”.

Verifying the IPDS Configuration on the AS/400

To test that the AS/400 and the Xip+ Controller are connected and communicating, ping the controller from an AS/400 workstation with the following command:

PING 'TCP/IP ADDRESS' or PING HOST NAME

'TCP/IP Address' is the address of the Xip+ Controller (be sure to include the single quote marks around the address). Host name is the optional name you may have defined for the controller if you created an optional TCP/IP Host Table entry. If the pings are successful, vary on the printer's device description by typing this command (all on one line):

WRKCFGSTS *DEV *printer name*

To use PSF/400 to send IPDS files to the printer, start the writer by typing this command:

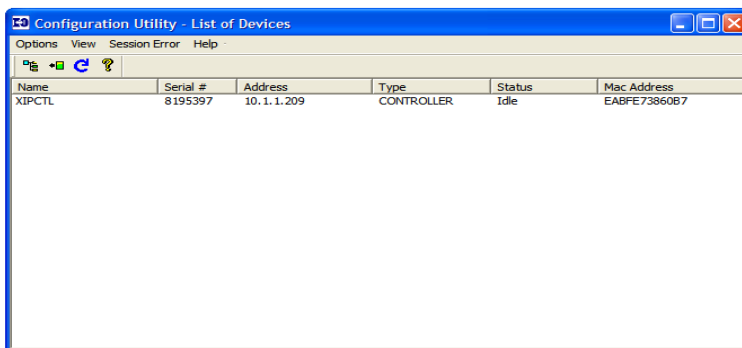
STRPRTWTR *printer name*


Configure the Xip+ Twinax Controller

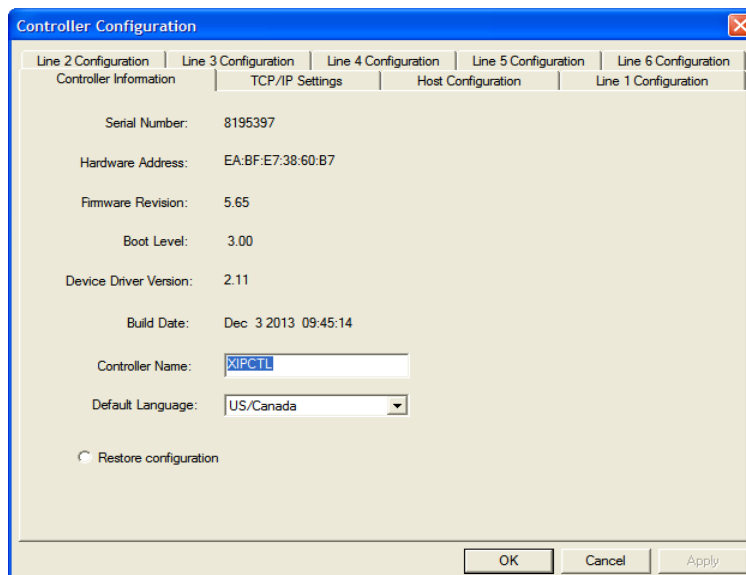
The process of configuring the controller involves setting an IP address for the controller, selecting the appropriate protocol for communicating to the AS/400, iSeries or eServer i5 host, and setting up the controller to use the appropriate protocols. Depending upon the protocol selected, there also may be a need to do some setup on the host (refer to the Configuring the AS/400, iSeries or eServer i5 section).

Setting the General Information and IP Address

1. Run the I-O Configuration Utility by clicking on Start | Programs, navigate to the I-O Configuration Utility Group, and click on the I-O Configuration Utility option.



2. In the List of Devices, you will find an entry with a type of Controller and the serial number for the Xip+ controller that you want to configure. If there is no entry, click on the Rescan icon  to refresh the list. Double click on the desired Xip+ controller.
3. On the Controller Information tab:

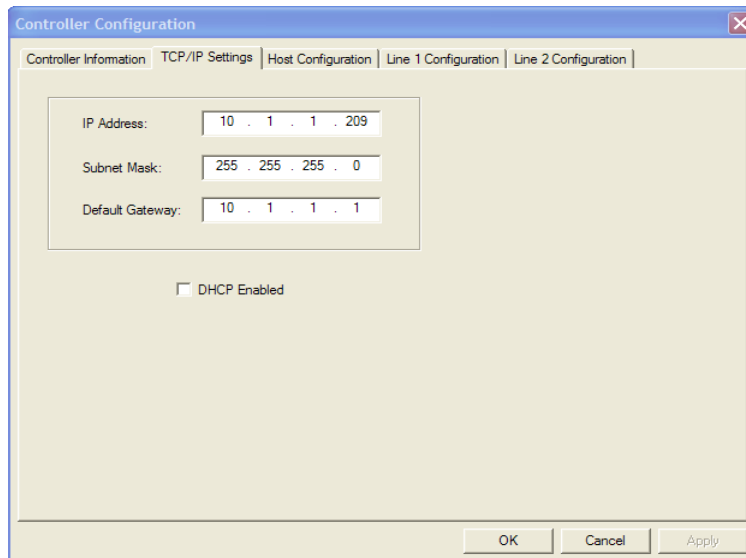


- a. In the **Controller Name** field, enter the name that will be used on the I-O Configuration Utility's List of Devices screen. This name is used only with the I-O Configuration Utility.
- b. In the **Default Language** field, select the default language for all devices. There is an option to override the default language on a device-by-device basis in the Line Configuration tabs, however due to a limitation of memory, this feature is currently limited to the default language for all devices.

- c. By selecting the **Restore Configuration** radio button, you can restore a previous configuration file if for some reason the controller's configuration was lost, corrupted, or factory defaults were restored. Once you have configured the controller, it is recommended that you save the configuration file as a backup by going to Explore | Program Files | I-O Configuration and save the C819.....cfg file (819.... being the serial number of the controller).

To restore the configuration file, copy and paste the backup C819.....cfg file into the I-O Configuration folder replacing the current file. Open the configuration of the Xip+ and select the Restore Configuration radio button, click OK and Yes on the Reset. **DO NOT** make any changes to any of the fields, otherwise the configuration file will change to reflect that change and won't restore the correct configuration.

4. On the TCP/IP Settings tab, assign the IP address for the Xip+ controller:



The screenshot shows the 'Controller Configuration' dialog box with the 'TCP/IP Settings' tab selected. The dialog has a title bar with a close button. Below the title bar are five tabs: 'Controller Information', 'TCP/IP Settings', 'Host Configuration', 'Line 1 Configuration', and 'Line 2 Configuration'. The 'TCP/IP Settings' tab contains three text input fields: 'IP Address' with the value '10 . 1 . 1 . 209', 'Subnet Mask' with '255 . 255 . 255 . 0', and 'Default Gateway' with '10 . 1 . 1 . 1'. Below these fields is a checkbox labeled 'DHCP Enabled' which is currently unchecked. At the bottom of the dialog are three buttons: 'OK', 'Cancel', and 'Apply'.

- a. To have the IP address automatically assigned by DHCP, select the DHCP Enabled check box, then skip to the next section entitled Select the Host Communication Protocol.
- b. Otherwise uncheck the DHCP Enabled check box to assign the IP address manually.
 - i. In the IP Address field, enter the TCP/IP address of the Xip+ controller.
 - ii. In the Subnet Mask field, enter the subnet mask of the Xip+ controller.
 - iii. In the Default Gateway field, enter the IP address of the router or gateway serving the Xip+ controller.

Select the Host Communication Protocol

Three protocols are available to connect to the AS/400, iSeries or eServer i5 host – two TCP/IP protocols (TN5250e and AnyNet) and IBM's SNA (currently SNA is not functional). All protocols are auto configuring on the host. The Xip+ controller will support up to four hosts. On the first host, any one of the three protocols may be selected. Choose the protocol based upon the type of devices that are being attached.



NOTE: AFTER SELECTING THE PROTOCOL, GO TO THE APPROPRIATE SECTION IN THIS CHAPTER FOR INSTRUCTIONS ON COMPLETING THE CONFIGURATION OF THE XIP+ CONTROLLER.

- **TN5250e** is a routable protocol. This means that it can be used at remote locations (or where there is a router between the controller and the host). TN5250e is the easiest protocol to setup for displays and SCS printers. Using TN5250e for configuring an IPDS Printer requires you to have PSF/400 installed and for you to manually configure the IPDS Printer on the iSeries Host.

Non-IPDS Printers are auto configured on the host as 3812-1 SCS page printers. The controller will customize the data stream to the attached twinax printer's capability removing SCS commands the printer cannot support. This allows printers like a 4214, 5224, etc. to be attached. However, TN5250e is limited in that it does not support posting the dot-matrix form alignment message (see Tip below) as well as the IBM dot-matrix functions of backspace, bold, underscore or overstrike.

Displays will automatically be matched to the closest TN5250e emulation by the controller. For example, a 3180 will be matched to a 3180, but a 3489 will be matched to a 3477. The display models that Telnet supports are: 5251m11, 5291-1, 5292-2, 3180-2, 3179-2, 3196-A1, 3477-FG and 3477-FC non-InfoWindow (InfoWindow II features are not supported).



