

WORKiO[®]

DIGITAL IMAGING SYSTEMS

AS/400[®] Printing through a Remote Output Queue
using the WORKiO[®]
DP-2310/3010/3510/3520/4510/4520/6010/6020



IBM  server



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Overview

This document is designed to provide basic information regarding printing from an IBM AS/400 server running the OS400 operating system V5R1 and higher to the Panasonic DP-2310, DP-3010, DP-3510, DP-3520, DP-4510, DP-4520, DP-6010 and DP-6020 multi-functional devices. Since many volumes of data exist on printing from an AS/400, it is intended that this document only summarize the basics of printing specifically to these devices.

To better understand the AS/400 printing environment, there will be some new terms and definitions you may or may not be familiar with. This document will explain some of those as it progresses but will also provide these in an appendix at the end. Some of these terms need to be defined first so let's start with those that cause the most head-scratching, the TLA's (Three Letter Acronyms).

All of the command structures within the operating system can be broken down to a TLA or an XTLA (eXtended Three Letter Acronym). When these TLA's are combined, they form a command that can be typed on the command line to execute an internal program or menu. Some of these are:

CFG = Configure
CRT = Create
WRK = Work with
END = End or stop
STR = Start
GO = Go to a menu

Some of the various menus or programs also use TLA's or XTLA's:

STS = Status program
DEVD = Device Description program
WTR = Printer Writer program

And the devices that exist are also referenced in the same manner:

OUTQ = Output Queue
PTR = Printer
SPLF = Spooled Files

When you put these items together, you form a command structure. An example would be:

CRTOUTQ = create and output queue
WRKSPLF= work with spooled files
WRKCFGSTS = Work with Configured Status'

Some of the other TLA's you might hear when discussing the AS/400 and printing are:

SCS Printing = SNA Character String

AFP Printing = Advanced Function Printing

IPDS Printing = Intelligent Printer Data Stream

These are different types of printer data streams that are supported by the AS/400. Each of these support different types of data, along with different types of equipment and each has it's own unique characteristics. SCS has a limited number of commands, so this will limit the amount of formatting you can do with the output. IPDS supports an extremely complex set of commands, so it will allow various formatting options. As you can see, this will affect the end result requirements dramatically.

SCS, being a simple data stream is primarily utilized by line printers. It supports a feature set comprising of overstrikes, margins, sub and super-script text, underscores and the like. While AFP data streams includes support for objects and text. This means it supports forms processing, overlays and various additional fonts. It is generally known that IPDS printers support AFP data streams as well.

Since IPDS is more complex, it supports both text and data as well as forms, fonts and overlays. It also supports bi-directional communications between the OS and the printer. IPDS enabled printers can supply various information such as job status, error recovery and reporting as well as resource management of things such as fonts, forms etc.

Host Print Transform

For users who don't need all of the advanced printing features of AFP and/or IPDS, or who don't want to spend the extra dollars required to obtain these more expensive printers, HPT is included in all versions of the base operating system. Whereas IPDS printers process the data stream after it's sent to the printer, HPT's data stream is processed on the AS/400 and then sent to the printer as ASCII text. While this does add to the workload of the AS/400 itself, it will support any printer that can interpret or print ASCII (plain text). This allows the printer to be attached to the AS/400 in various ways. This can be a Twinaxial connection (dual coaxial cable for direct connection to the AS/400), or it can be attached directly to a workstation or terminal or another AS/400. Or it can be a LAN connection, such as our DP-35/45/6010. Since it is ASCII that is being sent, support the most popular page description languages, PCL and PostScript, exists. This can be advantageous for embedding commands for formatting data within the print stream.

Printing to the DP-6010

For the purposes of this document, we will assume that a DP-6010 has already been setup with an IP Address, has the DA-PC300 installed and is functioning correctly on the network. We will also assume the appropriate PTF's¹ have been installed on the AS/400. We will now go through the process needed to print to the DP-6010.

