Installation PM-Ethernet in AS/400 Networks

AS/400

Basics

The print servers fully support the SCS data stream of the IBM AS/400/iSeries. For IPDS data, only the conversion of fonts is possible. Other IPDS features still have to be converted using special data stream converters that are switched between the print server and the printer.

In AS/400 networks there are two ways to operate network

- using a remote printer queue (RMTPRTQ)**)**

- using a device description

In both cases the print-out is carried out via the AS/400/iSeries spool output system.
We would recommend that you add the attribute SAVE(*YES) to printer files (PRTF) or spool files (SPLF) that are printed on printers with large storage capacity (e.g. PC printers). This avoids the loss of spool files in case of a printer fault.

Starting with OS/400 V3R7, network printers can be connected to an enhanced device description via IP. To this purpose, special entries are made in the device description for the keywords DEVCLS(*LAN), LANATTACH (*IP) and RMTLOCNAME. As in the case of locally connected printers, error messages from the printer will accumulate in a message queue so that the printout can easily be controlled. To use this integration method, the Print Service Facility OS/400 (5769TC1 TCP/IP Connectivity Utilities) license program, which
is available as standard feature with Release 3.7 and later has to be installed.
When the network printer is integrated via a device description, the IBMSNMPDRV driver is supported. This driver allows bidirectionality in the case of external print servers. Starting with OS/400 V4R2, network printers can be addressed directly via a specially defined output queue (*OUTQ) without having to create a device description (*DEVD) for the printer. This can be done using the keywords RMTSYS and RMTPRTQ of the CRTOUTQ command. These keywords define a remote printer with the same name as the output queue. The remote printer can be started using the OS/400 command STRRMTWTR. The disadvantage of this kind of installation under OS/400 V4 is that the AS/400 does not receive the current printer status messages from the network printer and the administration options are considerably restricted. These restrictions are not caused by the print server but by the IP print mechanisms (lpr) used in the AS/400/iSeries. Starting with OS/400 V5R1, the IBM iSeries support IPP (Internet Printing Protocol) that allows the forwarding of detailed messages from the printer to the message queue.

 In order to configure a network printer, the user must have *IOYSCFG special authority.

This may be the AS/400 security officer (QSECOFR) or a specially defined user profile. For further information about the *IOSYSCFG special authority, please consult the relevant AS/400/iSeries documentation.

Which procedures can be selected?

- Creating a Remote Output Queue

- Creating a Device Description

Creating a Remote Output Queue

The installation involves the following steps:

- Saving the IP Address in the Print Server
- Checking the IP Connection
- Creating a Remote Output Queue
- Starting the Remote Printer Writer

Saving the IP Address in the Print Server

In pure AS/400 network environments, the IP address cannot be assigned using arp and ping since the arp command is not available. Use other options to save the IP address such as the PRINTSERVER-NetTool.

Checking the IP Connection

Make sure that the print server will be recognized in the network by the AS/400/iSeries. Proceed as follows:

Enter the following command into the OS/400 command line:
- PING' <IP address or host name of the print server>
The result of the connection will be displayed.
The IP address or the host name must be put in single quotation marks.

If a connection cannot be achieved, check the network cabling and the IP connection of the print server from a PC. Make sure that the required TCP servers are started on the AS/400/iSeries.

Creating a Remote Output Queue

A remote output queue is created using the CRTOUTQ command. Depending on the release version of the OS/400, the keywords and parameters for the creation of an output queue may differ slightly from the following description.

Before creating a remote output queue, make sure that there is no other output queue with the same name.

Proceed as follows:

- **Log in using a user profile. This user profile has *IOSYSCFG special authority. (alternatively QSECOFR).**

- **Enter the following command: CRTOUTQ**

- **Press the Enter key. The following window appears:**

```
            Ausgabewarteschlange erstellen (CRTOUTQ)

 Auswahl eingeben und Eingabetaste drücken.

 Ausgabewarteschlange . . . . . . OUTQ        > MY OUTQ
   Bibliothek . . . . . . . . . .              >   *CURLIB
 Max. Größe der Spool-Datei:      MAXPAGES     _
   Anzahl Seiten . . . . . . . .               *NONE
   Startzeit . . . . . . . . . .
   Endzeit . . . . . . . . . . .
                    + für weitere Werte  _
 Dateireihenfolge in Warteschl.   SEQ         *FIFO
 Fernes System . . . . . . . . . RMTSYS       > *INTNETADR


 _____

 Ferne Druckwarteschlange . . . . RMTPRTQ     > LP1
 _____


                                            Weitere ...
 F3=Verlassen   F4=Bedienerf.   F5=Aktualisieren   F12=Abbrechen
 F13=Verwendung der Anzeige    F24=Weitere Tasten
 MA   a                                           05/050
```

- **Press F11. The command keywords are displayed.**

- **Geben Sie folgende Parameter in die Maske ein:**

    OUTQ   < name of the output queue >

                   e.g. MY_OUTQ

    library   *QUSRSYS oder *CURLIB

    RMTSYS   *INTNETADR

- **Press F11**.

