Host Print Set-up Guide

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1 PSF/MVS AFP Printing Using TCP/IP

This chapter provides information on how to create MVS definitions for printing from PSF/MVS via TCP/IP. The following topics are addressed:

JES printer statements
PSF Start-up procedure

Once these parameters have been configured, and the basic TCP/IP installation of the PrintServer with IPDS has been completed, direct AFP / IPDS from PSF / MVS will be possible.

MTU size:

- The Maximum Transmission Unit (MTU) of the IP packet for the MVS system is recommended to be set up to 2000.
  NOTE: *The MTU size should not exceed the maximum size sent through the control unit. Failure may lead to transmission problems.*

1.1 PSF/MVS direct attachment

Sample PSF/MVS JES2 initialisation statements

```
FSSDEF(FSS1)PROC=PSF4,HASPFSSM=HASPFSSM
```

```
PRT420    FSS=FSS1,MODE=FSS,PRMODE=(LINE,PAGE),
          CLASS=A,UCS=0,SEP,NOSEPDS,CKPTPAGE=100,DRAIN,WS=(R,Q/FCB)
```

Example of PSF/MVS JES2 printer definition

1.2 PSF/MVS start-up procedure

```
//PSF4    PROC
//STEP01 EXEC PGM=APSPPIEP,REGION=1750K
//JOBHDR OUTPUT PAGEDEF=V06483,          /* JOB SEPARATOR PAGEDEF    */
//       FORMDEF=A10110,CHARS=GT15       /* JOB SEPARATOR FORMDEF    */
//JOBTLR OUTPUT PAGEDEF=V06483,          /* JOB SEPARATOR PAGEDEF    */
//       FORMDEF=A10110,CHARS=GT15       /* JOB SEPARATOR FORMDEF    */
//DSHDR  OUTPUT PAGEDEF=V06483,          /* DS  SEPARATOR PAGEDEF    */
//       FORMDEF=A10120,CHARS=GT15       /* DS  SEPARATOR FORMDEF    */
//MSGDS  OUTPUT PAGEDEF=A06462,          /* MESSAGE DATASET PAGEDEF  */
//       FORMDEF=A10110                  /* MESSAGE DATASET FORMDEF  */
//*****************************************************************
//*
//*      THIS PROC. IS TO BE USED FOR 300 DPI DEVICES
//*                                -----------
//*****************************************************************
//FONT01 DD DSN=SYS1.FONTLIBBB,DISP=SHR   /*      FONTS - 300 DPI   */
//       DD DSN=SYS1.FONT300,DISP=SHR    /* SYSTEM FONTS - 300 DPI  */
//*---------------------------------------------------------------
//PSEG01 DD DSN=SYS1.PSEGLIB,DISP=SHR   /* SYSTEM PAGE SEGMENTS     */
//*---------------------------------------------------------------
//OLAY01 DD DSN=SYS1.OVERLIB,DISP=SHR   /* SYSTEM MEDIUM OVERLAYS   */
//*---------------------------------------------------------------
//PDEF01 DD DSN=SYS2.PDEFLIB,DISP=SHR    /* SYSTEM PAGEDEFS         */
//       DD DSN=SYS1.PDEFLIB,DISP=SHR    /* SYSTEM PAGEDEFS         */
//*---------------------------------------------------------------
//FDEF01 DD DSN=SYS2.FDEFLIB,DISP=SHR    /* SYSTEM FORMDEFS         */
//       DD DSN=SYS1.FDEFLIB,DISP=SHR    /* SYSTEM FORMDEFS         */
//*****************************************************************
//*            STANDARD                 PRINTDEV                  */
//*****************************************************************
```

```
//PRT420 CNTL
//PRT420 PRINTDEV FONTDD=*.FONT01,    /* FONT     LIBRARY DD          */
//       OVLYDD=*.OLAY01,             /* OVERLAY  LIBRARY DD          */
//       PSEGDD=*.PSEG01,             /* SEGMENT  LIBRARY DD          */
//       PDEFDD=*.PDEF01,             /* PAGEDEF  LIBRARY DD          */
//       FDEFDD=*.FDEF01,             /* FORMDEF  LIBRARY DD          */
//       JOBHDR=*.JOBHDR,             /* JOB HEADER SEPARATOR OUTPUT  */
//       JOBTRLR=*.JOBTLR,            /* JOB TRAILER SEPARATOR OUTPUT*/
//       DSHDR=*.DSHDR,               /* DATA SET HEADER SEPERATOR    */
//       MESSAGE=*.MSGDS,             /* MESSAGE DATA SET OUTPUT      */
//       PAGEDEF=A06462,              /* DEVICE PAGEDEF DEFAULT       */
//       FORMDEF=A10110,              /* DEVICE FORMDEF DEFAULT       */
//       CHARS=(GT10,                 /* DEVICE                       */
//       GT12,GT15,GT10),             /* DEFAULT FONT SET             */
//       PIMSG=YES,                   /* ACCUMULATE DATA SET MESSAGES*/
//       DATACK=BLOCK,                /* REPORT ALL DATA-CHECK ERRORS*/
//       TRACE=NO,                    /* CREATE INTERNAL TRACE        */
//       FAILURE=WCONNECT,            /* ACTION ON PRINTER FAILURE    */
//       TIMEOUT=REDRIVE,             /* PSF ACTION ON TIMEOUT        */
//       DISCINTV=0,                  /* DISCONNECT INTERVAL IN SECS.*/
//       MGMTMODE=IMMED,              /* ACTIVATE PRINTER AT STARTUP  */
//       IPADDR='192.0.110.21'        /* IP ADDRESS                   */
//       PORTNO=5001                  /* IP ADDRESS                   */
//PRT420 ENDCNTL
```

Using IP address 192.0.110.21 and port number 5001

The IP address of the *PrintServer* (IPDS) should be programmed in the IPADDR statement. The PORTNO 5001 is the default port number of the first IPDS port on the *PrintServer* (IPDS). Use a value of 5002 to address the second IPDS port if required.

2 z/OS SCS Printing Using TN3270e

This chapter provides examples of how to set up SCS printing using TN3270e.

2.1 TN3270E Setup using z/OS Communication Server

The IBM z/OS is capable of supporting TN3270e sessions communicating directly. The following describes the required mainframe definitions for a LinkCom or DocOut. It is assumed that the TN3270e service is already active on the mainframe.

2.1.1 Mainframe TCPIP profile definitions:

```
PRTGROUP PRTGRP1
        LU08
        TCPPRT01 TCPPRT02 TCPPRT03 TCPPRT04 TCPPRT05
        TCPPRT06 TCPPRT07 TCPPRT08 TCPPRT09 TCPPRT10
        TCPPRT11 TCPPRT12 TCPPRT13 TCPPRT14 TCPPRT15
ENDPRTGROUP

IPGROUP IPGRP1 255.255.0.0:128.0.0.0 ENDIPGROUP
LUMAP LUGRP1 IPGRP1 SPECIFIC PRTGRP1
PRTMAP PRTGRP1 IPGRP1
************
```

2.1.2 SNA Definitions:

```
TCP         VBUILD TYPE=APPL

LU08        APPL  EAS=1,ESTIMATED CONCURRENT SESSIONS     *
            AUTH=ACQ,                                       *
            VPACING=3,                                      *
            MODETAB=RSCSTAB,                                *
            SESSLIM=YES

TCPPRT*     APPL  EAS=1,ESTIMATED CONCURRENT SESSIONS     *
            AUTH=ACQ,                                       *
            VPACING=3,                                      *
            MODETAB=RSCSTAB,                                *
            SESSLIM=YES
```

3 Mainframe Printing Using SNA

This chapter provides:

Note: *The descriptions below appear in Ethernet and Token Ring versions respectively, and the sections are marked accordingly. Be sure to select the right section*.

- sample LU1 printer logmode definitions:
  3.1 Logmode

- sample definitions for installation in association with a locally attached 3174 and 3745:
  3.2 Ethernet - PS PU definition for 3174
  3.3 Ethernet - PS PU definition for 3745
  3.4 Token Ring - PS PU definition for 3174
  3.5 Token Ring - PS PU definition for 3745

Once these definitions have been configured, performing direct printing via SNA will be possible.

Requirements:

- PrintServer with SCS feature for 3270 printing .

- PrintServer with IPDS feature for IPDS printing.

3.1 Logmode

The PrintServer uses standard IBM LU1 printer logmodes. Please refer to your IBM VTAM documentation for particular configurations that best meet your network requirements. Two sample definitions are listed below:

IPDS printer:

```
IPDSPSF1 MODEENT  LOGMODE=IPDSPSF1,
FMPROF=X'03',                    X
TSPROF=X'03',                    X
PRIPROT=X'B1',                   X
SECPROT=X'B0',                   X
COMPROT=X'7080',                 X
SRCVPAC=X'02',                   X
RUSIZES=X'85C7',                 X
SSNDPAC=X’00’,                   X
PSNDPAC=X'02',                   X
PSERVIC=X'014000010000000001000000'
```

SCS printer:

```
RSCSPRT1 MODEENT  LOGMODE=RSCSPRT1,
FMPROF=X'03',                    X
TSPROF=X'03',                    X
PRIPROT=X'B1',                   X
SECPROT=X'30',                   X
COMPROT=X'7080',                 X
SSNDPAC=X'00',                   X
SRCVPAC=X'00',                   X
RUSIZES=X'8787',                 X
PSNDPAC=X'80',                   X
PSERVIC=X'01000000E100000000000000'
```

3.2 Ethernet - PS PU definition for 3174

Sample definition for installation in association with a locally attached 3174.