Creating the output queue

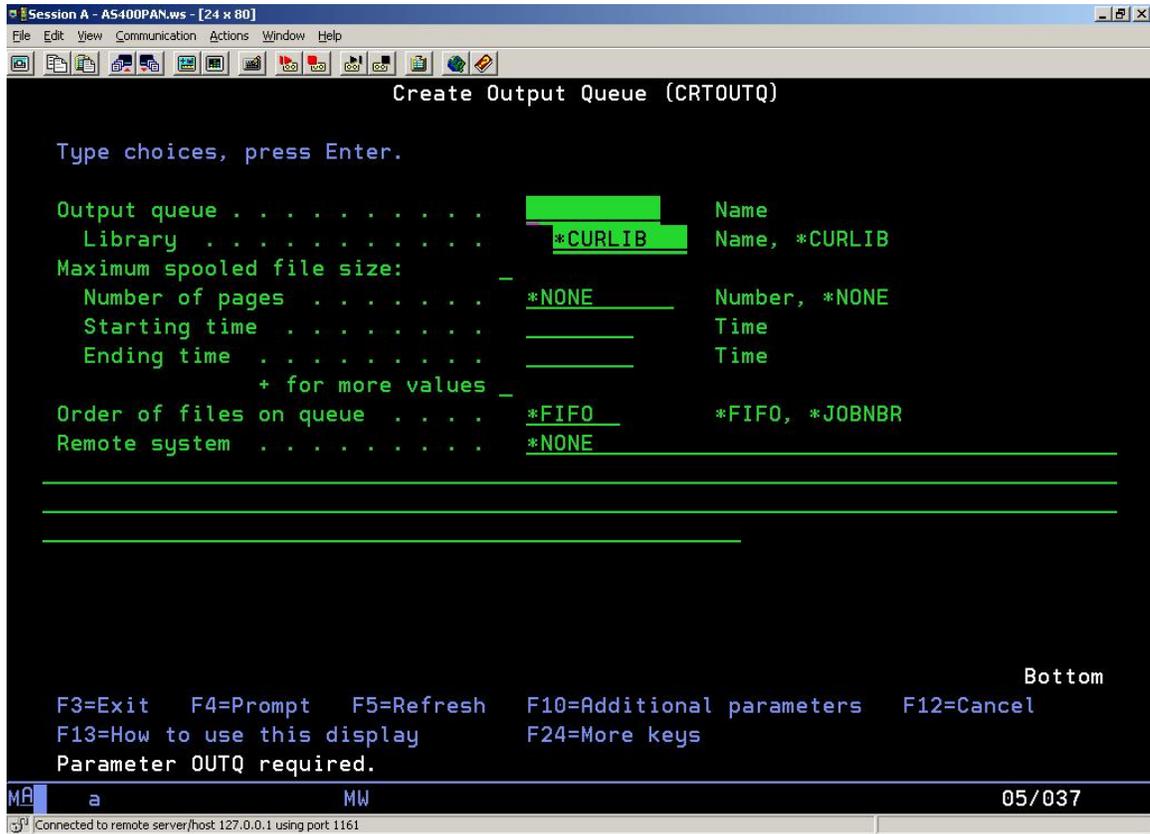
The first step is to create a remote output queue. The command to accomplish this is CRTOUTQ. This command will also create the print writer object with the same name as the output queue. At the command line of the AS/400, type CRTOUTQ and hit <Enter>.

```
Session A - AS400PAN.ws - [24 x 80]
File Edit View Communication Actions Window Help
MAIN OS/400 Main Menu System: AS400PAN
Select one of the following:
1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. Client Access/400 tasks
90. Sign off
Selection or command
==> crtoutq_
F3=Exit F4=Prompt F9=Retrieve F12=Cancel F13=Information Assistant
F23=Set initial menu
(C) COPYRIGHT IBM CORP. 1980, 2002.
MA a MW 20/014
Connected to remote server/host.127.0.0.1 using port.1161
```

This screen is the first menu screen shown after login. Typing the number of the listed menu item will open that menu or if you know the command structure, typing it will accomplish the same tasks.

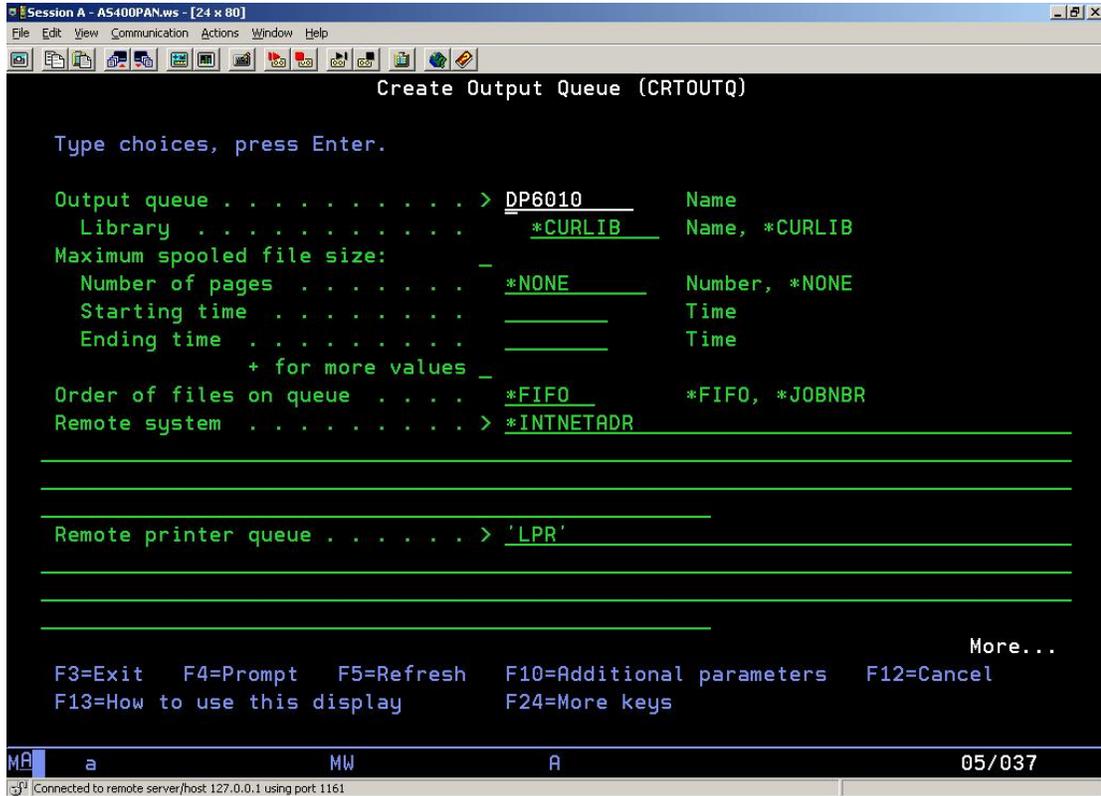
1. Program Temporary Fix (yet another TLA!). This is an upgrade or service pack type file installed to the OS400 operating system. See [page 19](#) for more information.

