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AS/400 Configuration, ASCII Printer

Overview

This chapter details a complete AS/400 configuration setup including:

- Developing Line Descriptions with CRTLINETH
- Configuring the AS/400 for TCP/IP
- Configuring the AS/400 for Printing
- Verifying Printing from the AS/400

This document assumes no AS/400 printer configuration has been done. If any configuration has been done, please follow the procedure to the point at which continued configuration is required.

Developing Line Descriptions With CRTLINETH

For each LAN adapter on the AS/400, a line description needs to be created for the Ethernet Interface.

If a line description already exists, make sure the SSAP list includes default options “AA” and “12.” You must also know the LAN speed for the AS/400 LAN adapter.

NOTE: To change a line description, you need to vary the line off before making the change. After making the change, you need to vary the line back on.

To change an existing line description, use the CHGLINETH command. To create a line description, use CRTLINETH.

NOTE: SSAPS of “AA” and “12” are automatically set as default values in the line description when “*CALC” is used in creating new line descriptions. You do not need to set these values unless they have been changed.

To create a line description, enter the following command:

CRTLINETH LIND(ETHLAN) RSRNAME(LIN041)

Your completed screen should look like Figure 26.

```

5763SS1 V3R2M0 960517                                BLDD60 09/11/96 12:25:46
Line description . . . . . : LIND      ETHLAN
Option . . . . . : OPTION    *ALL
Category of line . . . . . :          *ELAN
Resource name . . . . . : RSRNAME  LIN041
Online at IPL . . . . . : ONLINE  *YES
Vary on wait . . . . . : VRYWAIT  *NOWAIT
Local adapter address . . . . . : ADPTADR *ADPT
Exchange identifier . . . . . : EXCHID 056A1005
Ethernet standard . . . . . : ETHSTD  *ALL
Maximum controllers . . . . . : MAXCTL 40
Error threshold level . . . . . : THRESHOLD *OFF
Text . . . . . : TEXT      *BLANK
-----Active Switched Controllers-----
(No active switched controllers attached)
SSAP list . . . . . : SSAP
-----Source Service Access Points-----
SSAP      Maximum Frame  Type      SSAP      Maximum Frame  Type
04         1496          *SNA      AA         1496          *NONSNA
12         1496          *NONSNA   C8         1496          *HPR
Group address . . . . . : GRPADR
-----Group Addresses-----
(No group addresses found)
Link speed . . . . . : LINKSPEED 10M
Cost/connect time . . . . . : COSTCNN 0
Cost/byte . . . . . : COSTBYTE 0
Security for line . . . . . : SECURITY *NONSECURE
Propagation delay . . . . . : PRPDLY *LAN
User-defined 1 . . . . . : USRDFN1 128
User-defined 2 . . . . . : USRDFN2 128
User-defined 3 . . . . . : USRDFN3 128
Autocreate controller . . . . . : AUTOCRTCTL *NO
Recovery limits . . . . . : CMNRCYLMT
Count limit . . . . . :          2
Time interval . . . . . :          5

```

Figure 26. Example Ethernet Interface Line Description

The following three parameters must be specified:

Line Description (LIND)

The line description name is the user's name for the AS/400 adapter. This name must be identical to the name entered when the TCP/IP is configured on the AS/400.

Resource Name (RSRCNAME)

The system-assigned name for the interface (for example, LIN041).

SSAP

When *CALC is used, the values of "12" and "AA" are entered automatically as defaults. Verify that those SSAP values have not been changed.

Configuring AS/400 For ASCII Using TCP/IP

The next step is to configure the interface on the AS/400 for TCP/IP.

NOTE: The AS/400 interface is not the Ethernet Interface. Do not set the AS/400 interface address to the same address as the Ethernet Interface IP address. Also, do not add the Ethernet Interface to the AS/400 TCP/IP interface list.

Configuring With ADDTCPIFC

ADDTCPIFC is used to add a TCP/IP interface to the AS/400. This step configures the AS/400 for attachments to a TCP/IP network.