3174 VTAM definition

```
V1SNA1C2  VBUILD TYPE=LOCAL
*
* LOCAL SNA 3174
*
V1LS1C2   PU     CUADDR=3C3,                                              X
                 DLOGMOD=D4A32782,                                        X
                 PACING=3,                                                X
                 VPACING=3,                                               X
                 MAXBFRU=10,                                              X
                 SSCPFM=USSSCS,                                           X
                 USSTAB=VUSSTAB,                                          X
                 LOGTAB=VMODETAB,                                         X
                 MODETAB=VMODETAB
*
* SINGLE ETHERNET DEVICE WITH ID=40005A0001C2
*
IDS1C2P1 LU      LOCADDR=02,DLOGMOD=RSCSPRT1,PACING=0,MODETAB=RSCSTAB,    X
                 USSTAB=VUSSTAB1,VPACING=3
```

3174 Definition

```
*************************************************************************
LOCAL ETHERNET DEFINITION 3174
* CHANNEL ADDRESS 1C1-1C8
* 3174 /11L Microcode EC=A78831 ML=90095
* Prompt 900 - 400031740001              * Ethernet Gateway Address
*
* Prompt 940                        * Ethernet Assignment
*          C1 - 40005A0001C1
*          C2 - 40005A0001C2
*          C3 - 40005A0001C3
* Prompt 941                       * Ethernet Address Configuration
*                                SAP      F       W
*          C1 - 40005A00001C1    4        3       3
*          C2 - 40005A00001C2    4        3       3
*          C3 - 40005A00001C3    4        3       3
```

PrintServer Definition file extract

```
&&??##N1,0#     ; Start of file - Don't remove this !
;-------------------------------------------------------------------------
;      Configuration for the Ethernet PrintServer
;      (This is an example. Please modify the parameters to match
;      your configuration).
;      00824001
;-------------------------------------------------------------------------
END
;*************************************#*********************************
;                                     P U
;*************************************#*********************************
BEGIN_CONFIGURATION PU
   BLOCKNUMBER              05D                 ; Fill in your Block number
   IDNUMBER                 00000               ; Fill in your ID number
   REMOTE_MAC       400031740001          ; Fill in HOST / GW MAC address
   LOCAL_SAP        4                     ; Fill in your local SAP value
   REMOTE_SAP       4                     ; Fill in your HOST SAP value
END

&&??
```

3.3 Ethernet - PS PU definition for 3745

Sample definition for installation in association with a locally attached 3745.

Logmode

```
MTABPS       MODETAB
*
*      MODE TABLE
*
MODPS  MODEENT LOGMODE=MODPS,FMPROF=X'03',TSPROF=X'03',      x
       PRIPROT=X'B1',SECPROT=X'B0',COMPROT=X'7080',          x
       RUSIZES=X'85C6',                                      x
       PSNDPAK=X'02',SRCVPAC=X'02,SSNDPAC=X'00',             x
       PSERVIC=X'014000010000000001000000'

*      MODEEND
*
       END
```

PU/LU Definitions

```
SPPRKEN              VBUILD TYPE=SWNET, SWITCHED MAJOR NODE
               MAXNO=1,
               MAXGRP=1
*              STATOPT='NN PRINTER'
PA01B91              PU ADDR=C1,
               IDBLK=017,
               IDNUM=E2961,
               DISCNT=NO,
               MAXOUT=1,
               MAXDATA=1033,
               MODETAB=MTABPS,
               PACING=3,
               VPACING=3,
               MAXPATH=1,
               PUTYPE=2,
               DLOGMOD=MODPS
*              PATH
B91PATH              DIALNO=020400036E0035C9,GRPNM=ZTOKEN,GID=1,PID=1
*
TA01B911             LU LOCADDR=2,DLOGMOD=MODPS
*
```

PSF JCL

```
//PRTN CNTL
//PRTN PRINTDEV FONTDD=*.FONT300, /*FONT LIBRARY DD                */
//     OVLYDD=*.OLAY01,           /*OVERLAY LIBRARY DD       */
//     PSEGDD=*.PSEG01,           /*SEGMENT LIBRARY DD       */
//     PDEFDD=*.PDEF01,           /*PAGEDEF LIBRARY DD       */
//     FDEFDD=*.FDEF01,           /*FORMDEF LIBRARY DD       */
//     JOBHDR=*.JOBHDR,           /*JOB HEADER SEPARATOR OUTPUT    */
//     JOBTRLR=*.JOBTLR,          /*JOB TRAILER SEPARATOR OUTPUT   */
//     DSHDR=*.DSHDR,                   /*DATA SET HEADER SEPARATOR      */
//     MESSAGE=*.MSGDS,           /*MESSAGE DATA SET OUTPUT  */
//     FORMDEF=A10110,                  /*DEVICE FORMDEF DEFAULT         */
//     PAGEDEF=P06683,                  /*DEVICE PAGEDEF DEFAULT         */
//     CHARS=GT57,                /*DEVICE FONT DEFAULT            */
```

3.4 Token Ring - PS PU definition for 3174

Sample definition for installation in association with a locally attached 3174.

3174 VTAM definition

```
V1SNA1C2  VBUILD TYPE=LOCAL
*
* LOCAL SNA 3174
*
V1LS1C2  PU    CUADDR=3C3,                                              X
               DLOGMOD=D4A32782,                                        X
               PACING=3,                                                X
               VPACING=3,                                               X
               MAXBFRU=10,                                              X
               SSCPFM=USSSCS,                                           X
               USSTAB=VUSSTAB,                                          X
               LOGTAB=VMODETAB,                                         X
               MODETAB=VMODETAB
*
* SINGLE TOKEN RING DEVICE WITH ID=40005A0001C2
*
IDS1C2P1 LU    LOCADDR=02,DLOGMOD=RSCSPRT1,PACING=0,MODETAB=RSCSTAB,    X
               USSTAB=VUSSTAB1,VPACING=3
```

3174 Definition

```
*************************************************************************
LOCAL TOKEN RING DEFINITION 3174
* CHANNEL ADDRESS 1C1-1C8
* 3174 /11L Microcode EC=A78831 ML=90095
* Prompt 900 - 400031740001             * Token-Ring Gateway Address
*
* Prompt 940                       * Token-Ring Assignment
*         C1 - 40005A0001C1
*         C2 - 40005A0001C2
*         C3 - 40005A0001C3
* Prompt 941                      * Token-Ring Address Configuration
*                              SAP     F      W
*         C1 - 40005A00001C1    4      3      3
*         C2 - 40005A00001C2    4      3      3
*         C3 - 40005A00001C3    4      3      3
```

PrintServer Definition file extract

```
&&??##N1,0#     ; Start of file - Don't remove this !
;-------------------------------------------------------------------------
;      Configuration for the Token Ring PrintServer
;      (This is an example. Please modify the parameters to match
;      your configuration).
;      00824001
;-------------------------------------------------------------------------
;*********************************#*********************************
;                                    P U
;*********************************#*********************************
BEGIN_CONFIGURATION PU
       BLOCKNUMBER   05D           ; Fill in your Block number
       IDNUMBER      00000         ; Fill in your ID number
       REMOTE_MAC    400031740001; Fill in HOST / GW MAC address
       LOCAL_SAP     4             ; Fill in your local SAP value
       REMOTE_SAP    4             ; Fill in your HOST SAP value
END

&&??
```

3.5 Token Ring - PS PU definition for 3745

Sample definition for installation in association with a locally attached 3745.

Logmode

```
MTABPS         MODETAB
*
*              MODE TABLE
*
MODPS          MODEENT LOGMODE=MODPS,FMPROF=X'03',TSPROF=X'03',      x
                       PRIPROT=X'B1',SECPROT=X'B0',COMPROT=X'7080',   x
                       RUSIZES=X'85C6',                                      x
                       PSNDPAK=X'02',SRCVPAC=X'02,SSNDPAC=X'00',             x
                       PSERVIC=X'014000010000000001000000'
*
                       MODEEND
*
                       END
```

PU/LU Definitions

```
SPPRKEN              VBUILD TYPE=SWNET, SWITCHED MAJOR NODE
                     MAXNO=1,
                     MAXGRP=1
*                    STATOPT='NN PRINTER'
PA01B91              PU ADDR=C1,
                     IDBLK=017,
                     IDNUM=E2961,
                     DISCNT=NO,
                     MAXOUT=1,
                     MAXDATA=1033,
                     MODETAB=MTABPS,
                     PACING=3,
                     VPACING=3,
                     MAXPATH=1,
                     PUTYPE=2,
                     DLOGMOD=MODPS
*                    PATH
B91PATH              DIALNO=020400036E0035C9,GRPNM=ZTOKEN,GID=1,PID=1
*
TA01B911             LU LOCADDR=2,DLOGMOD=MODPS
*
```

