

Novell Open Enterprise Server

www.novell.com

July 18, 2007

IPRINT ADMINISTRATION GUIDE FOR
NETWARE®



Novell®

Legal Notices

Novell, Inc., makes no representations or warranties with respect to the contents or use of this documentation, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc., reserves the right to revise this publication and to make changes to its content, at any time, without obligation to notify any person or entity of such revisions or changes.

Further, Novell, Inc., makes no representations or warranties with respect to any software, and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. Further, Novell, Inc., reserves the right to make changes to any and all parts of Novell software, at any time, without any obligation to notify any person or entity of such changes.

Any products or technical information provided under this Agreement may be subject to U.S. export controls and the trade laws of other countries. You agree to comply with all export control regulations and to obtain any required licenses or classification to export, re-export or import deliverables. You agree not to export or re-export to entities on the current U.S. export exclusion lists or to any embargoed or terrorist countries as specified in the U.S. export laws. You agree to not use deliverables for prohibited nuclear, missile, or chemical biological weaponry end uses. See the [Novell International Trade Services Web page \(http://www.novell.com/info/exports/\)](http://www.novell.com/info/exports/) for more information on exporting Novell software. Novell assumes no responsibility for your failure to obtain any necessary export approvals.

Copyright © 2005-2007 Novell, Inc. All rights reserved. No part of this publication may be reproduced, photocopied, stored on a retrieval system, or transmitted without the express written consent of the publisher.

Novell, Inc., has intellectual property rights relating to technology embodied in the product that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed on the [Novell Legal Patents Web page \(http://www.novell.com/company/legal/patents/\)](http://www.novell.com/company/legal/patents/) and one or more additional patents or pending patent applications in the U.S. and in other countries.

Novell, Inc.
404 Wyman Street, Suite 500
Waltham, MA 02451
U.S.A.
www.novell.com

Online Documentation: To access the latest online documentation for this and other Novell products, see the [Novell Documentation Web page \(http://www.novell.com/documentation\)](http://www.novell.com/documentation).

Novell Trademarks

For Novell trademarks, see the [Novell Trademark and Service Mark list \(http://www.novell.com/company/legal/trademarks/tmlist.html\)](http://www.novell.com/company/legal/trademarks/tmlist.html).

Third-Party Materials

All third-party trademarks are the property of their respective owners.

Contents

About This Guide	11
1 Overview	13
1.1 What Is iPrint?	13
1.2 iPrint Component Overview	14
1.2.1 Print Manager	14
1.2.2 Broker	15
1.2.3 iPrint Client	17
1.2.4 Apache Web Server	18
1.2.5 Novell iManager	18
1.3 Understanding Port Usage	18
1.4 iPrint Solutions	18
1.4.1 Printing Across the Internet	19
1.4.2 Printing While Mobile	19
1.4.3 Printing Instead of Faxing	20
1.5 What's Next	20
2 What's New	21
2.1 Enhancements for NetWare 6.5 Support Pack 7	21
2.2 Enhancements for NetWare 6.5 Support Pack 6	21
2.3 Enhancements for Open Enterprise Server Support Pack 2	21
2.4 Enhancements for Open Enterprise Server Support Pack 2	22
2.5 Enhancements for OES SP1 (NetWare 6.5 Support Pack 4)	22
2.6 Enhancements for NetWare 6.5 Support Pack 3	22
2.7 Enhancements for NetWare 6.5 Support Pack 2	23
2.8 Enhancements for NetWare 6.5	23
3 Setting Up iPrint on Your Server	25
3.1 Installing iPrint Software	25
3.2 iPrint Setup Requirements	25
3.3 Setting Up DNS for the Print Manager	26
3.3.1 Adding the DNS Name to the DNS Name Server	26
3.3.2 Enabling DNS on the Print Manager	27
3.4 Creating a Broker	27
3.5 Adding Printer Drivers	28
3.6 Creating a Print Manager	29
3.7 Creating a Printer	30
3.7.1 Prerequisites	30
3.7.2 Procedure	30
3.8 Enabling iPrint on Existing Printers	31
3.9 Upgrading to Novell iPrint	31
3.9.1 Upgrading Existing iPrint Systems	32
3.9.2 Upgrading from NDPS to iPrint	32
3.9.3 Migrating from Print Queues	32
3.10 What's Next	33

4	Setting Up iPrint on Client Workstations	35
4.1	Installing the iPrint Client	35
4.1.1	Linux: iPrint Client	35
4.1.2	Macintosh: iPrint Client	39
4.1.3	Windows: iPrint Client	40
4.1.4	Windows: Distributing the iPrint Client	42
4.2	Installing Printers	43
4.2.1	Using the iPrint Printer List Web Page	44
4.2.2	Creating Location-Based Printing Web Pages	44
4.2.3	Removing iPrint Printers	44
4.3	Updating the iPrint Client	45
4.4	Managing Print Jobs from the Client	45
4.5	Using iprntcmd on Linux and Macintosh	45
4.6	Windows Client: Using Additional Features	47
4.6.1	Updating the iPrint Client	47
4.6.2	Using the iPrint Client Tray Icon	47
4.6.3	Configuring the iPrint Client Settings	47
4.6.4	Implementing iPrint by Using DOS Commands	50
4.6.5	Using iPrint with NetIdentity	53
4.6.6	Manage Global Actions through lprint.ini	53
4.7	Using iPrint Client Management	56
4.7.1	Understanding the Schema Update	57
4.7.2	Deploying iPrint Client Management	57
4.7.3	Managing iPrint Client Settings	58
4.7.4	Automatically Installing Printers	58
4.7.5	Using Advanced Settings	60
4.8	Uninstalling the Novell iPrint Client	61
4.8.1	Removing the Linux iPrint Client	61
4.8.2	Removing the Macintosh iPrint Client	61
4.8.3	Removing the Windows iPrint Client	62
4.9	Printing from LPR Print Systems to iPrint	62
4.10	What's Next	62
5	Customizing iPrint	63
5.1	Setting Up Location-Based Printing	63
5.1.1	Creating Location-Based Maps with iPrint Map Designer	63
5.1.2	Creating Customized Printer Lists	66
5.2	Customizing the iPrint HTML Interface	66
5.3	Changing Printer Driver Default Install Options	66
5.4	Installing Printer as Default on Windows	67
6	Running iPrint in a Virtualized Environment	69
7	Managing Your Print System	71
7.1	Managing the Print Manager	71
7.1.1	Understanding the Print Manager Database	71
7.1.2	Using the Print Manager Health Monitor	72
7.1.3	Setting Up Printer Pooling	75
7.1.4	Using Print Auditing	76
7.1.5	Moving the Print Manager	81
7.1.6	Enabling Printer Agent Redirection	81
7.1.7	Print Manager Startup Switches	83
7.2	Managing Printers	85

7.2.1	Enabling/Disabling iPrint on Individual Printers	85
7.2.2	Enabling iPrint Direct.	86
7.2.3	Moving Printer Agents to Another Print Manager on NetWare	86
7.2.4	Managing Printer Agents.	86
7.2.5	Managing Print Jobs	87
7.2.6	Using Printer Driver Profiles	88
7.2.7	Using Printer Banner Pages	89
7.2.8	Modifying the Printer's Gateway Load Commands	91
7.2.9	Configuring Printer Settings	92
7.2.10	Configuring Job Holds	93
7.2.11	Optimizing Event Notification	94
7.2.12	Setting Print Job Spooling	95
7.2.13	Configuring LPR Printers.	96
7.2.14	Migrating NDPS Printers to iPrint	97
7.2.15	Migrating Queue-Based Printers to iPrint	97
7.2.16	Supporting Queue-Based Client Workstations	97
7.3	Managing the Broker	97
7.3.1	Accessing the Broker Health Monitor	98
7.3.2	Adding or Updating Brokered Resources	98
7.3.3	Changing the Location of a Broker	98
7.3.4	Adding Banner Pages	98
7.3.5	Adding or Updating Printer Drivers	101
7.3.6	Enabling Event Notification Delivery Methods.	102
7.3.7	Enabling and Disabling Brokered Services	102
7.3.8	Reconfiguring a Broker	103
7.3.9	Broker Startup Switches	104
7.4	Configuring LDAP	105
8	Setting Up a Secure Printing Environment	107
8.1	Setting Access Control for Your Print System	107
8.1.1	Setting Access Control for Printers	107
8.1.2	Setting Access Control for the Print Manager	110
8.1.3	Setting Access Control for Brokers	111
8.2	Setting Printer Security Levels.	111
8.3	Secure Printing Using SSL/TLS.	112
8.3.1	Considerations When Changing Printer Security	113
8.3.2	Enabling SSL/TLS.	113
8.3.3	Saving Passwords for Secure Printers	114
8.3.4	Configuring TLS Printing with Proxies.	114
A	Supported Browsers for iPrint	115
A.1	iPrint Client Supported Browsers.	115
A.2	Supported Browsers with the iPrint Plug-In and Novell iManager	115
A.2.1	Uploading PPD Files Using iManager.	116
A.2.2	Uploading Windows Printer Drivers Using iManager.	116
A.3	Supported Browsers for the iPrint Map Designer.	116
B	Configuring the iPrint HTML Interface	117
B.1	iPrint Client HTML Interface Description	117
B.1.1	Internet Explorer Browser Customization	117
B.2	HTML Parameters	119
B.2.1	call-back-url.	119
B.2.2	debug	119
B.2.3	error-type.	119

B.2.4	file-path-name	120
B.2.5	job-list	120
B.2.6	job-list-options	120
B.2.7	printer-url	121
B.2.8	result-type	121
B.2.9	target-frame	121
B.3	Supported Operation Strings	121
B.3.1	op-client-interface version	122
B.3.2	op-client-is-printer-installed	122
B.3.3	op-client-version-info	122
B.3.4	op-job-cancel	123
B.3.5	op-job-get-info	123
B.3.6	op-job-hold	123
B.3.7	op-job-release-hold	123
B.3.8	op-printer-get-info	123
B.3.9	op-printer-get-status	124
B.3.10	op-printer-install	124
B.3.11	op-printer-list-all-jobs	124
B.3.12	op-printer-pause	124
B.3.13	op-printer-purge-jobs	124
B.3.14	op-printer-remove	125
B.3.15	op-printer-resume	125
B.3.16	op-printer-send-file	125
B.3.17	op-printer-send-test-page	125

C Troubleshooting Your Print System 127

C.1	Initial Troubleshooting Steps	128
C.1.1	Attempt to resolve the error and try again (A1)	128
C.1.2	Try some quick fixes (A2)	129
C.1.3	Determining your printing environment (A3)	129
C.1.4	All queue-based environment (A4)	130
C.1.5	All iPrint environment (A5)	130
C.1.6	Mixed iPrint and queue-based environment (A6)	130
C.2	Narrowing Your Focus	131
C.2.1	Send job to same printer from other workstations (B1)	131
C.2.2	Has workstation printed to this printer before? (B2)	132
C.2.3	Gather information on setup and configuration (B3)	132
C.2.4	Has printing ever worked with the current configuration? (B4)	132
C.3	Determining Your Platform When Problem Affects Only One Workstation	133
C.3.1	Are queues being serviced by an iPrint printer? (C1)	133
C.3.2	All queue-based printing (C2)	134
C.3.3	Queue-iPrint integration (C2)	134
C.3.4	Look in Novell iManager for Printer objects (C4)	134
C.4	Isolating Printing Problems Affecting Only One Windows Workstation	135
C.4.1	Check status of printer in Windows Control Panel (D1)	135
C.4.2	Check to see what network object the installed printer is servicing (D2)	136
C.4.3	Check status of printer in NDPS Print Manager (D3)	136
C.4.4	Determine problem from error message (D4)	136
C.4.5	NetWare queue object (D5)	136
C.4.6	Are queues going to a printer? (D6)	136
C.4.7	Queue-iPrint integration (D7)	136
C.4.8	All queue-based printing (D8)	137
C.4.9	Printer is set for working offline (D9)	137
C.4.10	Other possibilities (D10)	137
C.5	Tracking Jobs from a Workstation	138
C.5.1	Pause output of printer (E1)	138
C.5.2	Check job list in Novell iManager (E2)	139

C.5.3	Resume printer output (E3)	139
C.5.4	Job printed this time but nothing was changed (E4)	139
C.5.5	Job did not print and is still in the job list (E5)	139
C.5.6	Job did not print but is no longer in the job list (E6)	139
C.6	Checking Printer Output and Using Test Files	140
C.6.1	Check availability of network printer (F1)	140
C.6.2	Check for error messages (F2)	141
C.6.3	Test file prints but jobs from application do not (F3)	141
C.6.4	Job is being held in spooler (F4)	141
C.6.5	Job did not print but is no longer in the job list (F5)	141
C.7	Printing Problems Affecting All Users	142
C.7.1	Determine severity and scope of printing problems (G1)	142
C.7.2	No print jobs are printing from any network printer (G2)	143
C.7.3	No print jobs are coming from a specific printer (G3)	143
C.7.4	Jobs are printing slowly or are corrupted (G4)	143
C.7.5	Check status of the Printer in Novell iManager (G5)	143
C.7.6	A problem is identified in an error message (G6)	144
C.7.7	Jobs are getting to the job list but the printer is unable to print them (G7)	144
C.8	Problems Integrating with Queue-Based Components	145
C.8.1	Check the printer's spooling configuration (H1)	145
C.8.2	Reconfigure spooling for this printer (H2)	146
C.8.3	Check the job list for the queue (H3)	146
C.8.4	Make sure the job is being redirected to the queue properly (H4)	146
D	Documentation Updates	147
D.1	September 2006 (NetWare 6.5 Support Pack 6)	147
D.2	December 23, 2005 (Open Enterprise Server SP2)	148
D.3	September 29, 2005	148
D.4	August 19, 2005 (Open Enterprise Server SP1)	148
D.5	February 2005 (NetWare 6.5 SP3)	149
D.6	June 2004 (NetWare 6.5 SP2)	149
E	iPrint Client Version Release List	151

About This Guide

This guide describes how to install, configure, and customize Novell® iPrint on NetWare® 6.5 and Novell OES for NetWare. It is intended for network administrators and is divided into the following sections:

- ♦ **Chapter 1, “Overview,” on page 13:** Introduction to iPrint and its components.
- ♦ **Chapter 2, “What’s New,” on page 21:** New features in NetWare 6.5 Support Packs.
- ♦ **Chapter 3, “Setting Up iPrint on Your Server,” on page 25:** Installing server software and configuring your print system.
- ♦ **Chapter 4, “Setting Up iPrint on Client Workstations,” on page 35:** Distributing and installing client software on workstations and using client utilities.
- ♦ **Chapter 5, “Customizing iPrint,” on page 63:** Designing custom Web pages that users access to find and install printers.
- ♦ **Chapter 6, “Running iPrint in a Virtualized Environment,” on page 69:** Running NetWare as a virtual machine.
- ♦ **Chapter 7, “Managing Your Print System,” on page 71:** Managing your iPrint components.
- ♦ **Chapter 8, “Setting Up a Secure Printing Environment,” on page 107:** Implementing SSL and access controls for your print system.
- ♦ **Appendix A, “Supported Browsers for iPrint,” on page 115:** Overview of the supported Web browsers and their available iPrint operations.
- ♦ **Appendix B, “Configuring the iPrint HTML Interface,” on page 117:** Customizing your HTML pages using the iPrint operations.
- ♦ **Appendix C, “Troubleshooting Your Print System,” on page 127:** Techniques for troubleshooting your print system.
- ♦ **Appendix E, “iPrint Client Version Release List,” on page 151:** Lists the different release of the iPrint Client.

Audience

This guide is intended for anyone involved in installing, managing, and using iPrint on NetWare.

Feedback

We want to hear your comments and suggestions about this manual and other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation.

Documentation Updates

For the latest version of the *Novell OES iPrint Administration Guide for NetWare*, visit the [Novell Open Enterprise Server documentation Web site \(http://www.novell.com/documentation/oes\)](http://www.novell.com/documentation/oes).

Additional Documentation

Novell iPrint also is available for Linux^{*}. For more information, see the *OES 2: iPrint for Linux Administration Guide*.

Documentation Conventions

In this documentation, a greater-than symbol (>) is used to separate actions within a step and items in a cross-reference path.

A trademark symbol (® , ™, etc.) denotes a Novell trademark. An asterisk (*) denotes a third-party trademark.

When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as Linux^{*} and UNIX^{*}, should use forward slashes as required by your software.

- ♦ Section 1.1, “What Is iPrint?,” on page 13
- ♦ Section 1.2, “iPrint Component Overview,” on page 14
- ♦ Section 1.3, “Understanding Port Usage,” on page 18
- ♦ Section 1.4, “iPrint Solutions,” on page 18
- ♦ Section 1.5, “What’s Next,” on page 20

1.1 What Is iPrint?

iPrint lets mobile employees, business partners, and customers access printers from a variety of remote locations using existing Internet connections. Whether users are working in an office building, telecommuting from home, or attending a sales meeting in another country, iPrint ensures that they can print documents quickly, easily, and reliably.

Using a Web browser, users point to a Web page that displays the available printers to install. By clicking a printer, the iPrint client is installed (if not installed previously), the printer’s driver is downloaded, and a printer is created on the user’s workstation, enabling the user to send documents to the printer from any application on the desktop.

Using iPrint, mobile users no longer need to contact a busy network administrator to find out a printer’s name and context and the required printer driver. Instead, mobile users work within a familiar Web browser to locate nearby printers and download and install the latest printer drivers. Companies can reduce communication costs by reducing the need to fax documents between offices. Instead, companies can use their existing Internet connections to print documents to remote printers.

iPrint Uses Industry Standards

iPrint uses the Internet Printing Protocol (IPP), an industry standard, to eliminate the complexities of printing over the Internet and to make location-based printing a reality.

The benefits of IPP include the following:

- ♦ Uses the IP protocol
- ♦ Provides broad vendor support
- ♦ Works over local networks and the Internet
- ♦ Provides for print data encryption (SSL, TLS)
- ♦ Provides a standard print protocol for all platforms (Linux, Macintosh*, Windows*, etc.)

For more information about IPP, see the documents available on the [Printer Working Group Web \(http://www.pwg.org/ipp/index.html\)](http://www.pwg.org/ipp/index.html) site.

iPrint Benefits

In addition to the benefits of IPP, the Novell® implementation of iPrint adds the following value:

- ♦ Printer driver download and installation

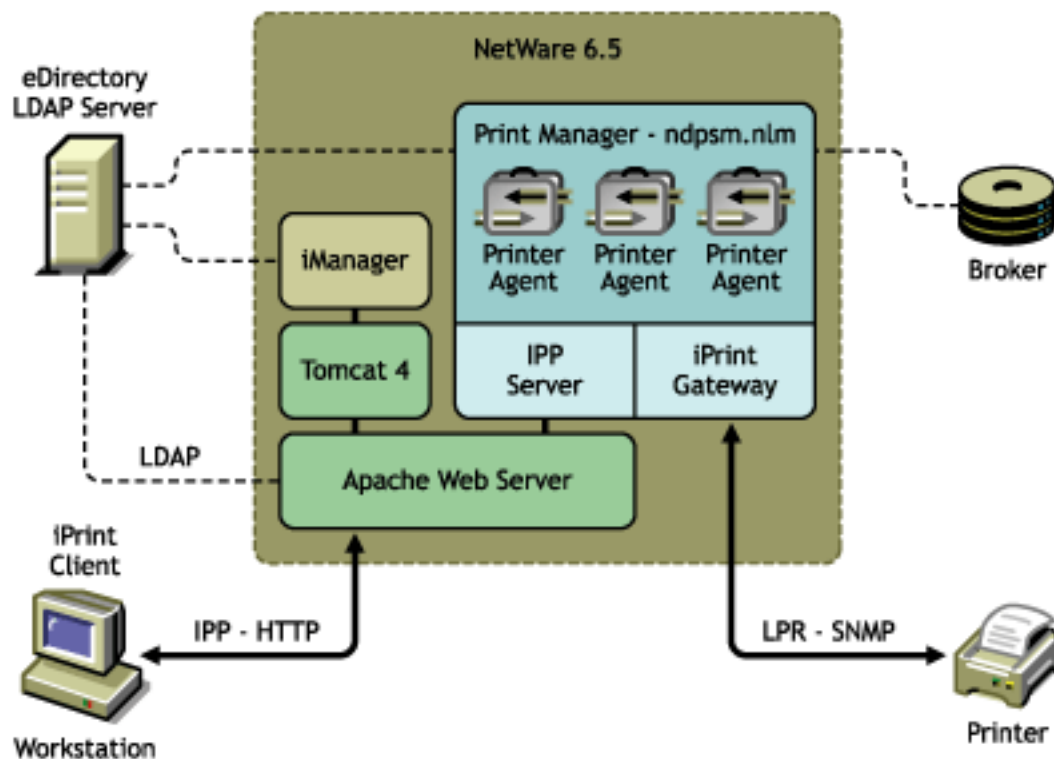
- ♦ Location-based printing
- ♦ Browser-enabled print interface
- ♦ Customizable user interface
- ♦ Secure information transfer
- ♦ Provides a standard print protocol for all client platforms (Linux, Macintosh, and Windows)

For secure printing needs, iPrint integrates with Novell eDirectory™ to ensure that only authorized users can access the printer. Users are required to authenticate with their eDirectory username and password. Print data is also encrypted to ensure that sensitive print data is kept secure and unaltered.

1.2 iPrint Component Overview

iPrint consists of three main components: the Print Manager, the Broker, and the iPrint Client. Other supporting components include Apache Web Server, Novell iManager, and eDirectory.

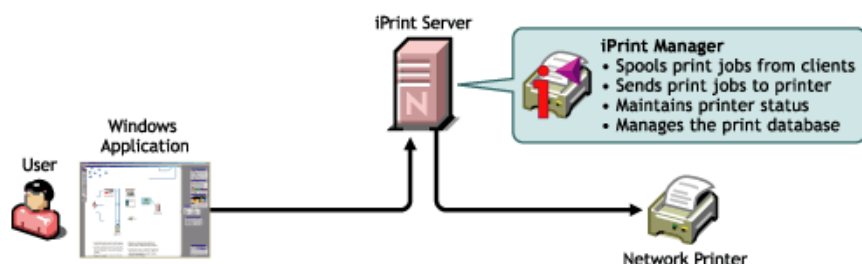
Figure 1-1 iPrint Component Overview



1.2.1 Print Manager

The Print Manager is an object in the eDirectory tree as well as software that runs on a NetWare® server. The Print Manager provides a platform for Printer Agents to reside on the server. Printer Agents are representations of actual printers. As print jobs are submitted to the Print Manager, the print job is forwarded to a printer, when the printer is ready.

Figure 1-2 *Print Job Flow through the Print Manager*



A single Print Manager can handle print jobs for multiple printers. Depending on your network configuration (for example, remote locations), you can create additional Print Managers on other servers, but only one Print Manager can exist on any one server. Using access control, the Print Manager allows authorized users to print.