- **Enter the following parameter into the mask:**

    RMTPRTQ <logiscal printer> z.B. lp1
       (lp1 is the default of Interfaces)

- **Press the page down key.**

  The following window appears:

```
                       Create Output Queue (CRTOUTQ)

 Type choices, press Enter.

 Output queue . . . . . . . . . . OUTQ        > MYOUTQ
   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        *LP1



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


  ONLINE                                     17,54               DEMO
```

- Enter the following parameters into the mask:

AUTOSTRWTR	< number of WTR jobs to be started >
	e.g. 2 (from 1-10)
CNNMTYPE	*IP
DESTTYPE	*OTHER
TRANSFORM	*YES
MFRTYPMDL	< manufacturer printer type and model > e.g. (*EPLQ2550, *IBM42083...... Recommendation: Model * **EPLQ2550** offers the largest use (kinds of fonts, pitches etc..) Depending of model type the appropriate emulation in the printer must be selected.
INTNETADR	'<IP- address or host name of the print server > ' z.B.'192.168.0.123'

The IP address or the host name must be put in single quotation marks.

Further data of the output queue can be used alternatively. We recommend that you choose a significant description for the keyword TEXT.

- Press the Enter key.

The installation of a remote output queue has been completed successfully.

Starting the Remote Printer Writer

The printer writer for a remote output queue is started using the STRRMTPRT command.

Proceed as follows:

- Enter the following command at the system console:
  STRRMTPRT <name of the output queue>

  Example: STRRMTPRT MY_DEVICE

  If the printer writer has already been started you will receive a message. Alternatively, you can give details about message queues (MSGQ) and restrictions of form types (FORMTYPE).

Troubleshooting

- **There may be various reasons that a print job cannot be printed**.

  The remote printer writer is not started.
  Start the remote printer writer using the writer is not started. **STRRMTWTR** command <name of the output queue>.:

  Note: Printer writers for remote output queues cannot be
  displayed using the **WRKWTR** command.

- **The output queue is held.**

  View all output queues using the OS/400 command WRKOUTQ *ALL.The status of the output queue should be RLS (released). If the status is HDL (held), release the output queue by entering 6.

- **The spool files are not released**

  View the contents of the output queue using the WRKOUTQ command <name of the output queue>. If the status of the first spool file to be printed is HDL (held), release the file by chosing 6. The status will change from *RLS to SND (send). Once the file is printed it will be deleted from the list or will change to the status SAV (save).
  .

Creating a Device Description

The installation involves the following steps:

- Saving the IP Address in the Print Server
- Checking the IP Connection
- Creating a Device Description
- Attaching the Device Description
- Starting the Printer Writer

Saving the IP Address in the Print Server

In pure AS/400 network environments, the IP address cannot be assigned using arp and ping since the arp command is not available. Use other options to save the IP address such as the PRINTSERVER-NetTool.

Checking the IP Connection

Make sure that the print server will be recognized in the network by the AS/400/iSeries. Proceed as follows:

Enter the following command into the OS/400 command line:
- PING' <IP address or host name of the print server>

The result of the connection will be displayed.
The IP address or the host name must be put in single quotation marks.

If a connection cannot be achieved, check the network cabling and the IP connection of the print server from a PC. Make sure that the required TCP servers are started on the AS/400/iSeries.

Creating a Device Description

A remote device printer may be created using the CRTDEVPRT command. Depending on the release version of the OS/400, the keywords and parameters for the creation of a device description may differ slightly from the following description (V5R1). Before creating a device description, make sure that there is no other device with the same name

Proceed as follows:

- Log in using a user profile. This user profile has *IOSYSCFG special authority. (alternatively QSECOFR).

- Enter the following command: CRTDEVPRT

- Press F4.

  The command prompt is displayed.

- **Press F9.**

  The following window appears

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

Type choices, press Enter.