PSF JCL

```
//PRTN CNTL
//PRTN PRINTDEV FONTDD=*.FONT300, /*FONT LIBRARY DD                */
//            OVLYDD=*.OLAY01,                  /*OVERLAY LIBRARY DD       */
//            PSEGDD=*.PSEG01,                  /*SEGMENT LIBRARY DD       */
//            PDEFDD=*.PDEF01,                  /*PAGEDEF LIBRARY DD       */
//            FDEFDD=*.FDEF01,                  /*FORMDEF LIBRARY DD       */
//            JOBHDR=*.JOBHDR,                  /*JOB HEADER SEPARATOR OUTPUT
      */
//            JOBTRLR=*.JOBTLR,                 /*JOB TRAILER SEPARATOR OUTPUT
      */
//            DSHDR=*.DSHDR,                    /*DATA SET HEADER SEPARATOR
      */
//            MESSAGE=*.MSGDS,                  /*MESSAGE DATA SET OUTPUT  */
//            FORMDEF=A10110,                   /*DEVICE FORMDEF DEFAULT
      */
//            PAGEDEF=P06683,                   /*DEVICE PAGEDEF DEFAULT
      */
//            CHARS=GT57,                       /*DEVICE FONT DEFAULT
      */
```

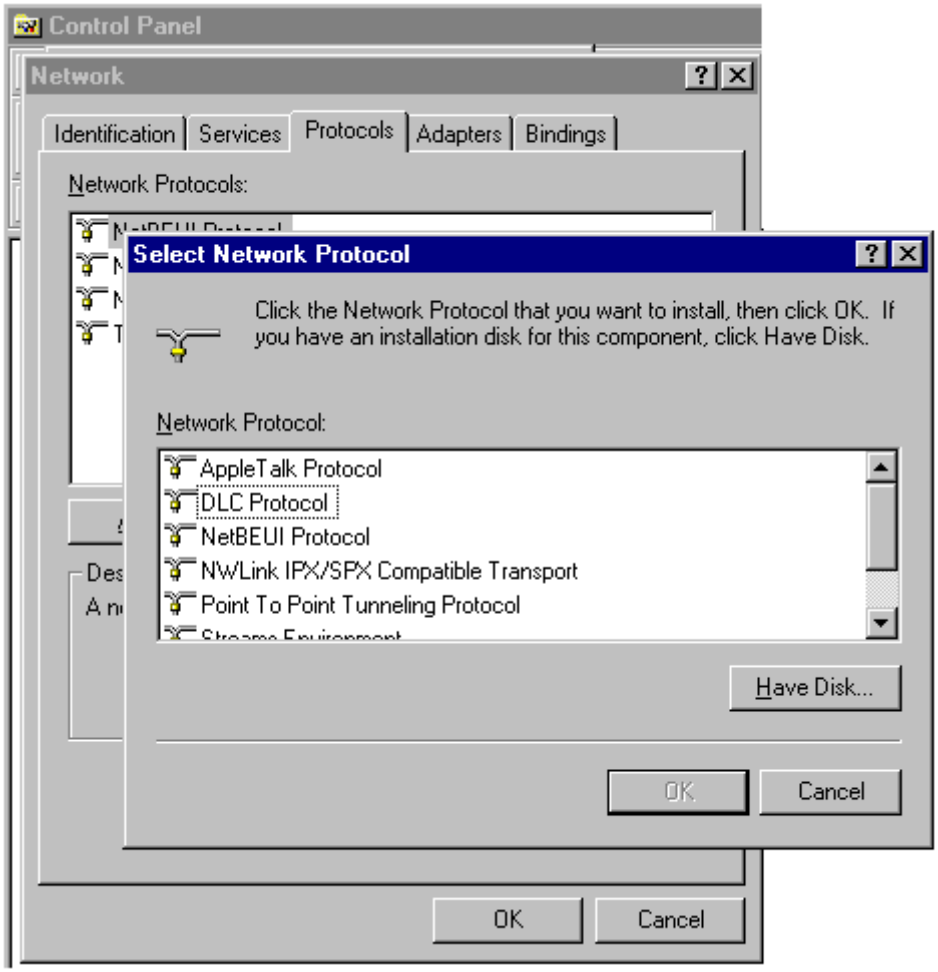
4 Configuration of MS SNA/HIS Server

This chapter provides examples of how to set up SCS printing using TN3270e.

4.1 General setup

4.1.1 Adding DLC 802.2 protocol to your Windows Server / Workstation

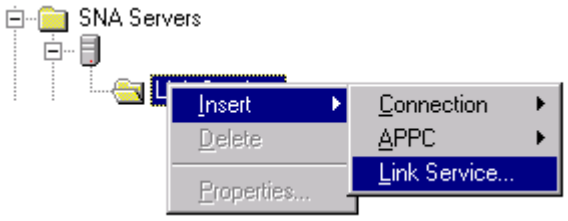
In order to communicate via Token ring or Ethernet over SNA, you must add the DLC protocol to your Windows Server or Workstation running SNA Server.

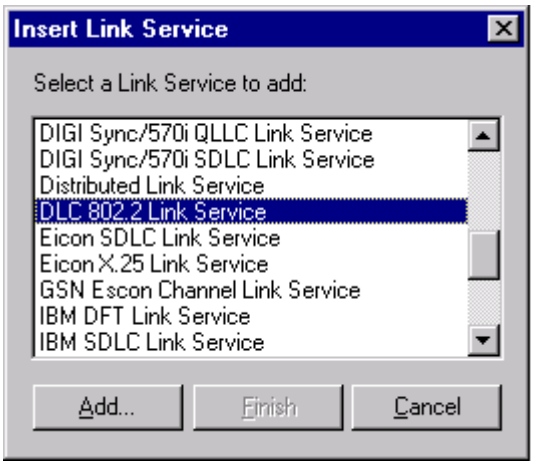


4.1.2 SNA Server configuration – Create a link

You must define the Server LAN card to be used to communicate with the host.

- Folder ***Link Services***, make a right click and select Link Service. Select DLC 802.2 Link Service from the list.



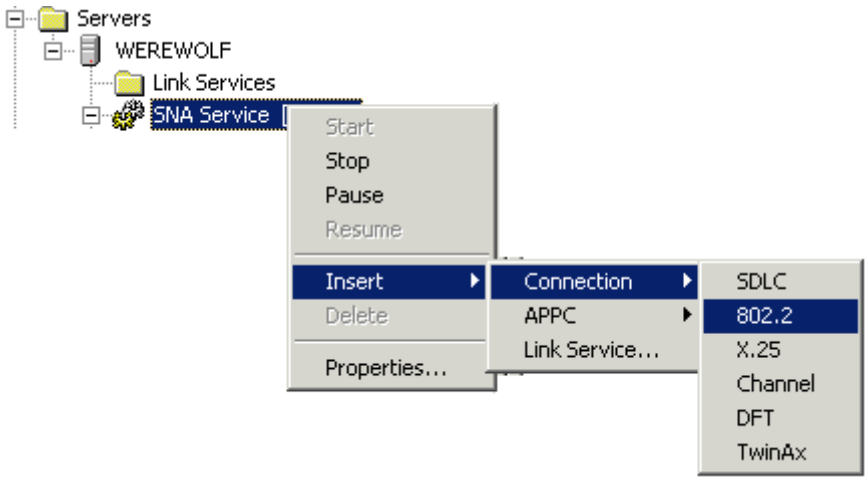


- In the ***DLC 802.2 Link Service Properties*** window, select the LAN card you want to use.

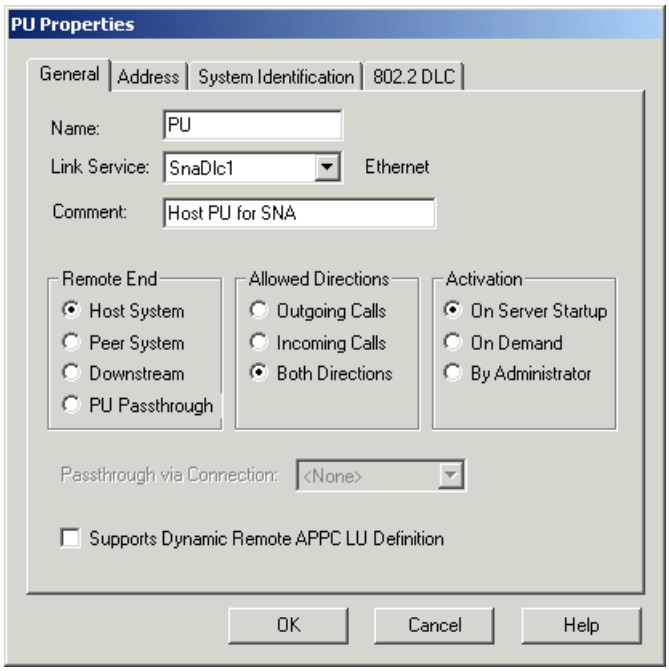
4.1.3 SNA Server configuration – Create a connection

You must define a connection (PU Emulation) with attributes matching the VTAM PU Definitions

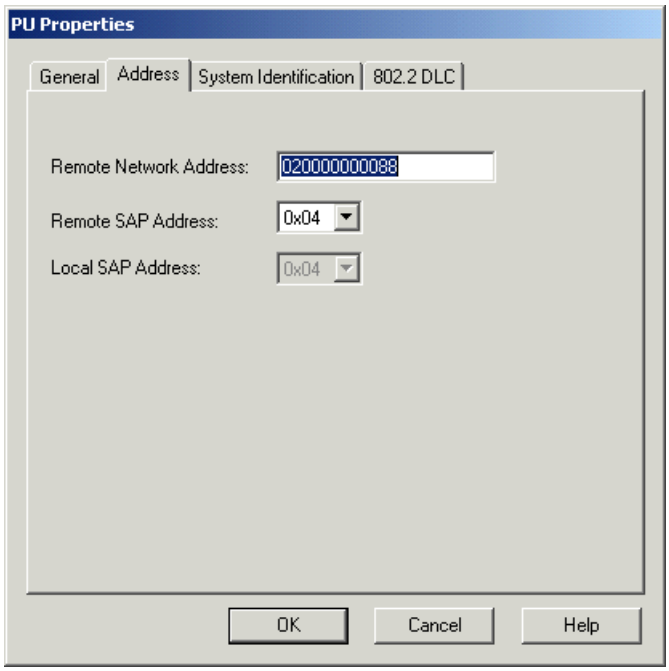
- Folder ***Connections***, make a right click and select ***802.2*** from the list:



