

American PrintWare, Inc.

27126B Paseo Espada, Stel 724 San Juan Capistrano, CA 92675

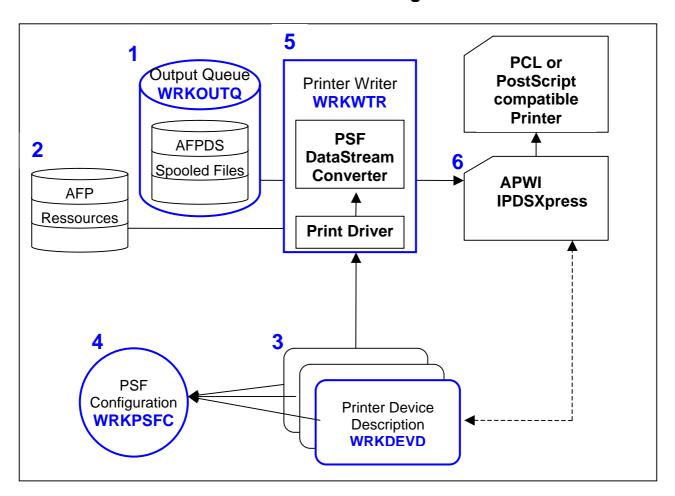
Tel 949-488-2222 Fax 949-488-2225 E-mail sales@apwi.com Web www.apwi.com



Contents

1.1 A brief introduction to AFP/IPDS Printing	2
1.2 Creating the PSF Configuration Object on the IBM Server	
1.3 Creating the IPDS Printer Device Description on the IBM Server	
1.4 Alternative: Using a Command line	11
1.5 Activating the Printer Definition on the IBM Server	12
1.6 Testing and Starting the Printer	12
1.6.1 Verify the TCP/IP Connection	12
1.6.2 Varying the Printer Device Description On	13
1.6.3 Start the Printer Writer	15
1.6.4 Change your Login job to use the printer as default	16
1.6.5 Make a test print (for example your User Profile)	16
1.7 Notices	16
1.7.1 Publication Information	16
1.7.2 Disclaimer	17

1.1 A brief introduction to AFP/IPDS Printing.



This Guide is intended to give you a quick, stepwise instruction in setting up an iSeries IPDS Printer Writer. For deeper insight into host printing, AFP and IPDS, we refer to IBM publications and iSeries courses.



1 The output queue.

This is where the host application – by means of the Printer File – places the raw AFP Data Stream (AFPDS). They are kept here as spool files until printing. Once printed the file is by default deleted from the Output Queue.

The raw AFP Data Stream doesn't contain resources, but merely refer to them in order to keep the size of the spool file at a minimum.

The most frequently used command that works with Output Queues is WRKOUTQ

2 The AFP Resources

AFP documents consist of objects such as fonts, images and graphics in the form of page segments or overlays, and bar codes. Other objects, called a page definition and form definition, are used by AFP documents to determine the layout of the output. All of these objects are called AFP resources.

3 The Printer Device Description

This is a description of a printer device (a virtual printer), based upon the actual printer. It lets you specify device configuration options. For example if the printer is at a remote location (LAN attached), which IBM printer emulation that should be used, timeout settings and manufacturer type and model.

The most frequently used command that works with Output Queues is WRKDEVD

4 The Print Services Facility (PSF) Configuration

A PSF configuration object is an extension of the printer device description, that is used by the PSF to convert the AFPDS into IPDS. It lets you specify device configuration options that you cannot specify with the device description. For example, you can specify a library list for PSF to use to search for resources, when PSF should release a session with a printer, or whether to automatically take advantage of outline fonts.

The most frequently used command that works with Output Queues is WRKPSFCFG

5 The Printer Writer

The printer writer is a system-supplied program. This program takes the spooled file from an output queue and sends it to a printer. The printer writer handles AFP spooled files by using Print Services Facility (PSF) to perform data stream conversion to Intelligent Printer Data Stream (IPDS).

The most frequently used command that works with Output Queues is WRKWTR

Note: The term: *print* writer, is used in Twinax & Coax environments in the same role as the PSF, when the target printers are SCS, IPDS configured with the Advanced Function Printing (AFP) parameter set to *NO (AFP without resources), or ASCII using an emulator.