Device description . . . . . . . .   TESTMH           Name
Device class . . . . . . . . . . .   *LAN             *LCL, *RMT, *VRT, *SNPT, *LAN
Device type  . . . . . . . . . . .   3812             3287, 3812, 4019, 4201...
Device model . . . . . . . . . . .   1                0, 1, 2, 3, 4, 10, 13, 301...
LAN attachment . . . . . . . . . .   *IP              *LEXLINK, *IP, *USRDFN
Switched line list . . . . . . . .   _____       Name
             + for more values       _____
LAN remote adapter address . . . .   _____     000000000001-FFFFFFFFFFFE
Adapter type . . . . . . . . . . .   *INTERNAL        *INTERNAL, *EXTERNAL
Adapter connection type  . . . . .   *PARALLEL        *PARALLEL, *SERIAL
Emulated twinaxial device  . . . .   ____             3812, 5219, 5224, 5256
Advanced function printing . . . .   *NO              *NO, *YES
AFP attachment . . . . . . . . . .   *WSC             *WSC, *APPC
Port number  . . . . . . . . . . .   9100             0-65535
Switch setting . . . . . . . . . .   _____           0, 1, 2, 3, 4, 5, 6
Local location address . . . . . .   __               00-FE
                                                                         More...
F3=Exit    F4=Prompt    F5=Refresh    F12=Cancel    F13=How to use this display
F24=More keys
Parameter DEVD required.                                                      +
```

  If the command keywords are not displayed, press F11.

- **Enter the following parameters into the mask:**

DEVD	<arbitrary name> e.g. TESTMH
DEVCLS	*LAN
TYPE	3812, 4208, 4224......
MODEL	1
LANATTACH	*IP
AFP	*NO
PORT	9100 or 9101 to 9104

- **Press the page down key**

The following window appears:

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

Type choices, press Enter.

Auxiliary printer  . . . . . . .    ____        *YES, *NO
Emulating ASCII device . . . . .    *NO         *NO, *YES
Physical attachment  . . . . . .    _____      *DIRECT, *PTT, *MODEM...
Online at IPL  . . . . . . . . .    *YES        *YES, *NO
Attached controller  . . . . . .    _____  Name
Language type  . . . . . . . . .    *SYSVAL     *SYSVAL, AGB, AGI, ALI...
Print quality  . . . . . . . . .    *STD        *STD, *DRAFT, *NLQ
Font:
   Identifier . . . . . . . . . .    011         3, 5, 11, 12, 13, 18, 19...
   Point size . . . . . . . . . .    *NONE       000.1-999.9, *NONE
Form feed  . . . . . . . . . . .    *TYPE       *TYPE, *CONT, *CONT2, *CUT...
Separator drawer . . . . . . . .    *FILE       1-255, *FILE
Separator program  . . . . . . .    *NONE       Name, *NONE
   Library  . . . . . . . . . . .    _____  Name, *LIBL, *CURLIB
Number of drawers  . . . . . . .    _           1, 2, 3
Printer error message  . . . . .    *INQ        *INQ, *INFO
                                                            More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

- **Enter the following parameter into the mask:**

   FONT   011

- **Press the page down key**

The following window appears:

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

Type choices, press Enter.

Message queue  . . . . . . . . .    *CTLD       Name, *CTLD, *SYSOPR, QSYSOPR
   Library  . . . . . . . . . . .    _____  Name, *LIBL, *CURLIB
Maximum length of request unit .    *CALC       *CALC
Application type . . . . . . . .    *NONE       *NONE, *NRF, *DEVINIT...
Activation timer . . . . . . . .    2550        1-2550, *NOMAX
Inactivity timer . . . . . . . .    *SEC15      1-30, *ATTACH, *NOMAX...
SNA pass-through device desc . .    *NONE       Name, *NONE
SNA pass-through group name  . .    *NONE       Name, *NONE
Host signon/logon command  . . .    *NONE       _____


Pacing . . . . . . . . . . . . .    7           1-7
Line speed . . . . . . . . . . .    *TYPE       *TYPE, 150, 300, 600, 1200...
Word length  . . . . . . . . . .    *TYPE       *TYPE, 7, 8
Type of parity . . . . . . . . .    *NONE       *TYPE, *EVEN, *ODD, *NONE...
                                                            More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

- **Enter the following parameters into the mask:**

  ACTTMR   2550

  INACTTMR   *SEC30

If the printer is used solely with the AS/400/iSeries, you can also enter the parameter value *NOMAX for the keyword ACTTMR. In this case, the printer will not be released by the AS/400/iSeries at the end of the print-out.

- **Press the page down key**

The following window appears:

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

Type choices, press Enter.


Stop bits  . . . . . . . . . .    1           *TYPE, 1, 2
Host print transform . . . . .    *YES        *NO, *YES
Manufacturer type and model  ..   *HP4
Paper source 1 . . . . . . . .    *MFRTYPMDL   *MFRTYPMDL, *LETTER...
Paper source 2 . . . . . . . .    *MFRTYPMDL   *MFRTYPMDL, *LETTER...
Envelope source  . . . . . . .    *MFRTYPMDL   *MFRTYPMDL, *MONARCH...
ASCII code page 899 support  ..   *NO         *NO, *YES
Image configuration  . . . . .    *NONE       *NONE, *IMGA01, *IMGA02...
Maximum pending requests . . . .  6           1-31
Print while converting . . . . .  *YES        *NO, *YES
Print request timer  . . . . . .  *NOMAX      1-3600, *NOMAX
Form definition  . . . . . . . .  F1C10110    Name
  Library  . . . . . . . . . . .    *LIBL     Name, *LIBL, *CURLIB
Character identifier:
  Graphic character set  . . . .  *SYSVAL     1-32767, *SYSVAL
  Code page  . . . . . . . . . .              1-32767
                                                         More...
F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
F24=More keys
```