At the AS/400 command line, enter the following command:

```
ADDTCPIFC INTNETADR ('9.99.15.188') LIND(ETHLAN)  
SUBNETMASK('255.255.255.0')
```

Your completed screen should look like Figure 27.

System: BLDD6	
Internet address:	9.99.15.188
Subnet mask:	255.255.255.0
Line description:	ETHLAN
Line type:	*Elan
Interface status:	Inactive
Type of service:	*Normal
Maximum transmission unit:	*Lind
Automatic start:	*Yes

Figure 27. Example of ADDTCPIFC Interface

The following parameters must be specified:

Internet Address

Internet address of the AS/400 LAN adapter.

NOTE: Do not use the IP address of the Ethernet Interface.

Subnet Mask

The Subnet Mask for this AS/400 TCP/IP interface (for example, 255.255.255.0).

Line Description

The name assigned to the AS/400 line description as described in "Developing Line Descriptions With CRTLINETH" on page 181.

NOTE: Each AS/400 LAN adapter will have its own line description.

Configuring A Router Definition With ADDTCP RTE

If necessary, use the ADDTCP RTE command to create a route definition. This is required if the printer is somewhere other than on a local segment and must cross bridges.

Configuring A Local Domain And Hostname

The AS/400 print commands, described in “Setting Up Printing For ASCII Files” on page 186, require a local name and hostname. If you have already configured LAN attached TCP/IP printers on the AS/400 system, you will have a local domain name and hostname configured on the system.

NOTE: If you already have a local domain name and hostname configured on the system, do not change your setup.

If the local domain name and hostname file is empty, the file must be set up. This control file information is used to determine if a print request comes from an authorized host.

To configure the local domain and hostname, you will run the CFGTCP command and select Option “12” from the menu. Enter a local domain name, such as *city.company.com*. Enter a local hostname, such as *as400-01*. This is the name of your AS/400 system and must match the hostname for your system in the host entry table. Refer to “Configuring A TCP/IP Host Table Entry” for more information.

NOTE: If the printer and AS/400 are not on the same local LAN segment, use CFGTCP Option 2 to verify that there is a route defined in the TCP/IP route list.

Configuring A TCP/IP Host Table Entry

Although creating a TCP/IP host table entry is optional, it is a good idea to take this step. Add the AS/400 name and the IP address of the LAN adapter to the “Host Table Entries.”

Configuring The AS/400 For Printing

To configure an AS/400 for printing, you must:

- set up the printing capability, and
- verify the setup with a print job.

You will need the following information:

Remote Printer Queue name

Set to 'd1prn' through 'd8prn'.

NOTE: The Remote Printer Queue name must be in lowercase letters. Do not use "PASS."

NOTE: When the IPDS feature is installed, the queue name 'd4prn' is not available.

IP Address

The IP address for the Ethernet Interface.

Setting Up Printing For ASCII Files

The next step is to set up the remote printing capability. There are two ways to do this: you can either specify the LPR parameters manually each time you send a file to the printer, or use Remote Writer and a remote output queue for automatic printing to the printer.

To Use LPR Manually

1. Start TCP/IP, if it is not already running, by entering the command `STRTCP`.
2. At the AS/400 command line, enter `LPR`.
3. Figure 28 displays in **bold** the parameters you need to specify.

```

Send TCP/IP Spooled File (LPR)

Type choices, press Enter.

Remote system          RMTSYS          > *INTNETADR
Printer queue          PRTQ            > 'd1prn'
Job name               JOB              *
  User
  Number
Spooled file number    SPLNMBR          *ONLY
Destination type       DESTTYP          *OTHER
Transform SCS to ASCII TRANSFORM        *YES
Manufacturer type and model MFRTYPMDL      > DBM42023
Internet address       INTNETADR        > '9.99.2.3'
    
```

Figure 28. ASCII LPR Parameters

The following parameter values are required:

Remote System

Enter the hostname of your printer or `*INTNETADR`, which then prompts you to specify the IP address of your printer.

Printer Queue (PRTQ)

Set to `'d1prn'` through `'d8prn'`. The remote printer queue name must be in lowercase letters, entered in single quotes.

NOTE: When the IPDS feature is installed, queue name `'d4prn'` is not available.