Connections : General

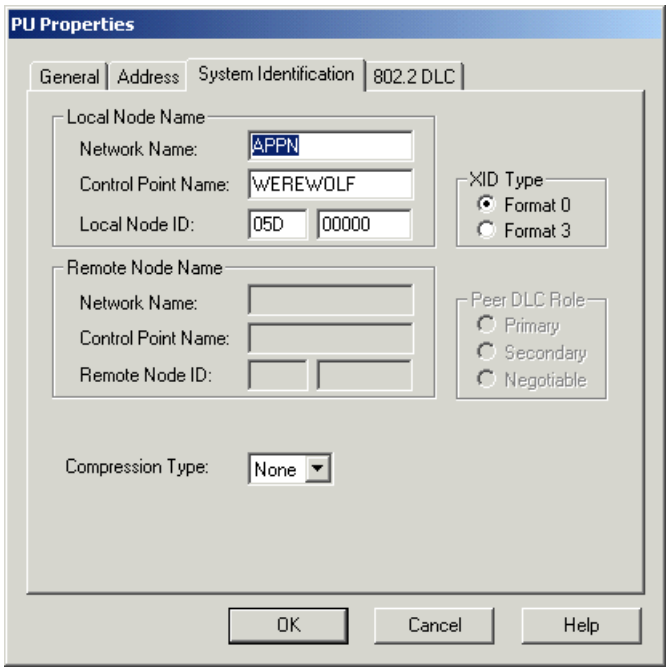


Connections : Address



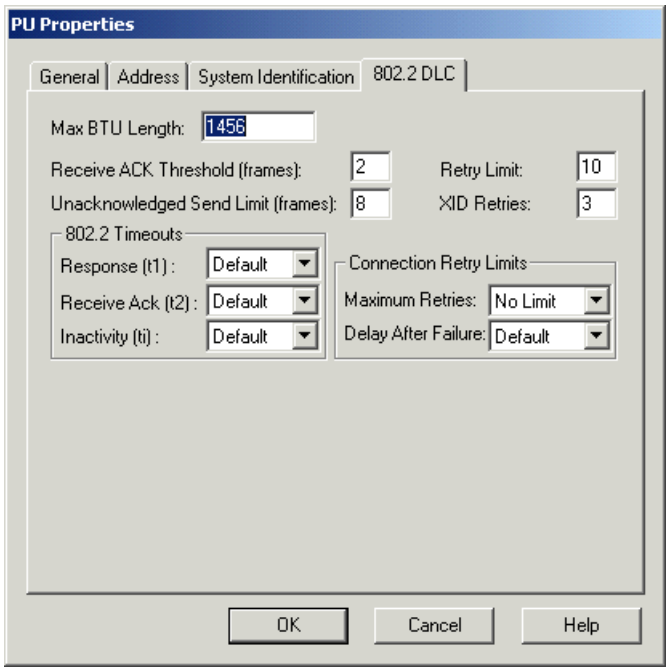
Note : ***Remote Network Address*** must match the Host MAC Address (TIC)

Connections : System Identification



Note : ***local Node ID*** must match the ***ID_NUM*** and ***ID_BLOCK*** parameters of the VTAM PU Definition

Connections : System Identification

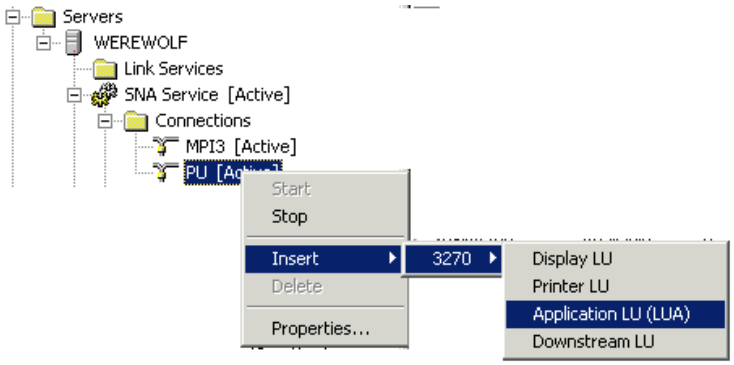


Note : ***MAX BTU Length*** must match the ***MAX_DATAD*** parameter of the VTAM PU Definition

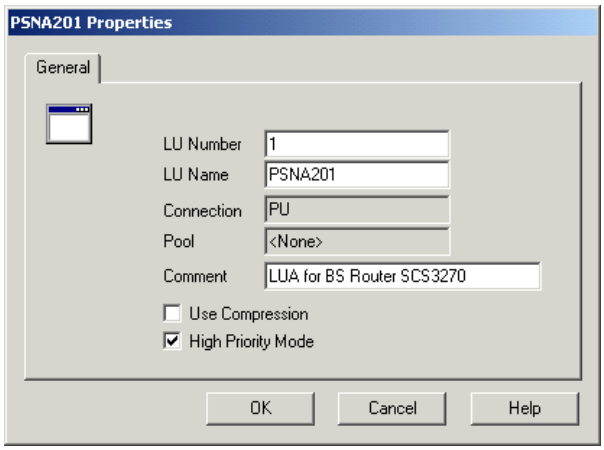
4.2 SNA Server configuration – Create a Printer LU

Attached to the connection, you must create your printer LU. In order to run with MPI Router, you must define a LUA LU.

- Make a right click on your connection and select Application LU (LUA).



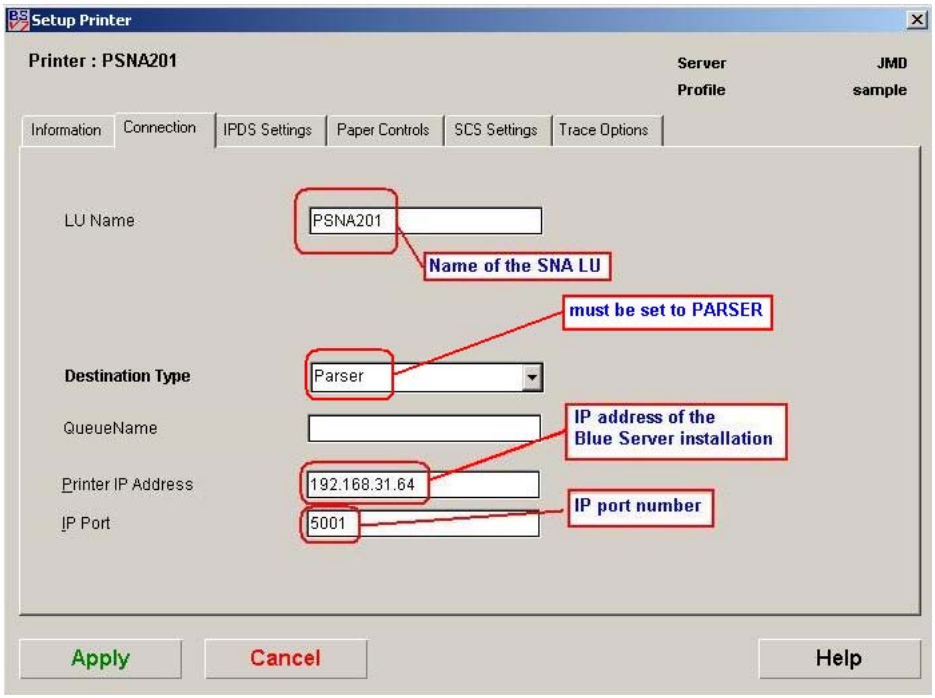
- This new window appears:



Note : The number specified for ***LU*** must match the ***LOCADDR*** parameter of the VTAM LU Definition

4.3 Configuring BlueServer for SNA communication

4.3.1 Setup Connection tab



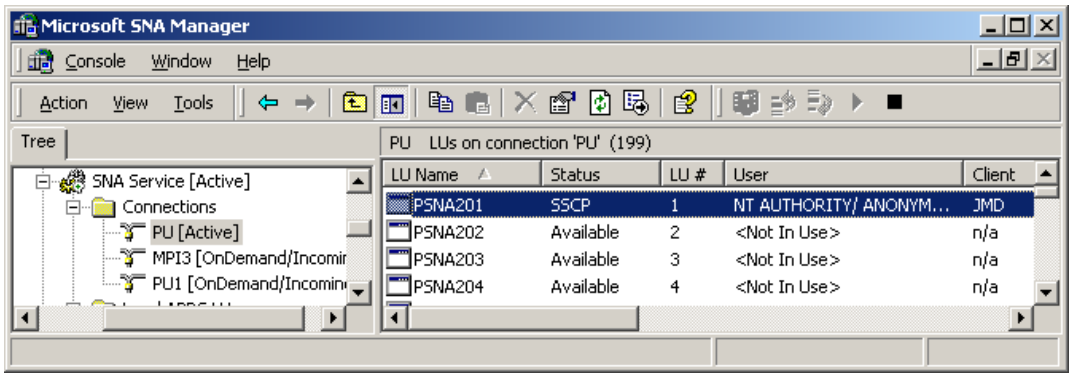
Notes:

- The other tabs “IPDS Settings”, “Paper Controls”, are not used in this case.
- The SCS Settings tab is only used only for SCS printout.