TIP: TN5250E IS RECOMMENDED WHEN ALL PRINTERS ARE SCS PRINTERS, ARE 3812-1 LASER PRINTERS OR DOT-MATRIX PRINTERS NOT AFFECTED BY THE BACKSPACING LIMITATIONS. ALIGNMENT MESSAGES CAN BE OBTAINED BY CHANGING THE FORM FEED PARAMETER IN THE PRINTER CONFIGURATION TO *CONT.

- **AnyNet** is actually SNA encapsulated in TCP/IP and is a routable protocol. It is more difficult than TN5250e to initially configure, but has the advantage of reporting to the host each twinax device's native model so that the actual device will be auto configured on the host. AnyNet fully supports all SCS and IPDS printers. For displays, AnyNet supports all display functions except InfoWindow II features (like Extended Character Display and Extended User Interface).



TIP: ANYNET IS THE RECOMMENDED PROTOCOL TO USE WHEN CONNECTING IPDS PRINTERS (WHERE A LICENSE FOR PSF/400 IS NOT AVAILABLE) OR WHERE THERE ARE IBM SCS DOT-MATRIX PRINTERS PRINTING APPLICATIONS THAT REQUIRE FEATURES NOT SUPPORTED BY TN5250E.

- **SNA** is IBM's most robust protocol. However, SNA cannot be routed. (Currently SNA is not supported on the Xip+). Like AnyNet, SNA is more difficult than TN5250e to initially configure. This protocol can only be used when the Xip+ controller is located within the same Ethernet link as the host (there cannot be a router between them). Like AnyNet, each twinax device's actual model will be auto configured on the host. SNA also does not have the limitations of TN5250e in that it fully supports all SCS and IPDS printers. I-O's implementation of SNA supports all display functions except InfoWindow II features (like Extended Character Display and Extended User Interface). **Currently SNA is not supported by the Xip+**



TIP: SNA IS THE RECOMMENDED PROTOCOL TO USE FOR LOCAL CONNECTIONS.

Configure the Controller to Use TN5250e



TIP: USE THIS PROTOCOL IF ALL PRINTERS TO BE ATTACHED TO THE XIP+ CONTROLLER ARE: SCS PRINTERS THAT DO NOT NEED TO UTILIZE THE BACKSPACE, UNDERSCORE, BOLD OR OVERSTRIKE FUNCTIONS, OR THEY ARE IPDS AND YOU HAVE A LICENSE FOR PSF/400. IPDS PRINTERS WILL REQUIRE MANUALLY CONFIGURING A PSF OBJECT AND THE IPDS PRINTER. ALIGNMENT MESSAGES FOR SCS PRINTERS CAN BE OBTAINED BY CHANGING THE FORM FEED PARAMETER IN THE PRINTER CONFIGURATION TO *CONT.

1. After setting up the controller's general information and the IP address, select the **Host Configuration tab**.

- a. For each host to be configured **select the TN5250e** radio button.
- b. In the Host IP Address field, **enter the IP address of the AS/400, iSeries or eServer i5 host**.



NOTE: IN GENERAL, A HOST SHOULD ONLY BE ASSIGNED ONE TIME. HOWEVER, THE SAME HOST MAY BE USED IN SESSION 1 WITH ANYNET AND AGAIN IN SESSION 2 WITH TN5250E.

- c. In the Telnet Options section, **enter up to six characters** in the Default Device Name field that will become the first part of the name the controller will use when assigning a name to each device. If a name is not entered, the controller will assume the name XIPxx, the xx being a random 2 digit number.

When the controller assigns a name, it will take the value in this field, and add a “D” or “P” indicating the device is a display or printer. This will be followed by a “1”, “2”, “3”, etc indicating the line the device is attached to. The next digit is the twinax address of the device. For example, if “TEST” was entered into this field, and there was a display on the first line with the twinax address of 4, the controller would assign the name of “TESTD141”. The last digit represents the session number.

The controller will allow up to four display sessions to be assigned to the same host. If all four sessions were assigned to the first host, the host would assign the session names as TESTD141, TESTD142, TESTD143, and TESTD144. (See the sections entitled Controller Operation for instructions on how to assign sessions to a host and how to toggle between the sessions.)

Printer devices also support four sessions, one session on each host. Therefore, if only two hosts are configured, only two printer sessions will be available – one on each host. The Telnet device name will be the same on each host.

2. On the **Line Configuration** tabs, you can manually enter the Telnet device names for each individual Twinax device by overriding the controller's automatically assigned names. (Currently the Default Language set in the Controller Information tab cannot be overridden by the Language selection for each device). For each device, do the following:

- a. If you want to override the Telnet Default Device Name the Xip+ assigned or the name you entered into the Default Device Name on the Host Configuration Tab, check the box for Override Default Name. In the Telnet Device Name field, enter the name the host will use for this device.



NOTE: PRIOR TO THE HOST CONFIGURING ANY DEVICE, YOU CAN CHECK THE OVERRIDE DEFAULT NAME BOX AND ENTER THE NAME YOU WANT THE HOST TO CONFIGURE. AFTER THE RESET, THE DEVICE WILL BE CONFIGURED AFTER THE DEVICE BECOMES ACTIVE, SUCH AS CONNECTING AND POWERING ON THE DEVICE.

- b. Currently the language selection for each device **will not** override the Default Language selected on the Controller Information tab. The Default Language selected will be the language for all devices.
3. When all settings on all the tabs have been completed, **click OK**. You will be presented with a confirmation screen, **click Yes to save the settings** and the controller will reset.
 4. After the controller restarts, the host sign-on screen will appear on the attached displays. Be patient as it takes the controller a couple of minutes to reset and come active. It may take the host a few minutes to create the devices as well.

Configure the Controller to Use AnyNet



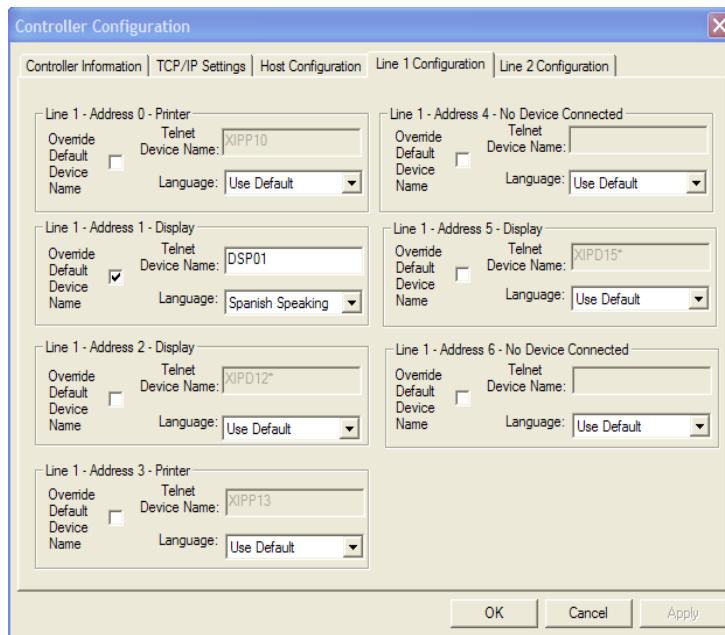
TIP: USE THIS PROTOCOL IF THE CONTROLLER IS REMOTELY LOCATED (OR THERE ARE ROUTERS BETWEEN THE CONTROLLER AND THE HOST), IF THERE ARE IPDS PRINTERS TO BE SUPPORTED (WITHOUT A LICENSE FOR PSF), OR IF THERE ARE IBM DOT-MATRIX PRINTERS THAT REQUIRE THE BACKSPACE, UNDERSCORE, BOLD OR OVERSTRIKE FUNCTIONS.

1. After setting up the controller's general information and the IP address, select the **Host Configuration tab**.

The screenshot shows the 'Controller Configuration' dialog box with the 'Host Configuration' tab selected. It contains four host configuration sections (Host 1 to Host 4). Host 1 is the active host, with 'AnyNet' selected under 'Host Connection Type' and 'Host IP Address' set to '10 . 1 . 2 . 248'. Other fields for Host 1 include 'Host Local Adapter Address', 'Host Control Point Name' (S100AA1G), 'Host Network ID' (APPN), and 'Interface Control Point Name' (ANYNCTL). Below these are 'Telnet Options' with a 'Default Device Name' of 'XIP' and checkboxes for 'Disable Connection Status Report' (checked) and 'Disable Auto Creation of Devices' (unchecked). Host 2 has 'Telnet 5250' selected and IP '10 . 1 . 2 . 248'. Host 3 has 'Telnet 5250' selected and IP '10 . 1 . 12 . 251'. Host 4 has 'None' selected and an empty IP field. At the bottom are 'OK', 'Cancel', and 'Apply' buttons.

2. Select the AnyNet radio button.
3. In the Host IP Address field, enter the IP address of the AS/400, iSeries or eServer i5 host.
4. In the Host Control Point Name field, enter the Local Control Point Name for the AS/400, iSeries or eServer i5 host.
5. In the Host Network ID field, enter the Local Network ID name.
6. In the Interface Control Point Name field, enter a name for the Xip+ controller. The name must meet the following requirements:
 - The name can be no shorter than two characters and no longer than eight characters in length.
 - The name must start with an alpha character (A-Z).
 - The name must contain only alpha-numeric characters (A-Z, 0-9).
 - The first four characters must uniquely identify the Xip+ controller, since the controller will automatically create printer and display devices on the host using the first four characters of this name followed by five additional host assigned characters.