Destination Type (DESTTYP)

Specify *OTHER for the DESTTYP parameter.

Transform (TRANSFORM)

Specify *YES.

Manufacturer Type and Model (MFRTYPMDL)

Select a manufacturer type and model. This is the name of the WSCO. Select *IBM6400i for Proprinter Emulation or IBM6400iEP for Epson Emulation.

Internet Address (INTNETADR)

The IP address of the Ethernet Interface.

NOTE: You may specify either *INTNETADR (and the Ethernet Interface IP address) or the hostname for the Ethernet Interface (if you added the printer to the host table entry as directed in “Configuring A TCP/IP Host Table Entry” on page 185).

To Create An Automatic Remote Output Queue

1. From the AS/400 command line, enter `CRTOUTQ`.
2. Figure 29 displays in **bold** the parameters you need to specify.

Send TCP/IP Spooled File (LPR)		
Type choices, press Enter.		
Output queue	OUTQ	> USERNAME
Library		*CURLIB
Maximum spooled file size:	MAXPAGES	
Number of pages		*NONE
Starting time		

Ending time		
	+ for more values	
Order of files on queue	SEQ	*FIFO
Remote system	RMTSYS	> *INTNETADR
Remote printer queue	RMTprtq	> 'd1prn'
Writer to autostart	AUTOSTRWTR	1
Queue for writer messages	MSGQ	QSYSOPR
Library		*LIBL
Connection type	CNNTYPE	> *IP
Destination type	DESTTYP	*OTHER
Host print transform	TRANSFORM	*YES
Manufacturer type and model	MFRtYPMDL	> IBM6400i
Workstation Customizing Object	WSCST	*NONE
Library		
Internet address	INTNETADR	> '9.99.57.173'
Destination options	DESTOPT	*NONE
		XAUTOQ XAIX
Print separator page	SEPPAGE	*YES
User defined option	USRDFNOPT	*NONE

Figure 29. Automatic Remote Output Queue Configuration

3. Enter values for the following parameters:

Output Queue (OUTQ)

The name of the AS/400 output queue. The name can be anything you would like. This name is not the same as the printer internal queue name, 'd1prn'.

Remote System (RMTSYS)

Internet address of the Ethernet Interface on the printer (*INTNETADR prompts you for this) or the hostname of the Ethernet Interface.

Remote Printer Queue (RMTprtQ)

Default name of the network printer. Set for any of 'd1prn' through 'd8prn'. The remote printer queue name must be lowercase, entered in single quotes.

NOTE: When the IPDS feature is installed, queue name 'd4prn' is not available.

Writer to Autostart (AUTOSRTWTR)

Set the value to 1. This will start the Remote Writer when the queue is created, and it automatically starts the Remote Writer after each IPL of the AS/400 and whenever STRTCP is started.

Connection Type (CNNTYPE)

Specify this value as *IP.

Destination Type (DESTTYP)

Specify *OTHER. *OTHER is a performance enhancement, in which data is not required to be transformed again if the connection is interrupted and allows printing of multiple copies.

Transform (TRANSFORM)

Specify this value as *YES.

Destination Options (DESTOPT)

Specify **XAUTOQ**, **XAIX**. **XAUTOQ** is a performance enhancement, in which data is not required to be transformed again if the connection is interrupted. **XAIX** allows printing of multiple copies.

Manufacturer Type (MFRTYPMDL)

Select a manufacturer type and model. This is the name of the WSCO. Select ***IBM6400i** for Proprinter Emulation. Or **6400iEP** for Proprinter for Epson Emulation.

Internet address (INTNETADR)

Specify the IP address of the printer.

Verify Printing On AS/400

This section verifies that the printer is capable of printing ASCII files and that the printer can be pinged on the network.

To test ASCII printing:

1. Start TCP/IP, if it is not already running, by entering the command **STRTCP**.
2. Verify that the AS/400 TCP/IP interface is active.
3. **Ping** the printer from an AS/400 workstation with the command:
ping ip_address.

Where *ip_address* is the Internet address of the remote system printer (the Ethernet Interface) or the hostname of the printer (if you put the hostname in the host entry table as directed in “Configuring A TCP/IP Host Table Entry” on page 185).