Printer Agent: The Printer Agent is an entry in the Print Manager database that represents the physical printer. When you create a printer, a Printer Agent is created in the Print Manager's database and a Printer object is added to eDirectory. The Printer Agent manages the processing of print jobs; answers queries from network clients about a print job or attributes of a printer; and provides SNMP information retrieved from the physical printer. This is displayed in the Print Manager Health Monitor.

IPP server: The IPP server's main function is to handle IPP requests from the Web server and deliver the requests to the Print Manager or to the Broker.

iPrint Gateway: The gateway maintains communication with the printers. When a printer is ready, the gateway requests print jobs from the Print Manager for the printer. The print jobs are sent to the printer using LPR over the TCP/IP protocol. Using SNMP, the gateway also queries printers to get their status and other printer information.

1.2.2 Broker

The Broker is an eDirectory object. Only one Broker is required on a network but, depending on your network configuration, you can create additional Brokers. The fewer Brokers running, the better, because you do not have to track which Broker has which printer drivers.

The Broker is a repository of printer drivers for your print system. When the first user of a printer installs that printer, the Print Manager requests the associated printer driver from the Broker and saves the printer driver to disk for future uses. Periodically, Print Manager refresh their saved copies of printer drivers for the printers they are hosting with updated printer drivers from their associated Broker.

The Broker provides a service registry service, and event notification service and a resource management service.

Service Registry Service.

The Service Registry allows public-access printers, event notification services, and resource management services to advertise themselves so that administrators and users can find them. This service maintains information about device type, device name, device address, and device-specific information such as the printer manufacturer and model number.

The Service Registry Service helps minimize the network traffic problem created by many printers advertising through the Service Advertising Protocol (SAP). (For information on turning off the SAP, see the documentation for your printer.) When an application or user wants to use a printer, it can contact an SRS and retrieve a list of all registered printers on the network.

NOTE: For IPX™, the SRS uses SAP type 8202; for IP environments, it uses Multicast.

If there are multiple Service Registries running on the network, they synchronize automatically.

Event Notification Service

This service allows printers to send customizable notifications to users and operators about printer events and print job status. The Event Notification Service supports a variety of delivery methods including NetWare pop-up, log file, e-mail, and programmatic.

If you are using the Windows iPrint Client, users can use the built-in notification in the system tray. For more information, see [Section 4.6, “Windows Client: Using Additional Features,” on page 47](#).

With the Broker’s Event Notification Service (ENS), you can configure event notification for interested parties, that is, non-job-owners that you wish to be notified of a defined printer or server event that occurs during the processing and printing of a job. See [“Configuring Interested-Party Notification” on page 95](#) for more information.

The Event Notification Service supports both consumers of events (users) and suppliers of events (printers). Users can register with the ENS by identifying the types of events they want to be notified about, while the printer can register the kinds of events it is capable of reporting. For example, the administrator for a specific printer (by default a Manager of that printer) can designate an Operator to be notified if the printer runs out of paper or if the toner is low. Similarly, users can be notified when their jobs have finished printing.

Delivery Methods

The availability of the following delivery options is dependent on which of them you have enabled. (See [“Enabling Event Notification Delivery Methods” on page 102](#) for more information.)

- ♦ **Pop-up notification:** Messages pop up on the screen for individuals designated to receive them. (Pop-up notification is always enabled when the ENS is enabled.)
- ♦ **SMTP notification:** Messages are sent to the recipient through SMTP (Simple Mail Transfer Protocol) in IP-based systems.
- ♦ **Log file notification:** Messages are written to a file at a designated location on a NetWare server that the recipient has rights to.
- ♦ **Programmatic notification:** Two programmatic notification delivery methods are shipped with iPrint: SPX™ and RPC.

iPrint is enabled to work with SNMP. In addition, some third-party gateways are SNMP-enabled independently of the iPrint software.

Resource Management Service

This service allows resources to be installed in a central location and then downloaded to clients, printers, or any other entity on the network that needs them. The Resource Management Service supports adding, listing, and replacing resources including printer drivers, printer definition (PDF) files, banners, and fonts.

You can also configure your own banners through iManager. See [Section 7.2.7, “Using Printer Banner Pages,” on page 89](#) for more information.

1.2.3 iPrint Client

The iPrint Client is available on the following platforms:

- ♦ [Linux](#)
- ♦ [Macintosh](#)
- ♦ [Windows](#)

Linux iPrint Client

This client lets Linux workstations install iPrint clients and includes the following components:

- ♦ **Browser plug-in:** The iPrint Client contains a browser plug-in for Mozilla-based browsers. This plug-in lets you install printers through your Web browser.
- ♦ **Console utility:** The Linux iPrint client includes the `iprntcmd` utility that lets you install printers, print test pages, and upload drivers to a driver store from a console prompt. For more information, see [Section 4.5, “Using iprntcmd on Linux and Macintosh,” on page 45](#).
- ♦ **CUPS Integrator:** The iPrint client integrates with the CUPS client and uses the CUPS local spooler to send print jobs to the Print Manager.

For more information, including client requirements, see [Section 4.1.1, “Linux: iPrint Client,” on page 35](#).

Macintosh iPrint Client

The Macintosh iPrint Client contains a browser plug-in for the Safari* Web browser that lets you install printers through your Web browser. See [“iPrint Client Supported Browsers”](#) for more information.

The iPrint client integrates with the CUPS client and uses the CUPS local spooler to send print jobs to the Print Manager.

For more information, including client requirements, see [Section 4.1.2, “Macintosh: iPrint Client,” on page 39](#).

Windows iPrint Client

The Windows iPrint Client lets you install iPrint printers and configure iPrint on your workstation and includes the following components:

- ♦ **Print Provider:** The iPrint Print Provider communicates directly with the Windows Spooler, which takes print jobs from applications and delivers them to a print provider. Upon startup, the iPrint Client ensures that the iPrint Print Provider is the first one in the list of providers. When a print job is destined for an iPrint printer, the iPrint Print Provider delivers the print job to the Print Manager.
- ♦ **Browser plug-in:** The iPrint Client contains a browser plug-in for Mozilla-based browsers and Internet Explorer. The Internet Explorer plug-in is an OCX-based plug-in lets you install printers through your Web browser.

- ♦ **Client configuration:** Through the iPrint Client configuration screen, you can take advantage of several advanced client features. For more information on each of these features, see the associated documentation. These features include the following:
 - ♦ “Using a Proxy Server” on page 48
 - ♦ “Using the Novell iCapture LPT Port Redirector Utility” on page 49
 - ♦ “Setting Up iPrint on Terminal Servers” on page 49
 - ♦ “Managing Passwords for Remote iPrint Servers” on page 48
- ♦ **Command line utilities:** The iPrint MS-DOS* commands let you install iPrint printers without a Web browser and capture LPT ports to iPrint printers. These commands are useful when you have legacy applications that require output to an LPT port, or when you want to add printers through a login script.

For more information, see [Section 4.6.4, “Implementing iPrint by Using DOS Commands,” on page 50](#).

For more information, including client requirements, see [Section 4.1.3, “Windows: iPrint Client,” on page 40](#).

1.2.4 Apache Web Server

Apache 2.0 is the Web server for iPrint. The Web server serves up HTML pages, handles secure (SSL/TLS) and non-secure requests, and utilizes LDAP for authentication.

1.2.5 Novell iManager

Use Novell iManager to create, configure, and manage your iPrint system. For complete management, including uploading printer drivers and PPD files, you need to access iManager from a workstation with the iPrint Client installed. For more information, about iPrint tasks in iManager, see [Chapter 3, “Setting Up iPrint on Your Server,” on page 25](#) and [Chapter 7, “Managing Your Print System,” on page 71](#). For more information about Novell iManager, see the *Novell iManager 2.5 Administration Guide*.

1.3 Understanding Port Usage

iPrint can use any port specified on Apache; however, iPrint defaults to two primary ports:

- ♦ **Port 443:** All secure printing occurs over port 443 using SSL.
- ♦ **Port 631:** All non-secure printing occurs over port 631.

The iPrint Client also supports TLS. If your system is configured to use TLS including the client, all secure and non-secure printing occurs over port 631.

1.4 iPrint Solutions

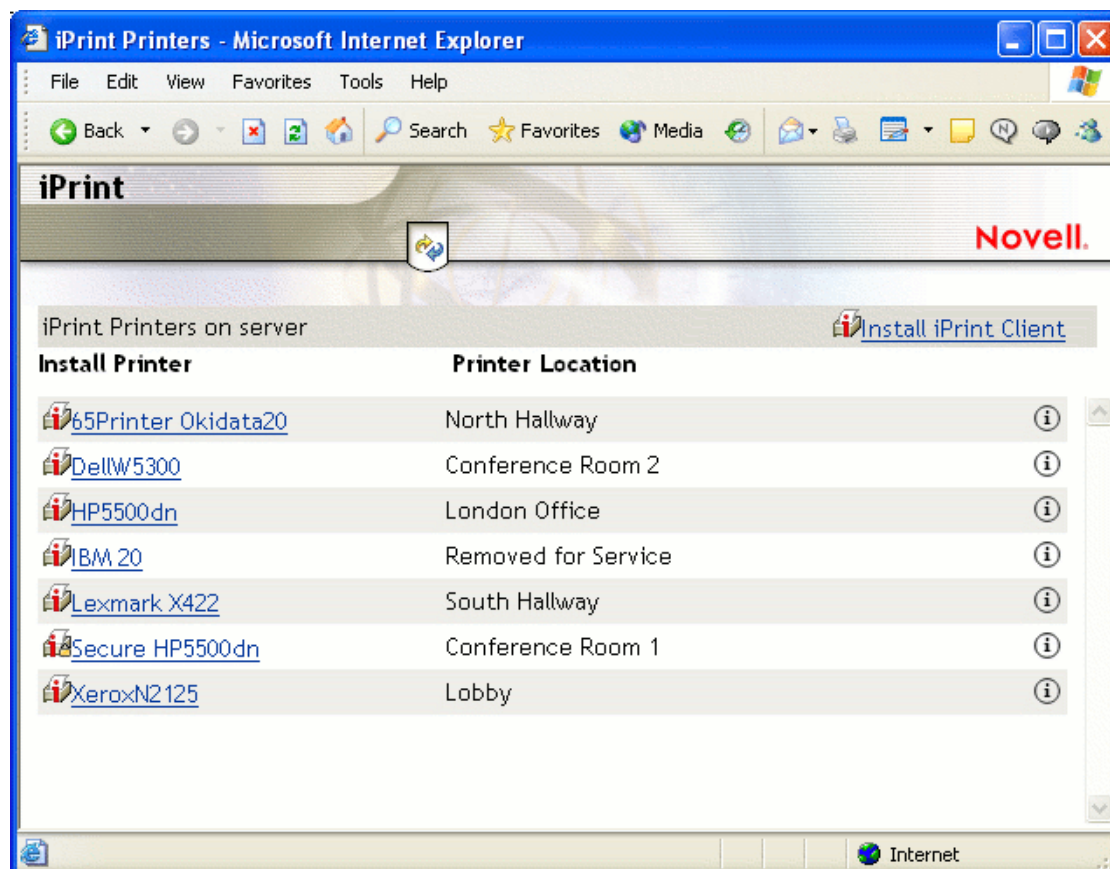
The following scenarios illustrate how iPrint can resolve business needs:

- ♦ [Section 1.4.1, “Printing Across the Internet,” on page 19](#)
- ♦ [Section 1.4.2, “Printing While Mobile,” on page 19](#)
- ♦ [Section 1.4.3, “Printing Instead of Faxing,” on page 20](#)

1.4.1 Printing Across the Internet

John is an employee working at home who wants to send a document to a printer at his office. John does not want to dial into the company's network, but he has access to the Internet.

1. John points his Web browser to the company's print URL, http://Printing.My_Company.Com/ipp.



2. From the Web page, John selects the printer to install. The iPrint client is automatically downloaded and installed on his computer. The printer driver is also downloaded and the printer is installed on his computer.
3. From any application on his home computer, John can now print to the company's printer.

1.4.2 Printing While Mobile

Gail is visiting her company's branch office in Paris. She needs to print a handout for an upcoming meeting. Gail knows she can print to the branch office printer, even though she does not know the printer's name, eDirectory context, make, model, or required printer driver.

1. Gail connects her laptop to the company network, clicks the iPrint link on the company's intranet Web page, and then clicks a link for the branch office she is visiting. A map of the branch office and iPrint printers displays.
2. Gail locates the office she is using and clicks the icon for the printer just outside her office.

3. The printer driver is downloaded and a printer is created on her laptop. She didn't need to install the iPrint client software again because she had used iPrint previously at a different branch office.
4. From her application, Gail prints her handouts for the upcoming meeting.

1.4.3 Printing Instead of Faxing

Dan has just returned to his hotel room in Chicago after visiting with some clients. While checking his e-mail, he is reminded that he needs to submit a report to his boss in the corporate office in New York. The report is due by 8:00 a.m. Although he could send the report by fax, he wants a high-quality printout in color and he does not want to incur long-distance telephone charges.

1. Dan uses his laptop to dial in to a local Internet Service Provider.
2. Using his Web browser, Dan accesses the company's intranet Web page. Using the iPrint map pages, he locates an iPrint color printer adjacent to his boss' office.
3. After downloading and installing the printer driver, Dan uses his application to send the report to the printer.
4. Dan returns to the iPrint Web page and clicks the printer again to display printer management options. He monitors the printer job list to see that his print job is completed.
5. Dan sends an e-mail to his boss telling him that the report is available at the printer.

1.5 What's Next

- ♦ **Chapter 3, "Setting Up iPrint on Your Server," on page 25:** Helps you install the server software and configure your print system.
- ♦ **Chapter 4, "Setting Up iPrint on Client Workstations," on page 35:** Helps you deploy the iPrint client to workstations and explains the features of the client.
- ♦ **Chapter 5, "Customizing iPrint," on page 63:** With your print system set up and the client distributed to the workstation, you can focus on how your users can access and install iPrint Printers.

- ♦ [Section 2.1, “Enhancements for NetWare 6.5 Support Pack 7,” on page 21](#)
- ♦ [Section 2.2, “Enhancements for NetWare 6.5 Support Pack 6,” on page 21](#)
- ♦ [Section 2.3, “Enhancements for Open Enterprise Server Support Pack 2,” on page 21](#)
- ♦ [Section 2.4, “Enhancements for Open Enterprise Server Support Pack 2,” on page 22](#)
- ♦ [Section 2.5, “Enhancements for OES SP1 \(NetWare 6.5 Support Pack 4\),” on page 22](#)
- ♦ [Section 2.6, “Enhancements for NetWare 6.5 Support Pack 3,” on page 22](#)
- ♦ [Section 2.7, “Enhancements for NetWare 6.5 Support Pack 2,” on page 23](#)
- ♦ [Section 2.8, “Enhancements for NetWare 6.5,” on page 23](#)

2.1 Enhancements for NetWare 6.5 Support Pack 7

- ♦ [Support for Windows Vista](#) is available in the iPrint Client v5.x for Windows.

2.2 Enhancements for NetWare 6.5 Support Pack 6

- ♦ Using iPrint Client shipping with this Support Pack, you can redirect users from using one printer to different printer using [Printer Agent Redirection](#). This is useful when you need to decommission a Print Manager or consolidate printing on a different Print Manager.
- ♦ Using [iPrint Client Management](#) you can designate printers and iPrint Client attributes to be automatically installed and configured on a workstation when a user logs in.
- ♦ In preparation for future iPrint clients on different platforms, a new directory structure has been implemented under `sys:\apache2\htdocs\ippdocs`. A `client` directory has been added and all the clients are now located in the directory.

2.3 Enhancements for Open Enterprise Server Support Pack 2

- ♦ Beginning with the iPrint Client v4.15, `iprintcmd` on Linux was renamed to `iprntcmd`. The options for `iprntcmd` on both Linux and Windows are now similar so that they can be used more effectively in login scripts. For more information see, [Section 4.5, “Using iprntcmd on Linux and Macintosh,” on page 45](#) and [“Using iprntcmd.exe to Install iPrint Printers” on page 51](#).
- ♦ Beginning in Support Pack 2, the low security iPrint Client for Linux is the default client on the iPrint Printer List Web page instead of the high security client.

2.4 Enhancements for Open Enterprise Server Support Pack 2

- ♦ Beginning with the iPrint Client v4.15, `iprintcmd` on Linux was renamed to `iprntcmd`. The options for `iprntcmd` on both Linux and Windows are now similar so that they can be used more effectively in login scripts. For more information see, [Section 4.5, “Using iprntcmd on Linux and Macintosh,” on page 45](#) and [“Using iprntcmd.exe to Install iPrint Printers” on page 51](#).
- ♦ Beginning in Support Pack 2, the low security iPrint Client for Linux is the default client on the iPrint Printer List Web page instead of the high security client.
- ♦ Beginning with this release, the gateway stores print jobs in the same place as the Print Manager stores information instead of on `sys :`.

2.5 Enhancements for OES SP1 (NetWare 6.5 Support Pack 4)

The following changes and enhancements were added to iPrint for OES SP1 (NetWare® 6.5 Support Pack 4):

- ♦ iPrint Direct Printing lets you install an iPrint printer and submit the print job directly to the printer, bypassing the Print Manager.
- ♦ The iPrint Printer List Web page can be sorted by the printer name or location.
- ♦ When installing a printer from a map or the iPrint Printer List Web page, you can set it as the default printer.
- ♦ You can automatically create new audit logs based on time, number of entries, or log size.
- ♦ Secure printing is supported on Linux and Macintosh clients.
- ♦ Firefox Web browser is supported on Macintosh iPrint clients.

2.6 Enhancements for NetWare 6.5 Support Pack 3

The following changes and enhancements were added to iPrint for NetWare 6.5 Support Pack 3 and are included in Open Enterprise Server NetWare:

- ♦ Support for PPD files. See [Section 3.5, “Adding Printer Drivers,” on page 28](#).
- ♦ Support for Linux and Macintosh clients. See [Section 4.1, “Installing the iPrint Client,” on page 35](#).
- ♦ Migrating your queue management system (QMS) to iPrint. See [“Migrating from Print Queues” on page 32](#)
- ♦ End of Job notification for Windows Clients. See [“Managing Print Job Notifications” on page 48](#).
- ♦ TLS support to use port 631 for all secure and non-secure print functions. See [Section 8.3, “Secure Printing Using SSL/TLS,” on page 112](#).
- ♦ Supports for different Web browsers for client and management operations. See [Appendix A, “Supported Browsers for iPrint,” on page 115](#).

- ♦ Windows clients can access iPrint information using a notification area icon. See [Section 4.6.2, “Using the iPrint Client Tray Icon,” on page 47.](#)

2.7 Enhancements for NetWare 6.5 Support Pack 2

The following changes and enhancements were added to iPrint for NetWare 6.5 Support Pack 2:

- ♦ [Section 7.2.6, “Using Printer Driver Profiles,” on page 88](#)
- ♦ [Section 7.2.7, “Using Printer Banner Pages,” on page 89](#)
- ♦ Printers using Port 9100 are now supported.

2.8 Enhancements for NetWare 6.5

The following changes and enhancements were added to iPrint for NetWare 6.5:

iPrint Map Designer

- ♦ Multi-select printer icons and simultaneous property modifications.
- ♦ Set printer driver default properties such as paper size, orientation, color, collate, etc.
- ♦ Set an attribute on a printer so that after it is installed, the printer is removed from the workstation upon the next reboot.
- ♦ Obtain a list of printers from the Print Manager without authenticating.

Novell iManager

- ♦ View and manage retained print jobs and remove or set holds on print jobs. See [“Managing Print Jobs” on page 87.](#)
- ♦ Added links to Novell Remote Manager for Broker Health and Print Manager Health
- ♦ Added a tab for XP Driver support.
- ♦ Move printer agents to a different Print Manager. See [“Moving Printer Agents to Another Print Manager on NetWare” on page 86.](#)
- ♦ Load and unload the Print Manager and Broker from iManager.
- ♦ Complete printer control (startup/shutdown, pause/resume input and output, etc.). See [“Managing Printer Agents” on page 86.](#)
- ♦ Added a page to edit the Gateway load commands for a printer agent. See [“Modifying the Printer’s Gateway Load Commands” on page 91](#)

iPrint Client

- ♦ Manage printers from the command line. See [Section 4.6.4, “Implementing iPrint by Using DOS Commands,” on page 50.](#)
- ♦ Capture LPT ports and redirect print jobs to an iPrint printer using the `icapture.exe` command or [LPT Port Redirector Windows utility.](#)
- ♦ Install printers on a Windows NT/2000/XP workstation without having Power User or Administrator rights. See [“Setting Up iPrint on Client Workstations” on page 35.](#)

- ♦ Set a proxy server for iPrint. See “Using a Proxy Server” on page 48.
- ♦ Set up iPrint to run on terminal servers. See “Setting Up iPrint on Terminal Servers” on page 49.
- ♦ When an updated iPrint client is released, you can control how workstations are automatically updated. See Section 4.3, “Updating the iPrint Client,” on page 45.
- ♦ Create a printer pool. See Section 7.1.3, “Setting Up Printer Pooling,” on page 75.
- ♦ View auditing information on a per user or printer basis. See Section 7.1.4, “Using Print Auditing,” on page 76.
- ♦ Integrated with the NetIdentity client.
- ♦ Redesigned iPrint Printer List Web page. See http://server_IP_address_or_dns_name/ipp.

General iPrint Enhancements

- ♦ iPrint runs on the Apache Web Server.
- ♦ iPrint information and links available from the NetWare 6.5 Welcome page (http://server_IP_address).
- ♦ You can bind to network interface cards other than the primary card for the Broker and Print Manager and their services.
- ♦ You can create an Installed Printer Name Profile to show a shorter installed printer name. See “Creating a Short Printer Name Profile” on page 54.
- ♦ Display SNMP traps from the Novell Gateway using Novell Remote Manager.
- ♦ A command line switch, /NOADVERT, has been added to the Broker to turn off SRS advertising.
- ♦ The Print Manager database does an automatic backup five minutes after the creation of a Printer Agent.
- ♦ A command line switch, /NOSRS, has been added to the Print Manager to turn off SRS advertising.
- ♦ You can shut down and restart a printer agent using the Print Manager Health Monitor in Novell Remote Manager.
- ♦ You create reports about your print system using the Print Manager Health Monitor in Novell Remote Manager. See “Using the Print Manager Health Monitor” on page 72.
- ♦ The Print Manager uses the server’s IP address by default, if a DNS name is not assigned to the Print Manager using the /dnsname=*DNS_name* command line switch.
- ♦ You must authenticate before accessing the Print Manager Health Monitor.
- ♦ The Novell Gateway is the default gateway when creating a new Printer.
- ♦ You can load and unload the Broker or Print Manager from Novell iManager.