7. On the **Line 1 Configuration** and **Line 2 Configuration** tabs, the Language fields, **will not** override the default language selected on the Controller Information tab. This is a feature, which we hope to be able to rectify in the future.



8. When complete with all settings on all the tabs, **click OK**. **Click Yes** to save the settings and the controller will reset.
9. After the controller resets, the host sign-on screen will appear on the attached displays. Be patient as it takes the Controller a couple minutes to reset and come active. It may take the host a few moments to create the devices.

The following devices will now automatically be created on the host:

- An APPC Controller with the name assigned as the “Interface Control Point”.
- A 5494 Controller with the first five characters of the “Interface Control Point” name followed by the identifier RMT.
- A printer and display device for every printer and display attached to the controller at the time the controller was configured and reset. The names will follow the format of ABCDXXXYY where ABCD are the first four characters of the Interface Control Point Name. The XXX will either be DSP indicating a display or PRT indicating a printer. The YY will be a hexadecimal value assigned by the host.

Configure the Controller to Use SNA

Currently SNA is not supported on the Xip+. (Use the AnyNet protocol if SNA features are required).



TIP: USE THIS PROTOCOL ONLY IF THE CONTROLLER AND THE HOST ARE WITHIN THE SAME ETHERNET LINK (IE. THERE ARE NO ROUTERS BETWEEN THE CONTROLLER AND THE HOST).

1. After setting up the controller's general information and the IP address, select the **Host Configuration** tab.

The screenshot shows the 'Controller Configuration' dialog box with the 'Host Configuration' tab selected. It contains four host configuration sections (Host 1 to Host 4) and a 'Telnet Options' section. Host 1 is configured for SNA, while Hosts 2, 3, and 4 are configured for Telnet 5250. The 'Telnet Options' section includes a 'Default Device Name' field set to 'XIP' and two checkboxes: 'Disable Connection Status Report' (checked) and 'Disable Auto Creation of Devices' (unchecked). Buttons for 'OK', 'Cancel', and 'Apply' are at the bottom.

2. In the host Adapter Address field, enter the Local Adapter Address for the line this controller will be connected on. Make certain the address is entered in the format of XX:XX:XX:XX:XX:XX.
3. In the Host Control Point Name field, enter the Local Control Point Name for the AS/400, iSeries or eServer i5 host.
4. In the Host Network ID field, enter the Local Network ID name.
5. In the Interface Control Point Name field, enter a name for the Xip+ controller. The name must meet the following requirements:
 - The name can be no shorter than two characters and no longer than eight characters in length.
 - The name must start with an alpha character (A-Z).
 - The name must contain only alpha-numeric characters (A-Z, 0-9).
 - The first four characters must uniquely identify the Xip+ controller, since the controller will automatically create printer and display devices on the host using the first four characters of this name followed by five additional host assigned characters.

6. On the **Line 1 Configuration** and **Line 2 Configuration** tabs, in the Language fields, select a different language for the device if the default language selected on the Controller Information tab is to be overridden.

7. When you have completed all settings on all the tabs, **click OK**. **Click Yes** to save the settings and the controller will reset.
8. After the controller restarts, the host sign-on screen will appear on the attached displays. Be patient as it may take the host a few moments to create the devices.

The following devices will now be automatically created on the host:

- An APPC Controller with the name assigned as the “Interface Control Point”.
- A 5494 Controller with the first five characters of the “Interface Control Point” name followed by the identifier RMT.
- A printer and display device for every printer and display attached to the controller at the time the controller was configured and reset. The names will follow the format of ABCDXXXYY where ABCD are the first four characters of the Interface Control Point Name. The XXX will either be DSP indicating a display or PRT indicating a printer. The YY will be a hexadecimal value assigned by the host.

Configure the Controller for IPDS Printing via PPR/PPD

When configuring IPDS printers on the host via PPR/PPD, use the Telnet 5250 protocol for the Host configuration.

When IPDS printers are attached to a twinax cable, they are given a twinax address. This address along with the line number the printer is attached to (Line 1, Line 2, etc) are used to configure the host's PSF object and printer device description. See configuration instructions on page 25.

Controller Operation

Toggling between Display Sessions

Each twinax display address has four sessions. To move from one session to another:

- Press the ALT then HEX keys, then the F7 key to move forward a session.
- Press the ALT then HEX keys, then the F6 key to move back a session.
- The first time you switch sessions, you will need to press SysReq H1 to make a connection for each session, otherwise you will only get a blank screen.

Changing a Display Session from one Host to Another

When the controller is configured for the first time and goes through its initial connection process with the hosts, the first logical display session is created on the first host even if multiple hosts have been configured. The remaining three sessions are not attached to any host.

To attach or change a display session to a different host:

1. Toggle to the desired session using the ALT-HEX-F7 key sequence to move forward a session, or ALT-HEX-F6 key sequence to move back a session.
2. Press the System Request key.
3. On the new command line, select the host you want this logical session attached to by entering "h1" for host 1, "h2" for host 2, "h3" for host 3, or "h4" for host 4. Then press the Enter key.



NOTE: TO DISCONNECT A LOGICAL SESSION FROM A HOST, ENTER "H0" AS THE HOST IN STEP 3.

Sharing a Printer with Multiple Hosts

When a printer is idle, the controller will report to all hosts that the printer is available. The first host to send a job to the printer will get exclusive use of the printer until the writer is stopped. While the host's writer is active, all other hosts are told the printer is not available. When the active writer is ended, all hosts are told (after a short time-out) that the printer is now powered-up and available.

TN5250e Operation

Starting Display Sessions

After the controller has been configured, the controller will cycle through a restart process. During this process, displays will show a block cursor in the upper right-hand corner, then the cursor will move to the upper left-hand corner as the controller is connecting to the hosts and the host is creating the devices. After a brief pause, a host sign-on screen for the first session will be presented on each display.



NOTE: THE FIRST TIME THE CONTROLLER IS CONFIGURED (OR AFTER THE CONTROLLER HAS HAD THE FACTORY DEFAULTS RESTORED), THE FIRST SESSION ON EACH DISPLAY WILL AUTOMATICALLY BE CONFIGURED ON THE FIRST HOST. TO USE THE OTHER SESSIONS, EACH SESSION WILL NEED TO BE ASSIGNED TO A HOST (SEE CHANGING A DISPLAY SESSION FROM ONE HOST TO ANOTHER). THE SESSIONS MAY THEN BE ACCESSED USING THE SESSION TOGGLE FUNCTION (SEE TOGGING BETWEEN DISPLAY SESSIONS).

If a sign-on screen is not presented, and the cursor is in the upper left-hand corner, then the host has not accepted the request to connect. This can be caused by the following conditions:

- Incorrect IP address for the host – reenter the proper IP address.
- Incorrect IP address of the controller (another device may have the same address) – reenter a valid IP address.
- The host may not be set for auto-configuration – the system administrator will need to turn this on, or manually configure a device.
- The host may not have enough virtual device sessions available – the system administrator will need to use the CHGSYSVAL command to increase the number of available sessions.
- The host may believe there is another device with the same name and IP address already active – the system administrator will need to vary off the device and end the TCP/IP session (see Troubleshooting for details on how to handle this issue).



TIP: SEE TROUBLESHOOTING FOR MORE INFORMATION ON CONNECTION ISSUES.

Starting Printer Sessions

Printer sessions will start automatically at the same time the display sessions are started.



NOTE: THE FIRST TIME THE CONTROLLER IS CONFIGURED (OR AFTER THE CONTROLLER HAS HAD THE FACTORY DEFAULTS RESTORED), ONE PRINTER SESSION WILL BE CONFIGURED ON EACH HOST.

When the printer session has completed the start up process and has established a connection with the host, a Printer Connection Status message will be generated and sent to the printer. It will look like this:

```
AS/400 Host Communication Status:
Connection attempt succeeded
Host system S101256R
Printer name TNPRT00
Status code I902 - Session successfully started
```

The status code (I902) shown in the above example is the normal code indicating successful host communication.

If the printer session is not able to establish a connection to the host, the Printer Connection Status message will still be printed, but with a different status code and brief explanation. Refer to the Troubleshooting chapter for possible solutions to connection errors.

Re-Connect Sessions

There are several methods of reconnecting TN5250e sessions to the hosts:

- The controller will automatically attempt to reconnect with the host every five minutes.
- Reset the controller from either the Configuration Utility or by cycling power on the controller.
- For an individual device, power the device off and back on again.
- For a display session, do a System Request + h1 (h2, h3 or h4) keystroke sequence for the host you are connecting to.

Disconnect Sessions

In normal use the controller should never be powered down. In the unlikely event the controller is to be powered down, sign off all display sessions and power off the controller. When the controller is powered up again, any device that is powered on will reconnect to the host.