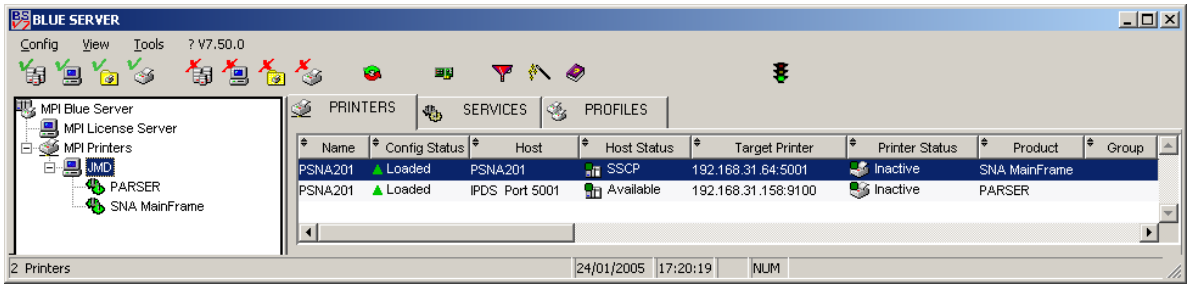
4.4 Loading the Router Mainframe and Parser

4.4.1 Microsoft SNA/HIS status indication

The PSNA201 is SSCP



4.4.2 Blue Server status indication



With this configuration, you are now able to print SCS or IPDS jobs from your Mainframe IBM host.

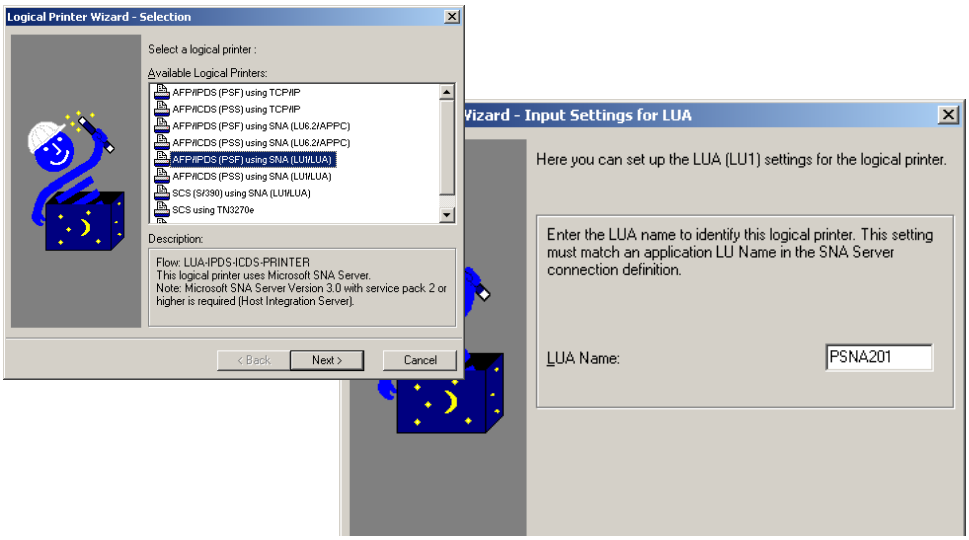
4.5 Configuring DocOut for SNA communication

4.5.1 Setup LUA(LU1) tab

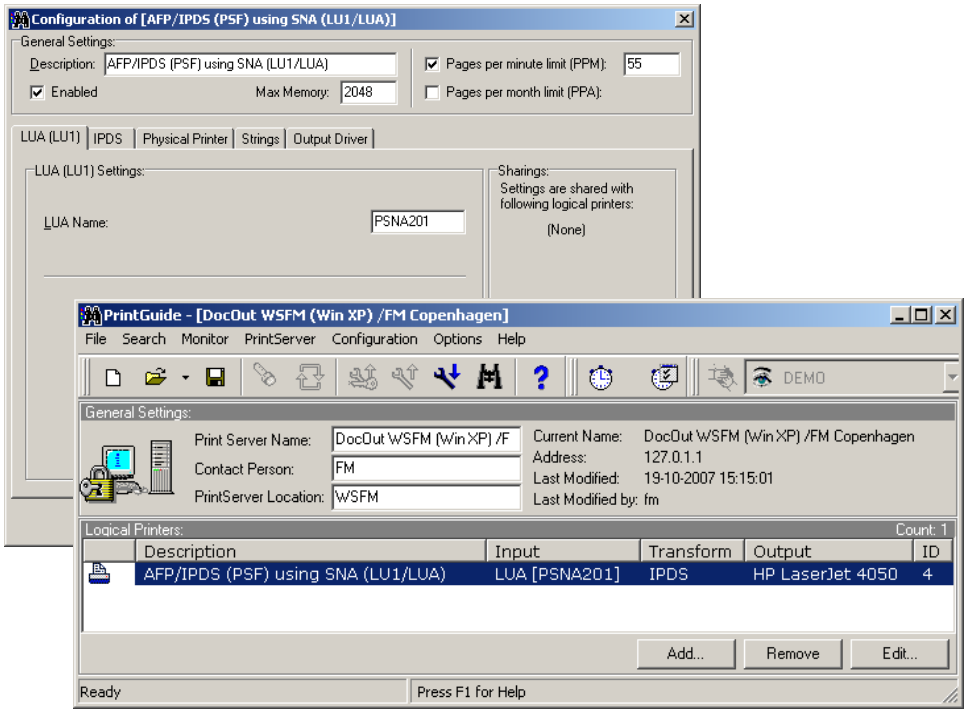
Select AFP/IPDS (PSF) using SNA (LU1/LUA)

or

SCS (S/390) using SNA (LU1/LUA)



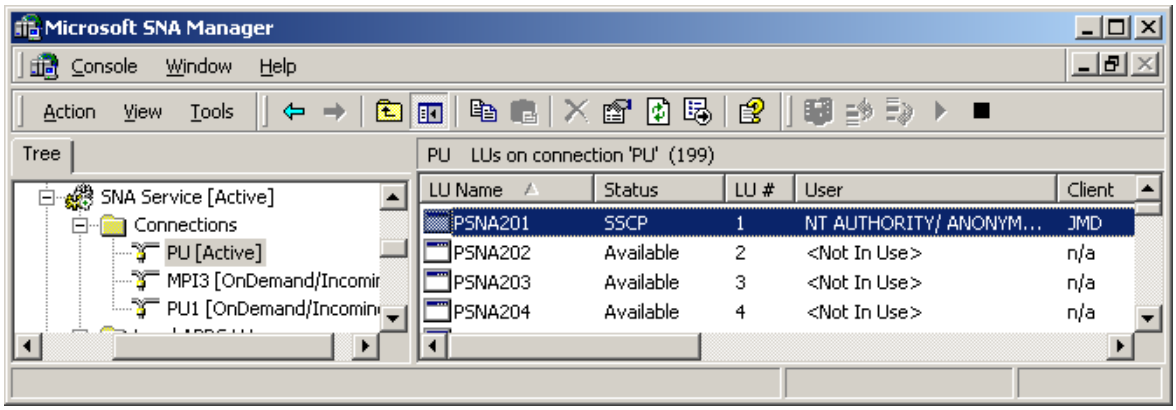
Check Configuration:



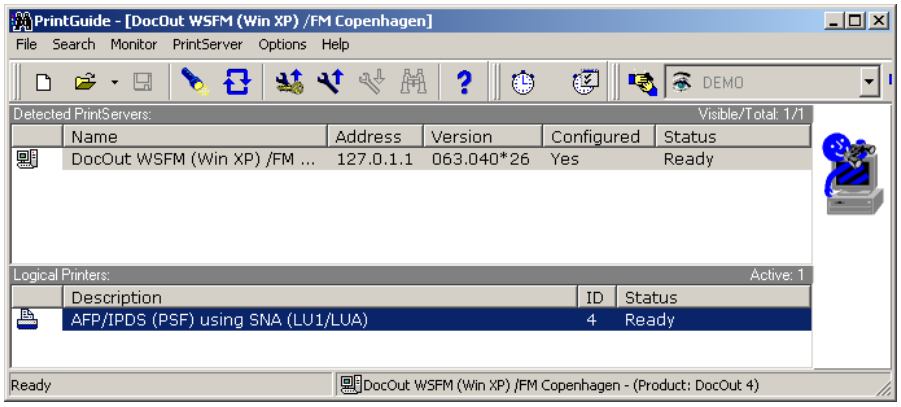
Select: Save Configuration

4.5.2 Microsoft SNA/HIS status indication

The PSNA201 is SSCP



4.5.3 DocOut status indication



With this configuration, you are now able to print SCS or IPDS jobs from your Mainframe IBM host.

5 PSF/AIX IPDS Printing Using TCP/IP

This chapter provides details on:

Adding a TCP/IP attached printer
Set up of the KEEPALIVE TCP/IP feature

The basic TCP/IP installation of the PrintServer (IPDS) must be completed before direct AFP / IPDS from PSF/AIX will be possible.