Setting Up iPrint on Your Server

3

Complete the following tasks to create an iPrint print system:

1. [Meet iPrint system setup requirements.](#)
2. [Install iPrint](#) (if not already installed).
3. [Set up DNS for the print manager.](#)
4. [Configure iPrint.](#)
5. [Upgrade existing NetWare print systems.](#)

3.1 Installing iPrint Software

If iPrint was selected during the server installation, the iPrint software components were automatically installed on the server. If iPrint was not selected during the installation, you need to install the iPrint software. For more information, see “[Installing Additional Products](#)” in the *OES 2: NetWare Installation Guide*.

3.2 iPrint Setup Requirements

Before you set up iPrint printers, you should complete the following tasks:

- ❑ **Start Novell iManager:** iManager provides browser-based management of Novell® eDirectory™. You can access iManager from a Linux workstation running a Mozilla-based browser or from a Windows workstation using a Mozilla-based browser or Internet Explorer 5.5 with Service Pack 2 or later. For complete management, including uploading printer drivers and PPD files, you need to access iManager from a workstation with the iPrint Client installed.

For a review of supported browsers and iPrint operations, see [Appendix A, “Supported Browsers for iPrint,”](#) on page 115.

NOTE: You cannot administer iPrint from iManager running on a Windows, Solaris^{*}, or HP-UX^{*} server platform.

For more information, see the *Novell iManager 2.5 Administration Guide*.

- ❑ **Set up DNS:** When you create an iPrint printer, a URL is associated with the printer. If DNS is not set up for printing, the URL contains the server’s IP address, which causes printing to stop working if the IP address changes. You should use DNS whenever possible for printing.

For more information about DNS, see, [Section 3.3, “Setting Up DNS for the Print Manager,”](#) on page 26.

- ❑ **Create a Broker:** A Broker provides three network support services: [Service Registry Service](#), [Event Notification Service](#), and [Resource Management Service](#). The resource management service stores printer drivers that are automatically downloaded and installed on client workstations.

For more information, see [Section 3.4, “Creating a Broker,”](#) on page 27.

- ❑ **Add Print Drivers:** With the Broker running, you can add printer drivers to the Resource Management System. The printer drivers are downloaded and installed when a workstation

installs an iPrint printer. Adding driver files now saves you an extra step of associating drivers when creating printers.

For more information, see [Section 3.5, “Adding Printer Drivers,” on page 28](#).

- ❑ **Install a Print Manager:** A Print Manager communicates print job information between users and printers while also providing print job management, security, and spooling.

For more information, see [Section 3.6, “Creating a Print Manager,” on page 29](#).

- ❑ **Create Printer Objects:** Printer objects represent the printer in eDirectory and are associated to a printer agent that combines the functions previously performed by a printer, print queue, print server, and spooler.

For more information, see [Section 3.7, “Creating a Printer,” on page 30](#).

- ❑ **Distribute the iPrint Client:** After iPrint is configured on the server, you need to distribute the iPrint Client to your users. See [“Setting Up iPrint on Client Workstations” on page 35](#) for more information.

3.3 Setting Up DNS for the Print Manager

Prior to configuring printers for iPrint, you should configure a DNS name for each Print Manager. When iPrint is enabled for a printer, a URL is generated based upon the Print Manager’s IP address or assigned DNS Name. Beginning with NetWare® 6.5, if a DNS name is not assigned to a Print Manager, by default the Print Manager uses the server’s IP address when generating the printer URL.

For example, if a Print Manager resides on a server using an IP address of 172.16.123.25 and the printer name is Printer1, then iPrint generates a URL of `ipp://172.16.123.25/ipp/Printer1`. If you assign a DNS name to the Print Manager of `Printing.My_Company.Com` and the printer name is Printer1, then the URL is `ipp://Printing.My_Company.Com/ipp/Printer1`.

By using a DNS name, you can change the server’s IP addresses without affecting a printer’s URL for printers already installed.

To correctly enable DNS for each Print Manager, you must complete the following tasks:

1. [Add the DNS name to the DNS name server.](#)
2. [Enable DNS on the Print Manager.](#)

WARNING: If you do not implement DNS before using iPrint or change a Print Manager’s DNS name, be aware of the following issues:

- ♦ If DNS is not set up for the Print Manager and the manager is moved to another server, users must reinstall their iPrint printers.
 - ♦ If a DNS name is added to the Print Manager after iPrint is set up, iPrint printers enabled before DNS cannot use the DNS name until the manager is restarted.
 - ♦ If users install printers before the DNS name is added, their printing works only until the IP address of the Print Manager changes. Then users must reinstall their printers.
-

3.3.1 Adding the DNS Name to the DNS Name Server

See your DNS name server documentation for more information. If you are using NetWare for your DNS name server, see the [Novell DNS/DHCP Services for NetWare Administration Guide for OES](#).

3.3.2 Enabling DNS on the Print Manager

To configure a DNS name for the Print Manager, use the Print Manager command line startup switch, `/dnsname=DNS_name`. If you use a DNS name that is not contained in the server's `sys:etc\hosts`, you receive an error when you load the Print Manager.

Syntax

```
ndpsm Print_Manager_Object_Name /dnsname=Print_Manager_DNS_Name
```

Example

```
ndpsm PrintManager1 /dnsname=Printing.My_Company.Com
```

where `PrintManager1` is the Print Manager name and `Printing.My_Company.Com` is the desired DNS name.

You need to use the DNS startup switch only once. After the startup switch is used, the Print Services Manager remembers the DNS name until a different DNS name is specified. To change the DNS Name, use the switch with the new DNS name. If you do not specify an IP address or DNS name when you load the Print Manager, the manager uses the server's IP address. If either the IP address or DNS name specified on the command line or in the `sys:etc\hosts` file is invalid, you receive one of the following errors:

```
IP Address xxx.xxx.xxx.xxx, specified at load time, is not bound.  
Program execution cannot continue normally. Press Escape to  
continue.
```

or

```
The NDPS Manager cannot resolve the DNS name xxx.
```

To resolve this error, use a valid DNS name or IP address for the Print Manager at the system console prompt or edit the `sys:\etc\hosts` to contain a valid address. See the *Novell DNS/DHCP Services for NetWare Administration Guide for OES* for more information.

NOTE: When loaded, the Print Manager appears in the IP Management list of Novell Remote Manager. However, if IP Management cannot validate the DNS name being used, the Print Manager does not appear in the list. If you want the Print Manager to appear in the IP Management list, you must add the DNS name you assigned to the Print Manager to `sys:etc\hosts`.

For more information about Novell Remote Manager, see the *OES 2: Novell Remote Manager for NetWare Administration Guide*.

3.4 Creating a Broker

Ideally, you should place a Broker on each server running a Print Manager. This requires you to create a separate Broker object in eDirectory for each Broker that is to be loaded. This configuration allows the Print Manager to connect directly with each Broker without sending data across the network.

If you are unable to place a Broker on each server running a Print Manager, you want your Brokers sufficiently well distributed so that your brokered services (Service Registry Service, Event Notification Service, and Resource Management Service) are readily available on the system when needed. Each eDirectory tree should have at least one Broker.

To minimize traffic across a WAN link, you might want one Broker running at each physical WAN location.

- 1 In Novell iManager, click *iPrint > Create Broker*.
- 2 Fill in the fields.
Click *Help* for explanations about the fields.
- 3 Click *OK*.
- 4 To autoload the Broker when you bring up the server, add the following line to your server's `autoexec.ncf` file:
`load broker Broker_name_and_context`
For example:
`load broker .broker1.corp.my_company`

To modify the Broker properties, click *Manage Broker*, then select the Broker you want to modify.

3.5 Adding Printer Drivers

A printer driver or PostScript^{*} Printer Description (PPD) file is a software entity that directly supports a physical printer, enabling it to carry out its functions.

Hardware vendors develop printer drivers and PPD files, which are specific to each printer. Most printers require different printer drivers for each operating system they interact with. You can view a complete list of printer drivers currently stored in a Broker, and you can add additional printer drivers from diskettes, CDs, and the workstation operating system.

The Broker must be running in order to add printer drivers, and the iPrint Client must be installed on a Linux or Windows workstation. To install the Client, go to `http://server_IP_address/ipp` and click the Install iPrint Client link. For more information on installing the client, see [Chapter 4, "Setting Up iPrint on Client Workstations," on page 35](#). For a review of supported browsers and driver upload operations, see [Section A.2, "Supported Browsers with the iPrint Plug-In and Novell iManager," on page 115](#).

To add printer drivers to the Broker:

- 1 In Novell iManager, click *Manage Broker*, then browse to and select the Broker you want.
- 2 Click *Drivers*, then select the client platform you want to work with.
- 3 Do one of the following:
 - ♦ Click *Add from File* to add drivers from a printer driver `.inf` file.
 - ♦ Click *Add from System* to add drivers from the workstation you are running iManager from.
The drivers installed on your workstation are made available for upload to the Broker. You can upload only drivers for the same platform as the workstation.
- 4 Select the driver you want, then click *OK*.

- 5 Click *OK* to save your changes.

You can also install driver files from a Linux console prompt using `iprntcmd` command. See [Section 4.5, “Using iprntcmd on Linux and Macintosh,” on page 45](#) for more information.

3.6 Creating a Print Manager

A Print Manager provides a platform for Printer Agents that reside on the server. The Print Manager object stores information used by the NetWare Loadable Module™ (NLM™), `ndpsm.nlm`. You can manually load this NLM at the server console. A Print Manager must be created as an object in the eDirectory tree before you can create server-based Printer Agents.

A single Print Manager can control any number of Printer Agents.

Although you can perform some configuration and management tasks directly through the Print Manager console interface, Novell iManager is the main tool for performing these tasks.

Use the following guidelines to determine where and when to place a Print Manager.

- ♦ Only one Print Manager can be loaded per server. A server that has a printer connected directly to it requires a Print Manager to be loaded on that server.
- ♦ Whenever possible, place the Print Manager and the printers it controls on the same LAN segment for optimal performance.
- ♦ You might want to consider distributing your printer agents across multiple Print Managers so that if one Print Manager goes down, not all of the printer agents are impacted.

Ensure that you have Supervisor rights for the container where the Print Manager object is to reside. For each Print Manager that is loaded, a separate eDirectory Print Manager object needs to be created.

- 1 In Novell iManager, click *iPrint > Create Print Manager*.

- 2 Fill in the fields.

Click *Help* for explanations about the fields.

IMPORTANT: As a result, workstation printers that were already installed on the client that were assigned to this Print Manager using an IP address instead of DNS no longer work. To avoid this, you can assign a DNS name to the Manager before creating Printer Agents associated to it using the `/dnsname=` startup switch. For more information, see [“Moving the Print Manager” on page 81](#).

Any printer you designate as a local printer when you are configuring Printer Agents assigned to this Print Manager must be directly attached to this server.

- 3 Click *OK*.

- 4 To load the Print Manager, click *Manage Print Manager*, browse to and select the Print Manager you created, then click *Load*.

To autoload the Print Manager when you bring up the server, add the following line to your server's `autoexec.ncf` file:

```
load ndpsm Print_Manager_name_and_context
```

For example:

```
load ndpsm .sales_manager.corp.acme
```

To modify the Print Manager properties, click *Manage Print Manager*, then select the Manager you want to modify.

For a discussion of Access Control roles, see “[Setting Access Control for the Print Manager](#)” on [page 110](#).

3.7 Creating a Printer

Before you can create a printer, you must first create a Print Manager on your server. See [Section 3.6, “Creating a Print Manager,” on page 29](#) for more information.

After creating a Print Manager, you can create printers. Printers are represented as objects in eDirectory. As eDirectory Printer objects, access to the printers can be controlled depending on the level of security chosen and if SSL is required. The Print Manager also creates a Printer Agent in its database.

When you use Novell iManager to create a Printer object, you need to select a gateway. The gateway handles communication between the Print Manager and the printer. Most printers work with the Novell gateway (ndpsgw.nlm). Some printer vendors have created their own gateways to provide proprietary, printer-specific information.

3.7.1 Prerequisites

- ☐ Have Supervisor rights for the destination container where its associated Printer object is to reside
- ☐ Be designated as a Manager of the Print Manager that controls this Printer Agent
- ☐ Have a Broker running
- ☐ Have a Print Manager running

3.7.2 Procedure

When you create a new Printer, iPrint is enabled by default.

- 1** In Novell iManager, click *iPrint > Create Printer*.
- 2** Fill in the fields.
Click *Help* for explanations about the fields.
- 3** Click *Next*.
- 4** Select the printer driver for each client operating system.

These drivers are automatically downloaded to users’ workstations when they install this printer in the future.

If you choose a Windows 3.x driver but not a Windows 95/98/ME or Windows NT*/2000 driver, a 16-bit driver is selected. Normally, this does not create problems.

Because the list of printer drivers shipped with this product is limited, you can add drivers to the Resource Management Service database. (See “[Adding or Updating Printer Drivers](#)” on [page 101](#) for more information.)

If the driver you need is not in the drivers list, rather than adding it to the RMS, you can select *[None]* at the top of each list. Users are then be asked to provide a disk with the appropriate driver the first time they install this printer on their workstations.

5 Click *Continue*.

3.8 Enabling iPrint on Existing Printers

When you create new printers with Novell iManager, iPrint is enabled by default. If you want to enable iPrint on existing printers, complete the following steps.

If you have a large number of printers that you want to enable iPrint on, use this iManager task to quickly enable iPrint.

1 In Novell iManager, click *iPrint > Enable iPrint Support*.

2 Browse to and select the Print Manager you want to enable IPP printing on.

3 To enable all printers associated with this Print Manager, select the first check box next to *Enabled*.

To select printers individually, select the check box next to each printer in the *Enabled* column.

4 (Optional) To enable all printers associated with this Print Manager to use Secure printing, select the first check box next to *Secure*.

To select secure printers for specific printers, select the check box next to each printer in the *Secure* column.

For more information on implementing secure printing, see [Section 8.3, “Secure Printing Using SSL/TLS,” on page 112](#).

5 To update the printer settings, click *Apply* or *OK*.

3.9 Upgrading to Novell iPrint

You can upgrade from a queue-based print system, Novell Distributed Print Services™, or an existing iPrint system to iPrint. The first step is to upgrade your print server's operating system or install a new server running NetWare OES. For more information on upgrading and installing the operating system, see the [OES 2: NetWare Installation Guide](#).

Once the server where you are going to run iPrint is running NetWare OES, you can begin the process of upgrading your existing print system to iPrint. See following sections:

- ♦ [“Upgrading Existing iPrint Systems” on page 32](#)
- ♦ [“Upgrading from NDPS to iPrint” on page 32](#)
- ♦ [“Migrating from Print Queues” on page 32](#)

IMPORTANT: When upgrading a NetWare 5.1 or 6.0 server with the Novonyx Web Server installed to NetWare 6.5 or OES NetWare, the document root is not updated. The document root from the Novonyx Web Server is copied to Apache's `httpd.conf` file instead of the document root for the Apache Web server. If iPrint does not work, edit the Apache configuration file (`sys:\apache2\conf\httpd.conf`) and change the `DocumentRoot` to the Apache document root (`sys:\apache2\htdocs`). You might need to change other entries in the `.conf` file.

3.9.1 Upgrading Existing iPrint Systems

To upgrade a NetWare 5.1 or NetWare 6 server running iPrint, choose your upgrade method for the operating system and run the upgrade. For more information on upgrade methods, see the *OES 2: NetWare Installation Guide*.

IMPORTANT: When you upgrade or apply a Support Pack, the existing `iprint.ini` file is saved as `iprint.bak` and the new `iprint.ini` is copied over. If you made changes to the `iprint.ini` file, you must delete the new `iprint.ini` file from the Support Pack and rename `iprint.bak` to `iprint.ini`. If you want new functionality included with the latest `iprint.ini`, you should duplicate the settings in `iprint.bak` in the new `iprint.ini`.

When upgrading iPrint from NetWare 5.1 or NetWare 6, the custom maps are copied from `sys:/login/ippdocs/` to `sys:/apache2/htdocs/ippdocs` on the NetWare 6.5 server. The map files are also flagged read only. To modify the maps, you need to manually remove the read only attribute.

IMPORTANT: When upgrading a NetWare 5.1 or 6.0 server with the Novonyx Web Server installed to NetWare 6.5 or OES NetWare, the document root is not updated. The document root from the Novonyx Web Server is copied to Apache's `httpd.conf` file instead of the document root for the Apache Web server. If iPrint does not work, edit the Apache configuration file (`sys:\apache2\conf\httpd.conf`) and change the `DocumentRoot` to the Apache document root (`sys:\apache2\htdocs`). You might need to change other entries in the `.conf` file.

3.9.2 Upgrading from NDPS to iPrint

To upgrade from Novell Distributed Print Services (NDPS®) 2.0 or Enterprise NDPS, choose your upgrade method for the operating system and run the upgrade. For more information on upgrading, see the *OES 2: NetWare Installation Guide*.

After the operating system is upgraded to OES for NetWare, complete the following tasks to migrate from print queues:

1. **Set up DNS.**
2. **Enable iPrint on your Printers.**
3. **Distribute the iPrint Client.**
4. **Edit the UpgradeNDPSPrinters entry in iprint.ini.**

The next time users start their computer, the iPrint printers are installed and the NDPS printers are removed.

3.9.3 Migrating from Print Queues

You can make the transition gradually from queues to Novell iPrint because the Print Manager (`ndpsm.nlm`) and the Print Server (`pserver.nlm`) can run simultaneously on a server.

After installing a server running OES for NetWare, complete the following tasks to migrate from print queues:

1. **Set up DNS.**
2. **Create a Broker.**

3. **Create a Print Manager.**
4. **Create a Printer Agent** for each printer.
5. **Associate Printer Agents to Queues.**
6. **Distribute the iPrint Client.**
7. **Edit the UpgradeQMSPrinters entry in `iprint.ini`.**

The next time users start their computers, the iPrint client identifies the installed or captured queue and installs the corresponding iPrint printer, then removes the installed queue printer. If a queue cannot be resolved immediately, the iPrint client periodically reattempts to identify the queue object and the corresponding iPrint Printer.

If you are capturing queues using a login script, you can remove the capture statements after all of your users' printers have been migrated.

8. After all queues have been migrated to iPrint, you can delete the Print Server, Printer, and Print Queue objects, and unload `pserver.nlm` from the server.

3.10 What's Next

With iPrint now installed on your server, you need to distribute the iPrint Client to your workstations and determine how users will access the system.

- ♦ **Chapter 4, "Setting Up iPrint on Client Workstations," on page 35:** Helps you deploy the iPrint Client to workstations and explains the features of the Client.
- ♦ **Chapter 5, "Customizing iPrint," on page 63:** With your print system set up and the client distributed to the workstation, you can focus on how your users can access and install iPrint Printers.

Setting Up iPrint on Client Workstations

4

In order for users to use iPrint, they need to install the Novell® iPrint Client software and a printer. When a user selects a printer to be installed by iPrint, iPrint checks to see if the Novell iPrint Client software is installed and then installs it if necessary. If the iPrint Client software is already installed, the printer driver is downloaded and the printer is installed on the user's workstation.

- ♦ [Section 4.1, “Installing the iPrint Client,” on page 35](#)
- ♦ [Section 4.2, “Installing Printers,” on page 43](#)
- ♦ [Section 4.3, “Updating the iPrint Client,” on page 45](#)
- ♦ [Section 4.4, “Managing Print Jobs from the Client,” on page 45](#)
- ♦ [Section 4.5, “Using iprintcmd on Linux and Macintosh,” on page 45](#)
- ♦ [Section 4.6, “Windows Client: Using Additional Features,” on page 47](#)
- ♦ [Section 4.7, “Using iPrint Client Management,” on page 56](#)
- ♦ [Section 4.8, “Uninstalling the Novell iPrint Client,” on page 61](#)
- ♦ [Section 4.9, “Printing from LPR Print Systems to iPrint,” on page 62](#)
- ♦ [Section 4.10, “What’s Next,” on page 62](#)

4.1 Installing the iPrint Client

In order for iPrint to work properly, a workstation must have the iPrint Client installed. You can distribute the client to your workstations in a variety of ways, including the iPrint Printer List Web page, distribution software like ZENworks®, login scripts, etc. Three clients are available.

The clients are located in the following directories:

- ♦ [“Linux: iPrint Client” on page 35](#)
- ♦ [“Macintosh: iPrint Client” on page 39](#)
- ♦ [“Windows: iPrint Client” on page 40](#)

OES Linux	<code>/var/opt/novell/iprint/htdocs/clients/<i>platform</i></code>
OES NetWare	<code>sys:\apache2\htdocs\ippdocs\clients\platform</code>

4.1.1 Linux: iPrint Client

- ♦ [“Linux: iPrint Client Requirements” on page 36](#)
- ♦ [“Linux: Controlling Access to the Workstation Print System” on page 36](#)
- ♦ [“Linux: Distributing the iPrint Client” on page 37](#)

Linux: iPrint Client Requirements

In order for iPrint to work properly, workstations should have the following:

- ❑ Novell Linux Desktop, SUSE® 9.2 Professional, SUSE Linux Enterprise Desktop (SLED), or later versions.

IMPORTANT: To install the client, you must have the `root` password or rights as `root`.

- ❑ A Mozilla-based browser such as Epiphany, Firefox*, or Galeon

NOTE: If the iPrint server is busy when your installed printer attempts to communicate, CUPS moves the printer into an error state and holds all print jobs. To release print jobs, use the printer management utility to restart the printer.

Linux: Controlling Access to the Workstation Print System

The Linux iPrint Client is packaged in two different, specialized installations that control access to the workstation's print system. The following table explains the differences between the two clients.

Table 4-1 *iPrint Client for Linux RPM list*

Client File Name	Workstation Access	Description
<code>novell-iprint-xclient-sh-version.i586.rpm</code>	Security high. Limited access to the print system.	This client requires workstation users to be defined with <code>lppasswd</code> to install, delete, or administer printers on the workstation. When performing one of these print operations, the user is challenged for a password.
<code>novell-iprint-xclient-sl-version.i586.rpm</code>	Security low. Unlimited access to the print system.	This client allows all users of the workstation to install, delete, or administer printers and print jobs on the workstation, including printers and print jobs of other users. By default, the iPrint Printer List Web page installs this RPM.

The above clients do not affect installation of the iPrint Client, just access to the workstation print system. To install the iPrint Client you still need `root` permissions. Also, these clients do not limit printing capabilities.

IMPORTANT: To install the iPrint Client you need `root` permissions. To upload drivers from the system, you need to be defined with `lppasswd` or know the `root` password; otherwise, when you attempt to add drivers from the system, the driver list is blank. To define a user to be part of `lppasswd`, you can use the following command:

```
lppasswd -a linux_user_account -g sys
```

Printing to Secure Printers

When installing a secure iPrint printer, you might be prompted twice for your username and password. First, you are prompted to provide your network credentials to verify that you have access to the printer (it would be no use installing a printer that would not allow you to print). The second prompt is for CUPS, to ensure you have rights to install printers on the client machine. You need to provide the `root` password or be defined in the CUPS `lppasswd`.