6 APWI IPDSXpress

By using an APWI IPDSXpress it is possible to avoid using a dedicated IPDS printer, which is quite expensive. The APWI IPDSXpress can use any ordinary PCL 5e or PostScript 2 compatible printer.

Note: In the following the term IPDS Printer refers to the fact, that the APWI IPDSXpress Server emulates an IPDS Printer. Thus the host is to be setup exactly as if there were attached an IPDS Printer.



1.2 Creating the PSF Configuration Object on the IBM Server

The Create Device Printer command is the generic command used to build all of the different types of printer descriptions supported by the iSeries operating system. For this reason, IBM tries to limit the number of parameters that are supported by this command. The PSF Configuration is a supplementary object that can be created on iSeries servers that includes more printer definition information specific to IPDS printers.

It is generally a good idea to use a PSF Configuration Object with TCP/IP attached IPDS Capable printers so that you can change the release timer value from its system default value of *NOMAX to a numeric value in minutes. The release timer is the host-based parameter that controls the function, which is used to open and close the TCP based socket connection, between the host and the printer. When there are no files in the spool queue on the host with a READY status, it is a good idea to close the socket connection. The closed connection will increase the stability of the network link between the host and the printer because the stress of an open but unused TCP socket link will not be placed on the TCP/IP stacks in either the host or the printer. The opening and closing of the TCP socket link has no effect on the print writer itself. The writer will maintain its started status on the host even through the actual socket link is opening and closing as necessary.



Fig. 1: In order to build a PSF Configuration Object, execute the CRTPSFCFG command on the IBM Server and then press F4 to prompt the command.



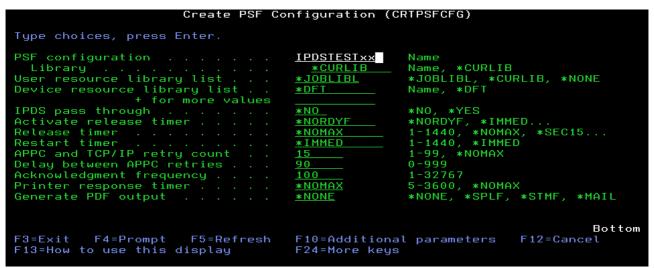


Fig. 2: When working with iSeries servers, the PSF Configuration Object can use a 10 character alphanumeric name chosen by the user. In our example, we have chosen IPDSTESTXX as the name for our PSF Configuration Object.

Note: When working with the earlier CISC processor based AS/400's (operating system V3R2 and earlier), you must create a unique PSF Configuration Object for each LAN Attached IPDS Capable printer that you add to the system. On these older hosts the PSF Configuration Object must have the same name as the printer description that it has been created to modify and the location of the *PSFCFG object file that is created must be the QGPL library.

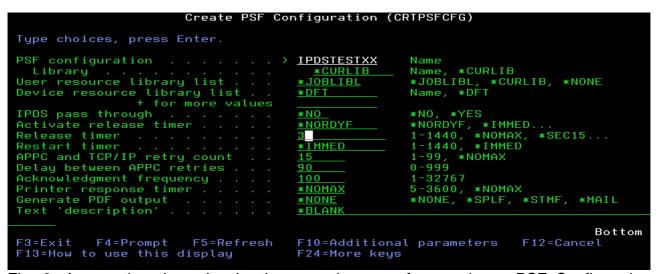


Fig. 3: As mentioned previously, the normal reason for creating a PSF Configuration Object for a LAN attached IPDS capable printer is to change the *Release timer* parameter value. In our example, we have changed the value from *NOMAX to three (3) minutes.

After changing the release timer value, you can press the enter key to create the PSF Configuration Object. The PSF Configuration Object creation occurs in the same fashion as the printer device creation. If all of the information entered into the menus is accepted by the operating system as correct, the object file is created and a message is displayed at the bottom of the screen. If an error is found, it will be noted and explained by a message in the same position at the bottom of the screen. In order to successfully build your PSF



Configuration Object, the error must be corrected and the CRTPSFCFG command executed again.

1.3 Creating the IPDS Printer Device Description on the IBM Server



Fig. 4: On the command line type the command CRTDEVPRT (the abbreviation stands for Create Device Description (Printer)) and then press F4 to prompt the command. A menu of parameters will be displayed on the terminal screen.

Fig. 5: To begin, you will need to choose a name for the IBM server based printer session. The name can include up to ten alphanumeric characters. We have chosen IPDSTESTxx for our example.