The screen that appears shows the various optional settings for the output queue. Note that the top of the screen shows the command you entered so you can be sure you are on the correct screen.



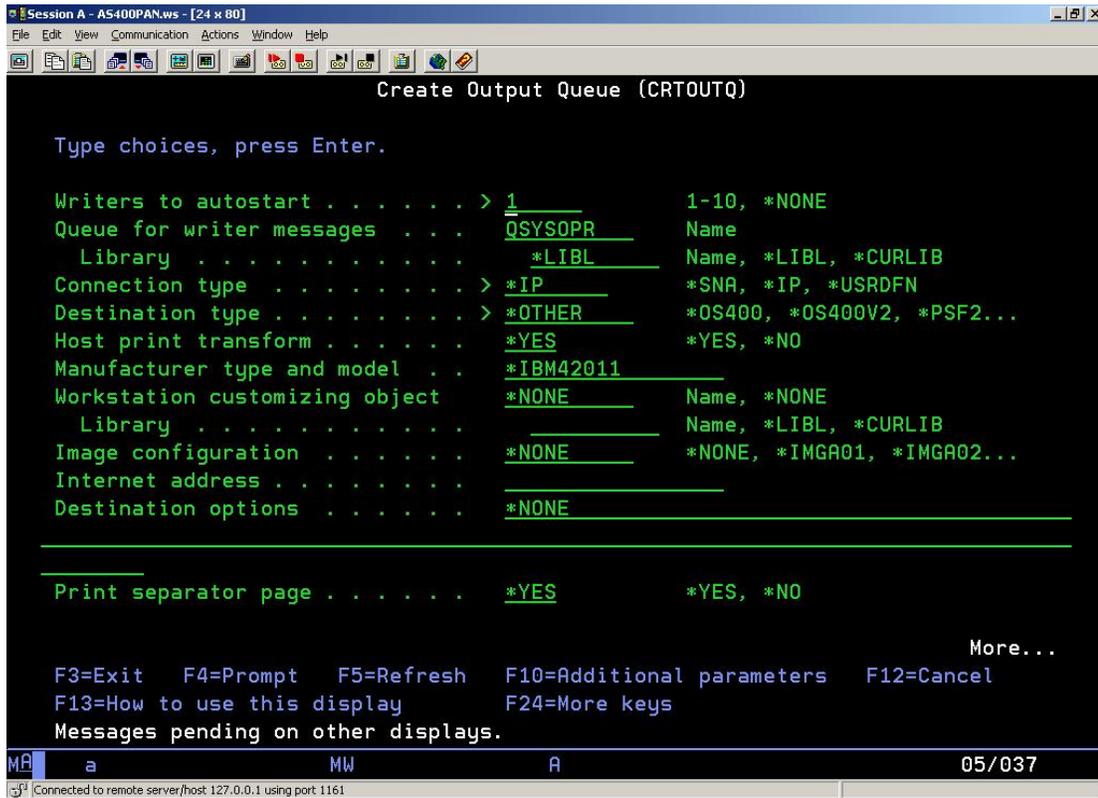
Note that also on the bottom of the screen, the status line shows that on this screen, the parameter OUTQ is a required entry for this command to execute. Enter the name of the desired output queue. The default entry for Library is '*CURLIB'. This indicates in which library the OUTQ will be created and usually isn't changed unless the system administrator deems it necessary. For this example, our OUTQ is to be called 'DP6010'. Upon entering the name, press the <TAB> key to proceed down to the 'Remote system' field.