Printing to secure printers is supported only when you are logged in to the desktop. If for any reason the CUPS iPrint back end cannot deliver the job to a secure printer, the job is requeued on the client with a hold. You can then see the held job and release it after you log in to the desktop.

NOTE: This client does not support printing from text logins such as SSH, unless the GUI is running on the host workstation.

Linux: Distributing the iPrint Client

Use one of the following methods to install the iPrint Client on users' workstations:

- ♦ “Linux: Install the Client from iPrint Printer List Web Page” on page 37
- ♦ “Deliver the Client Using Distribution Software” on page 38

Linux: Install the Client from iPrint Printer List Web Page

You can download and install the iPrint Client from the iPrint Printer List Web page that resides on the server where the Print Manager is loaded. By default, the link is set to install the `novell-iprint-xclient-sl-version.i586.rpm` high security client. You can change this by creating a symbolic link in `/var/opt/novell/iprint/htdocs` using the following command: `ln -sf client novell-iprint-xclient.i586.rpm` where *client* is the client filename noted above.

To reach the Web page:

- 1 Enter the iPrint server URL in your Web browser Address field:

`http://server_IP_address_or_dns_name/ipp.`

For example, if the DNS name for printing is `printing.my_company.com`, you would access iPrint from the following URL:

http://printing.my_company.com/ipp



- 2 Click the printer you want to install.

If the iPrint Client is not yet installed on your workstation, you are prompted to install it.

- 3 When prompted, save the iPrint Client RPM to your desktop or home directory.
- 4 Install the iPrint Client RPM by double-clicking the RPM. If a file association for the RPM does not exist, use an RPM installer program.
- 5 Exit and restart your Web browser before installing printers.
- 6 (Conditional) If you are using the KDE desktop and printing to secure printers, re-login as a user (not root) to start the iPrint listener or run the following command to manually load the listener: `/opt/novell/iprint/bin/iprint-listener`

For GNOME* users, you must load the iPrint listener manually or configure GNOME to load it. See **“Additional Configuration for Secure Printers with GNOME”** on page 38.

If you are using a non-standard installation of a browser, and the plug-in does not appear, create a symbolic link in the browser's plug-in directory using the following command: `ln -s opt/novell/iprint/plugin/npnipp.so`

Deliver the Client Using Distribution Software

Using client distribution software (such as ZENworks), you can also deliver the iPrint Client and possibly printers to your client workstations. For more information, see the documentation for your distribution software.

Additional Configuration for Secure Printers with GNOME

Users of the GNOME desktop that are printing to secure printers (printers that require you to authenticate) must add `iprint-listener` to the list of applications launched at login; otherwise, print jobs are not submitted to the secure printer.

NOTE: This does not apply to the KDE Desktop or GNOME running on the Novell Linux Desktop. This also does not apply when printing to non-secure printers.

- 1 On the GNOME desktop, click *System > Personal Settings*.
- 2 Under the System section, click *Sessions*.
- 3 Click *Startup Programs > Add*.
- 4 For the Startup Command, enter `/opt/novell/iprint/bin/iprint-listener`.
- 5 Click *OK > Close*.
- 6 Load `iprint-listener` by either running the command in **Step 4** or by logging out and logging in again.

The next time you log in, `iprint-listener` is automatically loaded.

If `iprint-listener` is not running, jobs submitted to secure iPrint printers are held in the local client queue. To release the jobs, start `iprint-listener` and then resume the job on the printer.

4.1.2 Macintosh: iPrint Client

- ♦ “Macintosh: iPrint Client Requirements” on page 39
- ♦ “Macintosh: Distributing the iPrint Client” on page 39

Macintosh: iPrint Client Requirements

- ☐ Mac OS* 10.2 or later
- ☐ Compatible Web browser. See “iPrint Client Supported Browsers” for more information.

NOTE: If the iPrint server is busy when your installed printer attempts to communicate, CUPS moves the printer into an error state and holds all print jobs. To release print jobs, use the printer management utility to restart the printer.

Macintosh: Distributing the iPrint Client

Use one of the following methods to install the iPrint Client on users’ workstations:

- ♦ “Macintosh: Install the Client from iPrint Printer List Web Page” on page 39
- ♦ “Deliver the Client Using Distribution Software” on page 40

Macintosh: Install the Client from iPrint Printer List Web Page

You can download and install the iPrint Client from the iPrint Printer List Web page that resides on the server where the Print Manager is loaded. To reach the page

- 1 Enter the iPrint server URL in your Web browser Address field:

`http://server_IP_address_or_dns_name/ipp.`

For example, if the DNS name for printing is `printing.my_company.com`, you would access iPrint from the following URL:

http://printing.my_company.com/ipp



The disk image file is downloaded, the install package extracted, and the disk image file is moved to the trash. Then the iPrint Client install is launched.

2 Click the printer you want to install.

2a If the iPrint Client is not yet installed on your workstation, follow the prompts to install the client.

The disk image file is downloaded, the install package extracted, and the disk image file is moved to the trash. Then the iPrint Client install is launched.

2b After installing the client, restart your Web browser in order for the browser to recognize the iPrint Client plug-in.

3 After installing the client, restart your Web browser in order for browser to recognize the iPrint Client plug-in.

(Optional) PostScript Printer Description (PPD) files that use Foomatic filters should be running the latest Foomatic filter script and ESP Ghostscript, which are available from [Linux Printing.org](http://www.linuxprinting.org/macosx/hpijs) (<http://www.linuxprinting.org/macosx/hpijs>).

Deliver the Client Using Distribution Software

Using client distribution software (such as ZENworks), you can also deliver the iPrint Client and possibly printers to your client workstations. For more information, see the documentation for your distribution software.

4.1.3 Windows: iPrint Client

Beginning with this release

- ♦ “Windows: iPrint Client 5.x Requirements (Vista Only)” on page 41

- ♦ “Windows: iPrint Client 4.x Requirements” on page 41
- ♦ “Windows: iPrint Client Installation Files” on page 42

Windows: iPrint Client 5.x Requirements (Vista Only)

- ❑ Windows Vista Business, Enterprise, or Ultimate (x86 or x64)

NOTE: While any user can install the iPrint Client on a Vista Machine, to install printers, and upload drivers, your Web browser must be running as Administrator

- ❑ Web browser with JavaScript* enabled *and*

- ♦ Microsoft Internet Explorer 7 or later

NOTE: You must run your browser as Administrator.

- ❑ Hotfixes from Microsoft*:

- ♦ 941542 (<http://support.microsoft.com/kb/941542/en-us>)
- ♦ 932206 (<http://support.microsoft.com/kb/932206/en-us>)

Contact Microsoft Customer Support Services for more information.

Limitations of the iPrint Client 5.x

The iPrint Client v5.x for Windows Vista does not support the following features:

- ♦ Printer driver profiles
- ♦ iPrint Client Management
- ♦ User printers
- ♦ DOS box printing
- ♦ iCapture
- ♦ Auto-update of the client
- ♦ Sharing credentials with the Novell Client

Windows: iPrint Client 4.x Requirements

- ❑ Windows 95/98/ME or Windows NT*/2000/XP Professional

To install the client on Windows NT/2000/XP, you must have Administrator rights or be a Power User on Windows NT/2000.

- ❑ Web browser with JavaScript* enabled *and*

- ♦ Microsoft Internet Explorer 5.5 or later
- ♦ Mozilla-based Web browser

NOTE: The iPrint Client for Windows uses ActiveX* controls when using Internet Explorer. By default, Internet Explorer’s Run ActiveX Controls and Plug-ins are enabled. However, if this has been changed, you need to reenable it for iPrint to work correctly. This setting is found in *Tools > Internet Options > Intranet > Custom Level*. You need to enable the setting on the Internet page, if you are running across the Internet

Windows: iPrint Client Installation Files

The Windows iPrint Client is packaged in several different, specialized installations. Depending on your distribution method or need, select the file you want. The following table compares the different types of installations.

Table 4-2 *iPrint Clients for Windows*

iPrint Client Filename	Description
nipp.exe	Installs the iPrint Client and displays dialog boxes and progress windows that require user intervention. This is the default installation program.
nipp.zip	A WinZip version of the client that can be used with distribution software programs. After the file is unzipped, run <code>setupipp.exe</code> . For a list of the command line parameters that you can use with <code>setupipp.exe</code> , enter <code>setupipp.exe /h</code> at a command prompt.
nipp-s.exe	Installs the iPrint Client. A screen displays the progress of the installation, but requires no user intervention. NOTE: Because Windows 9x users must reboot their workstations after the client is installed, you should use <code>nipp-sr.exe</code> unless you are using a software distribution package that reboots the workstation.
nipp-sr.exe	Installs the iPrint Client and reboots the workstation. A screen displays the progress of the installation, but no user intervention required.
nipp-su.exe	Uninstalls the iPrint Client. A screen displays the progress of the uninstall, but requires no user intervention.
nipp-u.exe	Uninstalls the iPrint Client. The user confirms to uninstall the client, then a screen displays the progress of the uninstall.

NOTE: Windows 9x users must restart their workstations. After the iPrint Client is installed, Windows NT/2000/XP users do not need to restart, unless they are using iPrint utilities to capture LPT ports.

4.1.4 Windows: Distributing the iPrint Client

Use one of the following methods to install the iPrint Client on users' workstations:

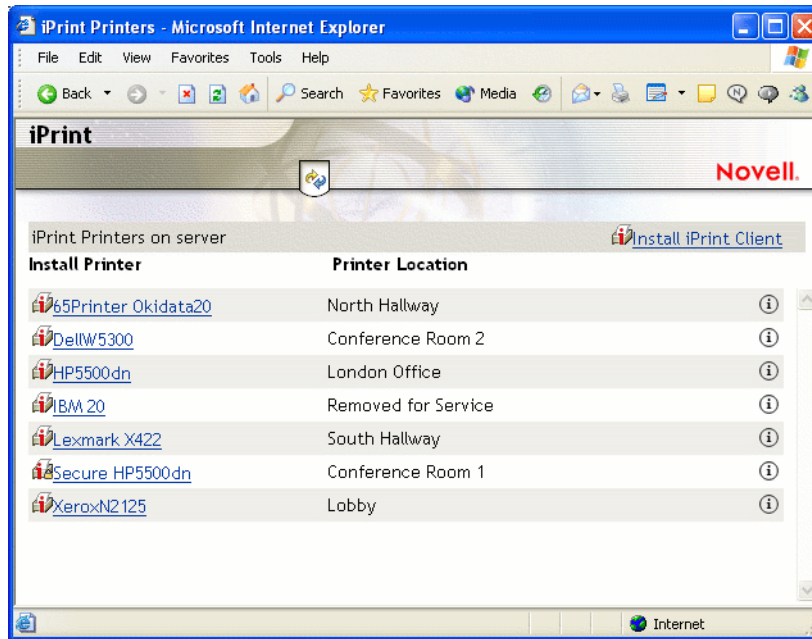
- ♦ [“Windows: Install the Client from iPrint Printer List Web Page” on page 43](#)
- ♦ [“Deliver the Client Using Distribution Software” on page 43](#)

NOTE: Windows 9x users must restart their workstations. After the iPrint Client is installed, Windows NT/2000/XP users do not need to restart, unless they are using iPrint utilities to capture LPT ports.

Windows: Install the Client from iPrint Printer List Web Page

You can download and install the iPrint Client from the iPrint Printer List Web page that resides on the server where the Print Manager is loaded. To reach the page, enter the following URL in your Web browser address field: `http://server_IP_address_or_dns_name/ipp`.

Figure 4-1 iPrint Printer List Web Page



For example, if the DNS name for printing is `printing.my_company.com`, you would access iPrint from the following URL:

`http://printing.my_company.com/ipp`

Deliver the Client Using Distribution Software

Using client distribution software (such as ZENworks), you can also deliver the iPrint Client and possibly printers to your client workstations. For more information, see the documentation for your distribution software.

For example, when using Novell ZENworks, you can use any of the iPrint Clients described in **“Windows: iPrint Client Installation Files” on page 42** to deliver the Windows iPrint Client. Most likely you need to use the `nipp.zip` file to deliver the client to the desktop and execute `setupipp.exe` with one of the command line parameters.

4.2 Installing Printers

You can install and distribute iPrint printers in the following ways:

- ♦ **Section 4.2.1, “Using the iPrint Printer List Web Page,” on page 44**
- ♦ **“Creating Location-Based Printing Web Pages” on page 44**

NOTE: If you are running Windows XP Service Pack 2 or other browsers with pop-up blocking, you might encounter problems with pop-up windows. To manage iPrint in iManager and to install printers with iPrint Clients, turn off pop-up blocking or allow the URL.

4.2.1 Using the iPrint Printer List Web Page

iPrint generates a list of printers associated with a Print Manager that can be used to install the iPrint Client, install an iPrint printer, or check the status and configuration of a printer including a list of print jobs.

- 1 Enter the iPrint URL in your Web browser address field.

The iPrint Printer List is located at `http://server_IP_address_or_dns_name/ipp`.

- 2 (Conditional) If the iPrint Client is not installed, install it when prompted.
- 3 From the list of available printers, select the printer you want to install and follow the prompts.

During the printer installation, iPrint downloads and installs the printer driver, if one is associated with the printer, and installs the printer on the user's workstation. The first time a printer is installed, printer drivers are forced to the workstation, even if the workstation contains a newer driver. Print Managers refresh their saved copies of printer drivers for the printers they are hosting with updated printer drivers from the associated Driver Store.

4.2.2 Creating Location-Based Printing Web Pages

Location-based printing lets users select printers based on locations by using a list view or a map. Using a list view, printer locations can be displayed by using HTML pages organized by building, office location, eDirectory™ context, etc. You configure the lists in a way that best suits the users' needs. For an example of using a list view, see `/var/opt/novell/iprint/httpd/htdocs/ippdocs/examples/example2/innerweb.htm`.

For more information, see [“Creating Customized Printer Lists” on page 66](#).

Using the iPrint Map Designer, you can create maps of printer locations by using drag-and-drop technology. After the maps are created, they can be posted on a Web server for users to access. When users view the maps, they can find a printer close to their location and then click its icon. The client software (if not yet installed) and the printer are installed on their workstations. For an example of using a list view, see `/var/opt/novell/iprint/httpd/htdocs/ippdocs/examples/example1/innerweb.htm`.

For more information on using the iPrint Map designer, see [“Creating Location-Based Maps with iPrint Map Designer” on page 63](#).

4.2.3 Removing iPrint Printers

Removing iPrint printers is dependent on your workstation's operating system.

- ♦ [“Linux: Deleting iPrint Printers” on page 45](#)
- ♦ [“Macintosh: Deleting iPrint Printers” on page 45](#)
- ♦ [“Windows: Deleting iPrint Printers” on page 45](#)

Linux: Deleting iPrint Printers

To remove iPrint printers, use the CUPS management utility included with your Linux distribution.

Macintosh: Deleting iPrint Printers

Use the print list management utility included with the operating system.

Windows: Deleting iPrint Printers

Use the printer folder to delete printers installed on your system.

4.3 Updating the iPrint Client

Periodically, users need updates to the Novell iPrint Client. You need to decide how to manage this. If you want iPrint to automatically update the clients, see [“Updating the iPrint Client Automatically” on page 53](#), or you can choose to distribute a newer client using a software distribution package such as Novell ZENworks.

4.4 Managing Print Jobs from the Client

Users can monitor and manage their own print jobs from their workstations.

Linux: To manage print jobs or delete printers, use the CUPS management utility included with your Linux distribution.

Macintosh: To manage print jobs or delete printers, use the print list management utility included with the operating system.

Windows: To manage print jobs or delete printers, use the Windows printers folder on the Start menu or in the Control Panel. To monitor the status of the last 10 print jobs, right-click the iPrint icon in the notification area and select Document Status.

4.5 Using iprntcmd on Linux and Macintosh

The Linux and Macintosh iPrint Clients include the iprntcmd utility that performs the same functions as iprntcmd in the Windows iPrint Client. In addition, you can use iprntcmd to upload PPD drivers to a Driver Store from the Linux iPrint Client. iprntcmd is located in `/opt/novell/iprint/bin/iprntcmd` on Linux and in `/usr/bin` Macintosh.

Use the following parameters when executing the iprntcmd command.

Table 4-3 Parameters used with iprntcmd

Parameters	Description
-a or --addprinter <i>printer_uri</i>	Installs the specified printer.
-d or --delprinter <i>printer_uri</i>	Removes the specified printer.
-g or --getdefault	Displays the default printer installed on the workstation.

Parameters	Description
-h or --help	Displays help for the command.
-j or --listjobs <i>printer_uri</i>	Lists the print jobs for the specified printer that are on the server in a pending or printing state.
-l or --listlocalprinters	Lists printers installed on the workstation.
-L or --listprintersonserver <i>psm-hostname</i> or <i>psm-address</i>	Lists iPrint printers on the specified Print Manager where <i>psm-hostname</i> or <i>psm-address</i> can be a DNS name or IP address.
-p or --printfile <i>printer-uri file path</i>	Sends a printer-ready file to the specified iPrint printer.
-P or --ppdlist	Lists the PPDs installed on this workstation.
-s or --setdefault <i>printer_uri</i>	Sets the specified printer as the default.
-t or --testpage <i>printer_uri</i>	Prints a test page to the specified printer.
-u or --upload <i>ids_uri ids_user ppd</i>	Uploads the specified PPD files to the indicated driver store where <i>ids_uri</i> is the IP Address or DNS name for the driver store, <i>ids_user</i> is the username with rights to add drivers to the driver store, and <i>ppd</i> is the directory path and filename to the PPD files. You can use wildcards in the PPD filename.
-U or --upload RMS <i>rms_uri rms_user rms_address ppd</i>	Uploads the specified PPD files to the indicated Broker where <i>rms_uri</i> is the IP Address or DNS name for the Broker's associated print manager, <i>rms_user</i> is the username with rights to add drivers to the broker, <i>rms_address</i> is the IP address or DNS name of the broker, and <i>ppd</i> is the directory path and filename to the PPD files. You can use wildcards in the PPD filename.
-v or --version <i>server_uri server_user</i>	Displays the server platform and version information where <i>server_uri</i> is the URI for the server and <i>server_user</i> is a valid user for the server.

Syntax

```
iprntcmd parameters
```

You must use quotes around parameter information that contains a space, such as printer names and printer drivers.

Example

To install a printer named Color Printer 1 and set it as the default printer, you would enter the following for non-secure printing

```
iprntcmd -a "ipp://printing.my_company.com/ipp/Color Printer 1"
```

You should use `ipp://` instead of `http://` or `https://`.

4.6 Windows Client: Using Additional Features

- ♦ [Section 4.6.1, “Updating the iPrint Client,” on page 47](#)
- ♦ [Section 4.6.2, “Using the iPrint Client Tray Icon,” on page 47](#)
- ♦ [Section 4.6.3, “Configuring the iPrint Client Settings,” on page 47](#)
- ♦ [Section 4.6.4, “Implementing iPrint by Using DOS Commands,” on page 50](#)
- ♦ [Section 4.6.5, “Using iPrint with NetIdentity,” on page 53](#)
- ♦ [Section 4.6.6, “Manage Global Actions through Iprint.ini,” on page 53](#)

4.6.1 Updating the iPrint Client

Periodically, users need updates to the Novell iPrint Client. You need to decide how to manage this. You can allow iPrint to automatically update the clients or you can choose to distribute a newer client using a software distribution package like Novell’s ZENworks.

See [“Updating the iPrint Client Automatically” on page 53](#) for more information.

4.6.2 Using the iPrint Client Tray Icon

On Windows workstations, the iPrint Client adds an icon to the notification area. The iPrint icon lets you receive notification when a job has printed and access iPrint client settings quickly. Right-clicking the icon displays the following menu options:

iPrint Settings: Opens the iPrint Client Settings.

Document Status: Lets you check the status and other information for the last 10 documents printed.

Launch Printer Folder: Opens the Windows printer folder.

Find/Install Printers: (Optional) Opens a browser window to the Menu Link URL specified on the Tray Icon tab.

Close: Removes the iPrint icon from the notification area until the next reboot. To make the icon reappear in your notification area, click *Start > Programs > Novell iPrint > iPrint Client Settings > Tray Icon* and deselect the *Enable the iPrint icon in the system tray*. Click *OK*. Then repeat to enable the icon.

To permanently remove the tray icon, see [“Managing iPrint’s Notification Area Icon” on page 48](#).

4.6.3 Configuring the iPrint Client Settings

- ♦ [“Using a Proxy Server” on page 48](#)
- ♦ [“Managing Passwords for Remote iPrint Servers” on page 48](#)
- ♦ [“Managing iPrint’s Notification Area Icon” on page 48](#)
- ♦ [“Managing Print Job Notifications” on page 48](#)
- ♦ [“Setting Up iPrint on Terminal Servers” on page 49](#)
- ♦ [“Using the Novell iCapture LPT Port Redirector Utility” on page 49](#)

Using a Proxy Server

A proxy server sits between a client and another server that the client is trying to communicate with. Often proxy servers are used in conjunction with a firewall to keep internal addresses private while only exposing the proxy server's address to external users. If you are using a proxy server and have users that need to submit print jobs through a proxy server, you can use the iPrint Clients Proxy setting. The Client sends all print-related requests, like a print job, to the proxy server. The proxy server then redirects the print job to the correct iPrint server.

For example, Juan is a laptop user and has installed and printed to a variety of iPrint printers at the company's headquarters. While on the road, Juan wants to submit a report to his boss. Rather than sending the report by e-mail or fax, Juan decides to send it to the printer near his boss. When he tries to send the report to the printer, he receives an error that the printer cannot be found. He knows that the company uses a firewall and a proxy server. He types the proxy server address in the iPrint Proxy settings, then tries to print the report again. This time the print job is accepted. The print job travels from his laptop to the proxy server. The proxy server redirects the print job to the printer's Print Manager, where the print job is spooled and forwarded to the printer.

To set the proxy server address in iPrint:

- 1 Click *Start > Programs > Novell iPrint > iPrint Settings > Proxy*.
- 2 To use a proxy server, select the check box and then specify the URL for the proxy server.
- 3 Click *OK*.

To disable using a proxy server, deselect the check box.

Managing Passwords for Remote iPrint Servers

You can manage passwords for print services that you indicated should be remembered by your workstation. The ability to delete passwords is useful if you are connected to a print service that you no longer use.

To manage passwords for print services:

- 1 Click *Start > Programs > Novell iPrint > iPrint Settings > Passwords*.
- 2 Select the password you want to remove, and then click *Clear Password*.

Managing iPrint's Notification Area Icon

The iPrint icon in the notification area lets you receive notification when a job has printed and view a list of print jobs that you have submitted.