5.1 Adding TCP/IP attached printer

The port number is defined in the PSF/AIX SMIT Add a TCP/IP-Attached Printer panel.

1. Enter Printer name
   PSF/AIX uses the printer name you specify. Enter a name of up to 8 characters.

2. Enter Internet address
   The address in the TCP/IP network where the PrintServer is installed. Enter a 32-bit dotted decimal notation (e.g. 192.0.2.1).

3. Enter Port number (5001)
   If the output device is attached to PARALLEL 1 of the print server, then select TCP/IP port number 5001. The value chosen must match the value defined for the session in the PrintServer (IPDS). 5001 is the default port number of the first IPDS port no. in the PrintServer (IPDS).

5.2 KEEPALIVE support for AIX

The TCP/IP components in AIX offer network attachment for printers. However, these TCP/IP components do not always detect connection failures if a point-to-point session between the AIX machine and the device has failed (e.g. in connection with a printer being abruptly powered off). This may result in serious problems for IPDS printers in sessions with PSF/AIX

Now, support for the TCP KEEPALIVE facility has been added to the TCP/IP components of AIX to detect all communication failures. PSF/AIX directs TCP to send a KEEPALIVE transmission on a TCP connection remaining inactive for an extended period. If the KEEPALIVE transmission is not acknowledged, the TCP assumes that the connection partner has been lost and subsequently reports a failure to PSF/AIX

The frequency of these transmissions depends upon the configuration of AIX TCP/IP environment. The default for AIX is two hours or more. This, however, can be adjusted. These values apply to all TCP applications that request KEEPALIVE transmissions.

In the following, you are provided with instructions for using the KEEPALIVE support facility added to the TCP/IP components for AIX

5.3 AIX KEEPALIVE support

The no (network options) command can be used by the root user to configure KEEPALIVE frequencies.

```
no -o tcp_keepidle=nnn

no -o tcp_keepintvl=nnn
```

when nnn is in half-seconds.

The command **tcp_keepidle** specifies the interval of inactivity causing the TCP to generate a KEEPALIVE transmission for an application that requests them.
The default is 14400 (2 hours).

The command **tcp_keepintvl** specifies the interval between the nine retry attempts if a KEEPALIVE transmission is not acknowledged.
The default is 150 (75 seconds).

The **no** commands must be run each time the AIX system is started. Adding the **no** commands to /etc/rc.net is a convenient way of automating this step.

Adding e.g.

```
no -o tcp_keepidle=480

no -o tcp_keepintvl=80
```

to /etc/rc.net causes the TCP to send a KEEPALIVE transmission if a TCP connection has been inactive for 4 minutes and the application requested KEEPALIVE transmissions, as AIX now does. AIX recommends these TCP configuration settings to customers who use TCP/IP attached printers and the device.

To view current settings enter

```
no -a
```

When the installation and configuration procedures for the PSF/AIX have been completed, you are ready for printing.

6 PSF/400 AFP Printing Using TCP/IP

This chapter provides configuration guidelines for AS/400 IPDS Printing over TCI/IP. These guidelines are applicable for OS/400 version 3.7, 4.X and 5.X.

The examples of completed screens given are for OS/400 version 4.X and 5.X and may contain some additional parameters not seen in version 3.7, these may be ignored.

Requirements:

Before IPDS printing using TCP/IP can be accomplished, the following points need to be checked:

- TCP/IP is installed and enabled
- IBM Print Services Facility/400 (PSF) is installed.

6.1 AS/400 Settings for Version 3.7, 4.X and 5.X

To configure IPDS printing on OS/400 3.7, V4RX and V5RX, it is necessary to create a Printer Device Description. It is also highly recommended to create a PSF configuration as this includes additional printer settings and e.g. media size information used with matrix printers. These are created using the following commands:

- CRTPSFCFG
- CRTDEVPRT

6.1.1 Creating the PSF configuration

On the AS/400 command line, enter a command in the form:

CRTPSFCFG PSFCFG(*AFP*/*NETWRKPRT*) IPDSPASTHR(*YES) RLSTMR(*SEC15) TEXT('<*Optional Text description*> ')

Where:

AFP is the name an existing library in which the PSF configuration is to be located and ***NETWRKPRT*** is the name given to the PSF configuration object. Any existing library and a name of choice for the object can be substituted here but the same values must be used in the creation of the Printer Device Description in the next step.

<Optional Text description> is an optional text description for the PSF configuration object.

A completed PSF Configuration looks like this:

```
PSF Configuration Information              Page 1
PSF configuration:  NETWRKPRT     Library:      AFP
User resource library . . . . . . . . . . . . . . : *JOBLIBL
IPDS pass through . . . . . . . . . . . . . . . . : *YES
Activate release timer. . . . . . . . . . . . . . : *NORDYF
Release timer . . . . . . . . . . . . . . . . . . : *SEC15
Restart timer . . . . . . . . . . . . . . . . . . : *IMMED
SNA retry count . . . . . . . . . . . . . . . . . : 2
Delay time between retries. . . . . . . . . . . . : 0
Blank page. . . . . . . . . . . . . . . . . . . . : *YES
Page size control . . . . . . . . . . . . . . . . : *YES
Resident fonts. . . . . . . . . . . . . . . . . . : *YES
Resource retention. . . . . . . . . . . . . . . . : *YES
Edge orient . . . . . . . . . . . . . . . . . . . : *NO
Remote location:
Name or address . . . . . . . . . . . . . . . . . : *NONE
TCP/IP port . . . . . . . . . . . . . . . . . . . : *NONE
TCP/IP activation timer . . . . . . . . . . . . . : 170
PSF defined options:                      *NONE
Text description. . . . . . . . . . . . . . . . . :<Optional Text description>
Device resource library list:             *DFT
```

6.1.2 Creating the Printer Device Description

On the AS/400 command line, enter a command in the form:

CRTDEVPRT DEVD(<*DeviceName*>) DEVCLS(*LAN) TYPE(*IPDS) MODEL(0) LANATTACH(*IP) AFP(*YES) PORT(*5001*) FONT(11) FORMFEED(*AUTOCUT) RMTLOCNAME('192.194.134.90') USRDFNOBJ(*AFP*/*NETWRKPRT* *PSFCFG) TEXT('<*Option Txt Description*> ')

Where:

<DeviceName> is the selected name for the printer Device Description which will also be used as the name for the Output Queue.

AFP is the name of the library in which the PSF configuration was created in the previous step.

NETWRKPRT is the name given to the PSF configuration in the previous step.

5001 is the port number to be used. For the LinkCom's and Host2Net this can be 5001, 5002 or 5003 depending how the LinkCom is communicating with the printer, please see the table below:

	PORT 5001	PORT 5002	PORT 5003
LinkCom III IPDS	Parallel Port or Network 1 Session	USB Port	
LinkCom III IPDS with 3 Network session option	Parallel Port **or** Network Session 1	USB Port **or** Network Session 2	Network Session 3
LinkCom Xpress	Parallel Port 1	Parallel Port 2	
Host2Net	Network Session 1	Network Session 2	Network Session 3

<Option Txt description> is an optional text description for the Printer Device Description object.

A completed Device Description looks like this:

```
Display Device Description                          Page 1
5716SS1 V4R4M0 981108       BLDRB1       09/11/98 12:02:59
Device description . . . . . : DEVD             <DeviceName>
Option . . . . . : OPTION           *ALL
Category of device . . . . . :                  *PRT
Device class . . . . . : DEVCLS           *LAN
Device type. . . . . : TYPE             *IPDS
Device model . . . . . : MODEL            0
LAN attachment . . . . . : LANATTACH        *IP
User-defined object  . . . . . : USRDFNOBJ        NETWRKPRT
Library. . . . . :                        AFP
Object type. . . . . :                    *PSFCFG
Data transform program . . . . . : USRDTATFM        *NONE
User-defined driver program . . . .: USRDRVPGM        *NONE
Advanced function printing . . . . : AFP              *YES
Port number. . . . . : PORT             5001
Online at IPL. . . . . : ONLINE           *YES
Font . . . . . : FONT
Identifier . . . . . : 011
Point size . . . . . :                    *NONE
Form feed. . . . . : FORMFEED  *AUTOCUT
Separator drawer . . . . . : SEPDRAWER        *FILE
Separator program. . . . . : SEPPGM           *NONE
Library. . . . . :
Printer error message. . . . . : PRTERRMSG        *INQ
Message queue. . . . . : MSGQ             QSYSOPR
Library. . . . . :                        *LIBL
Activation timer . . . . . : ACTTMR           170
Maximum pending requests . . . . . : MAXPNDRQS        6
Print while converting . . . . . : PRTCVT           *YES
Print request timer. . . . . : PRTRQSTMR        *NOMAX
Form definition. . . . . : FORMDF           F1C10110
Library. . . . . :                        *LIBL
Remote location. . . . . : RMTLOCNAME
Name or address. . . . . : '192.194.134.90'
Dependent location name. . . . . : DEPLOCNAME       *NONE
Text . . . . . : TEXT             <Option Txt Description>
User-defined options . . . . . : USRDFNOPT
-----------------User-defined options------------------
```

Then do the following:

Ping the IP address to verify communication with the printer:
PING ’192.194.134.90’

Vary the printer on:
VRYCFG <*DeviceName*> CFGTYPE(*DEV) STATUS(*ON)

Start the print writer:
STRPRTWTR <*DeviceName*>

7 SCS/DCA Printing Using TN5250e

To set up TN5250, configure your PrintServer using PrintGuide (see the manual *Getting Started with PrintGuide*, doc. no. 60364 on the Utility Pack).