NOTE: IF POWER IS ACCIDENTLY CYCLED ON THE CONTROLLER, THE HOST WILL CLOSE ALL TELNET SESSIONS AND RE-ESTABLISH THOSE CONNECTIONS AFTER THE CONTROLLER REBOOTS.

How Telnet Names Devices

In the I-O Configuration Utility, a unique Telnet device name is assigned to each display and printer device by default. This is done in one of three ways:

- The controller automatically defaults with a Telnet Device Name that auto fills the Telnet Options box on the Host Configuration screen in the I-O Configuration Utility. This default name is XIPxx with the xx being a randomly generated number.
- The controller will automatically assign a name based upon the Default Telnet Device Name that is manually entered in the Telnet Options box on the Host Configuration screen in the I-O Configuration Utility.

Or

- Manually enter a unique name for each twinax device on the Line Configuration screen by selecting the Override Default Device Name in the I-O Configuration Utility.



TIP: USE THE DEFAULT NAMING PROCESS TO HAVE THE CONTROLLER AUTOMATICALLY ASSIGN NAMES, THEN FOR A SPECIFIC DEVICE, OVERRIDE THE AUTOMATICALLY CREATED NAME.

Each host will use the same name for the printer. For example, if there was a 3812-1 printer on line 1 using the Twinax address of 1, and the Telnet device name assigned in the I-O Configuration Utility was "ACCNTG", then this printer would be known as "ACCNTG" on each host.

When the controller is configured for the first time, each defined host will create a 3812-1 page printer device for each attached printer. This means each printer will support up to four different hosts.



NOTE: SHARING A PRINTER USING THE SAME NAME WITH MULTIPLE HOSTS IS ONLY AVAILABLE WHEN USING TN5250E PROTOCOL. IF ANYNET IS USED FOR THE FIRST HOST, AND TN5250E IS USED FOR THE SECOND, THIRD AND FOURTH HOSTS, ANYNET ASSIGNS ITS OWN UNIQUE DEVICE NAMES WHILE THE TN5250E HOSTS WILL USE THE SAME TELNET DEVICE NAME.

Display Emulations

The TN5250e display protocol as implemented by IBM has a limited number of supported display models. In general, the supported display models will provide 24 x 80, 25 x 80, and/or 27 x 132 line support (all include the message line).

I-O has enhanced the Xip+ controller so the controller will automatically match the actual display model to the closest TN5250e emulation. For example, a 3180 will be matched to a 3180, but a 3489 will be matched to a 3477. The display models Telnet supports are: 5251m11, 5291-1, 5292-2, 3180-2, 3179-2, 3196-A1, 3477-FG and 3477-FC non-InfoWindow.

InfoWindow II features are not supported. These include, but are not limited to: extended character attributes, extended user interface, mouse, light pen, magnetic stripe readers, 5292 graphics, shared addressing, viewing faxes and calculator support.

The following is a list of common IBM terminals and the model type that is configured by TN5250e at the host:

<i>IBM Terminal</i>	<i>Host Configures As ...</i>
5251	5251 -11
5291	5291-1
3180	3180-2
3196	3196-A1
3197C	3179-2
3197D	3180-2
3487 InfoWindow II	3477-FC
3487C Non-InfoWindow	3477-FC

AnyNet Operation

Starting Display Sessions

After the controller has been configured, the controller will cycle through a restart process. During this process, displays will show a block cursor in the upper right-hand corner, then the cursor will move to the upper left-hand corner as the controller is connecting to the host and the host is creating the devices. After a brief pause, a host sign-on screen for the first session will be presented on each display.



NOTE: THE FIRST TIME THE CONTROLLER IS CONFIGURED (OR AFTER THE CONTROLLER HAS HAD THE FACTORY DEFAULTS RESTORED), ALL SESSIONS ON EACH DISPLAY WILL BE CONFIGURED ON THE FIRST HOST.

If a sign-on screen is not presented, and the cursor is in the upper left-hand corner, then the host has not accepted the request to connect. This can be caused by the following conditions:

- Incorrect IP address of the controller (another device may have the same address) – re-enter a valid IP address.
- Incorrect host information may have been entered on the controller's Host Configuration screen– verify that the host IP address, Host Network ID, Host Control Point Name, and Remote Control Point Name are entered correctly.
- The host may not be set for auto-configuration or auto-remote – the system administrator will need to turn these on.
- The host may not have enough virtual device sessions available – the system administrator will need to increase the number of available sessions.



TIP: SEE TROUBLESHOOTING FOR MORE INFORMATION ON CONNECTION ISSUES.

Starting Printer Sessions

Printer sessions will start automatically at the same time the display sessions are started.



NOTE: THE FIRST TIME THE CONTROLLER IS CONFIGURED (OR AFTER THE CONTROLLER HAS HAD THE FACTORY DEFAULTS RESTORED), ONE PRINTER SESSION WILL BE CONFIGURED ON EACH HOST.

Re-Connect Sessions

There are several methods of reconnecting sessions to the hosts:

- Cycle power on the Twinax device.
- At the host, vary off and then back on the devices attached to the controller, then cycle power on the device.
- For a display session, do a System Request + h1 (h2, h3 or h4) keystroke sequence and change to a different host.

Disconnect Sessions

In normal use the controller should never be powered down. In the unlikely event that the controller is to be powered down, sign off all display sessions. Then, power down the display and printer devices.



CAUTION: IF POWER IS ACCIDENTLY CYCLED ON THE CONTROLLER, THE HOST MAY STILL HAVE OPEN SESSIONS AND IT MAY TAKE SEVERAL MINUTES TO RECONNECT.

How AnyNet Names Devices

After the Xip+ controller has been configured and restarted, the following devices will automatically be created on the host:

- An APPC Controller with the name assigned as the “Interface Control Point”.
- A 5494 Controller with the first five characters of the “Interface Control Point” name followed by the identifier RMT.
- A printer and display device for every printer and display attached to the controller at the time the controller was configured and reset. The names will follow the format of ABCDXXXYY where ABCD are the first four characters of the Interface Control Point Name. The XXX will either be DSP indicating a display or PRT indicating a printer. The YY will be a hexadecimal value assigned by the host.

The host will configure the YY value in the following manner:

- Hex values 00 to 06 represent Line 1 on displays and printers
- Hex values 07 to 0D represent Line 2 on displays and printers
- Hex values 0E to 14 represent Line 3 on displays and printers
- Hex values 15 to 1B represent Line 4 on displays and printers
- Hex values 1C to 22 represent Line 5 on displays and printers
- Hex values 23 to 29 represent Line 6 on displays and printers

Display Emulation

AnyNet will automatically recognize the actual IBM Terminal model type and will report it to the host.

InfoWindow II features are not supported. These include, but are not limited to: extended character attributes, extended user interface, mouse, light pen, magnetic stripe readers, 5292 graphics, shared addressing, viewing faxes and calculator support.

The following is a list of common IBM terminals and the model type that is configured by AnyNet at the host:

<i>IBM Terminal</i>	<i>Host Configures As ...</i>
5251	5251 -11
5291	5291-1
3180	3180-2
3196	3196-A1
3197C	3197-C1
3197D	3197-D1
3487 InfoWindow II	3487-HC
3487C Non-InfoWindow	3487-HC

SNA Operation

Currently SNA is not functional on the XIP+ Controller. For applications that require true printer emulation, use the AnyNet Protocol.

IPDS Operation via PPR/PPD

The controller automatically passes all communication and data streams to and from the IBM host and the IPDS printers. No operator action is required at the controller.


Troubleshooting

This chapter contains solutions for problems you may encounter while using the product. If a problem persists after implementing the solutions provided here, or if a problem is not listed here, please contact your dealer or I-O Corporation can be contacted at 801-972-1446 or by email at support@iocorp.com.

Please have the following information available when requesting assistance:

- Model number
- Version number of firmware
- Version number of the I-O Configuration Utility
- Serial number of the controller (found on the back label of the logic unit)
- Date of purchase
- Version of operating system on the AS/400, iSeries or eServer i5system
- Concise description of problem
- Summary of events and actions that occurred just prior to the failure
- Model number of displays and printers that are attached to the controller
- Information on which protocol the controller is using for its configuration

General Error Conditions

<i>Problem</i>	<i>Solution</i>
<ul style="list-style-type: none"> • No power to the Xip+ controller (Power LED and Line LED's are off) 	<ul style="list-style-type: none"> ✓ The controller uses a 12vdc – 5a external power supply, which may have gone bad. Check the power supply for power. If the power supply has 12vdc output, there may be a connection issue with the power connector. Contact I-O Corporation for assistance. 801-972-1446 <hr/> <p> CAUTION: PLUGGING IN A DIFFERENT POWER SUPPLY COULD DAMAGE THE XIP+ CONTROLLER.</p> <hr/>
<ul style="list-style-type: none"> • On the displays, the System Available indicator does not appear on the left side of the status line. 	<ul style="list-style-type: none"> ✓ There is no communication with the host. <ul style="list-style-type: none"> • The host is not operating. • The Xip+ controller is not operating. • Check all cable connections, routers, etc. for proper connection. ✓ Communication configuration on the host does not match the display station. <ul style="list-style-type: none"> • Check the host's device description to make sure the display type matches (or closely matches) the actual display. In Telnet, the display type reported to the host may not be the same type as the actual display because Telnet only supports a limited number of types (5251m11, 5291-1, 5292-2, 3180-2, 3179-2, 3196-A1, 3477-FG, 3477-FC (InfoWindow II features are not supported)).
<ul style="list-style-type: none"> • On the displays, there is a status line, but no sign on screen, and there is a block cursor in the upper left corner of the screen. 	<ul style="list-style-type: none"> ✓ Check the following: <ul style="list-style-type: none"> • Verify the IP address of the host is entered correctly in the I-O Configuration Utility. • Make sure there are no other devices in the network