- 1 Click *Start > Programs > Novell iPrint > iPrint Settings > Tray Icon*.
- 2 Modify the settings.

For more information about the settings, see [Section 4.6.2, "Using the iPrint Client Tray Icon," on page 47](#).

Managing Print Job Notifications

iPrint can notify you by way of a pop-up message in the notification area when your document has printed or needs attention.

To turn iPrint notification on or off:

- 1 Click *Start > Programs > Novell iPrint > iPrint Settings > Notifications*.
- 2 Select or deselect the check box as indicated.

NOTE: If you close the iPrint applet running in the notification area, you do not receive notifications. To restart the applet, see [Using the iPrint Client Tray Icon](#).

Setting Up iPrint on Terminal Servers

You can set up iPrint on a terminal server to allow terminal server clients to install and print to iPrint printers.

- ♦ [“Installing the iPrint Client on a Terminal Server” on page 49](#)
- ♦ [“Configuring iPrint for Terminal Server Clients” on page 49](#)

Installing the iPrint Client on a Terminal Server

- 1 Log in to the terminal server with Administrator or equivalent rights.
- 2 Install the iPrint Client.

You can download the iPrint Client from the iPrint Printer List or you can copy and execute `nipp.exe` from the iPrint server in `sys:\apache2\htdocs\ippdocs`.

NOTE: On terminal servers, the client auto-update does not work. To update the client with a newer release, you must install it manually.

Configuring iPrint for Terminal Server Clients

You can configure iPrint to work in any of the following ways, depending on the rights the terminal server client has.

- ♦ **Install user printers only:** User printers can only be installed and deleted by the user who installed the printer. User printers are not available to other users on the workstation.
- ♦ **Install workstation printers only:** Workstation printers can be installed and deleted only by users with sufficient rights. After a workstation printer is installed, all users using the workstation can print to it.
- ♦ **Try to install workstation printer first:** If the user has insufficient rights to install the printer, the printer is installed as a user printer.

To configure iPrint for terminal server clients:

- 1 Log in to the terminal server with Administrator or equivalent rights.
- 2 Click *Start > Programs > Novell iPrint > iPrint Settings*.
- 3 Click *Terminal Server*, then select the configuration option you want.
- 4 Click *OK*.

Using the Novell iCapture LPT Port Redirector Utility

The Novell iCapture LPT Port Redirector lets you capture LPT ports and redirect the output to iPrint printers. Novell iCapture is installed when you install the iPrint Client. Before using the LPT Port

Redirector, you must have iPrint printers installed on the workstation and the Print Manager and Printer Agents must be up and running. This feature is not available on terminal servers.

For example, Olga uses a legacy MS-DOS application to run reports. The application can print only to an LPT port. With the iPrint Client installed, Olga installs an iPrint printer on her workstation and uses Novell iCapture to capture the LPT port. iCapture redirects any data sent to the LPT port to the iPrint printer. Olga can now run her MS-DOS application from her Windows workstation and send print jobs to an iPrint Printer.

To run the utility:

- 1 Click *Start > Programs > Novell iPrint > iPrint Settings > iCapture*.
- 2 Select the port you want to capture.
- 3 Click *Select Printer*, select the iPrint printer you want, then click *Capture*.

If the printer you want is not listed, check to see that the printer agent is up and running and that the printer has been installed as an iPrint printer.

- 4 Click *OK*.

You can also use the LPT Port Redirector to end a printer capture by selecting the port and clicking End Capture.

IMPORTANT: Existing port assignments are not displayed, and iPrint port assignments supersede all other port assignments. iPrint port assignments remain in effect, even after the workstation restarts, until you end the capture.

4.6.4 Implementing iPrint by Using DOS Commands

The following DOS commands let you install iPrint printers without a Web browser and capture LPT ports to iPrint printers. These commands are useful when you have legacy applications that require output to an LPT port, or when you want to add printers through a login script.

- ♦ **Icapture.exe**
- ♦ **Iprntcmd.exe**

Using Icapture.exe to Capture Printer Ports

Icapture.exe is a DOS command line utility that lets you capture LPT ports and redirect the output to iPrint printers. The utility is installed when you install the iPrint Client, and it can be used from a DOS command line, called from a batch file, or called from a login script. Icapture.exe is compatible with Windows NT/2000/XP/2003.

IMPORTANT: Icapture.exe requires that the iPrint printer be installed before the command is run. You can install a printer from the DOS command line using **iprntcmd.exe**.

Use the following parameters when executing the `icaputure.exe` command.

Table 4-4 Parameters used with *icapture.exe*

Parameter	Description
LPTx or L=x where x is the port number	The port you want to capture.
P= <i>printer_name</i>	The name of the printer that appears in the Printers Folder after the iPrint printer is installed.
EndCap	Ends the capture to the specified port.
NOTE: Captured ports remain captured, even through a workstation restart, until you end the capture.	
Show	Displays the status of currently captured ports and their associated printers.

Syntax

```
icapture parameters
```

Examples

For example, to capture a printer named Printer1 to port number 2, you would enter either:

```
icapture l=2 p=printer1
```

or

```
icapture lpt2 p=printer1
```

To end the capture, you would enter either:

```
icapture endcap l=2
```

or

```
icapture endcap lpt2
```

Using iprntcmd.exe to Install iPrint Printers

If you need to install an iPrint printer but cannot use a Web browser, you can use the `iprntcmd.exe` command at a DOS prompt. The `iprntcmd.exe` command can install, remove, or set a printer as the default printer. This command is most often used in login scripts in conjunction with the `icapture.exe` command.

Use the following parameters when executing the `iprntcmd` command.

Table 4-5 Parameters used with *iprntcmd*

Parameters	Description
-a or --addprinter <i>options printer_uri</i>	<p>Installs the specified printer. You can replace <i>options</i> with any or all of the following:</p> <ul style="list-style-type: none"> ♦ no-gui: Does not display the printer installation dialog box when installing a printer. ♦ default: Installs the specified printer as the default printer. ♦ temp: The installed printer is removed when the workstation is rebooted. <p>NOTE: These options are available on the Windows Client only.</p>
-d or --delprinter <i>printer_uri</i>	Removes the specified printer.
-g or --getdefault	Displays the default printer installed on the workstation.
-h or --help	Displays help for the command.
-j or --listjobs <i>printer_uri</i>	Lists the print jobs for the specified printer that are on the server in a pending or printing state.
-l or --listlocalprinters	Lists printers installed on the workstation.
-L or --listprintersonserver <i>psm-hostname</i> or <i>psm-address</i>	Lists iPrint printers on the specified Print Manager where <i>psm-hostname</i> or <i>psm-address</i> can be a DNS name or IP address.
-p or --printfile <i>printer-uri file path</i>	Sends a printer-ready file to the specified iPrint printer.
-P or --ppdlist	Lists the PPDs installed on this workstation.
-s or --setdefault <i>printer_uri</i>	Sets the specified printer as the default.
-t or --testpage <i>printer_uri</i>	Prints a test page to the specified printer.
-v or --version <i>server_uri server_user</i>	Displays the server platform and version information where <i>server_uri</i> is the URI for the server and <i>server_user</i> is a valid user for the server.

Syntax

```
iprntcmd parameters
```

Example

To install a printer named ColorPrinter1 and set it as the default printer, you would enter the following:

```
iprintcmd -a -s ipp://printing.my_company.com/ipp/ColorPrinter1
```

4.6.5 Using iPrint with NetIdentity

The NetIdentity agent works with eDirectory authentication to provide background authentication to Windows Web-based applications that require eDirectory authentication. iPrint supports the NetIdentity agent included with the Novell Client32™ running on Windows NT/2000/XP only. If the NetIdentity agent is installed on the workstation, iPrint uses NetIdentity when authenticating. For more information on using NetIdentity, see the *NetIdentity Administration Guide for NetWare 6.5*.

4.6.6 Manage Global Actions through Iprint.ini

A configuration file named `iprint.ini` is located on each server where a Print Manager is running. The `iprint.ini` file should be synchronized across all servers where iPrint and a Print Manager are running. The `iprint.ini` file can be found in the following locations

Linux	<code>/var/opt/novell/iprint/htdocs/</code>
NetWare	<code>sys:\apache2\htdocs\ippdocs\</code>

The file controls the following tasks:

- ♦ “Updating the iPrint Client Automatically” on page 53
- ♦ “Creating a Short Printer Name Profile” on page 54
- ♦ “Installing User Printers” on page 54
- ♦ “Upgrading NDPS Printers to iPrint Printers” on page 55
- ♦ “Upgrading QMS Printers to iPrint Printers” on page 56

IMPORTANT: When you apply a support pack, the existing `iprint.ini` file is saved as `iprint.bak` and a new `iprint.ini` is copied over. If you made changes to the `iprint.ini` file, you must delete the new `iprint.ini` file from the support pack and rename `iprint.bak` to `iprint.ini`. If you want new functionality included with the latest `iprint.ini`, you should duplicate the settings in `iprint.bak` in the new `iprint.ini`.

Updating the iPrint Client Automatically

When a workstation boots up, iPrint checks the default printer to ensure that the workstation is using the latest Novell iPrint Client. When needed, a newer client is installed. Using a configuration file, you can control how this update takes place.

An `iprint.ini` configuration file is located in on each server where iPrint is installed. This file controls whether the user is prompted before the updated client is installed or the updated client is installed without user intervention. When the client is installed without user intervention, the user still sees the installation program.

- 1 Using a text editor, edit `iprint.ini`.

Linux	<code>/var/opt/novell/iprint/htdocs/</code>
-------	---

NetWare	sys:\apache2\htdocs\ippdocs\
---------	------------------------------

- 2 Change the AllowAutoUpdate setting for the desired behavior.
- 3 Save the file.

IMPORTANT: The `iprint.ini` file should be synchronized across all servers where iPrint and an Print Manager are running.

After the iPrint Client is updated, Windows 9x users must restart their machines. Windows NT/2000/XP users do not need to immediately reboot, unless they are using iPrint utilities to capture LPT ports.

Creating a Short Printer Name Profile

By default, the installed printer name on the client follows the full UNC/URL format: `\\ipp://dns_name\printer_name`. An example of a printer name in this format is `\\ipp://Printing.My_Company.Com\ColorPrinter`. These printer names are often too long to fit in an application's display field for the printer name. Using a Short Printer Name Profile, you can replace the UNC server name (or *dns_name*) for all printers on a Print Manager with any name you want to be displayed. For example, if you want to display just the company name, the above example would display as `\\My_Company\ColorPrinter`.

NOTE: You should keep the UNC path and printer name to less than 32 characters.

The Short Printer Name Profile is available only on Windows NT, 2000, and XP workstations. When you implement a Short Printer Name Profile, printers that are already installed are not affected. Only newly installed printers after the change use the shortened name. For printers already installed, you must delete and reinstall the printers to realize any changes to their names.

- 1 Edit `iprint.ini` in a text editor.

Linux	/var/opt/novell/iprint/htdocs/
NetWare	sys:\apache2\htdocs\ippdocs\

- 2 Change the value of the ShortInstallName parameter to the value you want displayed.

`ShortInstallName=your_name`

where *your_name* is the value you want displayed. To reset the parameter to its default setting, use "default" as the value.

IMPORTANT: The `iprint.ini` file should be synchronized across all servers where iPrint and a Print Manager are running. The Installed Printer Name Profile affects all printers on a Print Manager.

Installing User Printers

To install an iPrint Printer and the associated printer driver users, you must have Administrator or equivalent permissions on Windows NT/2000/XP or Power User permissions on Windows NT/

2000. User Printers let you control what permissions are required to install a printer. To implement User Printers, edit the `iprint.ini` file and change the value for `AllowUserPrinters` = *entry* to one of the following:

Table 4-6 *User Printer Settings*

Value	Description
0	Follow Windows standards and only let users with sufficient permissions to install the printer to the desktop. This allows all users to see and use this printer. This is considered a global or Workstation Printer.
1	If the current user does not have permissions to add a Workstation Printer (option 0), automatically add the printer so that only the current user can install, view, modify, or delete this printer. This is considered a private or User Printer.
2	Only add User Printers. All users (including Administrator or power user) that add a printer can install, view, modify, or delete the printer they installed. All printers are private or User Printers.
3	Only add Workstation Printers. No permissions required. All users have rights to install, view, modify, or delete iPrint printers even if the Windows workstation has been locked down. Non-iPrint printers are not affected.

For example, three workers—Albert, Juan, and Carla—share the same computer during the day. Albert prints to an accounting printer, Juan prints to a plotter, and Carla prints to a printer in the CEO’s office. The administrator set `AllowUserPrinters` = 2. Each worker can install the printer they need but cannot see printers installed by the other users.

Upgrading NDPS Printers to iPrint Printers

NDPS[®] Printers that are installed on the workstation can easily be upgraded to iPrint printers, giving additional features like global access to printers, printer profiles, and end of job notification. This requires that currently existing NDPS printers be iPrint enabled (see [Section 3.8, “Enabling iPrint on Existing Printers,” on page 31](#)) and the iPrint client be installed on the workstation.

You control the upgrade through `UpgradeNDPSPrinter`= *entry* in the `iprint.ini` using the following values:

Table 4-7 *UpgradeNDPSPrinter Settings*

Option	Description
0	(Default) Leave NDPS installed printers alone.
1	Prompt the user to upgrade the printer to an iPrint printer.
2	Silently upgrade the printer to an iPrint printer. No user intervention required.

The next time the user reboots and logs in, their NDPS printers is upgraded to an iPrint printer installed and the NDPS printer is removed, except for printers using a captured ports.

Upgrading QMS Printers to iPrint Printers

Queue-based printers installed on the workstation can be upgraded to iPrint printers after associating an iPrint printer with the eDirectory Queue object and installing the iPrint client on the workstations. Once the associations are complete, you control the upgrade through the `UpgradeQMSPrinters=` entry in the `iprint.ini` using the following values:

Table 4-8 *UpgradeQMSPrinters Settings*

Option	Description
0	(Default) Leave QMS installed printers alone.
1	Prompt the user to upgrade the printer to an iPrint printer.
2	Silently upgrade the printer to an iPrint printer. No user intervention required.

The next time the user reboots and logs in, their Queue-based printers are deleted and the associated iPrint printer installed.

4.7 Using iPrint Client Management

iPrint Client Management (iCM) includes functionality similar to the Remote Printer Management feature included in Novell Distributed Print Service™, which lets you designate printers to be installed on a workstation when a user logs in to the workstation using the Novell Client. Previously, this functionality was only available with NDPS printers, but now it is available for iPrint printers. iCM also lets you control the iPrint Client configuration, making it easier to configure the iPrint Client without visiting each workstation. When the user logs in to the workstation using the Novell Client, the iPrint Client settings you designate are configured on the user's workstation.

iCM is available for Windows 2000/XP/2003 workstations, and requires the following:

- ♦ iPrint iManager plug-in for Linux or the iPrint iManager plug-in for NetWare dated May 2006 or later
- ♦ Novell Client™ 4.91 for Windows 2000/XP/2003 or later
- ♦ Novell iPrint Client v4.17 or later (install after the Novell Client)
- ♦ `iprint.ini`
- ♦ eDirectory schema update from NetWare 6.5 Support Pack 6 or later.

All of the above components are included in the NetWare 6.5 Support Pack 6 except the Novell Client 4.91 for Windows 2000/XP, which is available from the [Novell Support Web site \(http://support.novell.com/produpdate/patchlist.html#client\)](http://support.novell.com/produpdate/patchlist.html#client).

The iPrint iManager plug-ins also work with Mobile iManager. Mobile iManager is available at [Novell Downloads \(http://download.novell.com/Download?buildid=w4WNnPmq6R8~\)](http://download.novell.com/Download?buildid=w4WNnPmq6R8~).

NOTE: You can install the iPrint iManager plug-in for NetWare NPM on Mobile iManager or iManager running on NetWare. You can install the iPrint iManager plug-in for Linux on Mobile iManager or iManager running on Linux or NetWare. Depending on your iManager configuration,

you might see two *iPrint* roles. The *iPrint* role is for iPrint running NetWare tasks, and, the *iPrint (Linux)* role is for iPrint running Linux tasks.

With iCM, you manage a set of attributes on a given eDirectory tree regardless of whether the printers are hosted on an Open Enterprise Server NetWare or a Linux server, because iCM is configured and managed through eDirectory objects.

Use the following information to install and configure iCM:

- ♦ [Section 4.7.1, “Understanding the Schema Update,” on page 57](#)
- ♦ [Section 4.7.2, “Deploying iPrint Client Management,” on page 57](#)
- ♦ [Section 4.7.3, “Managing iPrint Client Settings,” on page 58](#)
- ♦ [Section 4.7.4, “Automatically Installing Printers,” on page 58](#)
- ♦ [Section 4.7.5, “Using Advanced Settings,” on page 60](#)

4.7.1 Understanding the Schema Update

iPrint Client Management requires you to extend the eDirectory schema. The `iprint.sch` file contains the schema extension, which adds five optional attributes to Organization, Organizational Unit, Groups, and User object class definitions. The five attributes are:

- ♦ `iPrintiCMControlFlags`
- ♦ `iPrintiCMPrinterList`
- ♦ `iPrintiCMClientTrayURI`
- ♦ `iPrintiCMClientProxyURI`
- ♦ `iPrintiCMClientFlags`

Users should be able to read these new attributes on their user objects; however, if you plan to configure iCM at an Organization, Organizational Unit, or Group object level, users might need the Read right to read the attributes. The first time you access iCM on an Organization, Organizational Unit, or Group object in iManager, iManager attempts to assign the Read right to the attributes. Then users should be able to read these attributes through inheritance on subcontainers and groups. If iManager cannot assign the read right to the Organization, Organizational Unit, or Group object, your configuration is saved, but a message appears explaining that rights to the attributes could not be granted. You need to grant rights to these iPrint attributes by using either the eDirectory Administration or Trustee task in iManager.

TIP: To avoid multiple explicit rights assignments for the iCM attributes, you should make your first iCM assignment as high in the eDirectory tree as possible so that the rights can flow down the tree. You could even make an iCM assignment so that the Read right is set, and then disable the iCM assignment because this does not remove the Read right to the attributes.

4.7.2 Deploying iPrint Client Management

- 1 Distribute the iPrint Client version 4.26 or later.

For more information, see [Section 4.1.4, “Windows: Distributing the iPrint Client,” on page 42](#) or if the iPrint Client is already distributed, see [Section 4.6.1, “Updating the iPrint Client,” on page 47](#).

If you use the `iprint.ini` to distribute the iPrint Client, you need to allow enough time for the users to update to the new client before configuring iCM. If you do not allow enough time, the client attempts to update a workstation at the same time it is trying to deploy the settings in iCM.

2 Configure iPrint Client Management in iManager.

See [Section 4.7.3, “Managing iPrint Client Settings,” on page 58](#) or [Section 4.7.4, “Automatically Installing Printers,” on page 58](#) for more information.

4.7.3 Managing iPrint Client Settings

You can standardize the iPrint Client settings for users by using iCM Client Configuration to define the attributes for an Organization, Organizational Unit, Group, or a User Object. The attributes are delivered as a complete set, meaning that if you change only one attribute, all of the attributes are delivered to the client. The changes are not additive, so you cannot change the value of an attribute for an object and change the value of a different attribute on another object. Only the set of attributes closest to the user’s object are used.

When a user logs in, iCM walks up the tree from the user’s container to the highest container in the user’s fully distinguished name. Then iCM starts applying the iCM attributes in each container as it walks back down to the user object. Then the user’s group membership list is queried for the same attributes. Those closest to the User object have a higher priority. The set of attributes on or closest to the User object is always used.

WARNING: Using iCM on group objects can simplify making assignments, but using iCM on multiple groups can cause undesired results. You should create a new Group object with a descriptive name so that you can control the desired results for users that you assign to that group.

To configure the iCM client attributes:

- 1** In Novell iManager, click *iPrint > iPrint Client Management*.
- 2** Browse to and select the Organization, Organizational Unit, Group, or User object you want to automatically configure iPrint Client Settings for.
- 3** Click *Client Configuration*.
- 4** Configure the attributes you want for the iPrint Client on the workstation.
Click *Help* for explanations about the attributes.
- 5** Click *OK* to save the changes.

A log file of the iCM actions taken and ignored is stored in `c:\ndps\users\username\icmlog.txt`, where *username* is the name used to log in to Windows by using the Novell Client Login. The file is created and updated when the user uses the Novell Client to log in to the workstation.

4.7.4 Automatically Installing Printers

iPrint Client Management Printer Configuration lets you designate printers to be downloaded and installed automatically on user workstations when users log in to the network. These printers appear in the user’s printers folder, ready for use. You can also use this feature to remove printers, assign a printer to be the default printer, and set a printer to be a temporary printer so that it is removed when the workstation is rebooted.

iCM configures printers on workstations based on assignments made on the User object, Group object, Organization, and Organizational Unit container. When you use iManager to designate a printer for automatic installation on a user's workstation, the associated eDirectory Container, Group, or User object is updated with this information.

The actions taken are cumulative, meaning that action is taken for each assignment you made. For example, if you add two printers at one level, then add three more printers at another level, the workstation has all five printers installed. If you have more than one printer set as the default, the last printer installed is set as the default.

When a user logs in, iCM starts searching at the highest container in the user's full distinguished name, looking for the iCM Printer Configuration associated to containers and groups. The search continues through subcontainers down to the User object. Printers continue to be added or removed to the workstation as specified by iCM. If the *Allow Only Specified Printers to Reside on Workstation* option is enabled, any actions to printers specified above that container or group in the user's fully distinguished name are ignored, but any actions to printers specified between that point and the User object are taken.

- ◆ If the client finds a printer designated for installation that has not yet been installed, it is automatically installed.
- ◆ If a currently installed printer is added to the *Printers to Remove* list, that printer is automatically uninstalled.
- ◆ If you designate a different printer to be the default, the change is made.
- ◆ Using *Do Not Update Workstations* turns off iCM for printers at that container, group or user, but actions for iCM printers found on other containers or groups are taken.

WARNING: Using iCM on group objects can simplify making assignments, but using iCM on multiple groups can cause undesired results. You should create a new Group object with a descriptive name so that you can control the desired results for users that you assign to that group.

To automatically install printers:

- 1 In Novell iManager, click *iPrint > iPrint Client Management*.
- 2 Browse to and select the Organization, Organizational Unit, Group or User object you want to automatically install printers for.
- 3 Configure the attributes you want for the *Printer Configuration* option.
Do Not Update Workstations: iCM for printers is disabled and printers are not installed or removed from workstations. Printers already installed are not altered.
Allow Only Specified Printers to Reside on Workstations: Allow only the iPrint printers specified in the *Printers to Install* list to reside on the workstation. All other iPrint printers on the workstation are removed. Non-iPrint printers are not affected.
- 4 Use the buttons to modify the *Printers to Install* list.
If you select a printer to be the default and want to remove the Set as Default attribute, click the button adjacent to the *Default Printer* field.
- 5 Modify the *Printers to Remove* list.
- 6 Click *OK* to save the changes.