Enter '*INTNETADR' in this field and hit <Enter>. This will indicate we will be sending the output of this queue to a TCP/IP address. After hitting <Enter> another field will become visible, this is the 'Remote printer queue' field. Tab down to this field and enter something, we usually use 'LPR' or 'LP' as we do in Windows. It is important to also note that you need to include the single quote marks as well anywhere in this document a screen shot shows the quotes.



Note two other things on this screen. The bottom menu descriptions for the function keys has the 'F10' listed for additional parameters and the word 'More...' in the lower right corner. These two items are important to note that they provide access to the rest of the parameters needed to properly configure the queue. Anytime the 'More...' is listed on the bottom right, hitting the <Page Down> key will change to the next page to access those additional parameters. So you can use the <Page Down> and <Page Up> keys to scroll through the pages to be sure you have entered all the pertinent information prior to hitting <enter> to complete the creation of the queue. At this point, hit the <Page Down> key to get to the next page.

On this screen, enter the following information. At 'Writers to autostart', enter a '1'. This will allow the print writer to start after we create the output queue and at any power up. Without this, we would have to start the writer manually using the 'STRRMTWTR' command. For 'Connection type, enter '*IP' and at 'Destination type' enter '*OTHER'. This will tell the AS/400 we want a standard IP connection. Be sure 'Host print transform' is set to '*YES' (it is by default) and tab to the 'Manufacturer type and model' field. The default choice is '*IBM42011'. Now hit <F4>.



Type in '*PANASONIC6010' and hit <Enter>. You will now see the previous screen again with the new information you have chosen. Now tab down to 'Internet address' and enter the IP Address of the machine within the single quotes.

```
Session A - A5400PAN.ws - [24 x 80]
File Edit View Communication Actions Window Help
Create Output Queue (CRTOUTQ)

Type choices, press Enter.

Writers to autostart . . . . . > 1_____ 1-10, *NONE
Queue for writer messages . . . QSYSOPR_____ Name
Library . . . . . *LIBL_____ Name, *LIBL, *CURLIB
Connection type . . . . . > *IP_____ *SNA, *IP, *USRDFN
Destination type . . . . . > *OTHER_____ *OS400, *OS400V2, *PSF2...
Host print transform . . . . . *YES_____ *YES, *NO
Manufacturer type and model . . > *PANASONIC6010_____
Workstation customizing object
Library . . . . . *NONE_____ Name, *NONE
Image configuration . . . . . *NONE_____ *NONE, *IMGA01, *IMGA02...
Internet address . . . . . '192.168.0.60'_____
Destination options . . . . . *NONE_____

-----

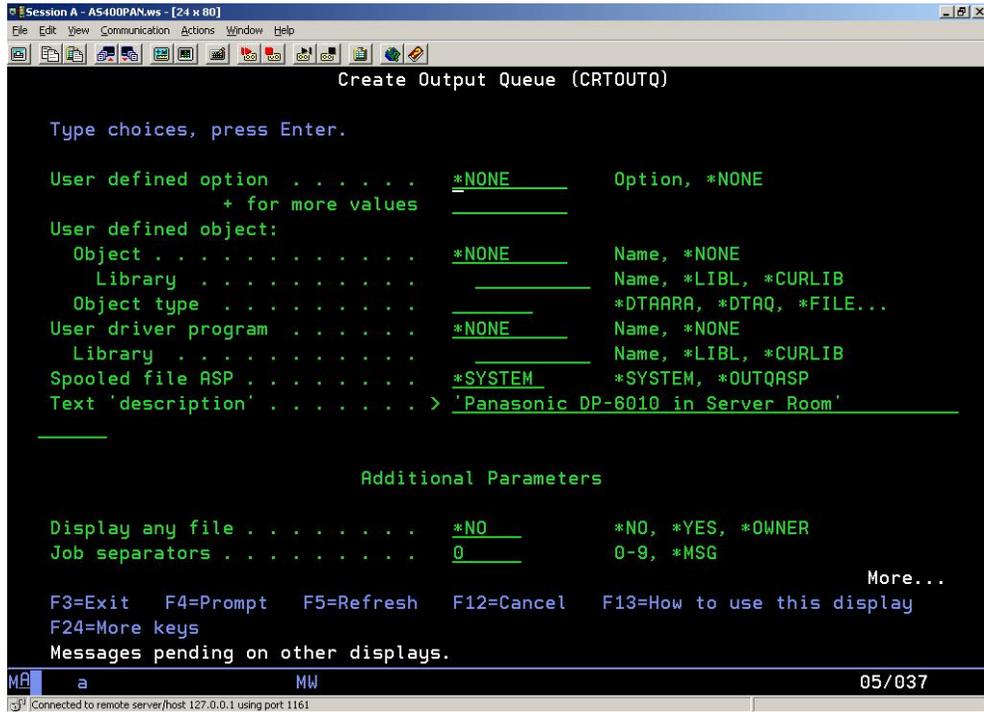
Print separator page . . . . . *YES_____ *YES, *NO

More...

F3=Exit F4=Prompt F5=Refresh F10=Additional parameters F12=Cancel
F13=How to use this display F24=More keys
Messages pending on other displays.

MA a MW A 16/037
Connected to remote server/host 127.0.0.1 using port 1161
```

Hit <Page Down> and the other item that should be entered is just a text description. This will make it easier to identify while working with spooled files.