4. If the printer cannot be pinged, proceed to “AS/400 ASCII Troubleshooting” on page 192.

5. Use one of the following methods to send a spooled file to the printer:
 - Enter the LPR command on the AS/400 command line with the appropriate parameters. See “To Use LPR Manually” on page 186.
 - Enter `STRMTWTR name` on the AS/400 command line, where *name* is the name of the AS/400 remote output queue (not the printer Internet queue, as described on “To Create An Automatic Remote Output Queue” on page 188).
 - Use the `WRKOUTQ` command to send jobs.

AS/400 ASCII Troubleshooting

During power up, the printer performs an interface hardware test. The presence of the ETHERNET PARAMS menu selection at the printer control panel indicates that the Ethernet Interface hardware is functioning properly. See the *User's Manual* for configuration menu information.

If you have trouble pinging the printer:

1. Verify the configuration of the AS/400, including the printer and any intervening devices such as routers and bridges.
2. Verify that the AS/400 line description is varied on and the printer is turned on and displays an ONLINE status.
3. Verify that the AS/400 TCP/IP is active.

TCP/IP Access Problem

If you can ping the printer from a workstation, but you cannot Web browse, Telnet, or print to the printer through the Ethernet Interface, there may be an incorrect entry in the TCP access list. So that the workstation can use the Ethernet Interface in this case, one of two things must happen:

- the TCP list must have an entry added to grant access to this workstation, or
- all entries must be deleted from the TCP list to grant all workstations/hosts access to the above TCP services.

To view the current access list, use the printer control panel to access the menu. See the *User's Manual* for configuration menu information. From the Operator Print Test menu, choose the Ethernet Test Page. When the page prints, look under the "TCP ACCESS TABLE" section for the TCP access list entries.

To add/delete a TCP access list entry, refer to "TCP Access Lists" on page 316.

NOTE: When the following procedure is used, the TCP access list will be cleared, but all IP addresses will need to be entered again after the procedure is complete.

To reset all TCP/IP values to the factory defaults when access is impossible:

1. Obtain a printer configuration printout using the control panel. See the *User's Manual* for configuration menu information.
2. Power off the printer.
3. On the Ethernet Interface, place SWITCH 1 in the down position.
4. Power on the printer and wait for the ONLINE state.
5. On the Ethernet Interface, place SWITCH 1 in the up position.

6. From a workstation attached to this network segment, create an ARP entry. The Ethernet Interface IP address and hardware or MAC address are needed. At the workstation, enter:

```
arp -s <ipaddress> <MACaddress>
ping <ipaddress>
```
 7. Try to ping this IP address to see if the Ethernet Interface can be seen on your network. If the interface does not respond, verify you are on the same network segment as the printer and that the ARP entry was created.
 8. Telnet into the Ethernet Interface using the same IP address as above. Log in as root with no password.
 9. At system prompt, enter:

```
store tcpip from default
config http on
reset
```
- NOTE:** This will reset all TCP/IP settings to factory default and reset the Ethernet Interface.
10. Wait five minutes for the Ethernet Interface to reset.
 11. Power the printer off and then back on.
 12. Wait for the “E-NET READY” message to display.
 13. Set the IP address, subnet mask, and default gateway parameters to the desired values. (See “Configuration Tools” on page 30.)

Web Browser/HTTP Problem

In some cases you may not be able to browse the printer Web page simply because the Ethernet Interface HTTP may be turned off.

If you cannot ping the Ethernet Interface IP address, make sure the IP address, subnet mask, and default gateway are set correctly by checking the ETHERNET PARAMS menu from the control panel. See the *User's Manual* for configuration menu information.

If you can ping the Ethernet Interface IP address but cannot access the Web pages, perform the following procedure to verify the Ethernet Interface HTTP is turned on:

1. **Telnet** into the Ethernet Interface and log in as **root** with no password.
2. At the system prompt, enter the following commands:

```
config http on
save
reset
```
3. After approximately 5 minutes, point your browser to the Ethernet Interface IP address. The printer Web pages should now be accessible.