A log file of the iCM actions taken and ignored is stored in `c:\ndps\users\username\icmlog.txt`, where *username* is the name used to log in to

Windows using the Novell Client Login. The file is created and updated when the user uses the Novell Client to log in to the workstation.

4.7.5 Using Advanced Settings

The iPrint Client Management Advanced Settings page lets you configure how far up the eDirectory tree iCM should look for iCM client settings and printers. You can also configure whether the iCM results dialog box should display on the workstations, which is useful for troubleshooting the iCM results.

- 1 In Novell iManager, click *iPrint > iPrint Client Management*.
- 2 Browse to and select the Organization, Organizational Unit, Group or User object you want to configure the settings on.
- 3 Click *Advanced Settings*.
- 4 Configure the settings you want.

Ignore iPrint Client Management (iCM) settings on parent containers: Limits the scope used to find iCM client settings and assigned printers to the object where the assignment is made and below. You can enable this setting on User, Group, and Container objects. You should enable this setting to limit traffic on the network, especially across slow network links.

When a user logs in, iCM checks the User object and group memberships, then it walks up the eDirectory tree from the user object to the root-most container to determine where iCM assignments have been made. If iCM encounters the Ignore Settings on Parent Containers attribute, iCM stops walking up the tree on that object. Then, iCM implements the iCM client settings and printers on the workstation.

To determine the iCM printers for the workstation, iCM searches down to the User object, adding and removing iCM printers as specified on each Container, Group, or User object. For iCM client settings, iCM uses the set of iCM client attributes closest to or on the User object.

The attributes are delivered as a complete set, meaning that if you change only one attribute, all of the attributes are set on the client. The changes are not additive, so you cannot change the value of one attribute for an object and change the value of a different attribute on another object. Only the set of attributes closest to or on the user's object are used.

The following table describes the behaviors when enabling this setting on different objects.

Object	Behavior
User	Only the iCM client settings and printers assigned to the User object are used. iCM does not check any group memberships, the User object's container, or parent containers.

Object	Behavior
Group	<p>iCM checks assignments on the User object and all associated groups, but does not check the User object's container or parent containers. All group memberships are read and assignments are considered even if this setting is enabled on just one group. This is useful if you want to apply iCM client settings or assigned printers from a group membership, but do not want any iCM client settings or assigned printers from the User object's container.</p> <hr/> <p>WARNING: Using iCM on Group objects can simplify making assignments, but using iCM on multiple groups could cause undesired results. You should create a new Group object with a descriptive name so that you can control the desired results for users that you assign to that group.</p> <hr/>
Organization or Organizational Unit	iCM checks assignments on the user object, all associated groups, and each container up to a parent container where this setting is enabled.

Display iCM results in a dialog box on workstations: Displays a window on the workstation that shows the printers that were installed and removed.

- 5 Click *OK* to save the changes.

4.8 Uninstalling the Novell iPrint Client

Uninstalling the Novell iPrint Client is dependent on your workstation's operating system.

- ♦ [Section 4.8.1, "Removing the Linux iPrint Client," on page 61](#)
- ♦ [Section 4.8.2, "Removing the Macintosh iPrint Client," on page 61](#)
- ♦ [Section 4.8.3, "Removing the Windows iPrint Client," on page 62](#)

4.8.1 Removing the Linux iPrint Client

You can remove the Linux iPrint Client RPM from a terminal prompt. Depending on the Client installed use one of the following commands.

```
rpm -e novell-iprint-xclient-sh-version.i586.rpm
```

```
rpm -e novell-iprint-xclient-sl-version.i586.rpm
```

NOTE: When you uninstall the Linux iPrint Client, all iPrint printers remain installed on the workstation and the user can still print to the printers until the printer is deleted from the workstation.

4.8.2 Removing the Macintosh iPrint Client

- 1 Open the *MacOSX* folder.
- 2 Click *Application*, then double-click *Uninstall iPrint.pkg*
- 3 Follow the prompts to uninstall the client.

The uninstall program runs an installation script. Even though the last screen says the installation is successful, the uninstall was successful.

NOTE: When you uninstall the Macintosh iPrint Client, all iPrint printers remain installed on the workstation and the user can still print to the printers until the printer is deleted from the workstation.

4.8.3 Removing the Windows iPrint Client

To remove the Novell iPrint Client, use *Remove Programs* option in the Windows Control Panel.

NOTE: When you uninstall the Windows iPrint Client, all iPrint printers are removed from the workstation.

4.9 Printing from LPR Print Systems to iPrint

The implementation of LPR printing in UNIX systems and other systems varies greatly. Typically, UNIX or LPR users know how to set up LPR Printing (BSD-style printing) on their systems. In order to complete the configuration, users need to know the *LPR Host* and the *LPR Printer/Queue* information, which is the Printer Agent name, provided in Novell iManager. The iPrint Client is not required to print using LPR.

To set up an iPrint printer to accept LPR print jobs, you need to enable LPR/LPD printing for the printer. See “[Configuring LPR Printers](#)” on page 96 for more information.

4.10 What's Next

- ♦ [Chapter 5, “Customizing iPrint,” on page 63](#): With your print system set up and the client distributed to the workstation, you can focus on how your users can browse to and install iPrint Printers using their Web browser.
- ♦ [Chapter 7, “Managing Your Print System,” on page 71](#): Helps you monitor and maintain your print system.

This section describes how to customize iPrint for your company by using the iPrint Map Designer and modifying the HTML pages and iPrint Client interface.

- ♦ [Section 5.1, “Setting Up Location-Based Printing,” on page 63](#)
- ♦ [Section 5.2, “Customizing the iPrint HTML Interface,” on page 66](#)
- ♦ [Section 5.3, “Changing Printer Driver Default Install Options,” on page 66](#)

5.1 Setting Up Location-Based Printing

When setting up location-based printing, each Print Manager creates an iPrint Printer List that users can access by entering `http://server_DNS_or_IP_address/ipp`. You can make installing printers even easier by creating customized Web pages that link the iPrint Printer lists together or by using the iPrint Map designer to create a map showing the location of printers.

- ♦ [“Creating Location-Based Maps with iPrint Map Designer” on page 63](#)
- ♦ [“Creating Customized Printer Lists” on page 66](#)

5.1.1 Creating Location-Based Maps with iPrint Map Designer

Using the iPrint Map Designer tool, you can quickly create a map showing printer locations. The tool lets you import floor plans as background images that can be used to drag and drop printers onto actual locations. These maps are then published on a Web server so users can install printers that are closest to their location.

IMPORTANT: If at any time after creating a map you change the DNS Name or IP Address for printing (which changes the IPP URL used by the printer agents), maps must also be updated; otherwise, users receive an SSL 5 or 1030 error when attempting to install a printer from the map.

Prerequisites

- ☐ Windows 9x/NT/2000/XP operating system
- ☐ Microsoft Internet Explorer 5.5 or later
- ☐ Novell® iPrint Client installed on the workstation

After the map is created, you must use the iPrint Map Designer to modify or update it. Changes to a map file that are made outside of the iPrint Map Designer are not supported. If you need to add links to a map, you should create a frameset file and then display the map file in one frame and display your links in a different frame.

- ♦ [“Creating a Map for Printing” on page 64](#)
- ♦ [“Adding Printers from Different Print Managers” on page 65](#)
- ♦ [“Hosting Maps on a Web Server” on page 65](#)
- ♦ [“Using the Keyboard with iPrint Map Designer” on page 65](#)

Creating a Map for Printing

Before creating the map, ensure the following:

- ❑ `ippsrvr.nlm` must be loaded.

NOTE: If you run the map tool using HTTP and `ippsrvr.nlm` is not loaded, you will receive a 503 Service not available error. To resolve this, you need to enable iPrint on one of the printers so that `ippsrvr.nlm` automatically be loaded.

- ❑ All of your background images (maps) are copied to the server:

NetWare Server: `sys:\apache2\htdocs\ippdocs\images\maps`

Linux Server: `/var/opt/novell/iprint/htdocs/images/maps`

File types that can be used for background and printer icon images are JPEG, GIF, and BMP. These files are detected by iPrint Map Designer at startup. A default set of printer icons is included.

- ❑ All of your custom printer icons are copied to the server

NetWare Server: `sys:\apache2\htdocs\ippdocs\images\printers`

Linux Server: `/var/opt/novell/iprint/htdocs/images/printers`

- 1 To start iPrint Map Designer, do one of the following:

Linux Server: Open `http://server_address/maptool.htm` where *server_address* is the server's IP address or DNS name of the server where the iPrint Manager is running.

NetWare Server: Using a mapped drive, open `sys:\apache2\htdocs\ippdocs\maptool.htm` in Microsoft Internet Explorer, or open `http://server_address:/maptool.htm` where *server_address* is the server's IP address or DNS name of the server where the printer agent is running.

If you want to save the map to this server, you need to be authenticated to the server.

- 2 Select a map from the *Background* drop-down list.

- 3 (Optional) Add a printer to the map.

- 3a From the *Printer Icon* field, select the type of printer and icon size you want.

Sizes range from 1 to 6, with 1 being the largest. Icons with a C indicate color printers.

- 3b Click the *Printer* icon and drag the printer to the desired location on the map.

- 3c Next to the *Printer List* field, click the *Browse* icon and specify the IP address or DNS name of the server where the Print Manager is running.

- 3d From the *Printer List*, select the printer agent you want associated with this printer icon.

If the printer is not listed, then you have not enabled IPP for the printer. See [“Enabling/Disabling iPrint on Individual Printers” on page 85](#) for more information.

The *Printer URL* and *Mouse Over Text* fields are automatically filled in with the printer agent information.

Printer URL: The URL created for the printer when IPP is enabled for the printer. You should not need to change the URL.

Mouse Over Text: By default, displays the printer agent's name. You can override this information by entering the text you want to display when a user moves the mouse over the Printer icon.

3e (Optional) In the *Printer Caption* field, enter the information to display, using Enter to parse the information onto multiple lines.

3f (Optional) From the menu bar, click *Font* to change the base font, color, and size for text on the map.

4 (Optional) Edit a printer's information by clicking the desired printer's icon and then editing the printer information fields.

To deselect a *Printer* icon while you are in the map, click anywhere in the design area.

5 Click *Save* and save the map.

WARNING: If you click *Refresh* or exit Internet Explorer without saving the map, all changes made since the last time the map was saved are lost.

To retrieve and modify an existing map file, click *Open* and browse to the directory where the map is located.

Adding Printers from Different Print Managers

You can add printers from different Print Managers to the same map. First, add the printers from one Print Manager. Then click the *Browse* icon and select a different manager.

If you need to add or modify printers from a previously used Print Manager, click a Printer icon from that manager and the *Printer List* is populated with printers from that manager.

Hosting Maps on a Web Server

After creating your maps, you need to post them on a Web server. Copy the contents of the \ippdocs directory and its subdirectories to the Web server in order for your maps and iPrint to work properly. You can link to your maps from your company's internal Web page or send the URL out to your users.

Using the Keyboard with iPrint Map Designer

You can use the keyboard to create maps by using iPrint Map Designer. The following table lists the tasks to complete and the corresponding keystrokes required.

Table 5-1 Keyboard Shortcuts

Task	Press
Move between fields	Tab
Insert Printer icon	Insert
NOTE: Before you can insert a printer, your focus must be on the design area.	
Move the printer icon within the design area	Arrow keys

Task	Press
Select a field	Enter

5.1.2 Creating Customized Printer Lists

Printer lists allow users to select printers using categories that are meaningful to them. For example, you could create a list of printers by building location, department names, eDirectory™ Context, etc. iPrint generates an iPrint Printer List for each Print Manager. To create a custom list, you must use an HTML editor and create links to the different generated lists or create a Web page by using the printer's IPP URL. This URL is displayed when you enable IPP for a printer.

To view a printer's URL:

- 1 From Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want.
- 3 Click *Client Support > iPrint Support*.

The printer's URL is displayed under *Accepted iPrint UR L* field.

5.2 Customizing the iPrint HTML Interface

You can edit any of the HTML files provided or you can create your own to customize iPrint for your environment. The HTML files are installed in the `sys:\apache2\htdocs\ippdocs` directory. For information on the HTML interface, see [Appendix B, "Configuring the iPrint HTML Interface," on page 117](#).

Some examples of ways to present printers to users are located in the `sys:\apache2\htdocs\ippdocs\examples` directory:

- ♦ Example 1 shows a fully graphical interface for locating and installing printers using standard HTML. This type of approach can also be created using the iPrint Map Designer. For more information, see ["Creating Location-Based Maps with iPrint Map Designer" on page 63](#).

Using your Web browser, view this example from

`sys:\apache2\htdocs\ippdocs\examples\example1\innerweb.htm`

- ♦ Example 2 shows a lower maintenance approach for locating and installing printers using standard HTML.

Using your Web browser, view this example from

`sys:\apache2\htdocs\ippdocs\examples\example2\innerweb.htm`

5.3 Changing Printer Driver Default Install Options

You can choose the default settings for a printer driver when it is installed on the workstation. For example, in a law office you might want the default paper size to be legal size. This means every time the printer and corresponding driver are installed on a workstation, the paper size is set to legal size.

Beginning with NetWare® 6.5 Support Pack 2, the ability to set the printer's default settings has been removed from the iPrint Map Designer and moved to iManager. Any settings specified on a

map are overwritten by the driver settings in iManager. To modify the printer's default settings for printers hosted on NetWare, use iManager. See [Section 7.2.6, "Using Printer Driver Profiles," on page 88](#).

5.4 Installing Printer as Default on Windows

When installing a printer on a Windows workstation from the iPrint Printer List Web Page, users can choose to set the printer they are installing as the default printer by selecting the *Set Printer as Default* check box in the *Printer Is Not Installed* dialog box. When this option is selected, the printer is installed and set as the default printer. When it is not selected, the printer is installed and no change is made to the default printer.

This feature has three settings:

- ♦ *Set Printer as Default* is automatically selected
- ♦ *Set Printer as Default* is not selected
- ♦ Hide the *Set Printer as Default* setting.

To modify this feature:

- 1 Edit `setdef.htm`, located in one of the following directories:

NetWare Server: `sys:\apache2\htdocs\ippdocs`

Linux Server: `/var/opt/novell/iprint/htdocs`

- 2 Modify the `var defTypeGbl =` setting to one of the following:

Setting	Description
DEF_TYPE_OPTION_YES	Displays the <i>Set as Default</i> check box, which is selected.
DEF_TYPE_OPTION_NO	Displays the <i>Set as Default</i> check box, which is not selected.
DEF_TYPE_OPTION_NONE	Hides the <i>Set as Default</i> check box, which is not selected.

- 3 Save the file.

When the file is saved, the change is effective immediately.

Running iPrint in a Virtualized Environment

6

iPrint runs in a virtualized environment just as it does on a physical NetWare server, or on a physical server running OES 2 Linux, and requires no special configuration or other changes.

To get started with virtualization, see “[Introduction to Xen Virtualization](#)” in the *Virtualization: Getting Started* guide.

For information on setting up virtualized NetWare, see “[Setting Up Virtual Machines](#)” in the *Virtualization: Getting Started* guide and “[NetWare Virtual Machines](#)” in the *Virtualization: Guest Operating System Guide*.

Managing Your Print System

7

- ♦ [Section 7.1, “Managing the Print Manager,” on page 71](#)
- ♦ [Section 7.2, “Managing Printers,” on page 85](#)
- ♦ [Section 7.3, “Managing the Broker,” on page 97](#)
- ♦ [Section 7.4, “Configuring LDAP,” on page 105](#)

To manage your print system, use Novell® iManager. The iPrint plug-in for Novell iManager works with workstations running Mozilla-based browsers or Internet Explorer 5.5 with Service Pack 2 or later. For a review of supported browsers, see [Appendix A, “Supported Browsers for iPrint,” on page 115](#).

NOTE: If you are running Windows XP Service Pack 2 or other browsers with pop-up blocking, you might encounter problems with pop-up windows. To manage iPrint in iManager and to install printers with iPrint clients, turn off pop-up blocking or allow the URL.

- ♦ To manage iPrint running on Linux, you must access iManager installed on a Linux server. To manage iPrint on NetWare®, you must access iManager installed on a NetWare server.
- ♦ You cannot administer iPrint from iManager installed on a Windows, Solaris, or HP-UX server platform.
- ♦ You cannot administer iPrint from a Macintosh computer.

For more information iManager, see the [Novell iManager 2.5 Administration Guide](#).

7.1 Managing the Print Manager

Although the default settings let users print without additional configuration, you might want to modify some of the settings so that you can manage your printing resources most effectively.

- ♦ [Section 7.1.1, “Understanding the Print Manager Database,” on page 71](#)
- ♦ [Section 7.1.2, “Using the Print Manager Health Monitor,” on page 72](#)
- ♦ [Section 7.1.3, “Setting Up Printer Pooling,” on page 75](#)
- ♦ [Section 7.1.4, “Using Print Auditing,” on page 76](#)
- ♦ [Section 7.1.5, “Moving the Print Manager,” on page 81](#)
- ♦ [Section 7.1.6, “Enabling Printer Agent Redirection,” on page 81](#)
- ♦ [Section 7.1.7, “Print Manager Startup Switches,” on page 83](#)

7.1.1 Understanding the Print Manager Database

The Print Manager uses a database to store information about the printers it controls. The database creates a backup when you create or delete a printer and also every night at 1:00 a.m. The last four backups are saved. When a new backup file is created, the oldest of the four stored files is deleted. If the oldest backup file is older than four days, then the Print Manager creates a new backup.

If the database fails to load through normal methods, you can retrieve the database from eDirectory™ and load the Print Manager on any other server in the eDirectory tree.

IMPORTANT: You cannot restore a database from eDirectory to the same server that it was backed up from. In order to restore a database from eDirectory to its original source server, you must first restore it to a different server and then back up the database to eDirectory from that server. You can then restore it to its original server.

Modifying the Database Backup Options

- 1 At the server console, go to the *Available Options* menu for the Print Manager.
- 2 Select *Print Manager Status and Control > Database Options*.
- 3 Modify the desired settings.
- 4 Use Escape to return to the *Available Options* menu.

Restoring a Database from eDirectory

- 1 At the server where you want to restore the database, enter

```
load ndpsm /dbvolume=full_NDS_volume_name
```

See [“Print Manager Startup Switches” on page 83](#) for more information.

- 2 Select the name of the Print Manager whose database you want to restore.

If the server with the original database is up and running, its name appears in this menu. If the server is down, no server name appears here. The only Source option available is eDirectory (existing jobs are lost).

- 3 Select the source of the backup you want to restore.

In most cases, you can select eDirectory as the source.

- 4 Select the volume where you want the database placed.

The restored database is then copied to the location you selected.

7.1.2 Using the Print Manager Health Monitor

The Print Manager Health Monitor provides you with a global view of your print system. The Health Monitor shows you the current status of printer agents, and allows you to configure settings and generate reports about your system.

- ♦ [“Understanding the Print Manager Health Monitor” on page 72](#)
- ♦ [“Accessing the Print Manager Health Monitor” on page 74](#)
- ♦ [“Generating Reports” on page 74](#)
- ♦ [“Configuring Health Monitor Settings That Affect Novell Remote Manager” on page 75](#)
- ♦ [“Posting Administrator Messages about a Printer” on page 75](#)

Understanding the Print Manager Health Monitor

- ♦ [“How can I tell which printers are not being used?” on page 73](#)
- ♦ [“Are any public access printers in my print system?” on page 73](#)

- ♦ “I am migrating to iPrint. How can I tell if the printers have the correct settings?” on page 73

The Print Manager Health Monitor is a powerful tool to manage and troubleshoot your print system. The following examples show some of the features and information available in the Health Monitor.

How can I tell which printers are not being used?

The opening page of the Health Monitor shows all of your printers: their current state and general statistics including the number of print jobs printed in the last hour, in the last day, and since the Print Manager was last started.

A quick look at these statistics helps you identify which printers are not being used. By clicking a printer name, you can see additional details about the printer that can help you troubleshoot why users are not using the printer.

For example, if the printer status shows `Error printing`, then click the printer for a list of known problems. If one of the known problems is `Printer not connected`, then use the IP address listed in the Load String field to ping the printer to determine if the IP address is valid.

By looking at the statistical information, you can correct printer problems or make decisions about redeploying underused printers to departments that print a lot.

Are any public access printers in my print system?

Many companies implemented print systems with public access printers—printers that are accessible to anyone. As security and budgets have become important issues, companies are migrating their public access printers to control access printers so that access to the printers can be managed through eDirectory.

Using the Print Manager Health Monitor, you can quickly scan all printers and determine if any public access printers still exist in the print system by generating a report of printer agents using the Associated NDS Printers report item. As you scan the report, look for printers with a listing of `False`, meaning they do not have an associated eDirectory Printer object. If a printer does not have an associated Printer object, then it is a public access printer.

IMPORTANT: We recommend that all public access printers be converted to a controlled access printer by associating an eDirectory Printer object with the printer agent. This lets you to manage the printer through iManager, use the printer with iPrint, and take advantage of advanced iPrint features like auditing.

I am migrating to iPrint. How can I tell if the printers have the correct settings?

In order for iPrint to work correctly, printers must have IPP enabled and an associated printer driver. While you could use Novell iManager to look at each printer individually, you can save time by using the Print Manager Health Monitor to generate a report showing all of your printers with these two settings.

Go to the Generate a report page, check the iPrint Enabled and driver types check boxes, and then generate a report. Now you can see which printers still need to be enabled for iPrint and which printers still need a printer driver associated with them.

Accessing the Print Manager Health Monitor

The Health Monitor can be accessed from Novell Remote Manager or from the Manage Print Manager page in iManager. From Novell Remote Manager, complete the following:

- 1 Use your Web browser to log in to Novell Remote Manager at `http://server_ip_address/PsmStatus.html`.
- 2 Under *Diagnose Server*, click *NDPS Manager Health*.

You can now view current printer agent states, startup or shutdown printer agents, and view other information about your print system.

Generating Reports

The report feature of the Health Monitor allows you to generate a report that can be displayed on the page or saved as a comma-separated-value (.csv) file that can be used in a spreadsheet program.

- 1 From the NDPS Manager Health Monitor main page, click *Advanced NDPS Manager Information > Generate Report*.
- 2 (Optional) To save the report as a file, click *Write Results to File* under the *File Options* heading.

The heading specifies the location and filename of the report.

- 3 Select the information you want included in the report by checking the corresponding check boxes.
- 4 Click *Generate Report*.

The following are some common reports that you might want to generate.