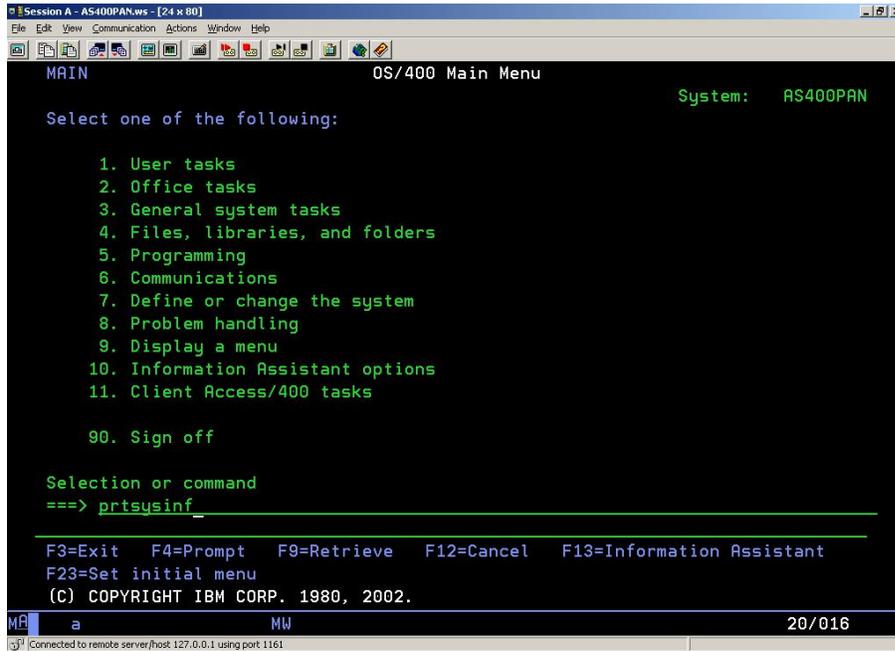


Now hit <Enter> and the output queue will be created. If nothing happens, look at the status area of the screen to see what information wasn't entered. The example above shows 'Messages pending on other displays.' Means that you must hit the <Page Up> key to find the page with the information missing, which might be we forgot the IP Address or remote queue name. Once that is corrected, hitting <enter> will create the output queue and the screen will revert to the menu or screen you were on before typing 'CRTOUTQ'. The message area on that screen will show that the output queue was created.

Congratulations! You have just created a remote output queue capable of printing to the DP-6010!

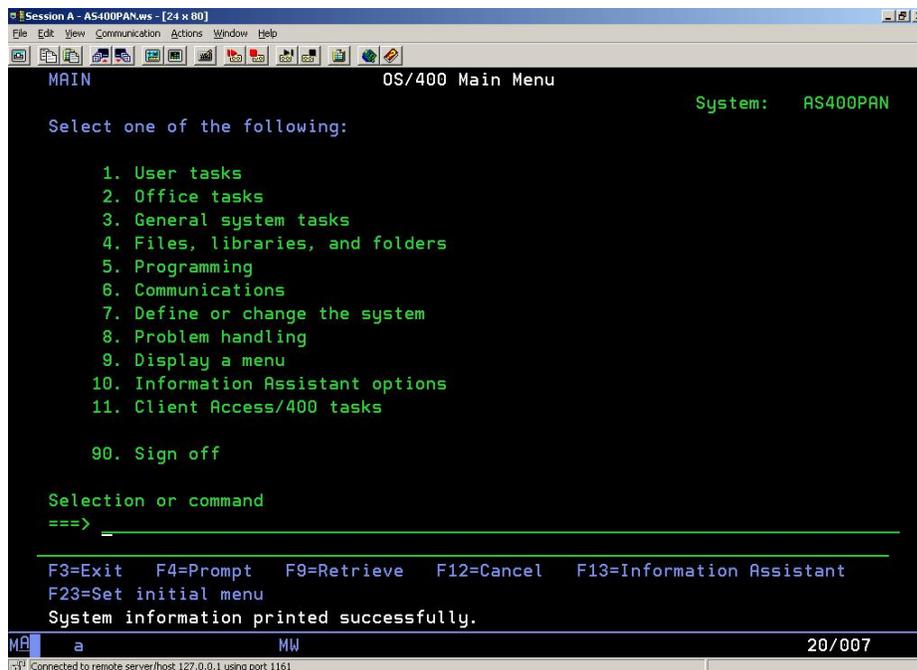
Sending a print job to the DP-6010

First of all, we must generate a print job so that we can direct it to the correct output queue. For this discussion, we will print generic system information. Your situation may vary and in all likelihood, there will already be spooled files available to print, contact your system administrator to re-direct them. On the command line enter the 'prtsysinf' command and hit <enter>.