Because this guide focuses on a TCP/IP transport connection between the IBM Server and the APWI IPDSXpress Server, the **Device class** parameter must be set to *LAN. All IPDS capable printers known to the iSeries operating system belong to a single device group and are always defined as **Device type** *IPDS and **Device model** 0. After making these selections, press the enter key to continue.





```
Create Device Desc (Printer) (CRTDEVPRT)
Type choices, press Enter.
Device description
                                                   IPDSTESTXX
                                                                         Name
                                                                        *LCL, *RMT, *VRT, *SNPT, *LAN
3287, 3812, 4019, 4201...
0, 1, 2, 3, 4, 10, 13, 301...
*LEXLINK, *IP, *USRDFN
Device class .
Device type .
                                                    *LAN
*IPDS
Device model
                                                    0
LAN attachment
                                                                                                           Bottom
F3=Exit F4=Prompt F5=Refresh
F13=How to use this display
                                                    F10=Additional parameters
                                                                                              F12=Cancel
                                                    F24=More keys
```

Fig. 6: Verify that the *LAN attachment* parameter is set to *IP as shown above. Now press the enter key again to continue.

```
Create Device Desc (Printer) (CRTDEVPRT)
Type choices, press Enter.
Device description .
                                           <u>IPDSTESTXX</u>
                                                             *LCL, *RMT, *VRT, *SNPT, *LAN
3287, 3812, 4019, 4201...
0, 1, 2, 3, 4, 10, 13, 301...
*LEXLINK, *IP, *USRDFN
*NO, *YES
*LAN
*IPDS
0
Advanced function printing .
                                           *YES
                                                                                         Bottom
                                           F10=Additional parameters
F3=E×it
            F4=Prompt
                           F5=Refresh
                                                                              F12=Cancel
F13=How to use this display
                                           F24=More keys
```

Fig. 7: The iSeries operating system requires that a software program named PSF be installed on the IBM server to support IPDS printing to a LAN attached printer. The *Advanced function printing* parameter specifies whether the IPDS printer definition will be used in conjunction with PSF or not. All IPDS printers that will receive data from the IBM Server via a TCP/IP LAN connection must have this parameter set to *YES.

Press the enter key to continue.



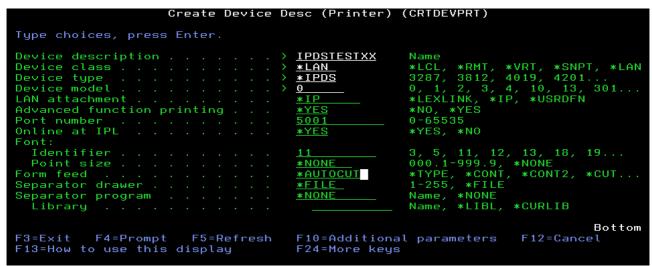


Fig. 8: The **Port number** parameter is the TCP socket address that the IBM Server will use to converse with the target printer. This is the parameter that makes each IPDS session created on an APWI IPDSXpress Server unique. The port number configured on the IBM Server must match the port number entered into the APWI IPDSXpress Server printer session.

The typical default *Font: Identifier* value used in most IBM Server printer definitions is the number 11, which correlates to the typeface Courier 10 pitch.

The **Form feed** parameter needs to be changed from *CONT to *AUTOCUT. This is because all of the IPDS printers that the APWI IPDSXpress Server can emulate are cut sheet fed laser printers.

Note: The APWI IPDSXpress Server can operate with the *CONT parameter, but is, amongst other things, unable to exercise tray and bin selections.

Continue by pressing the F10 function key to view Additional parameters.



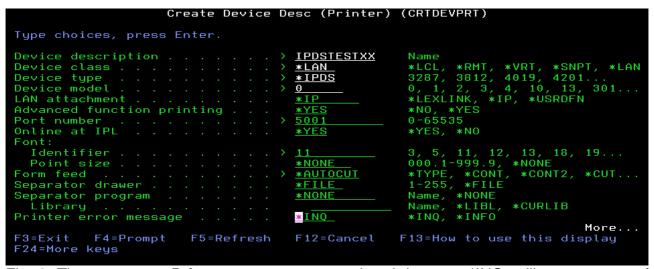


Fig. 9: The parameter **Printer error message**, when it is set to *INQ, will cause some of the conditions that can occur at the printer (ex. End of forms) to generate a message requiring an answer before the condition can be cleared and the IBM Server can continue printing. If a particular customer would prefer that the message be answered automatically after the problem is cleared at the printer, the parameter should be set to *INFO.