Printer Configurations: To determine what features are enabled for each Printer Agent, select the following:

- ♦ *SSL Required for iPrint Access*
- ♦ *Auditing Enabled*

Printer's Current State: To view the states of the printers and any printer console messages, select the following:

- ♦ *Printer Agent Status*
- ♦ *Printer Agent State Reasons*
- ♦ *Printer Console*

Printing Statistics: To view statistics about your print system, select the following:

- ♦ *Jobs Printed Ever*
- ♦ *Jobs Printed Since Load*
- ♦ *Jobs Printed Today*
- ♦ *Average Job Size Since Load*
- ♦ *Average Job Size Today*

Gateway Information: To view information about a gateway associated with the Printer Agents, including the gateway's IP address, select the following:

- ♦ *Gateway Load String*

Printer Driver Associations: To view the printer drivers associated with each printer, select the following:

- ♦ *Windows 95/98 Driver*
- ♦ *Windows NT4 Driver*
- ♦ *Windows 2000/XP Driver*
- ♦ *Win XP Driver*
- ♦ *Linux Driver*

Printer and Printer Agent Associations: Because a Printer Agent can service more than one printer, use the *Associated NDS[®] Printers* option to view the number of printers serviced by each Printer Agent.

Configuring Health Monitor Settings That Affect Novell Remote Manager

You can configure settings in the Health Monitor to control how the Health Monitor affects the Novell Remote Manager's overall health indicator. Generally, you should keep the default settings unless you are instructed by Novell to make a change.

- 1 From the NDPS Manager Health Monitor, click *Configure Settings and Error Thresholds*.
- 2 Adjust the settings.

See the online help for information about the available settings.

Posting Administrator Messages about a Printer

Suppose a printer has been taken offline for repairs, but you keep getting phone calls from other administrators that the printer has an error in the Health Monitor. This can be resolved by leaving a message about the printer in Health Monitor. Users can see the message, but only administrators can edit it.

- 1 From the NDPS Manager Health Monitor, click the printer you want, then click *Message From Admin*.
- 2 Type the text you want displayed for this printer.
- 3 Click *Apply*.

To remove a message, follow the steps above and delete the text in the message box (**Step 2**).

7.1.3 Setting Up Printer Pooling

You can create a pool of printers to share the load of printing. Users install one of the printers in the pool. When a printer in the pool has a print job waiting, the Print Manager can redirect that print job to an idle printer in the pool. The Print Manager attempts to evenly distribute print jobs among all printers in a pool.

For example, if four printers are in the pool and the first printer is printing a 100-page job, then the next print job is sent to the second printer. If the second printer completes the print job, and the first

printer is still busy, the next print job is sent to the third printer. Printer pools are specific to the Print Manager, and a printer pool cannot span multiple Print Managers.

Printers that are included in a pool should be the same model and use the same printer drivers. You can only include printers from the same Print Manager in a pool.

When you create a printer pool, the pool information resides in the Print Manager and can only be viewed using Novell iManager. Unlike the Printers and the Print Manager, a separate eDirectory object for a printer pool is not created.

After you set up a printer pool, users install only one of the printers in the pool. When a user submits a print job to the installed printer, the Print Manager uses the method described in the above example to send the print job to the next available printer in the pool. Users should be reminded that their print job might be printed by any printer in the pool. For this reason, the physical printers that are members of a printer pool should be located close to one another. You might also want to enable banner pages, depending on the type of documents being printed.

To set up printer pooling

- 1** From Novell iManager, click *iPrint > Printer Pool Configuration*.
- 2** Select the print services manager for this pool.
- 3** Select *Create Pool from the Select An Operation list*, then click *OK*.
- 4** Specify the name of the printer pool.
This name is only used to identify the pool within Novell iManager.
- 5** Select the printers you want included in the pool.
- 6** Click *Next*, then *OK*.

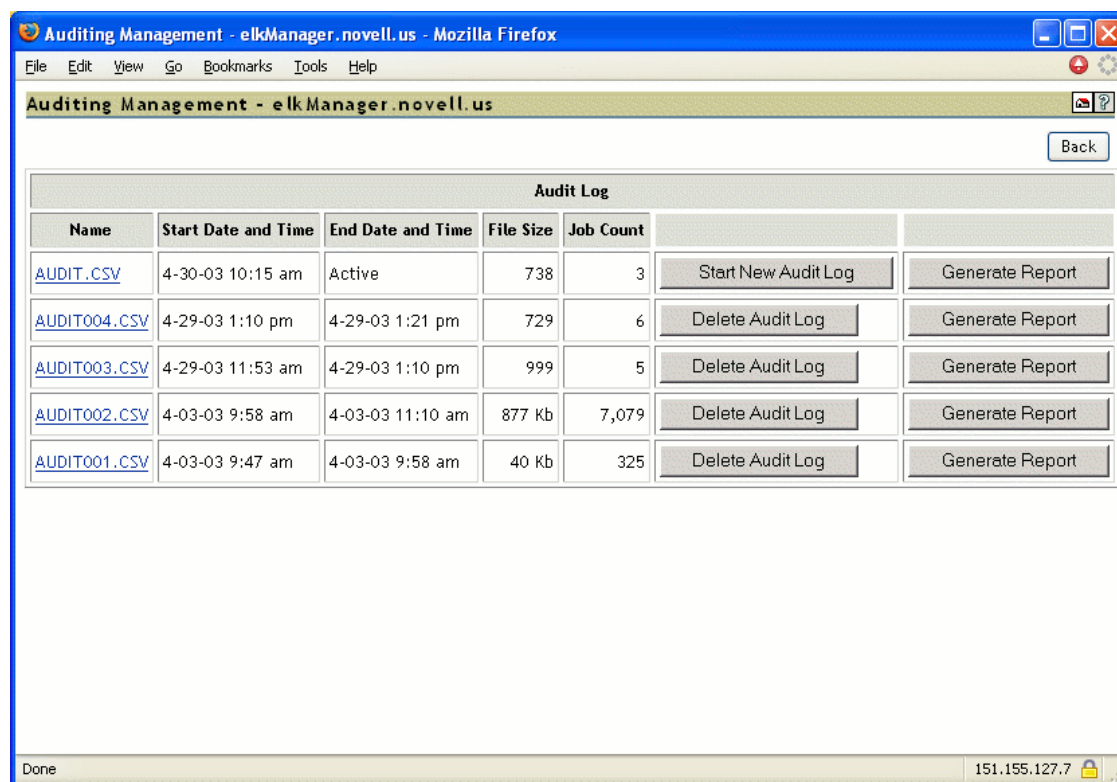
To modify or delete a pool, follow the above steps and select the desired action from the Select an Operation list in **Step 3**.

7.1.4 Using Print Auditing

To use print auditing, you first need to enable auditing for each printer you want to audit using either Novell iManager or the NDPS® Manager Health Monitor.

When auditing is enabled for a printer agent, a log file is created indicating who printed how many pages to which printer on a given date. The log file is in a comma-separated format (.csv). The data from this log file can be viewed from the Health Monitor or downloaded into a spreadsheet.

Figure 7-1 Auditing Management Page



From the Auditing Management page, you can complete the following tasks:

- ♦ “Using Novell iManager to Enable Auditing” on page 77
- ♦ “Using the Health Monitor to Enable Auditing” on page 77
- ♦ “Viewing Auditing Information” on page 78
- ♦ “Managing Audit Logs” on page 80
- ♦ “Configuring Automatic Log Rotation” on page 80
- ♦ “Downloading an Audit Report” on page 81

Using Novell iManager to Enable Auditing

- 1 In Novell iManager, click *iPrint > Enable Auditing*.
- 2 Browse to and select a Print Manager.
- 3 Select the printers you want to enable auditing for by selecting the check box in the *Auditing* column. Select the check box at the top of the column to enable auditing for all printers in the list.

Using the Health Monitor to Enable Auditing

- 1 To access the Print Manager Health Monitor, open `http://server_IP_address/psmstatus` in a Web browser.

For example: `http://printing.my_company.com/psmstatus`

- 2 Click the printer you want to enable auditing for.
- 3 Click *Configuration Options*.
- 4 Select the *Enable Auditing* check box.
- 5 Click *OK*

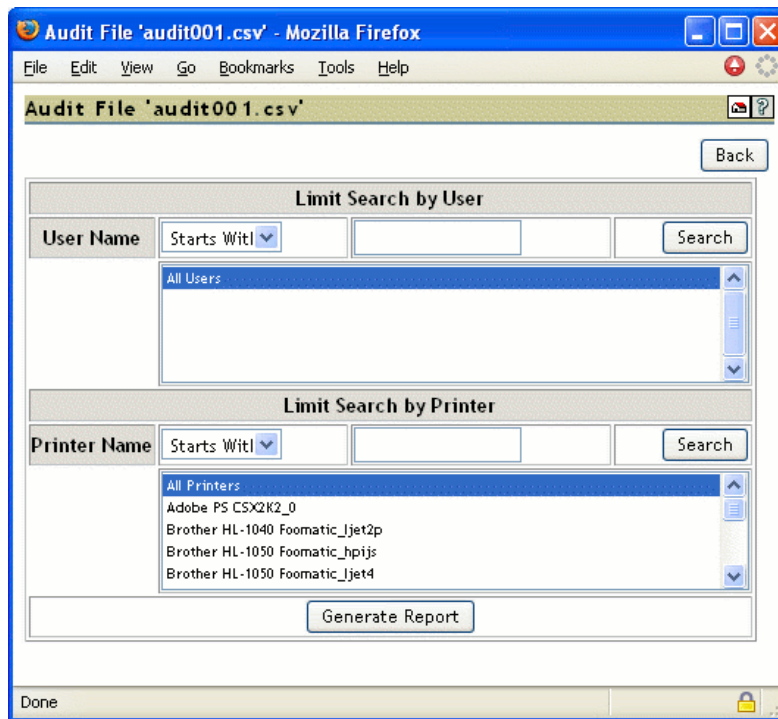
Viewing Auditing Information

You can generate an audit report that shows all print jobs or you can filter the report based on a user or a printer or both.

- 1 In the Health Monitor, click *Advanced NDPS Manager Information > Auditing > Generate Report*.

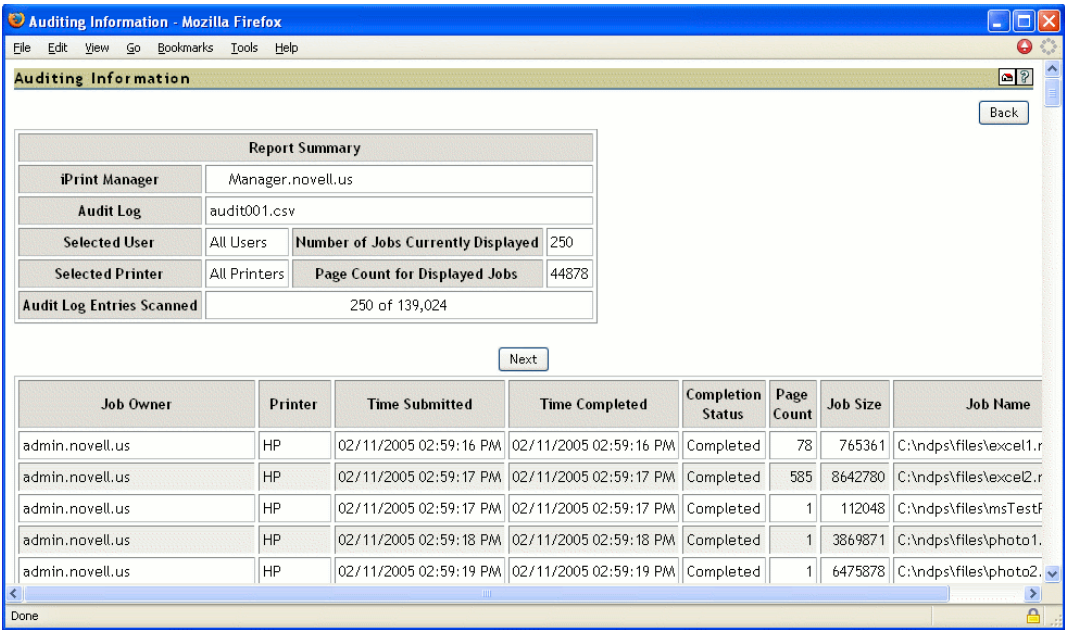
If there is more than one audit log, click *Generate Report* for the audit log you want to view.

- 2 (Optional) Filter the search by using the *Limit Search by User* and *Limit Search by Printer* filters.



- 3 Click *Generate Report* to view the report.

There are only 250 print jobs listed at a time. To view more print jobs in the report, click *Next*.



The following table explains the fields that are displayed in the Report Summary.

Table 7-1 Report Summary Fields

Field	Description
NDPS Manger	The NDPS Print Manager that the information is from.
Audit Log	The audit log filename that was used to create the report.
Selected User	Any user filter criteria that were used to create the report.
Selected Printer	Any printer filter criteria that were used to create the report.
Number of Jobs	The number of jobs submitted by the indicated users and printers.

The following table explains what is displayed in the body of the report.

Table 7-2 Report Fields

Field	Description
Job Owner	The owner of the print job.
Printer	The printer the print job was sent to.
Time Submitted	The time the print job was submitted to the printer.
Time Completed	The time the print job was printed on the printer.

Field	Description
Completion Status	The completion status of the submitted print job: Completed, Cancelled by User, Cancelled by Operator, or Other (typically, Other indicates the job was aborted by the system).
Page Count	The number of pages printed.
Job Size	The size of the print job (in bytes).
Job Name	The print job filename that was submitted and the type of print client that submitted the print job.

Managing Audit Logs

You can manage your audit logs by using the buttons on the Auditing Management page. When audit logs are no longer needed, you can manually delete them. To automatically save and create new logs, see [“Configuring Automatic Log Rotation” on page 80](#).

The active audit log file (`audit.csv`) logs data for all printers that have been enabled for auditing. You can generate a report from this file or you can move the data to a saved file using *Start New Audit Log*. You cannot download the `audit.csv` file. To download a file, it must be saved as a separate audit log. When you move the data to a saved audit log using the *Start New Audit Log*, the log file is named `auditxxx.csv`, where `xxx` is the next sequential number of the log. After a log file is saved, you can download the file to your workstation and import it into a spreadsheet program.

Configuring Automatic Log Rotation

Audit Log Rotation automatically creates a new log when certain criteria are met.

- 1 In the Print Manager Health Monitor, click *Advanced iPrint Manager Information > Auditing > Configure Log Rotation*.
- 2 Select *Enable Audit Log Rotation*.
- 3 Specify the number of logs to keep.

When the number of logs to keep is reached, the oldest log is deleted when the next log is created. When setting this number, take in to account the criteria you are using to create a new log file. If you want a year’s worth of logs, set the number of audit logs to keep to 12 and then select the *By Date* and *By Month* options.

- 4 Specify the criteria used for log rotation.

By Job Count: Specify the maximum number of print jobs that an audit log can contain before a new log is created.

By Date: Select when you want the audit logs to rotate.

- ♦ Day: The log rotates each day at midnight.
- ♦ Week: The log rotates each Sunday. If the Print Manager is not loaded on Sunday, the log is rotated the next time the Print Manager starts.
- ♦ Month: The log rotates at midnight on the first day of the month.

NOTE: If you select Day or Week, ensure that the *Maximum Number of Audit Logs to Keep* entry is large enough so that logs are not rotated before you need the data.

By File Size: Specify the maximum file size (in KB) before a new log is created. The maximum file size is 4 GB.

Downloading an Audit Report

When the file is downloaded, you can open the report in a spreadsheet application to sort, view, and format the data to meet your needs. The active audit log, `audit.csv`, cannot be downloaded. You must first start a new audit log by clicking **Start New Audit Log**, and then download the newly created audit log.

- 1 On the Print Manager Health Monitor main page, click *Advanced NDPS Manager Information > Auditing*.
- 2 Right-click the name of the audit log you want to download, then click *Save Target As*.
- 3 Follow the prompts and save the file to the desired location.

7.1.5 Moving the Print Manager

Sometimes it is necessary to move the Print Manager from one server to another. If you assigned a DNS name to the Print Manager, you should update the DNS entry with the new IP address that the Manager is running on after the move is completed; otherwise you are not able to manage the Print Manager and users cannot be able to print.

WARNING: The URLs generated by iPrint are based on the server's IP address or a DNS name. If you move a Print Manager to a server that has a different IP address or a different DNS name, a new URL is generated. Users must delete and reinstall their iPrint printers. If you are using NDPS[®] Printers, printing is not affected.

- 1 If the Print Manager is currently running, unload it by clicking *iPrint > Manage Print Manager*.
- 2 Browse to and select the Print Manager you want to move, then click *OK*.
- 3 Click *Shutdown*.

WARNING: All printing associated with this Print Manager ceases and waiting print jobs are lost.

- 4 At the other server console, enter
`load ndpsm`
If you need to use a startup switch, see **“Print Manager Startup Switches” on page 83**.
- 5 Select the Print Manager object you want to load.
A specific Print Manager can run only once.
You are prompted to download the database, and the Manager starts running.

7.1.6 Enabling Printer Agent Redirection

Printer Agent Redirection is useful when you are decommissioning an iPrint printer and want to automatically redirect printing to a different iPrint printer without users manually deleting and reinstalling the printer. Redirection can continue even after you delete the printer agent for iPrint printers only.

Printer Agent Redirection is supported with the iPrint client for Windows v4.26 or later.

With Printer Agent Redirection enabled by entering a Printer Redirect URL, the client attempts to access the printer and is then redirected to the new printer. The client verifies that it can access the new printer before deleting the installed printer and installing the new printer.

Before implementing Printer Agent Redirection, you should be aware of the following:

- ♦ When you redirect a Printer Agent, the iPrint Printer List Web page is automatically updated to install the redirected printer. This means when a user clicks to install a printer listed from the list page, the link has been updated to install the redirected printer.

For example, you redirect a printer agent that has the name of Printer_1_Color to a printer called Color_Printer. On the iPrint Printer List Web page, the user sees and clicks on Printer_1_Color. After the printer is installed, the printer listed in the Windows Printer Folder is Color_Printer.

- ♦ Printers on maps are not automatically redirected. If you are using maps and you redirect the printer agent, you need to also update your map and republish it to show the newer printer agent. You should update the map before enabling Printer Agent Redirection because as soon as you enter a redirection URL, the link on the map is broken and any user clicking on the link in the map receives an error.
- ♦ If you redirect a printer agent to another printer that is also being redirected, the iPrint client attempts to install the final destination printer; however, this might cause undesired results.

For example, if you have redirected Printer_1_Color to Color_Printer, and then redirect Printer_A to Printer_1_Color, the iPrint client attempts to install Color_Printer for Printer_A.

IMPORTANT: You should enable Printer Agent Redirection before deleting a printer; otherwise, when the client accesses the Print Manager and cannot find the associated printer agent for an installed printer, the installed printer is deleted.

WARNING: If you are using iPrint Client Management, you should not use Printer Agent Redirection. Using Printer Agent Redirection for printers being used by iPrint Client Management can cause undesired results.

Instead, you should update iPrint Client Management with the desired printers.

Managing Printer Agent Redirection

Before deleting printer agents from a print manager, you should enable Printer Agent Redirection for iPrint printers by entering another printer URL. By adding the URL before deleting the printer, workstations can update to the newest printer.

The Printer Agent Redirection lists include NDPS and iPrint printers. If you enable redirection for NDPS printers, then install the iPrint client on the workstations and edit the **UpgradeNDPSPrinter=** entry in the `iprint.ini` file, NDPS printers can be upgraded. However, if you delete an NDPS printer agent, redirection is discontinued.

- 1 In Novell iManager, click *iPrint > Manage Print Manager*.
- 2 Browse to and select a Print Manager.
- 3 Click *Printer Agent Redirection*.

- 4 For each printer agent you want to redirect, use the browse button to select the Printer object in eDirectory to ensure that you use the correct URL.

If the printer resides in a different tree, you can manually enter the URL using the following format: `ipp://server/ipp/pa_name` where *server* is the IP address or DNS name of the server and *pa_name* is the printer agent.

- 5 Click *Apply*.

Each URL is validated to ensure that the format is valid and that the printer agent is available. An error is displayed when the URL cannot be validated.

Managing Deleted Printer Agent Redirection

Each time a printer agent is deleted, it is moved to the Deleted Printer Agent Redirection list. Periodically, you should review this page and delete printers that are no longer being accessed or printers where redirection was not enabled.

- 1 In Novell iManager, click *iPrint > Manage Print Manager*.
- 2 Browse to and select a Print Manager.
- 3 Click *Printer Agent Redirection > Deleted Printer Agent Redirection*.
- 4 Select the printer agents to delete.

Using *Printer Last Accessed Time* and *Printer Deleted Time*, you can determine if users are still attempting to access a specific printer and if sufficient time has passed so that you can delete printer agents from the list.

- 5 Click *Apply*.

Each URL is validated to ensure the format is valid and that the printer agent is available. An error is displayed when the URL cannot be validated.

7.1.7 Print Manager Startup Switches

To always load a Print Manager with the same startup switch, add the switch to the load Print Manager entry in the server's `autoexec.ncf` file.

Syntax:

```
load ndpsm Print_Manager_name_and_context /startup_parameter
```

Example:

```
load ndpsm .sales_manager.corp.acme /dbvolume=sales_sys
```

The following table lists the startup switches you can use when loading `ndpsm.nlm`.

Table 7-3 *Print Manager Startup Switches*

Startup Parameter	Description
nodatabase	Load the Print Manager without opening the database. The Database Options menu is displayed. This lets you examine, back up, restore, resynchronize, and uninstall the Print Manager database.

Startup Parameter	Description
noipx	The Print Manager does not support the IPX™ protocol.
noip	The Print Manager does not support the IP protocol.
nosrs	Prevents the NDPS Manager from looking for an SRS. Use this switch in conjunction with the Broker's /noadvert switch.
noens	
dbvolume= <i>full_NDS_volume_name</i>	Download the database from eDirectory and reconnect pointers to the local server where the command is executed. This is useful for moving the Print Manager to a new volume.
dbvolume=nocheck	The Print Manager does not validate that the database volume is local. This is used with Clustering.
setens= <i>broker_name</i>	Set the Event Notification Service to the specified Broker for all printers associated with this Print Manager.
setrms= <i>broker_name</i>	Set the Resource Management Service to the specified Broker for all printers associated with this Print Manager.
qloadbalance	The Print Manager evenly distributes the waiting print jobs among printers that are ready. This is used when pooling printers.
iprinton	The iPrint attribute is turned on for all printers associated with the Print Manager.
dnsname= <i>NDPSM_DNS_name</i>	<p>This sets a DNS name to a Print Manager object. You need to include the DNS information in your DNS lookup tables.</p> <p>You use this switch only once, and the Print Manager uses the same DNS name each time it is loaded. To change the DNS name, use the switch with the new name.</p> <p>If you included the DNS name before deploying printing with this manager, then you can easily move the Print Manager to another server without disrupting printing.</p> <hr/> <p>NOTE: The DNS name must be assigned before printing on the Print Manager is deployed.</p> <hr/>
defragdatabase	Reallocates the data within the <code>psmdb.dat</code> file, the NDPS Manager database. This switch often resolves database corruption problems. Symptoms of database corruption include errors when loading <code>ndpsm</code> , inability to manage printer agents within the manager database, and slow performance.
qnumjobs= <i>number</i>	<p>Optional configuration when Printer Agents are configured to service legacy print queues. Must load <code>ndpsm.nlm</code> dated 15JUN2006 or later. Without this switch, 1 job is pulled from the print queue at an average of every 6 seconds. For some print environments, this is too slow. By using this switch, you can specify the number of jobs to be pulled every 2 seconds from the queue.</p> <p>For example, to pull 500 jobs from the queue every 2 seconds is / QNUMJOBS=500</p>

7.2 Managing Printers

The following sections help you perform management functions for printers.