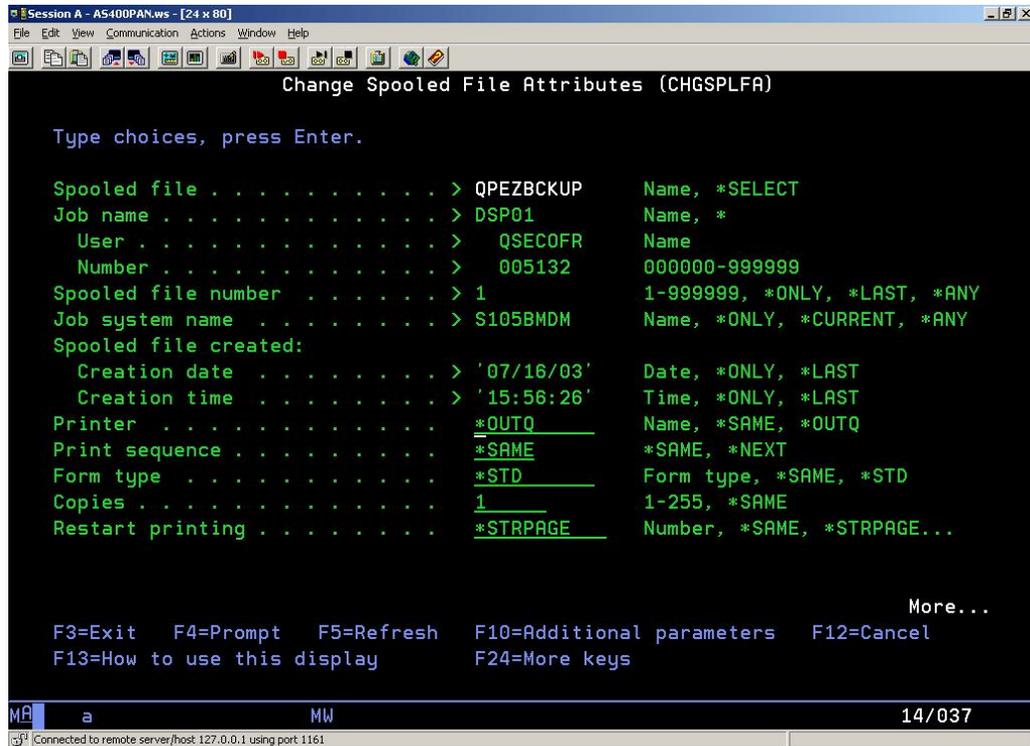
```
Session A - AS400PAN.ws - [24 x 80]
File Edit View Communication Actions Window Help
MAIN OS/400 Main Menu System: AS400PAN
Select one of the following:
1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. Client Access/400 tasks
90. Sign off
Selection or command
==> prtsysinf_
-----
F3=Exit F4=Prompt F9=Retrieve F12=Cancel F13=Information Assistant
F23=Set initial menu
(C) COPYRIGHT IBM CORP. 1980, 2002.
MA a MW 20/016
[Connected to remote server/host:127.0.0.1 using port: 1161]
```

After hitting <enter>, the following should be displayed with a slight delay based on the amount of information printed.



```
Session A - AS400PAN.ws - [24 x 80]
File Edit View Communication Actions Window Help
MAIN OS/400 Main Menu System: AS400PAN
Select one of the following:
1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. Client Access/400 tasks
90. Sign off
Selection or command
==>
-----
F3=Exit F4=Prompt F9=Retrieve F12=Cancel F13=Information Assistant
F23=Set initial menu
System information printed successfully.
MA a MW 20/007
[Connected to remote server/host:127.0.0.1 using port: 1161]
```

As you can see by the status line, the information was printed successfully!
 Now we need to access those printed files to direct them to the newly created output queue.
 We do this by using the 'WRKSPLF' command (Work with Spooled Files).
 Select the file you want to change by entering a '2' on the line next to it. This will bring up the
 'Change Spooled File Attributes' screen.



The first change we can make is what printer to send it to. On this field make sure it says '*OUTQ'. Then, as it shows the <F10> key is available, hit <F10>. Now you can hit the <Page Down> key to access the rest of the parameters.

Now we can change the output queue this job is directed to. For our example, enter 'DP-6010' in this field.



Some other important items we can change on this screen is Output priority and Save file. Output priority will signify order of importance in the queue. The lower the number, the higher the priority. Save file will print the file but won't delete it. Now hit the <Page Down> key and we'll look at the other attributes we might want to change.