- The host assigns a 3812-printer device with a name of QPADEVNnn (where nn is a 2-digit number).
 - The writer is in a writing status, but no printing is occurring and there are no messages on the host.
 - The printer device is in a Vary On Pending state.
- using the same IP address as the Xip+ controller.
 - Answer any host messages.
 - If using AnyNet, vary the device off and back on, then cycle power on the device.
 - If using SNA, this protocol is not functional with the XIP+. Change the protocol to AnyNet.
 - If using Telnet, end the Telnet sessions. At a command line on the host, enter "netstat", select the Work with TCP/IP Connection Status option, press ENTER. (You may also use the "wrktcpsts *dev [device name]" command.) Scroll until entries for the IP address of the Xip+ controller are found (there will be one entry for each session). Select the option to end the sessions. Cycle power on the devices.
- ✓ If the Telnet Printer Name is left blank when configuring the printer session, the host will create a 3812 device but will give the printer the name of QPADEVNnn, with nn being a 2-digit number. The first "n" is the line number and the second "n" is the printer address.
 - To correct the problem, using the I-O Configuration Utility, either enter a default Telnet Device Name on the Host Configuration screen, or enter individual Telnet device names for each device on the Line 1 and Line 2 Configuration screens.
- ✓ This usually occurs when TN5250e communication has been lost with the host.
 - Re-establish the session by doing the following:
 1. Vary off the device. At a command line on the host, enter "wrkdevd [device name]", press ENTER. Select the work with status option, then vary off the device.
 2. Cycle power on the display or printer device.
- ✓ This usually occurs when TN5250e communication has been lost with the host.
 - Re-establish the session by doing the following: Vary off the device and end the Telnet session:
 1. To vary off a device, at a command line on the host, enter "wrkdevd [device name]", press ENTER. Select the work with status option, then vary off the device.
 2. To end the Telnet sessions, at a command line on the host, enter "netstat", select the Work with TCP/IP Connection Status option, press ENTER. (You may also use the "wrktcpsts *dev [device name]" command.) Scroll until entries for the IP address of the Xip+ controller are found (there will be one entry for each session). Select the option to

- end the session.
- The printer session has ended on the /400 host after a period of inactivity.
 - Devices are dropped when powering down another device when using AnyNet.
 - The host gets an error message indicating the printer has received invalid data and that the IBM dot-matrix printer will not bold, backspace, overstrike or underscore when using TN5250e.
- ✓ The host has a timeout value that can be set to terminate any Telnet display or printer session. Setting this value to a longer timeout will allow the printer session to remain connected for a longer period. However, this longer timeout will also allow an unattended Telnet display session to remain open for a longer period and may create a security issue.
- To change the Telnet inactivity timer, follow these steps:
1. Using the host CFGTCP command, select menu option 20, Configure TCP/IP Applications.
 2. Select menu option 11, Configure Telnet.
 3. On the next screen, select menu option 12, Inactive Job Time Out.
 4. Change the QINACTITV value to a longer value, or use *NONE to deactivate the inactivity timeout.
- ✓ The host's Switched Disconnect function must be set to "NO" or anytime a device attached to the Xip+ controller is powered down, the host will drop some or all of the devices.
 - To correct the problem, follow the steps outlined in the Disabling the Host's Switched Disconnect Function section.
 - ✓ TN5250e does not support dot-matrix backspace functions.
 - Change the protocol used to connect to the host to AnyNet.

General Controller Status Messages

The following messages appear on the Status Error | Controller Status screen in the I-O Configuration Utility:

Message	Solution
<ul style="list-style-type: none"> • 0: Session status is normal. 	<ul style="list-style-type: none"> ✓ This status means that a display or printer has been recognized on the twinax cable, and there is currently an active host communication session.
<ul style="list-style-type: none"> • 1: Device not connected. 	<ul style="list-style-type: none"> ✓ No device is responding to polling on the twinax address for this session.

- | | |
|--|---|
| <ul style="list-style-type: none"> • 2: (Printer only) - Host not configured. | <ul style="list-style-type: none"> ✓ A printer has been recognized on the twinax cable, but the controller is not attempting to start a host connection for this session because there is no host configured for the session. This condition can arise only if fewer than four hosts are included in the controller configuration. |
| <ul style="list-style-type: none"> • 3: (Printer only) - Host not active | <ul style="list-style-type: none"> ✓ A printer has been recognized on the twinax cable, and there is a host computer configured for this session, but at this time the controller is telling the host that this printer is not available (powered-down) because the printer is currently in use by a different host. |
| <ul style="list-style-type: none"> • 4: (Printer only) - Paper Out. | <ul style="list-style-type: none"> ✓ The printer is out of paper. |
| <ul style="list-style-type: none"> • 5: (Printer only) - Printer Offline. | <ul style="list-style-type: none"> ✓ The printer is off line. |

TN5250e Host Communication Status Messages

The following messages appear on the Status Error | Controller Status screen in the I-O Configuration Utility:

Message	Solution
<ul style="list-style-type: none"> • 301: Host is unreachable. 	<ul style="list-style-type: none"> ✓ The controller is currently unable to establish any TCP connection to this host on behalf of any attached printer or display. • The host for this session is not powered-up. Verify that the host is powered-up and operational. • TCP has not been started on the host computer. Verify that TCP/IP, including telnet, has been configured and started on the host computer. • The controller was configured with the wrong IP address for this host. Check the configuration of the controller to be sure the IP address entered for the host computer is correct. • TCP/IP communication is not possible between the locations of the controller and this host computer. Verify (as by pinging the host computer from a location near the controller) that IP communication is possible between the two locations on the network. Also check to see that network traffic from the controller's location to that of the host computer is not excluded for telnet (normally port 23) by communication equipment such as a firewall. Take any steps required to make the path available.
<ul style="list-style-type: none"> • 302: No TCP session for this device. 	<ul style="list-style-type: none"> ✓ The controller has successfully established TCP connections for some printer or display sessions, but has failed to make a TCP connection for this session.

- 303: No TN5250 negotiation started by host.
 - The host computer considers a previous TCP connection for this session from this controller to be still active. This situation may arise if the controller has been shut down while printers or displays were powered on. Check the device status for this device on the host. If the host shows the device to be active while the controller is showing status code 302, and if you know that the device description is used only by this controller, vary the device off. Then retry the connection.
 - The device name (specified during controller configuration) for this session is in use on this host by some other remote device. Verify that all device names specified during configuration of the controller are not duplicated by any device otherwise connected to this host.
 - The host shows an invalid status for this device. Verify that the host shows the device status as being either 'varied off' or 'vary on pending'. If device status is any value other than these, vary the device on or off.
- 304: TN5250 session negotiation proceeding.
 - ✓ The controller has successfully established a TCP connection to the host for this session, but the host has not yet initiated TN5250 negotiations on the TCP connection. This condition should never last more than a few seconds. If this status lasts more than a few seconds at a time, it indicates a host computer malfunction or mis-configuration. Report the problem to the administrator of the host computer.
 - ✓ A TN5250e TCP connection for this session has been established with the host, and values for TN5250e parameters for the session are being negotiated by the host and the controller.

This is a normal but transient status that exists briefly during startup of the host session for every device. No action is required. A 304 status should be considered to be an indication that session startup is proceeding normally. If a session reaches the 304 state and does not move on to some other state within a few seconds, contact I-O support.
- 305: TN5250 session negotiation aborted by host.
 - ✓ The controller has successfully established a TCP connection to the host for this session, but negotiation of TN5250 parameters for the session was aborted at the request of the host computer.

This status should never be seen. If the controller and the host computer successfully begin TN5250 negotiations, startup of the session should always complete successfully. Contact I-O support for help in resolving the problem.

TN5250e Printer Connection Status Message

The Xip+ controller reports the success or failure of an attempt to communicate with the host(s) by printing a brief connection status message on each attached printer.

The message will show whether the connection succeeded or not, the name of the AS/400, iSeries or eServer i5 host the printer session is connected to, the printer name, and the session status. (If there is no Host or printer name in the message it is because the host did not send the information.)