Press the roll down key to reach the next menu.

```
Create Device Desc (Printer) (CRTDEVPRT)
Type choices, press Enter.
                                                                 Name, *CTLD, *SYSOPR,
Name, *LIBL, *CURLIB
1-2550, *NOMAX
*NONE, *IMGA01, *IMGA
                                                                                              OSYSOPR
Message queue
                                               *CTLD
Library . . .
Activation timer
                                               170
Image configuration
                                               *NONE
                                                                                      *IMGA02...
Maximum pending requests
                                              6
*YES
F1C10110
Print while converting .
Form definition . . . .
                                                                  *N0,
                                                                 Name, *LIBL, *CURLIB
Library . . . .
Remote location:
Name or address
                                                 *LIBL
                                               192.168.112.24
User-defined options
                                               *NONE
                                                                 Character value, *NONE
                      for more values
                                                                                               More...
F3=E×it
             F4=Prompt
                             F5=Refresh
                                              F12=Cancel
                                                                F13=How to use this display
F24=More keys
```

Fig. 10: The *Remote location: Name or address* parameter is where the qualified host name or IP address of the target printer (APWI IPDSXpress Server) must be entered.

Press the roll down key again to scroll to the next menu.



```
Create Device Desc (Printer) (CRTDEVPRT)
Type choices, press Enter.
User-defined object:
                                                                          Name, *NONE
Name, *LIBL,
                                                     IPDSTEST××
   Object
                                                     *LIBL
*PSFCFG
     Library
                                                                                              *CURLIB
                                                                          Name, *LIBL, *CURLIB

*DTAARA, *DTAQ, *FILE...

Name, *NONE

Name, *LIBL, *CURLIB

Name, *LIBL, *CURLIB

*NO, *YES

Name, *NONE

Name, *LIBL, *CURLIB
   Object type
Data transform program .
                                                     *NONE
   Library
User-defined driver program
                                                     *NONE
   Library
Secure connection . .
Validation list . . .
Library . . . . .
                                                     *N0
                                                     *NONE
                                                                                                            More...
F3=E×it
                                                     F12=Cancel
            F4=Prompt
                                 F5=Refresh
                                                                        F13=How to use this display
F24=More keys
```

Fig. 11: In order to link the PSF Configuration Object to the printer device description that was previously created

The name of the PSF Configuration Object that created in the previous step, must be entered into the *User-defined object: Object* parameter, the folder where the object was stored (known as a Library in iSeries terminology) and the Object type which will always be *PSFCFG.

Press the roll down key again to scroll to the next menu.

```
Create Device Desc (Printer) (CRTDEVPRT)
Type choices, press Enter.
Publishing information:
Support duplex . . . .
Support color . . . .
                                                                    *UNKNOWN, *SIMPLEX, *DUPLEX
*UNKNOWN, *NOCOLOR, *COLOR
1-32767, *UNKNOWN
1-32767, *UNKNOWN
  *UNKNOWN
                                                *UNKNOWN
                                                *UNKNOWN
                                                *UNKNOWN
  Location
                                                *BLANK
Data streams supported . . . .
+ for more values
Text 'description' . . . .
                                                *UNKNOWN
                                                                    *UNKNOWN, *PCL, *PS, *PDF...
                                                'Test Print Suite 01'
                                     Additional Parameters
Remote network identifier . .
Workstation customizing object
                                                *NETATR
                                                                    Name, *NETATR, *NONE
Name, *NONE
Name, *LIBL, *CURLIB
                                                *NONE
  Libraru
                                                                                                   More...
                                                                   F13=How to use this display
F3=Exit
             F4=Prompt
                              F5=Refresh
                                                F12=Cancel
F24=More keys
```

Fig. 12: Optionally printer device description

From this screen, you can enter a Text 'description' that will be shown along with the printer device as a comment field. This step is not mandatory

Now press the enter key, and the IBM Server based IPDS printer definition will be created.

If all of the parameters entered into the previous screens are perceived as being correct by the IBM Server operating system, the IPDS printer device description will be created. A message noting the successful completion of the task will be displayed at the bottom of the screen.



If a problem is encountered, an error message will be displayed in the same position. The error will need to be corrected and the CRTDEVPRT command executed again in order to successfully build the IPDS device description.