Some of the items on this page are what drawer to pull from and whether the job is going to be duplexed or not. Now hit <Page Down> again to continue.

```

Session A - AS400PANws - [24 x 80]
File Edit View Communication Actions Window Help
Change Spooled File Attributes (CHGSPLFA)

Type choices, press Enter.

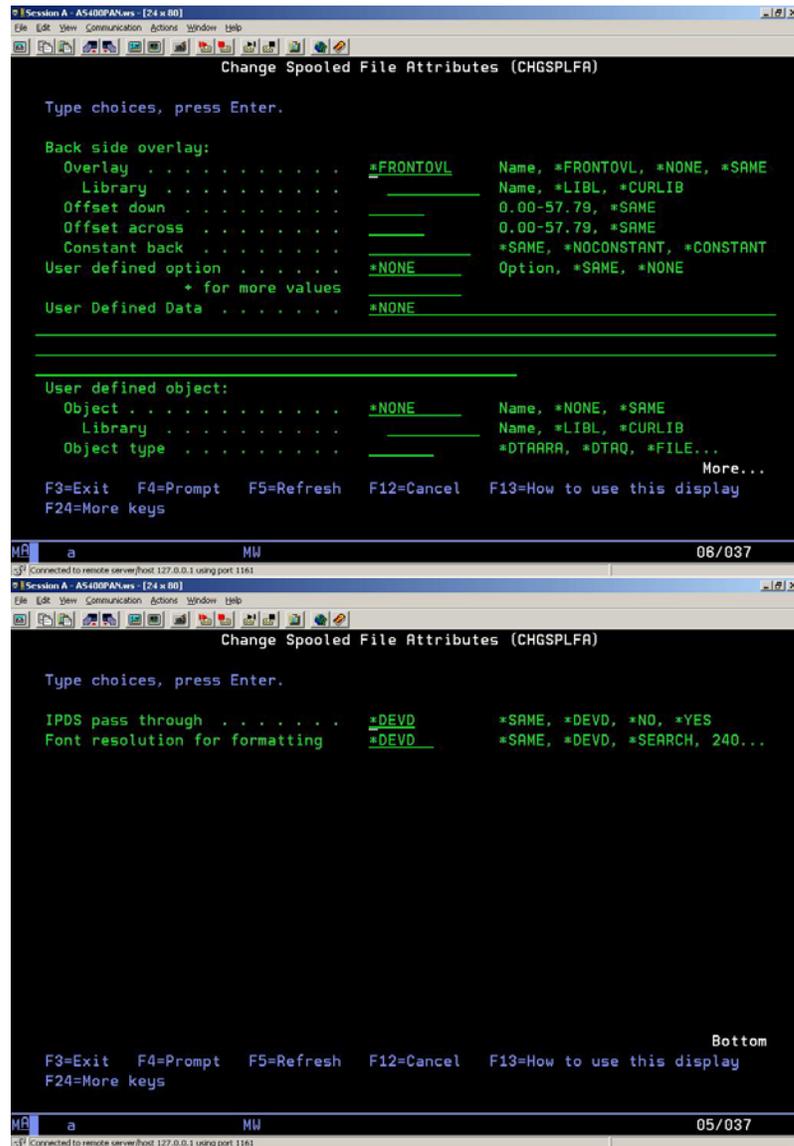
Source drawer . . . . . 1 1-255, *SAME, *E1, *FORMDF
Print fidelity . . . . . *CONTENT *SAME, *ABSOLUTE, *CONTENT
Print on both sides . . . . . *YES *SAME, *NO, *YES, *TUMBLE...
Pages per side . . . . . 1 1-4, *SAME
Form definition . . . . . *NONE Name, *SAME, *NONE, *DEVD...
Library . . . . . Name, *LIBL, *CURLIB
Front side overlay:
Overlay . . . . . *NONE Name, *NONE, *SAME
Library . . . . . Name, *LIBL, *CURLIB
Offset down . . . . . 0.00-57.79, *SAME
Offset across . . . . . 0.00-57.79, *SAME

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

MA a MW 08/037
[Connected to remote server/host: 127.0.0.1 using port: 1161]

```

These are the last 2 pages, although there really isn't much here that applies to our machines.



Now hit <Enter> to process the job. This will bring you back to the Work with Spooled Files screen. Hit <F12> and you should be back to the main menu, if not then hit <F3> and you will be.