The connection status message will look somewhat like:

```
AS/400 Host Communication Status:
Connection attempt succeeded
Host system S101256R
Printer name TNPRT00
Status code I902 - Session successfully started
```

The status code (I902) shown in the above example is the normal code indicating successful host communication. The possible values of the status code and suggested actions to take for that status code are as follows:

Message	Solution
<ul style="list-style-type: none"> • 0101 — Host not responding to pings 	<ul style="list-style-type: none"> ✓ This message usually indicates one of the following: <ul style="list-style-type: none"> • TCP/IP has not been started on the host. • The host's IP address has not been correctly entered in the I-O 5250 Printer's configuration on the thin client. • The Xip+ has not been correctly connected to the LAN.
<ul style="list-style-type: none"> • 0102 — Host rejected connect to Telnet port 	<ul style="list-style-type: none"> ✓ The host answers pings, but rejects a TCP/IP connect attempt, probably because its Telnet server has not been started.
<ul style="list-style-type: none"> • 0111 — Host Telnet session lost 	<ul style="list-style-type: none"> ✓ Usually means that the printer has been varied off at the host, the host has gone down, or there has been a communication (e.g. router) failure.
<ul style="list-style-type: none"> • 2777 — Damaged device description 	
<ul style="list-style-type: none"> • 8902 — Device not available 	<ul style="list-style-type: none"> ✓ This code appears when the I-O 5250 Printer connection attempts to start a session for a printer whose name duplicates the name of a printer already active on the host. In many cases, this means that the Xip+ with an I-O 5250 Printer session has been powered-off and then powered back on within a few minutes. When the Xip+ with an active I-O 5250 Printer session is turned off, it takes the host about 10-20 minutes to determine that the TCP/IP sessions for the printers are no longer active. If the I-O 5250 Printer session is restarted while the host shows the old printer sessions is still active, requests for new sessions will be rejected with

- 8906 — Session initiation failed
 - 8907 — Session failure
 - 8920 — Object partially damaged
 - 8921 — Communications error
 - 8922 — Negative response received
 - 8925 — Creation of device failed
 - 8928 — Change of device failed
 - 8930 — Message queue does not exist
 - 8935 — Session rejected
 - 8940 — Automatic configuration failed or not allowed
 - E001 — No Telnet printer support at host
- this code.
- You can recover by doing one of the following:
- Wait 10-20 minutes before trying to establish another printer session.
 - At the host, manually terminate the old TCP/IP sessions.
 - Avoid the problem by allowing the I-O 5250 Printer session to end its TCP/IP connection gracefully before powering the Xip+ off. Do this by powering-off the attached printer 2 minutes or more before closing the printer session.
- ✓ The operating system on the host supports only display (not printer) devices in Telnet sessions. Update your host to support TN5250e printer sessions.

- I902 — Session successfully started
- I904 — Source system at incompatible release

AnyNet Host Communication Status Messages

The following messages appear on the Status Error | Controller Status screen in the I-O Configuration Utility:

Message	Solution
<ul style="list-style-type: none"> • 99: No SNA session for device. 	<ul style="list-style-type: none"> ✓ The controller is able to communicate with the host computer, but the host has not started an SNA session for this device. <ul style="list-style-type: none"> • The device is varied off at the host. At the host computer, vary the device on. • No controller description for this controller exists on the host computer. Enable auto-creation of controller descriptions on the host, or manually create a controller description. • No device description for this device exists on the host computer. Enable auto-creation of devices for this controller on the host, or manually create a device description for the device.
<ul style="list-style-type: none"> • 401: Host is unreachable. 	<ul style="list-style-type: none"> ✓ The controller is currently unable to establish any TCP connection to this host on behalf of any attached printer or display. <ul style="list-style-type: none"> • The host for this session is not powered-up. Verify that the host is powered-up and operational. • TCP has not been started on the host computer. Verify that TCP/IP and AnyNet have been configured and started on the host computer. • The controller was configured with the wrong IP address for this host. Check the configuration of the controller to be sure that the IP address entered for the host computer is correct. • TCP/IP communication is not possible between the locations of the controller and this host computer. Verify (as by pinging the host computer from a location near the controller) that IP communication is possible between the two locations on the network. Also check to see that network traffic from the controller's location to that of the host computer is not excluded for AnyNet

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| <ul style="list-style-type: none"> • 402: Waiting to attempt host connect. | <p>(port 397, TCP and UDP) by communication equipment such as a firewall. Take any steps required to make the path available.</p> <ul style="list-style-type: none"> • This controller's AnyNet APPC controller on the host computer is not varied on. Check the host's configuration to determine which AnyNet APPC controller is selected to service this controller. Then verify that the APPC controller is varied on. • The host's TCP/IP Host Table does not include an entry that identifies this controller as an AnyNet location. Verify the appropriate Host Table entry exists. If there is no entry, create one as described in the User Guide. |
| <ul style="list-style-type: none"> • 403: Ready to connect to host. | <ul style="list-style-type: none"> ✓ The controller currently has no connection to the host computer, and is not currently attempting to establish a connection. • The host computer has disconnected all device sessions because all display sessions on this controller have been logged-off. Initiate a re-connect to the host computer by using the 'connect' procedure described in the User Guide. • This controller's 5494 controller description on the host computer is not varied on. Verify the controller description on the host computer is varied on. • This controller has been configured with the wrong control point name for the host computer. Verify the local configuration data in the controller correctly describes the host computer. |
| <ul style="list-style-type: none"> • 404: Negotiation proceeding on controller session. | <ul style="list-style-type: none"> ✓ A TCP/IP session with the host computer is being opened. This is a normal but transient status that exists briefly during startup of the main controller connection to the host. No action is required. A 403 status should be considered to be an indication that session startup is proceeding normally. If a session reaches the 403 state and does not move on to some other state within a few seconds, contact I-O support. ✓ A TCP/IP session with the host computer has been initiated, and parameters for the session are being exchanged between the controller and the host. This status exists transiently during a normal successful session startup, but if the status persists more than a few seconds, it indicates a configuration problem. • The controller has been configured with the wrong network id for the host computer. Verify the local configuration data in the controller correctly describes the host computer. |
| <ul style="list-style-type: none"> • 405: Host has not started a session for this device. | <ul style="list-style-type: none"> ✓ The main TCP/IP connection between the controller and the host computer has been started successfully, but the host computer has not yet started the TCP/IP session for this particular device. |

- The device description for this device is not varied on at the host. Verify the device is varied on at the host computer.
- The TCP/IP Host Table entry for this controller on the host computer contains either an incorrect IP address or an incorrect location name. Check the Host Table entry for this controller, and correct it if it contains incorrect information.
- The host computer's APPN configuration list does not include an entry for this controller, or the entry contains incorrect information. Refer to the User Guide to determine whether the AnyNet setup you are using on your host computer requires the host's APPN configuration list include an entry for this controller. If such an entry is required, verify that a correct entry exists.

SNA Host Communication Status Messages

SNA is currently not supported on the XIP+

The following messages appear on the Status Error | Controller Status screen in the I-O Configuration Utility.

On a display press and hold the ALT key, press the HEX key, release both keys and then press F1 to display these error codes. If the display's screen is blank, these codes may also be displayed by pressing ENTER.

In the error codes below, the 3rd digit of the error code (the "x") is a digit from 0 to 5 that indicates the most advanced stage the Xip+ controller has ever reached (since power-up) in its attempts to establish communication with the host. The meanings of the values for this digit are:

- 0 = Adapter open failed, and no connection is requested
- 1 = Adapter open failed, connection is requested
- 2 = No connection is requested.
- 3 = No TEST received the host.
- 4 = No SABME received the host.
- 5 = Connection to the host established successfully.

Message	Solution
<ul style="list-style-type: none"> • 99: No SNA session for device. 	<ul style="list-style-type: none"> ✓ The controller is able to communicate with the host computer, but the host has not started an SNA session for this device. • At the host computer, vary the device on. • No controller description for this controller exists on the host computer. Enable auto-creation of controller descriptions on the host, or manually create a controller description. • No device description for this device exists on the host computer. Enable auto-creation of devices for this controller on the host, or manually create a device

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| <ul style="list-style-type: none"> • 10x: No LAN connection to the host has been established. | <p>description for the device.</p> <ul style="list-style-type: none"> ✓ The communication status is 'adapter open failed, and no connect is requested', meaning the LAN adapter in the Xip+ controller has failed to open, and an operator at an attached display has requested a 'disconnect'. The Xip+ controller will periodically re-try to open the LAN adapter; but if a retry succeeds, no attempt will be made to contact the host until an operator requests a 'connect'. • The most probable cause for failure of the adapter to open is a bad cable connection between the Xip+ controller's LAN adapter and the LAN segment or hub. Other possible causes are a failed LAN adapter, or hardware failure of some other piece of LAN equipment. |
| <ul style="list-style-type: none"> • 11x: No LAN connection to the host has been established. | <ul style="list-style-type: none"> ✓ The communication status is 'adapter open failed, connect is requested', meaning the LAN adapter in the Xip+ controller has failed to open, but connection to the host is requested. The Xip+ controller will periodically retry to open the LAN adapter; and if a retry succeeds, attempts to contact the host will commence immediately. ✓ The most probable cause for failure of the adapter to open is a bad cable connection between the Xip+ controller's LAN adapter and the LAN segment or hub. Other possible causes are a failed LAN adapter, or hardware failure of some other piece of LAN equipment. |
| <ul style="list-style-type: none"> • 12x: No LAN connection to the host has been established. | <ul style="list-style-type: none"> ✓ The communication status is 'no connection is requested', meaning an operator at an attached display has requested a 'disconnect', canceling attempts to contact the host. • An operator has requested the Xip+ controller make no attempts to establish communication with the host. Make a 'connect' request at any display attached to the Xip+ controller in order to re-enable connection attempts. |
| <ul style="list-style-type: none"> • 13x: Establishment of LAN connection to the host is not yet complete. | <ul style="list-style-type: none"> ✓ The communication status is 'no TEST received from host', meaning the Xip+ controller is periodically sending TEST commands to the host, but has not yet received a TEST in response. • The most likely cause for this condition is that the LAN line description on the host is varied off. The problem may also be caused by configuration errors on the host or on the controller. Verify that all LAN addresses entered during configuration are correct. Other possible causes are poor connections to the LAN, or failure of LAN cabling or hub. |