Start PrintGuide, select **Telnet Print Settings** (Figure 7), select TN5250e as **Connection Type** and enter the **Device Name** for your <PrintServer>.

On many AS/400 installations, a device is automatically set up on the AS/400 when the PrintServer is booted. For this to happen, the following conditions apply:

- Telnet must be started.
- The QUATOVRT SYSVAL parameter must be set to a value that is higher than the number of auto-configured virtual controllers currently running on the system. See section 6.3.1 for this procedure.

On some installations, the QAUTOVRT SYSVAL parameter is set to 0. This prevents any virtual controllers from being auto-created. In cases where QAUTOVRT SYSVAL cannot be changed from 0, devices must be configured manually. See section 6.3.2

7.1.1 Autoconfiguration of Devices

How to set up your AS/400 to auto-configure devices:

Issue the command:

WRKCTLD *VWS

This will determine the number of auto-configured Virtual Controllers on the system.

Issue the command:

DSPSYSVAL QAUTOVRT

If the system value of **QAUTOVRT** is zero, then use the procedure outlined in section 6.3.2

If the system value of **QAUTOVRT** is equal to the number of auto-configured Virtual Controllers, the **QAUTOVRT** value should be increased by the number of devices that will be configured.

7.1.2 Manual Configuration of Devices

This section describes how to create printer definitions on AS/400s that have the QAUTOVRT SYSVAL parameter set to 0.

Prerequisites:

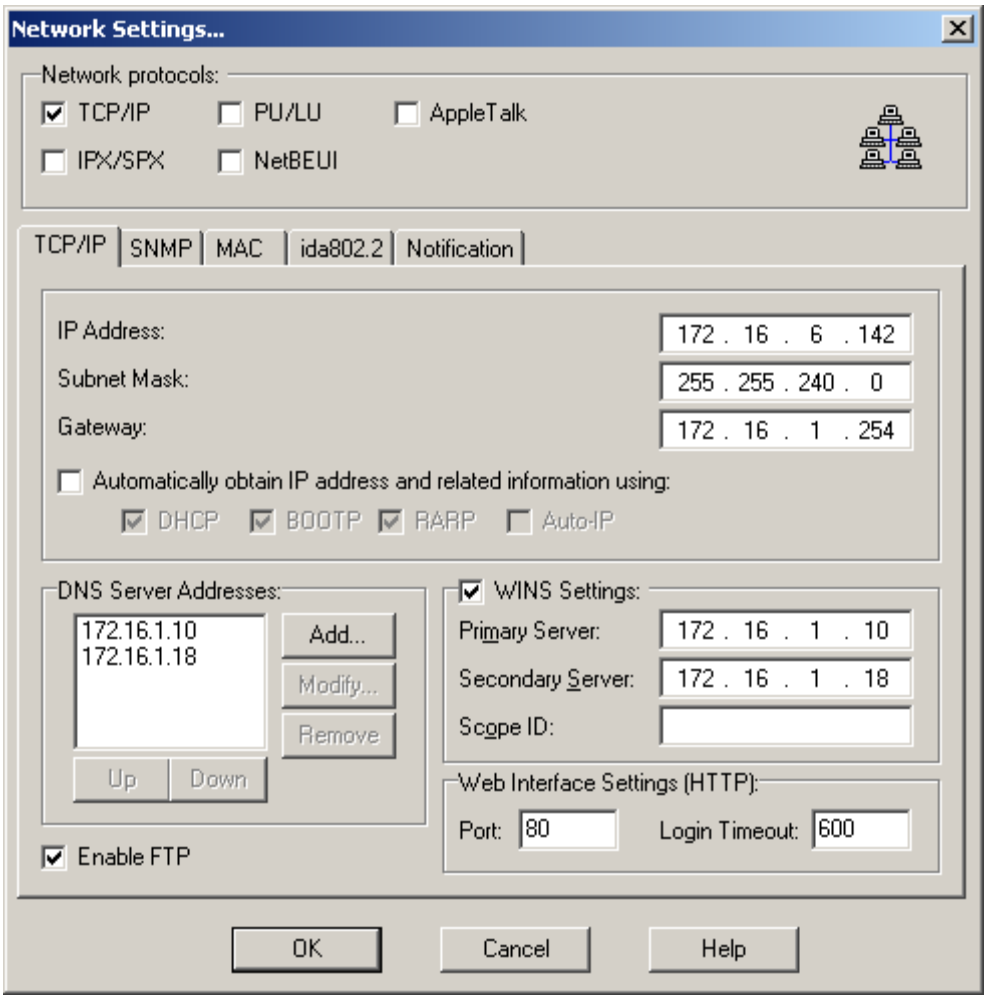
- AS/400 is configured and running TCP/IP
- Firmware level* on the interface is at least S80 xxx.360
- Release of PrintGuide* being used is at least S42 065.100

* Latest versions can be obtained from the MPI Tech web page

1. Install the PrintServer using PrintGuide.

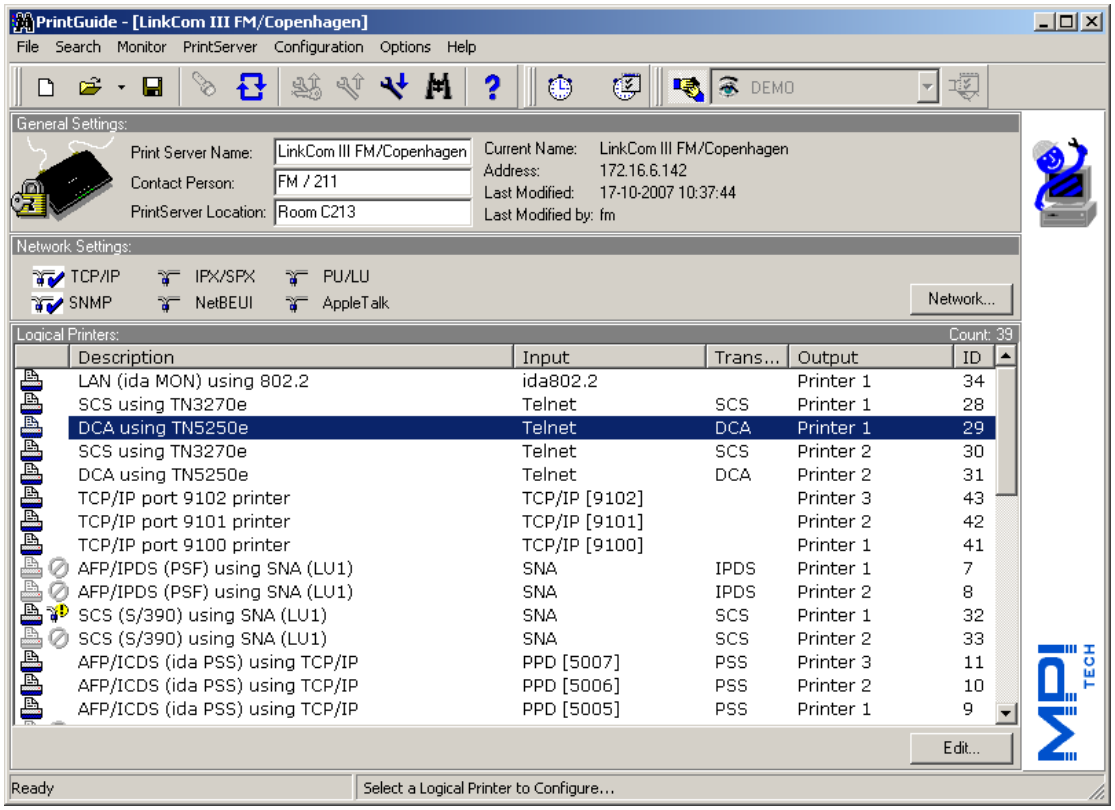
Define the IP Address, SubnetMask and Gateway values in The Network settings option.

Sample dialog: (The form of the panel may vary from product to product)