A benefit of starting by creating the printer device description is that a printer writer and an output queue is auto created with the same name as the printer device description.

1.4 Alternative: Using a Command line

It is possible to enter the above two sessions as commands:

```
Command Entry
Request level: 4

Previous commands and messages:

> CRTPSFCFG RLSTMR(3)
Command prompting ended when user pressed F3.

Bottom

Type command, press Enter.
===> CRTPSFCFG RLSTMR(3)

F3=Exit F4=Prompt F9=Retrieve F10=Include detailed messages
F11=Display full F12=Cancel F13=Information Assistant F24=More keys
```

Fig. 13: The Create PSF Configuration Object

```
Command Entry
Request level: 4

Previous commands and messages:

> CRIDEVPRT DEVD(IPDSTESTXX) DEVCLS(*LAN) TYPE(*IPDS) MODEL(0) LANATTACH(*I P) AFP(*YES) PORT(5001) FONT(11) FORMFEED(*AUTOCUT) RMTLOCNAME('192.168.1 12.24') USRDFNOBJ(*LIBL/IPDSTESTXX *PSFCFG) TEXT('Test Print Suite 01') Command prompting ended when user pressed F3.

Bottom
Type command, press Enter.
===> PRIDEVPRI DEVD(IPDSTESTXX) DEVCLS(*LAN) TYPE(*IPDS) MODEL(0) LANATTACH(*IF) AFP(*YES) PORT(5001) FONT(11) FORMFEED(*AUTOCUT) RMTLOCNAME('192.168.112.24') USRDFNOBJ(*LIBL/IPDSTESTXX *PSFCFG) TEXT('Test Print Suite 01')

F3=Exit F4=Prompt F9=Retrieve F10=Include detailed messages
F11=Display full F12=Cancel F13=Information Assistant F24=More keys
```

Fig. 14: The Create Printer Device command

To get the Command Entry screen, type 'CALL QCMD' and use F11 to toggle the number of command lines shown.

It is still possible to use the F4 prompt from the command line. By Pressing the F3 just before the final enter key, takes you back to the Command Entry screen. Pressing F9 will repeat last entered command, as shown above!

Please refer to your host documentation for specific information on entering commands.



1.5 Activating the Printer Definition on the IBM Server

In order to send a job from an IBM Server to the APWI IPDSXpress Server, three criteria's must be met on the IBM Server.

- 1. The printer definition file (known in iSeries terminology as an Object File) must be active. The active state is known as being Varied On.
- 2. In order to print the AFP spool files in the Printer Writer's Output Queue, they must be ready (RDY). If they are not, they must be released for printing.
- 3. Finally a software job known as a printer writer must be activated. This software job moves released spool files that need to be printed from the print queue to the printer itself.

Please refer to host literature for operating the host.

1.6 Testing and Starting the Printer

Except for the bolded values (IP address and device name), all values and characters such as ' and * should be entered exactly as listed.

1.6.1 Verify the TCP/IP Connection.

PING RMTSYS('192.168.112.24')



Fig. 15: If the ping operation was successful this text should occur (at bottom of screen)





Fig. 16: If the ping operation failed this text should occur (at bottom of screen)

1.6.2 Varying the Printer Device Description On.



Fig. 17: After a new printer definition has been created on an IBM Server, it will be stored in the deactivated Varied Off state. In order to prepare the printer definition for use, it will need to be Varied On. Execute the Work with Configuration Status command from an IBM Server command line. The syntax is WRKCFGSTS *DEV (this means that you want to work with the status of a physical device attached to the IBM Server) and the device name. If the name is not specified, all devices known to the system in the class requested will be displayed.



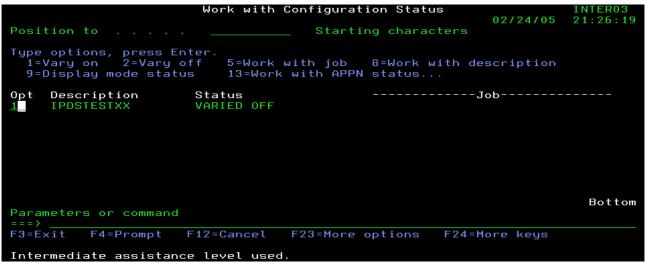


Fig. 18: In our example, the new printer we created was named IPDSTESTxx. We have navigated to the screen on the IBM Server (via the WRKCFGSTS *DEV command) where printers can be activated. Place a number 1 in the option field next to the printer description to vary the device on. After typing the 1, press the enter key.