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|---|--|
| <ul style="list-style-type: none"> • 14x: Establishment of LAN connection to the host is not yet complete. | <ul style="list-style-type: none"> ✓ The communication status is 'no SABME received from host', meaning that some communication messages have been successfully exchanged between the Xip+ controller and the host, but no SABME mode-setting command has yet been received from the host. • The most likely cause for this condition is the Xip+'s controller description on the host is varied off. |
| <ul style="list-style-type: none"> • 402: Waiting to attempt host connect. | <ul style="list-style-type: none"> ✓ The controller currently has no connection to the host computer, and is not currently attempting to establish a connection. • The host computer has disconnected all device sessions because all display sessions on this controller have been logged-off. Initiate a re-connect to the host computer by using the 'connect' procedure described in the User Guide. • This controller's 5494 controller description on the host computer is not varied on. Verify the controller description on the host computer is varied on. • This controller has been configured with the wrong control point name for the host computer. Verify the local configuration data in the controller correctly describes the host computer. |
| <ul style="list-style-type: none"> • 403: Ready to connect to host. | <ul style="list-style-type: none"> ✓ An SNA session with the host computer is being opened. This is a normal but transient status that exists briefly during startup of the main controller connection to the host. No action is required. A 403 status should be considered to be an indication that session startup is proceeding normally. If a session reaches the 403 state and does not move on to some other state within a few seconds, contact I-O support. |
| <ul style="list-style-type: none"> • 404: Negotiation proceeding on controller session. | <ul style="list-style-type: none"> ✓ An SNA session with the host computer has been initiated, and parameters for the session are being exchanged between the controller and the host. This status exists transiently during a normal successful session startup, but if the status persists more than a few seconds, it indicates a configuration problem. • The controller has been configured with the wrong network id for the host computer. Verify that the local configuration data in the controller correctly describes the host computer. |
| <ul style="list-style-type: none"> • 405: Host has not started a session for this device. | <ul style="list-style-type: none"> ✓ The main SNA connection between the controller and the host computer has been started successfully, but the host computer has not yet started the SNA session for this particular device. • The device description for this device is not varied on at the host. Vary on the device at the host computer. • The host computer's APPN configuration list includes an entry for this controller that contains incorrect information. Remove the entry. |

IPDS Error Conditions

<i>Problem</i>	<i>Solution</i>
<ul style="list-style-type: none"> • IBM host shows IPDS printer still active yet the printer has been powered down. 	<ul style="list-style-type: none"> ✓ When a printer has been powered off, the IBM host must be informed the printer is not available. Do this by manually stopping the print writer – take the *IMMED option to end the writer immediately eliminating the lengthy delay that will otherwise occur.

LED Indicators

The following table describes the function of each LED on the Xip+ controller. Use this information when troubleshooting the communication problems.

<i>LED</i>	<i>Function</i>
<ul style="list-style-type: none"> • Link 	<ul style="list-style-type: none"> ✓ This LED will be on indicating the controller is up and running and has a good link with the Ethernet LAN.
<ul style="list-style-type: none"> • Activity 	<ul style="list-style-type: none"> ✓ This LED will flash on and off as Ethernet packets are detected on the LAN.
<ul style="list-style-type: none"> • Power 	<ul style="list-style-type: none"> ✓ When power is first applied, the blue LED around the power button lights up solid. The Controller performs a startup routine that may take up to 75 seconds to complete. During this time, the Line LEDs flash in a sequence that indicates progress of the startup operation. <p>Initially, when power is plugged into the back of the controller, the Line LEDs will flash indicating the mother board is communicating with the Twinax cards. These LEDs will go out when the controller is powered off using the power button.</p>
<ul style="list-style-type: none"> • Ready 	<ul style="list-style-type: none"> ✓ This LED indicates when the controller has completed its startup operations and has entered the 'Ready' (normal operation) state. <p>If the Ready LED does not come on within 90 seconds of power-up, a hardware failure has been encountered during the startup procedure. In this case, a flat screen monitor should be connected to the back of the controller to help in diagnosing the problem.</p> <p>If the Ready LED heartbeat stops at some point after the Ready state has been reached, the system has ceased to function, because of either a hardware or a firmware failure.</p>

- Line 1 - 6
 - ✓ On with a slow flashing heartbeat without the blue power light indicates power has been plugged into the mother board for the first time, but the controller has not been powered on.
 - ✓ On with a fast flashing heartbeat with the blue power light on indicates the controller is booting.
 - ✓ On with a slow flashing heartbeat with the blue power light on indicates the controller has booted and ready.

Firmware Upgrade Process

Periodically new firmware is made available that contains enhancements and corrections for the Xip+. Before proceeding with the update, check your current Firmware and Driver versions. Contact I-O Tech Support for the current version available. This firmware may be downloaded using the following process:

1. Using your Web browser, navigate to ftp://ftp.iocorp.com/Host_Connectivity/Controller_software/Xip+ Firmware Update/
2. Download to a temporary directory on your PC the **ctlappc** file which will contain the latest firmware version. The Build Date shown in the Configuration Utility should be more that a few days older than the ctlappc file you download. Otherwise you should be current on your firmware. Contact I-O Tech Support if you have questions on the current firmware version. 1-800-871-9998



NOTE: THE XIP+ FIRMWARE UPDATE.PDF FILE CONTAINS INSTRUCTIONS FOR UPDATING THE FIRMWARE ON THE CONTROLLER. SINCE THE XIP+ IS USING A LINUX BASED PLATFORM, THE FIRMWARE UPDATE OPTION IN THE CONFIGURATION UTILITY DOES NOT WORK FOR THE XIP+.



TIP: IT IS SUGGESTED THAT WHEN YOU UPGRADE THE FIRMWARE, THAT YOU ALSO UPGRADE THE I-O CONFIGURATION UTILITY AT THE SAME TIME. GENERALLY YOU WILL WANT TO USE THE MOST RECENT VERSION OF THE I-O CONFIGURATION UTILITY.

3. Attach a monitor and usb keyboard to the back of the controller. Follow the instructions in the Xip+ Firmware Update.pdf file to update the firmware on the controller.
4. After the update, power off the controller and power back on.



NOTE: REBOOTING THE CONTROLLER WILL TAKE APPROXIMATELY 30 SECONDS TO POWER DOWN AND ANOTHER 60 SECONDS FOR IT TO BECOME ACTIVE AFTER POWERING ON.

5. Open the Configuration Utility or Rescan for devices. Open the configuration of the controller and make sure the Firmware has been updated.



TIP: IF SIGN ON SCREENS DO NOT APPEAR ON THE DISPLAYS, SEE TROUBLESHOOTING FOR THE PROCESS TO VARY OFF AND ON DEVICES.

I-O Configuration Utility Upgrade Process

Periodically a new version of the I-O Configuration Utility is made available that contains enhancements and corrections. This software may be downloaded using the following process:

1. Using your Web browser, navigate to [ftp://ftp.iocorp.com/Utilities/Configuration Utility/Xip Plus/](ftp://ftp.iocorp.com/Utilities/Configuration%20Utility/Xip%20Plus/)
2. Download the latest version of the I-O Configuration Utility. Look for a file in the format of IOCU_xxx.exe. The xxx will be the version number.



TIP: THE I-O CONFIGURATION UTILITY IS BACKWARD COMPATIBLE AND WILL MANAGE CONTROLLERS, PRINT SERVERS AND IP CONTROLLERS USING OLDER VERSIONS OF FIRMWARE.

3. After downloading the file, run the IOCU_xxx.exe file.
4. Follow the on-screen prompts.



NOTE: IF INSTALLING ON A WINDOWS 7 OR HIGHER PC OR SERVER, MANY TIMES YOU WILL NEED TO RIGHT CLICK ON THE PROGRAM AND RUN AS ADMINISTRATOR TO GET IT TO INSTALL.

Uninstalling the I-O Configuration Utility

The I-O Configuration Utility may be uninstalled using Microsoft's Add/Remove Programs process.

1. Click START | SETTINGS | CONTROL PANEL
2. Select the Add/Remove Programs icon.
3. Scroll to the I-O Configuration Utility entry and take the remove option.
4. Follow the on-screen prompts.

Restoring Factory Defaults

Factory defaults can be restored for all of the configuration options except a statically assigned IP Address.