Now to look at our output queue we use the 'WRKOUTQ' command.

```

Session A - AS400PAN.ws - [24 x 80]
File Edit View Communication Actions Window Help
MAIN OS/400 Main Menu System: AS400PAN

Select one of the following:

  1. User tasks
  2. Office tasks
  3. General system tasks
  4. Files, libraries, and folders
  5. Programming
  6. Communications
  7. Define or change the system
  8. Problem handling
  9. Display a menu
 10. Information Assistant options
 11. Client Access/400 tasks

 90. Sign off

Selection or command
==> wrkoutq_

F3=Exit F4=Prompt F9=Retrieve F12=Cancel F13=Information Assistant
F23=Set initial menu

MA a MW 20/014
Connected to remote server/host: 127.0.0.1 using port: 1161
  
```

This will bring up a list of all output queues we could work with. Tab down to the 'DP6010' queue's Opt line and enter a '5'. The Opt line is for entering the options listed directly above (in blue). This will let us 'Work with' the selected output queue.

```

Session A - AS400PAN.ws - [24 x 80]
File Edit View Communication Actions Window Help
Work with All Output Queues

Type options, press Enter.
  2=Change  3=Hold  4=Delete  5=Work with  6=Release  8=Description
  9=Work with Writers  14=Clear

  Opt  Queue      Library  Files  Writer  Status
  ---  ---
  ___  QDMT        QDMT     0
  ___  DP3010      QGPL     0
  5_  DP6010      QGPL     0      DP6010  RLS
  ___  FRANK       QGPL     1
  ___  QDKT        QGPL     0
  ___  QPFROUTQ    QGPL     0
  ___  QPRINT      QGPL     8
  ___  QPRINTS     QGPL     0
  ___  QPRINT2     QGPL     0
  ___  QIJSOUTQ    QIJS     0
  ___  QSPRCLOUTQ  QRCL     0
  ___  ERROR       QRDARS   0

Command
==>

F3=Exit F4=Prompt F5=Refresh F12=Cancel F24=More keys

MA a MW 10/003
Connected to remote server/host: 127.0.0.1 using port: 1161
  
```

As with many AS/400 commands, there are shortcuts to get there faster. Instead of using the 'WRKOUTQ' command by itself, then choosing the correct queue and using the '5' option, you can specify which queue you want to work with at the beginning. Just enter the command 'WRKOUTQ DP6010' and hit <Enter>.

```

Session A - AS400PAN.ws - [24 x 80]
File Edit View Communication Actions Window Help
MAIN OS/400 Main Menu System: AS400PAN
Select one of the following:
1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. Client Access/400 tasks
90. Sign off
Selection or command
==> wrkoutq dp6010
F3=Exit F4=Prompt F9=Retrieve F12=Cancel F13=Information Assistant
F23=Set initial menu
(C) COPYRIGHT IBM CORP. 1980, 2002.
MA a MW 20/021
Connected to remote server/host: 127.0.0.1 using port: 1161

```

Now you will get directly to the 'Work with output queue' just for the queue you wanted.

```

Session A - AS400PAN.ws - [24 x 80]
File Edit View Communication Actions Window Help
Work with Output Queue
Queue: DP6010 Library: QGPL Status: RLS/WTR
Type options, press Enter.
1=Send 2=Change 3=Hold 4=Delete 5=Display 6=Release 7=Messages
8=Attributes 9=Work with printing status
Opt File User User Data Sts Pages Copies Form Type Pty
2 QPEZBCKUP QSECOFR DSPBCKUPL RDY 1 1 *STD 5
- QPEZBCKUP QSECOFR DSPBCKUPL RDY 1 1 *STD 5
- QSYSVRT QSECOFR DSPPTF RDY 49 1 *STD 5
Parameters for options 1, 2, 3 or command
==>
F3=Exit F11=View 2 F12=Cancel F20=Writers F22=Printers
F24=More keys
MA a MW 10/003
Connected to remote server/host: 127.0.0.1 using port: 1161

```

Our example above has 3 files 'queued' for printing and their status is 'RDY', yet another TLA, it of course stands for 'Ready to print'. On the Opt field, we can enter '2' to change the attributes for that particular file or we could enter a '6' to release it for printing. If it hasn't printed already, enter a '6' and hit <Enter>.

Congratulations! You have just successfully printed from the AS/400!

A note about PTF's.

A Program Temporary Fix is a patch file provided by IBM for either updating or enhancing the operating system. The requirement for printing to the DP-35/45/6010 series will be included in version V5R3 of the OS400 operating system. Support for printing to these machines on V5R1 and V5R2 is provided via PTF. These can be obtained from IBM for supported installations of OS400. The required PTF's are as follows:

OS 400 Version	New WCO (Workstation Customization Object)	New MFRTYPDMDL's (Manufacturer Type and Models)
V5R1	SI08528, SI11177	SI11179
V5R2	SI08548, SI11246	SI11270

These PTF's can be obtained from IBM through their web-site at:

<http://www-912.ibm.com/>

Quick Setup Guide

Remote Output Queue setup

Command	CRTOUTQ
Output queue	Enter desired name (e.g. DP6010, etc.)
Remote system	*INTNETADR
Remote printer queue	'lpr'
Writers to autostart	1
Connection type	*IP
Destination type	*OTHER
Host print transform	*YES
Manufacturer type and model	*PANASONIC6010 (or PANASONIC2310 or PANASONIC4520)
Internet address	Enter unit's IP Address within single quotes (e.g. '192.168.0.60')
Text description	Enter a brief description of the queue or printer



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