- **Enter the following parameters into the mask:**

  TRANSFORM   *YES

  MFRPRTYMDL   < manufacturer printer type and model >
                        e.g. (*EPLQ2550, *IBM42083......
                        Recommendation: Model * **EPLQ2550** offers the largest use
                        (kinds of fonts, pitches etc..) Depending of model type the
                        appropriate emulation in the printer must be selected.

  PRTCVT   *YES

- **Press the page down key**

The following window appears:

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

 Type choices, press Enter.


 Remote location:
   Name or address  . . . . . . .    10.49.3.36_____
 _____
 _____
 _____

 Local location . . . . . . . . .    *NETATR       Name, *NETATR
 Mode . . . . . . . . . . . . . .    QSPWTR        Name, QSPWTR, *NETATR
 User-defined options . . . . . .    *NONE         Character value, *NONE
             + for more values      _____
 User-defined object:
   Object . . . . . . . . . . . .    *NONE         Name, *NONE
     Library  . . . . . . . . . .    _____    Name, *LIBL, *CURLIB
     Object type  . . . . . . . .    _____       *DTAARA, *DTAQ, *FILE...
 Data transform program . . . . .    *NONE         Name, *NONE
   Library  . . . . . . . . . . .    _____    Name, *LIBL, *CURLIB

                                                                        More...
 F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
 F24=More keys
```

- **Enter the following parameter into the mask:**

  RMTLOCNAME   „<IP address or host name of th print server>"

- **Press the page down key**

The following window appears:

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

 Type choices, press Enter.


 User-defined driver program  . .    *NONE         Name, *NONE
   Library  . . . . . . . . . . .    _____    Name, *LIBL, *CURLIB
 System driver program  . . . . .    *HPPJLDRV_____
 Publishing information:
   Support duplex . . . . . . . .    *UNKNOWN      *UNKNOWN, *SIMPLEX, *DUPLEX
   Support color  . . . . . . . .    *UNKNOWN      *UNKNOWN, *NOCOLOR, *COLOR
   Pages per minute black . . . .    *UNKNOWN      1-32767, *UNKNOWN
   Pages per minute color . . . .    *UNKNOWN ▮    1-32767, *UNKNOWN
   Location . . . . . . . . . . .    *BLANK_____
 Text 'description' . . . . . . .    *BLANK_____
 _____
 Dependent location name  . . . .    *NONE         Name, *NONE


                        Additional Parameters


 Remote network identifier  . . .    *NETATR       Name, *NETATR, *NONE
                                                                        More...
 F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display
 F24=More keys
 Messages pending on other displays.
```

- **Depending on the printer type, enter the following parameters into the mask under SYSDRVPGM:**

  for PSi Ethernet Matrixprinter ***IBMSNMPDRV**

  Further details of the device description can be used alternatively. We recommend that you choose a significant description for the keyword TEXT.

- **Press the Enter key.**

  The device description is created.

- **Attaching the Device Description**

  Proceed as follows:

  1. Check whether the device description is attached: WRKCFGSTS *dev <arbitrary name>

  2. If the status is "detached", attach the device by entering 1.

- **Starting the Printer Writer**

  Proceed as follows:

  1. Enter the following command: STRPRTWTR<arbitrary name>
     The printer writer is started.

  2. Make sure that the status of the output queue is RLS. Release the output queue using the RLSWTR command, if necessary.
     The installation has been completed successfully..

Troubleshooting

There may be various reasons that a print job cannot be printed.

- **The print device is not attached**
  The print device is not Check the status of the device using the attached WRKCFGSTS command as described in the section "Attaching the Device"

- **The printer writer is not startet**
  Start the program using the **STRPRTWTR** command.

  The output queue is held.
  Check the status of the output queue (status HLD). Release the output queue using the **RLSOUTQ** command.

- **The output file is held.**
  View the contents of the output queue using the **WRKOUTQ** command and release the spool file by entering 6.

- **A printer message is pending.**
  View the contents of the output queue using the WRKOUTQ command. If the status MSG is shown for an ouput queue to be printed, view the message by entering 7 and answer it.