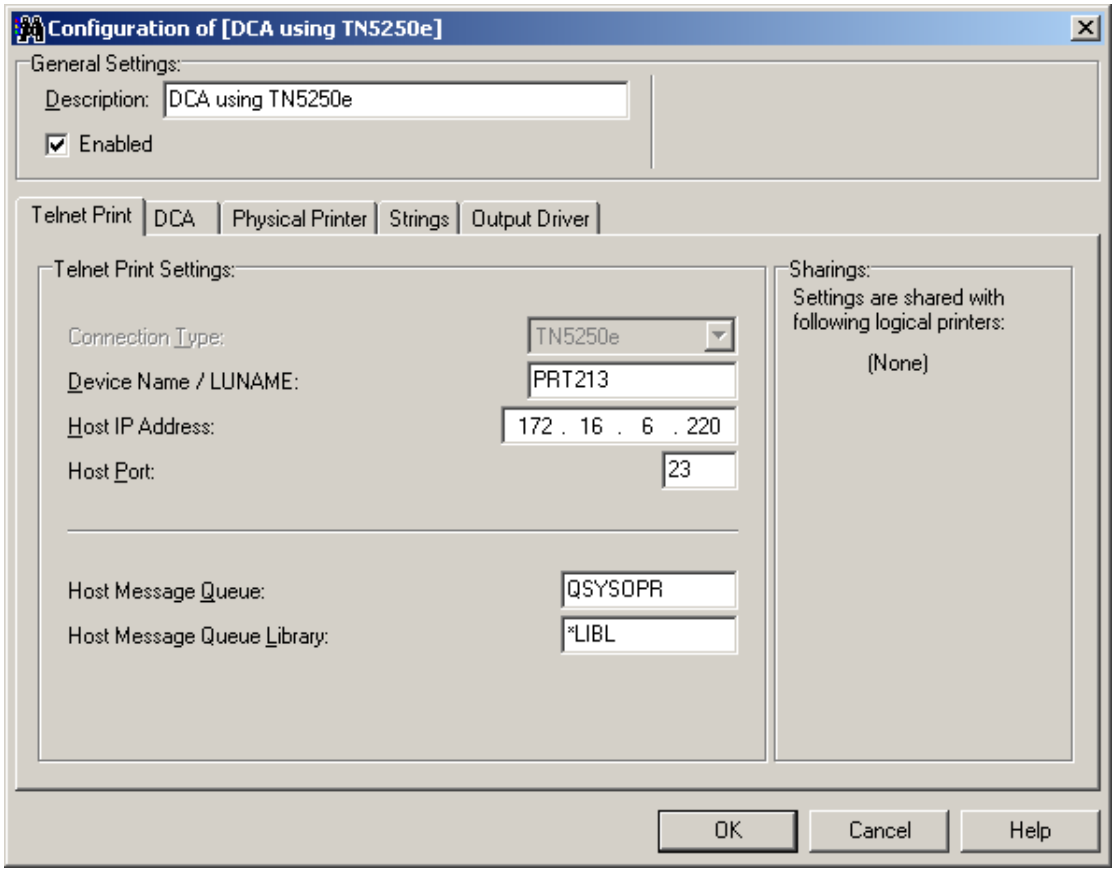


2. Define the Telnet 5250e session

Using PrintGuide, locate the Telnet session and highlight it:



3. Double-click on the highlighted session.



Type in the **Device Name**. This must be a unique name on the AS/400 that you wish to connect to. It can have up to 10 characters.

Type in the **Host IP Address** of the AS/400 you wish to connect to.

The standard Telnet port **23** is used for the **Host Port** and is predefined.

Click **OK** and then downlooad the settings to the PrintServer, selecting the option to restart the Server.

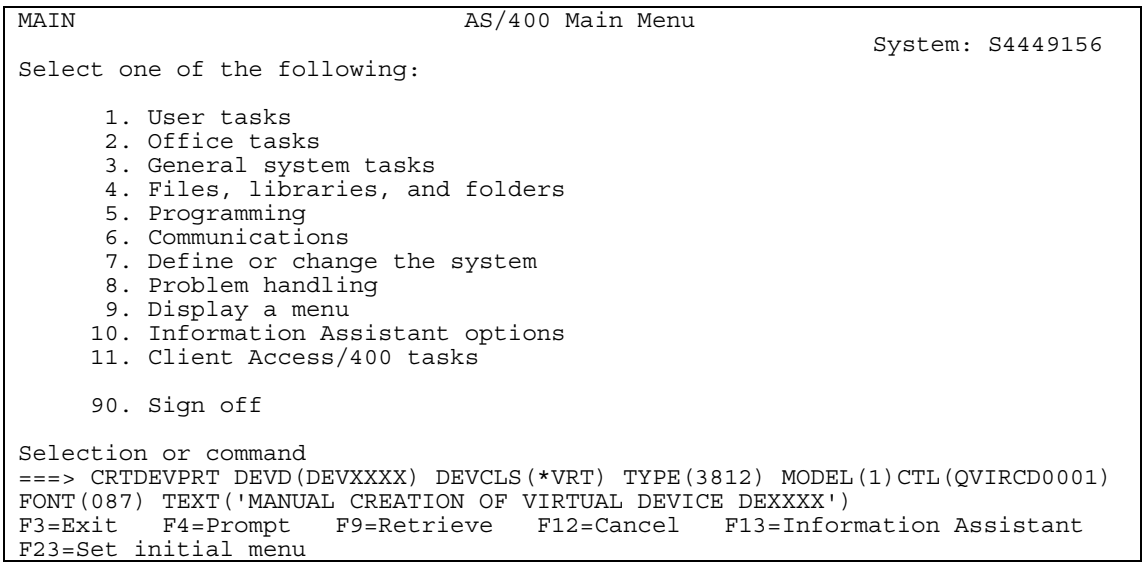
4. Configure AS/400.

Start TCP/IP if not already started by typing STRTCP on the command line.

Method 1: Using the Command Line
Create the device from the Command Line by typing:

CRTDEVPRT DEVD(DEVXXXX) DEVCLS(*VRT) TYPE(3812) MODEL(1) CTL(QVIRCD0001) FONT(87) TEXT('MANUAL CREATION OF VIRTUAL DEVICE DEVXXXX')

The value for DEVD should match the Device Name given in step 3.
The value of CTL should match the virtual controller on the system (Normally QVIRCD0001)
The value for TEXT is optional.



Check the status of the device is Vary on Pending. The device will remain in this state until the defined PrintServer has established the session. This is done by restarting; either from PrintGuide or by switching power off and then on.

Method 2: Using Device Definition panels
The Device can also be created using the same values from the Work with Device Definition Screens using option F6.

The value for DEVD should match the Device Name given in step 3.

The value of CTL should match the virtual controller on the system (Normally QVIRCD0001)
The value for TEXT is optional.

```
                    Create Device Desc (Printer) (CRTDEVPRT)

 Type choices, press Enter.

 Device description . . . . . DEVD          > DEVXXXX
 Device class . . . . . . . . . DEVCLS       > *VRT
 Device type  . . . . . . . . . TYPE         > 3812
 Device model . . . . . . . . . MODEL        > 1
 Online at IPL  . . . . . . . . ONLINE         *YES
 Attached controller  . . . . . CTL          > QVIRCD0001
 Font:                          FONT
   Identifier . . . . . . . . .               > 087
   Point size . . . . . . . . .                 *NONE
 Form feed  . . . . . . . . . . FORMFEED       *TYPE
 Separator drawer . . . . . . . SEPDRAWER      *FILE
 Separator program  . . . . . . SEPPGM         *NONE
   Library  . . . . . . . . . .
 Printer error message  . . . . PRTERRMSG      *INQ
 Message queue  . . . . . . . . MSGQ           QSYSOPR
   Library  . . . . . . . . . .                  *LIBL


More...
 F9=All parameters   F11=Choices   F14=Command string   F24=More keys
```

```
          Create Device Desc (Printer) (CRTDEVPRT)

 Type choices, press Enter.

 Host print transform . . . . . TRANSFORM      *NO
 User-defined options . . . . . USRDFNOPT      *NONE
                          + for more values
 User-defined object:           USRDFNOBJ
   Object . . . . . . . . . . .                *NONE
     Library  . . . . . . . . .
   Object type  . . . . . . . .
 Data transform program . . . . USRDTATFM      *NONE
   Library  . . . . . . . . . .
 User-defined driver program  . . USRDRVPGM    *NONE
   Library  . . . . . . . . . .
 Text 'description' . . . . . . TEXT         > 'Manual Def of
DEVXXXX'


More...
 F9=All parameters   F11=Choices   F14=Command string   F24=More keys
```

Check the status of the device is Vary on Pending. The device will remain in this state until the defined PrintServer has established the session. This is done by restarting; either from PrintGuide or by switching power off and then on.

8 AS/400 Printing using TCP/IP LPR/LPD

This chapter provides:

AS/400 definitions

Once these parameters have been configured, and the basic TCP/IP installation of the PrintServer has been completed, printing from AS/400 will be possible. This will use the AS/400 Host Print Transform to format and translate EBCDIC data to the printer language selected.

Requirements:

- AS/400 version 3.1 with TCP/IP installed and configured PrintServer
  The defined Output queue will be specified when printing

8.1 Create a remote output queue

The CRTOUTQ command is used to create a Remote output queue. This will enable the AS/400 to automatically output data that has been translated by Host Print Transform to the PrintServer.

```
                  Create Output Queue (CRTOUTQ)
Type choices, press Enter.
Output queue . . . . . . . . . . OUTQ          > <NAME>
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       > LPDPRT1
Writers to autostart . . . . . . AUTOSTRWTR    > 1
```

```
                         Create Output Queue (CRTOUTQ)
Type choices, press Enter.
Queue for writer messages  . . . MSGQ            QSYSOPR
  Library  . . . . . . . . . . .                 *LIBL
Connection type  . . . . . . . . CNNTYPE       > *IP
Destination type . . . . . . . . DESTTYPE      > *OTHER
Transform SCS to ASCII . . . . . TRANSFORM     > *YES
Manufacturer type and model  . . MFRTYPMDL       <Your Printer Model>
Internet address . . . . . . . . INTNETADR     > <IP address of your
PrintServer>
Destination options  . . . . . . DESTOPT         *NONE
Text 'description' . . . . . . . TEXT          >
```

The value *IP must be used for CNNTYPE
The value *OTHER must be used for DESTTYPE
The value *YES must be used for TRANSFORM
The value used for MRFTYPMDL will depend on the attached printer. Use the ‘F4’ to obtain a list of the possible choices
The value used for INTNETADR must be the same as the IP address of your PrintServer.

8.2 AS/400 printing

The data to be printed must be associated with the defined OUTQ via the various PRTF commands.