Restoring Factory Defaults Using the I-O Configuration Utility

1. If you haven't already done so, start the I-O Configuration Utility.
2. Select the desired Xip+ controller from the displayed list.
3. Click on the Options menu and select Restore Factory Defaults.
4. Answer Yes on the Are you sure that you want to restore factory defaults message.
5. Dhcp will be enabled, however if a static address was previously assigned, that address will still be active on the controller.

Configuring a new IP address if the Xip+ doesn't show on the Configuration Utility

The Xip+ has a Linux mother board which is shipped from I-O Corp with Dhcp enabled. If for some reason you don't have a Dhcp server or the controller fails to accept a Dhcp address, you will need to manually assign an IP address on the controller.

This is done by attaching a monitor and keyboard to the back of the Xip+ Controller and powering on the controller.

After the controller boots up, press enter to get the io-login: prompt.

Login: 'root'

Password: 'io-0001'

After the Linux prompt, enter the command `./setipadr`
This will prompt you for the IP address, Subnet Mask, and Default Gateway.
After entering these addresses, enter `'exit'` and cycle power on the controller.

After booting up, you should be able to rescan for devices on the Configuration Utility and have the controller show up. If not, make sure you can ping the controller. Click on View, Scan Options and select Scan for a specific device and enter the IP address you assigned the controller.

Host Communication Trace

It may be necessary to capture a complete communications trace of data being passed between the Xip+ controller and a host. This is done by starting, ending and printing a trace using IBM's commands at STRCMNTRC, ENDCMNTRC, and PRTCMNTRC.

See your IBM manuals for specific instruction on using these commands. You may also find on-line references to these commands at IBM's support site as follows:

Start a Trace

<http://publib.boulder.ibm.com/pubs/html/as400/v4r5/ic2924/index.htm?info/cl/strcmntr.htm>

End a Trace

<http://publib.boulder.ibm.com/pubs/html/as400/v4r5/ic2924/index.htm?info/cl/endcmntr.htm>

Print a Trace

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Manufacturer's Warranty & Repair Policy

Manufacturer's Three Year Limited Warranty (United States)

The following warranty applies only to products purchased and operated within the United States.

I-O Corporation (I-O) warrants this product against defects in material and workmanship for a period of three years commencing from date of purchase by the original customer, when operated and maintained in accordance with I-O's published specifications. I-O's liability shall be limited, at its option and expense, to refund to buyer the actual amount paid by buyer or to repair or replace any defective or nonconforming product or part thereof, F.O.B. I-O's authorized repair depot. Buyer may obtain a replacement product by meeting the terms of the I-O Customer On-Site Exchange Repair Policy in effect at the time of the request.

THE EXPRESS WARRANTY SET FORTH ABOVE IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES. OTHERWISE, THE PRODUCTS ARE SOLD AS IS WITHOUT FURTHER OBLIGATION OR LIABILITY ON THE PART OF I-O. I-O EXPRESSLY EXCLUDES ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

EXCEPT AS EXPRESSLY SET FORTH HEREIN, IN NO EVENT SHALL I-O BE LIABLE FOR ANY CLAIMS OR DAMAGE ARISING DIRECTLY OR INDIRECTLY FROM THE FURNISHING OR FAILURE TO FURNISH PRODUCTS, SPARE OR REPLACEMENT PARTS, INFORMATION OR SERVICES HEREUNDER. UNDER NO CIRCUMSTANCES SHALL I-O BE LIABLE IN ANY WAY FOR INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO LOST BUSINESS OR PROFITS, WHETHER OR NOT FORESEEABLE AND WHETHER OR NOT BASED ON BREACH OF WARRANTY, CONTRACT, OR NEGLIGENCE.

I-O shall not be liable for non-performance or delays hereunder due to causes beyond its control. These shall include, but not be limited to, acts of God, wars, strikes, fires, flood, storm, earthquake, shortages of labor or materials, labor disputes, transportation embargoes, acts of any government or agency thereof.

MODIFICATIONS OR RECONFIGURATION OF THE HARDWARE BY ANYONE OTHER THAN I-O OR I-O'S AUTHORIZED REPAIR FACILITY WILL VOID THIS HARDWARE WARRANTY.

Customer On-Site Exchange Repair Policy

Terms, Conditions, and Limitations
Effective May 1, 1994^a

For products covered by the I-O Corporation (I-O) Manufacturer's Limited Warranty (United States), I-O's Customer On-Site Exchange (COE) Repair Policy provides customers with a replacement unit for a defective product, subject to the following terms and conditions:

Call Customer Support

If a product fails, call I-O Customer Support for assistance at (801) 972-1446.

Verify Product Failure

I-O will verify the product serial number, warranty coverage and product failure.

You are responsible for assisting in verifying the product failure.

When I-O Customer Support verifies a product failure they will issue a Return Merchandise Authorization (RMA) number for the failed product.

Replacement Units

Replacement units are shipped from I-O's stock of refurbished units, subject to availability.

Replacement units carry the same warranty as remaining on the original product.

I-O's COE Repair Policy applies only to warranted product failures. Buyer guarantees payment for non-warranted product repairs or replacement.

Buyer will pay reasonable labor and handling charges for each product returned for repair which is found to have no defect.

Return Your Failed Unit

When you return the failed product it must be shipped freight prepaid. Always note the RMA number on the outside of the package.

Install the Replacement Unit

You are responsible for installing the replacement unit.

After receiving the replacement unit please call I-O Customer Support if any assistance is required.

^a I-O reserves the right to change the terms and conditions of this policy without notice.

Manufacturer's Three Year Limited Warranty (International)

The following warranty applies only to products purchased or operated outside the United States.

I-O Corporation (I-O) warrants this product against defects in material and workmanship for a period of three years commencing from date of purchase by the original customer, when operated and maintained in accordance with I-O's published specifications. I-O's liability shall be limited, at its option and expense, to refund to buyer the actual amount paid by buyer or to repair or replace any defective or nonconforming product or part thereof, F.O.B. I-O's authorized repair depot. Buyer may obtain warranty service by meeting the terms of the I-O Return-to-Depot Repair Policy in effect at the time of the request.

THE EXPRESS WARRANTY SET FORTH ABOVE IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES. OTHERWISE, THE PRODUCTS ARE SOLD AS IS WITHOUT FURTHER OBLIGATION OR LIABILITY ON THE PART OF I-O. I-O EXPRESSLY EXCLUDES ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

EXCEPT AS EXPRESSLY SET FORTH HEREIN, IN NO EVENT SHALL I-O BE LIABLE FOR ANY CLAIMS OR DAMAGE ARISING DIRECTLY OR INDIRECTLY FROM THE FURNISHING OR FAILURE TO FURNISH PRODUCTS, SPARE OR REPLACEMENT PARTS, INFORMATION OR SERVICES HEREUNDER. UNDER NO CIRCUMSTANCES SHALL I-O BE LIABLE IN ANY WAY FOR INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO LOST BUSINESS OR PROFITS, WHETHER OR NOT FORESEEABLE AND WHETHER OR NOT BASED ON BREACH OF WARRANTY, CONTRACT, OR NEGLIGENCE.

I-O shall not be liable for non-performance or delays hereunder due to causes beyond its control. These shall include, but not be limited to, acts of God, wars, strikes, fires, flood, storm, earthquake, shortages of labor or materials, labor disputes, transportation embargoes, acts of any government or agency thereof.

MODIFICATIONS OR RECONFIGURATION OF THE HARDWARE BY ANYONE OTHER THAN I-O OR I-O'S AUTHORIZED REPAIR FACILITY WILL VOID THIS HARDWARE WARRANTY.

Return-to-Depot Repair Policy Terms, Conditions, and Limitations

Effective May 1, 1994^a

For products covered by the I-O Corporation (I-O) Manufacturer's Limited Warranty (International), I-O's Return-to-Depot (RTD) Repair Policy provides customers with warranty service for a defective product, subject to the following terms and conditions:

Call Customer Support

If a product fails, call I-O Customer Support for assistance at:
(801) 972-1446 for all locations outside the United States.

Verify Product Failure

I-O will verify the product serial number, warranty coverage and product failure.

You are responsible for assisting in verifying the product failure

When I-O Customer Support verifies a product failure they will issue a Return Merchandise Authorization (RMA) number to authorize return of the failed product.

Select Your Preferred Repair Location

I-O's Customer Support Representative will assist you in identifying the nearest I-O authorized repair depot.

I-O's Customer Support Representative will provide you with an RMA transmittal form referencing the assigned RMA number and the authorized repair depot address.

Return Your Failed Unit

Return the failed product to the I-O authorized repair depot previously identified, enclosing the RMA transmittal form. When you return the failed product it must be shipped freight prepaid.

I-O's RTD Repair Policy applies only to warranted product failures. Buyer guarantees payment for non-warranted product repairs.

Buyer will pay reasonable labor and handling charges for each product returned for repair which is found to have no defect.

Install Your Repaired Unit

I-O's authorized repair depot will service the faulty unit and return it to you, freight prepaid.

You are responsible for installing the returned unit.

After receiving the repaired unit please call I-O Customer Support if any assistance is required.

^aI-O reserves the right to change the terms and conditions of this policy without notice.