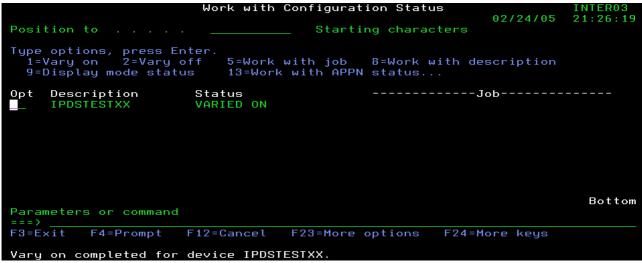


Fig. 19: After pressing the enter key in the previous step, you will see that the status of the device will change from Varied Off to Varied On.



Alternatively you could use this command OS/400 Main Menu INTER03 System: Select one of the following: User tasks 2. Office tasks 3. General system tasks 4. Files, libraries, and folders Programming Communications Define or change the system 8. Problem handling
9. Display a menu
0. Information Assistant options 11. Client Access/400 tasks 90. Sign off Selection or command ===> <u>vrycfg cfgobj(ipdstestxx) cfgtype(*DEV) status(*on)</u> F4=Prompt F9=Retrieve F12=Cancel F13=Information Assistant F23=Set initial menu

Fig. 20: VRYCFG CFGOBJ(IAPS) CFGTYPE(*DEV) STATUS(*ON)



Fig. 21: The bottom text indicates that the operation went well.

1.6.3 Start the Printer Writer.



Fig. 22: STRPRTWTR DEV() will show you all printer writers that can be started



1.6.4 Change your Login job to use the printer as default.

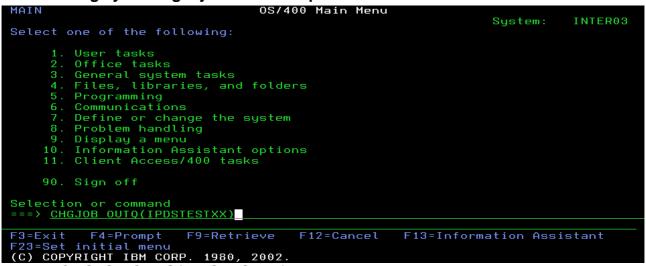


Fig. 23: CHGJOB OUTQ(IPDSTESTXX)

1.6.5 Make a test print (for example your User Profile).

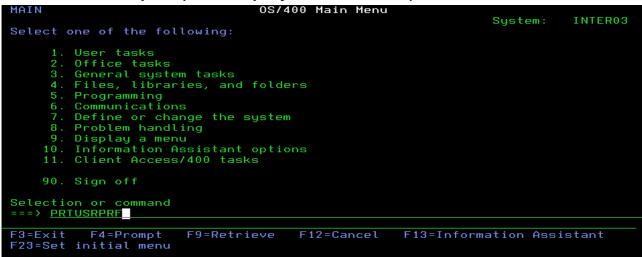


Fig. 24: PRTUSRPRF prints the Current user's profile.

1.7 Notices

1.7.1 Publication Information

iSeries Configuration - Crash Course. Edition 1.1 6 March 2005.

The information contained in this document is subject to change without notice.

© Copyright 2006 American PrintWare, Inc. 27126B Paseo Espada, Ste. 724, San Juan Capistrano, CA 92675 .

Tel: 949-488-2222 Fax: 949-488-2225



1.7.2 Disclaimer

The following provisions do not apply to any country or state where such provisions are inconsistent with local law. Some authorities do not allow disclaimer of express or implied warranties in certain transactions. Therefore, the following may not apply to you.

American PrintWare, Inc. makes no representation or warranty regarding the content of this product. For example, American PrintWare, Inc. does not warrant that the software or documentation are "error-free" or will meet the needs and requirements of a particular user. All information in the software and documentation is subject to change without notice.

All other warranties, representations, conditions, express or implied, including any implied warranty or condition of merchantability or fitness for a particular purpose are disclaimed by American PrintWare, Inc.. All other implied terms are excluded.

American PrintWare, Inc. shall not be liable for any direct, indirect, incidental, consequential, or other damage alleged in connection with the furnishing or use of this information.