- ♦ [Section 7.2.1, “Enabling/Disabling iPrint on Individual Printers,” on page 85](#)
- ♦ [Section 7.2.2, “Enabling iPrint Direct,” on page 86](#)
- ♦ [Section 7.2.3, “Moving Printer Agents to Another Print Manager on NetWare,” on page 86](#)
- ♦ [Section 7.2.4, “Managing Printer Agents,” on page 86](#)
- ♦ [Section 7.2.5, “Managing Print Jobs,” on page 87](#)
- ♦ [Section 7.2.6, “Using Printer Driver Profiles,” on page 88](#)
- ♦ [Section 7.2.7, “Using Printer Banner Pages,” on page 89](#)
- ♦ [Section 7.2.8, “Modifying the Printer’s Gateway Load Commands,” on page 91](#)
- ♦ [Section 7.2.9, “Configuring Printer Settings,” on page 92](#)
- ♦ [Section 7.2.10, “Configuring Job Holds,” on page 93](#)
- ♦ [Section 7.2.11, “Optimizing Event Notification,” on page 94](#)
- ♦ [Section 7.2.12, “Setting Print Job Spooling,” on page 95](#)
- ♦ [Section 7.2.13, “Configuring LPR Printers,” on page 96](#)
- ♦ [Section 7.2.14, “Migrating NDPS Printers to iPrint,” on page 97](#)
- ♦ [Section 7.2.15, “Migrating Queue-Based Printers to iPrint,” on page 97](#)
- ♦ [Section 7.2.16, “Supporting Queue-Based Client Workstations,” on page 97](#)

NOTE: While most tasks can be done in Novell iManager, some tasks require you to use NetWare Administrator.

7.2.1 Enabling/Disabling iPrint on Individual Printers

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want to enable IPP printing for.
- 3 Click *Client Support > iPrint Support*.
- 4 Check the *Enable iPrint Support Access* check box.

The URL that appears in the *Accepted IPP URL(s)* box is the URL used when the printer is created on a workstation. This is also the URL you should use when creating iPrint maps. For more information, see [“Creating Location-Based Maps with iPrint Map Designer” on page 63](#).

To disable iPrint, deselect the check box.

- 5 (Optional) For secure printing, check the *Require SSL and User Authentication* check box.
This requires users to authenticate to eDirectory using their usernames and passwords.
For more information, see [Section 8.3, “Secure Printing Using SSL/TLS,” on page 112](#).
- 6 To update the printer settings, click *Apply* or *OK*.

7.2.2 Enabling iPrint Direct

Users of an iPrint Direct-enabled printer send print jobs directly to the printer instead of sending the job to the Print Manager first. The job is sent to the printer in LPR or raw 9100 format, depending on the setting gateway autoloading command for the printer. Although this greatly reduces server communication, the ability to audit print jobs is lost. iPrint Direct still supports driver updates, and printer information is gathered directly from the printer by using SNMP.

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want to enable iPrint Direct printing for.
- 3 Click *Client Support > iPrint Direct*.
- 4 Select the *Enable iPrint Direct Printing* option.
- 5 Click *OK*.

7.2.3 Moving Printer Agents to Another Print Manager on NetWare

Using Novell iManager, you can move printer agents to a different Print Manager.

WARNING: The URLs generated by iPrint are based on the server's IP address or a DNS name. If you move a Printer to a server that has a different IP address or a different DNS name, a new URL is generated. Users must delete and reinstall their printers. If you are using NDPS Printers, printing is not affected.

- 1 From Novell iManager, click *iPrint > Manage Print Manager*, and then browse to and select the Print Manager.
- 2 Click *Printer Agents*, then click *Move*.
- 3 Select the printer agents you want to move by checking the check box next to them.
- 4 Click *Move*, and then select the Print Manager where you want the printer agents moved to.
- 5 Click *OK*.

You want to ensure that the same printer drivers are available to the printer agents.

7.2.4 Managing Printer Agents

Using iManager you can manage printer agents. You can start up or shut down a printer agent, pause or resume input and output, view printer information, set configuration settings, and change the printer drivers.

- 1 From your Web browser, log in to Novell iManager.
- 2 Click *iPrint > Manage Printer*, and then browse to and select the printer you want to manage.
- 3 Click *OK*.
- 4 Use the tabbed property pages to complete the task you want.

7.2.5 Managing Print Jobs

The following sections provide specific information about the print job management features. All of the procedures listed below can be performed through Novell iManager, NetWare Administrator or through the Novell Printer Manager. Users designated as managers or operators for a printer can perform these tasks for all jobs routed to that printer; individual job owners can only perform these tasks for their own print jobs.

Viewing Print Job Information

To view information about individual print jobs waiting to be processed by a specific printer:

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer the job was sent to.
- 3 Click *Printer Control > Jobs*.

Information about the print jobs is displayed.

Deleting Print Jobs

Administrators can delete any print job after it has been submitted if the job has not yet started printing. Users can delete only their own print jobs.

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer the job was sent to.
- 3 Click *Printer Control > Jobs*.
- 4 Select the check box next to the job you want to delete.
- 5 Click *Delete*.

Changing the Order of Print Jobs

Occasionally, you might need to print a job ahead of other jobs that have already been submitted to a printer, but have not yet started printing, and are awaiting servicing. Administrators can move jobs up or down the list. Users can move only their own jobs and can move them only down the list.

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer the job was sent to.
- 3 Click *Printer Control > Jobs*.
- 4 Select the check box next to the job you want to modify.
- 5 Click *Promote* to move a print job up the list.

Moving Print Jobs

You can allow operators and job owners to copy or move a print job to another printer. The target printer must be running on the same server (managed by the same Print Manager) as the printer on which the job currently resides. Also, the target printer must be compatible with the driver that formatted the job. For example, if a job was formatted with an HP5si driver, it should not be copied or moved to an HP LaserJet* III.

Administrators can copy or move any print job after it has been submitted if the job has not yet started printing. Users can copy or move only for their own print jobs.

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer the job was sent to.
- 3 Click *Printer Control > Jobs*.
- 4 Select the check box next to the job you want to move.
- 5 Click *Move* to move the print job to another printer in the list.

Modifying Print Job Characteristics

You can modify a print job in two ways:

- ♦ **Use printer driver profile.** To set the defaults for a printer driver so that the same defaults are installed every time a printer is installed, create printer driver profiles. This is the recommended method. For more information, see [Section 7.2.6, “Using Printer Driver Profiles,” on page 88](#).
- ♦ **Modify the specific job.** When a job is submitted, it inherits the properties of the installed printer’s configuration. The configuration of the job can then be modified, if needed, by the job’s owner or the printer’s Operator.

When jobs are modified, additional configurable properties are available which are not included in the original printer configuration. For example, the job can be delayed and advanced attributes can be viewed and modified.

Administrators can modify any print job after it has been submitted if the job has not yet started printing. Users can modify only their own print jobs.

To modify a job:

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer the job was sent to.
- 3 Click *Printer Control > Jobs*.

If you want to see a list of jobs already processed and being retained, click *Retained Jobs*. Information about each print jobs is displayed.

7.2.6 Using Printer Driver Profiles

Printer driver profiles let you set the driver defaults for a Windows printer driver. Then you associate the printer driver profile to a printer so that when the printer is installed, it is configured with the settings you want.

For example, in a law office you might want the default paper size to be legal size. This means every time the printer and corresponding driver are installed on a workstation, the paper size is set to legal size.

Create, Modify, and Delete Printer Driver Profiles

When creating a printer driver profile, you work directly with a platform-specific printer driver; therefore, you must create and modify profiles from the same operating-specific platform as the

printer driver. For example, to create or modify a Windows 2000 printer driver profile, you must access iManager and complete the task from a Windows 2000 workstation.

- 1 In Novell iManager, click *iPrint > Printer Driver Profile*.
- 2 Browse to and select the Print Manager where you want the driver profile stored and made available to the printers on that manager.
- 3 Select an *Operation* and click *OK*.
 - ♦ **Create Printer Driver Profile:** Creates a new printer driver profile.
 - ♦ **Delete Printer Driver Profile:** Deletes an existing driver profile.
 - ♦ **Modify Printer Driver Profile:** Edits the settings of an existing printer driver profile.

After creating a printer driver profile, you need to associate it with a printer.

Associate a Printer Driver Profile with a Printer

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want to modify.
- 3 Click *Drivers > printer_driver_operating_system*.
- 4 Select the printer driver from the list of *Available Drivers*.
- 5 Select the profile you want associated with this printer from the list of *Available Driver Profiles for Selected Driver*.

If you do not want a profile associated, select *None*.
- 6 Click *OK* to save the changes.

7.2.7 Using Printer Banner Pages

Banner pages create a cover sheet for each print job that a printer produces. Using the Printer Banner Configuration task, you can customize the information printed on a banner to your needs. If you select eDirectory information such as the eDir e-mail address, the Print Manager needs rights to read these attributes. Follow the steps in [“Using eDirectory Attributes with Custom Banners” on page 90](#).

NOTE: If you are using banners under *Manage Printer > Configuration > Defaults (Legacy)*, we recommend that you transition to using custom banners. If you continue to use a legacy banner and specify a custom banner, both banners print with each print job. Custom banners is the preferred method for implementing banners.

Configure a Custom Banner

- 1 In Novell iManager, click *iPrint > Printer Banner Configuration*.
- 2 Browse to and select the Print Manager you want.
- 3 Select an *Operation* and click *OK*.
 - Create Custom Banner:** Lets you create a new custom banner.
 - Delete Custom Banner:** Lets you delete an existing banner.
 - Modify Custom Banner:** Lets you edit the settings of an existing custom banner profile.

- 4 Complete the fields with the information you want. If you create multiple banners, you should use banner names that are descriptive enough to identify them when you associate the banner to a printer.
- 5 Select the *Banner Text Location*.

This is where the banner option information appears on the banner page. The banner information is grouped together and then placed as a chunk either starting at the top of the page, centered on the page, or starting at the bottom of the page.
- 6 Select the banner options you want and the font size you want to use to display the information.
- 7 Click *OK* to save the changes.

Associate a Custom Banner to a Printer

- 1 In Novell iManager, click *iPrint > Printer Banner Configuration*.
- 2 Browse to and select the Print Manager where the printer agents are hosted.
- 3 Select *Assign Custom Banner*, then click *OK*.
- 4 From the *Custom Banner* drop-down list, select the banner you want.
- 5 Select the check box next to each printer you want this banner associated with.

When you select the check box, the banner name appears in the Assign Banner field. To associate a different banner, select the desired banner from the Custom Banner drop-down list, and select the check box for the printer you want to change. If you do not want a banner to be used, select *None*.

You can also assign banners when using the Manage Printer task.

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want to modify.
- 3 Click *Configuration > Custom Banners*.
- 4 In *Available Banners*, select the banner that you want this printer to use.
- 5 Click *OK* to save the changes.

If you select eDirectory information such as the eDir e-mail address, the Print Manager needs rights to read these attributes. Follow the steps in [“Using eDirectory Attributes with Custom Banners” on page 90](#)

NOTE: If you are using banners under *Manage Printer > Configuration > Defaults (Legacy)*, we recommend that you transition to using custom banners. If you continue to use a legacy banner and specify a custom banner, both banners print with each print job. Custom banners is the preferred method for implementing banners.

Using eDirectory Attributes with Custom Banners

Custom banners let you select the information you want displayed on the banner page. Some of the banner options are information contained in eDirectory™. In order for the Print Manager to obtain this information, you must modify the trustee rights and allow read access to these attributes. Because rights flow down the eDirectory tree, you can assign the trustee right at a container level above the users, or to the tree.

- 1 In iManager, click *Rights > Modify Trustee Rights*.

- 2 Select the container or tree where you want to modify the rights.
- 3 Click *Add Trustee*, then select the object.
- 4 Click *Add Property*, then select the *Show All Properties in Schema* check box.
- 5 Select the following attributes:

Banner Option	eDirectory Property
eDir mail stop	mailstop
eDir e-mail address	EMail Address
eDir location	L
eDir telephone number	Telephone Number
eDir user first name	Given Name
eDir user full name	Full Name
eDir user last name	Surname

- 6 Click *OK*.
- 7 Ensure that at least the *Read* right is selected.
- 8 Click *Done*.

7.2.8 Modifying the Printer's Gateway Load Commands

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want to modify.
- 3 Click *Configuration > Gateway*.
- 4 Edit the *Gateway Autoload Command*.

The following tables describe the gateway load commands and parameters that can be used.

Gateway Load Parameters	Description
NDPSGW	The gateway NLM™ that is loaded for this printer agent. Additional third-party gateways are also available and only run on NetWare. The gateway executable displays at the beginning of the gateway autoload command.
PA=	The printer agent name that is to be loaded.

Gateway Load Parameters	Description
PORT= <i>port_value port_specific_parameters</i>	<p>The type of port to be used. Supported values are LPR, RAW and NULL. Most printers use LPR. Some printers use RAW, which defaults to PORT 9100. Other ports can be used by appending <i>:port_number</i> to the HOSTNAME or HOSTADDRESS. For example, 129.63.47.78:9101.</p> <p>The port value is followed by port-specific parameters. See the Port-Specific Parameters in the table below</p>
HOST= or HOSTADDRESS=	The hostname (DNS Name) or IP address of the printer.
PRINTERNAME=	Passthrough is used for most printers. If you are printing to a UNIX printer, use a UNIX-type printer or queue name.
GETCOMMUNITYSTRING=	Specifies the community string to be used for SNMP Get and GetNext requests.
SETCOMMUNITYSTRING=	The community string to be used for SNMP Get and GetNext requests.
NOSNMP	No SNMP traffic is generated by the gateway and printer status information, such as the information displayed on the printer, is not gathered.

Parameters	Description
T= and R=	Used to set the timing to re-establish a connection if communication with the printer is lost. You should leave this at the default of T=90 and R=60.
SPOLL=	The base SNMP polling interval (in seconds). Only certain SNMP information, such as the printer's alert table and display console, is gathered at this polling interval.
VENDOR=	The printer vendor. Reserved for the vendor's use only.

5 Click *OK* to save the changes.

7.2.9 Configuring Printer Settings

IMPORTANT: While you can configure the settings in this section on a per-printer basis, we recommend that you use **Printer Driver Profiles** and **Custom Banners** for iPrint and new NDPS printers. The printer configuration defaults should be used only for existing NDPS printers that already use these settings.

To modify the default settings:

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want to modify.
- 3 Click *Configuration > Defaults (Legacy)*.
- 4 Modify the settings.
 - ♦ **Copies:** The number of copies that are to be printed for this configuration.
Max Copies: The maximum number of copies that a user can print using this printer.
 - ♦ **Priority:** The priority assigned to jobs using this configuration.
Max Priority: The maximum priority (Low, Medium, High) set by the administrator for jobs using this printer. This setting determines when the job prints in relation to other jobs with different priorities sent to this printer.
 - ♦ **Banner:** A list of banner pages users can select from. Banner pages are printed at the beginning of print jobs using the configuration. If multiple copies of a document are printed, the banner page are printed only at the beginning of the first copy.

TIP: If your client, printer, and server are not all configured for the same language, you might experience problems with the output of your banner pages, such as the job name being corrupted. If you are working in this type of mixed environment, you should consider not using banner pages.

If you select the check box to lock the current setting, users cannot change this setting on the printer.

 - ♦ **Medium:** The medium (form) on which jobs can be printed without stopping the printer to mount a different medium (form). The default on the printer is Any Medium, which allows jobs to be printed using the currently mounted medium regardless of media specified in the job data. If a medium is specified for this configuration and a different medium (anything other than Any Medium) is mounted on the printer, this condition causes the printer to pause for the given amount of time (default is 15 minutes) or until the new media is mounted. If this Job Wait Time expires, the job is placed on hold and returned to the spooling area.

If you select the check box to Lock the current setting, users cannot change this setting on the printer.
- 5 Click *OK* to save the changes.

7.2.10 Configuring Job Holds

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want to modify.
- 3 Click *Configuration > Job Holds*.
- 4 Modify the settings.
 - ♦ **Operator Hold:** Jobs do not print until the Operator releases them.
 - ♦ **User Hold:** Jobs do not print until the user who submitted the job releases it.
 - ♦ **Retain Job No Longer Than:** The maximum amount of time that jobs to this printer can be retained after printing before being deleted (Minutes, Hours, Days, Years). By default, jobs are not retained.

- ♦ **Retain Job For:** The amount of time that a job sent to this printer should be retained (regardless of when it is printed) until it is deleted (Minutes, Hours, Days, Years).

5 Click *OK* to save the changes.

7.2.11 Optimizing Event Notification

With the iPrint Client users can be notified when their print job is complete (see “[Managing Print Job Notifications](#)” on page 48). You can also configure event notification for users who want to be notified of a defined printer or server event that occurs during the processing and printing of a job.

For example, the administrator for a specific printer (by default a Manager of that printer) can designate an Operator to be notified if the printer runs out of paper or if the toner is low.

This type of Event Notification is configured using NetWare Administrator.

Notification Types

Using NetWare Administrator, you can configure two types of event notification:

- ♦ **Job-owner notification.** You can configure event notification for job owners only through the printer’s Configuration dialog box. When notification is part of a configuration, the owner of a job submitted to a printer with that configuration receives the notification specified. For more information, see “[Configuring Job-Owner Notification](#)” on page 95.

At the workstation, individual users can use the Novell Printer Manager to configure event notification pertaining to their own jobs.

- ♦ **Interested-party notification.** You can use the Access Control Notification feature to configure notification to be sent to a printer’s Managers, Operators, or other interested parties about specified events, normally those that require intervention of some kind.

Because this feature is tied to the Printer Access Control feature, it allows you to restrict the list of individuals who receiving this notification as much as you want. For more information, see “[Configuring Interested-Party Notification](#)” on page 95.

Delivery Methods

The availability of the following delivery options depends on which of them you have enabled. See “[Enabling Event Notification Delivery Methods](#)” on page 102 for more information.

- ♦ **Pop-up notification.** Messages pop up on the screen of individuals designated to receive them. Users designated for pop-up notification must have a default server defined in their User Environment specified in NetWare Administrator. They also must be currently authenticated to that server or they cannot receive notifications.
- ♦ **SMTP notification.** Messages are sent to the recipient through SMTP (Simple Mail Transfer Protocol) in IP-based systems.
- ♦ **Log file notification.** Messages are written to a file at a designated location on a NetWare server that the recipient has rights to. This is especially useful for keeping a record of printing events for auditing purposes (such as job completions, how often the toner ran out, etc.).
- ♦ **Programmatic notification methods.** Two programmatic notification delivery methods are included: SPX™ and RPC.
- ♦ **Third-party notification methods.** The open architecture of the print system allows third parties to develop additional delivery methods.

Configuring Job-Owner Notification

Job-owner notification can be configured for specific print jobs or for printer configurations. This section provides procedures for each method.

Notification for Specific Print Jobs

- 1 From the main *Printer Control* view of the printer's *Details* page, click *Jobs/Job List*.
- 2 (Conditional) To see a list of jobs being retained and not currently scheduled for processing, click *Show Retained Jobs*.
- 3 Click *Job Options* and select *Configurations* from the drop-down list.
- 4 Click *Notification*.
- 5 Select the notification methods and events you want.
- 6 Click *OK*.

Configuring Interested-Party Notification

The following procedure allows you to specify the users who receives event notification for a Printer object, the method of notification, and the types of events they receive notification for.

- 1 In NetWare Administrator, select the printer you want to configure.
- 2 Click the *Access Control* button.
Three roles are available: *Manager*, *Operator*, and *User*.
- 3 Select the role you want to configure Access Control notification for.
- 4 Select the object you want to configure notification for, then click *Notification*.
- 5 Click the icon representing the method you want to use.
- 6 Select the notification methods and events you want.
- 7 Click *OK*.

7.2.12 Setting Print Job Spooling

Although you do not need to send print jobs through queues, jobs submitted to printers often need to be stored somewhere when the printer is already processing other jobs or when the job is on hold or retain status. Job spooling allows you to specify where you want jobs to be stored while they await processing.

By default, the spooling area for a printer is located on the same volume as the database for the Print Manager supporting that printer. However, the Spooling Configuration option allows you to spool jobs to a different location through the following procedure.

Job spooling offers greater simplicity and management convenience than queue-based printing. Spooling requires only that a directory be designated where jobs can be stored while awaiting processing.

You can modify job spooling at any time, even when a job is already being processed.

To optimize job spooling:

- 1 In Novell iManager, click *iPrint > Manage Printer*.

- 2 Browse to and select the printer you want to enable Access Control for.
- 3 Click *Configuration > Spooling*.
- 4 Modify the spooling information.
 - ♦ **Spooling Location:** Specify the path where print job data is stored while waiting to be printed. By default, the spooling area for a printer is located in the same volume as the database for the Print Manager supporting that printer.
 - ♦ **Available Disk Space:** The amount of disk space available on the volume.
 - ♦ **Limit Disk Space:** To limit the amount of disk space to be used for spooling, select the check box and set the limits you want.
 - ♦ **Spooling Space:** The total amount of disk space in kilobytes (KB) you want to set aside for print job spooling.
 - ♦ **Retained Job Space:** The amount of disk space in kilobytes (KB) you want to set aside for holding retained print jobs. This amount should be sufficiently less than the total spooling space to ensure that new print jobs can be processed efficiently.
 - ♦ **Scheduling:** Four common job scheduling algorithms are available: First In, First Out, Print Smallest Job First, Minimize Media Changes, Backward Print Only Current Medium.
- 5 Click *OK*.

7.2.13 Configuring LPR Printers

UNIX, Macintosh, and other LPR clients can print to iPrint printers using LPR.

IMPORTANT: In order for LPR to work, the printer agent name cannot contain spaces. If it does, you need to recreate the printer agent or select a different printer.

- 1 In Novell iManager, click *iPrint Management > Manage Printer*.
- 2 Browse to and select the printer you want to enable LPR printing for.
- 3 Click *Client Support > LPR Support*.
- 4 Check the *Enable LPR/LPD Client Support* check box.

The *LPR Host* and *LPR Printer/Queue* fields display information required when setting up printing for Macintosh, UNIX, or other LPR clients.

LPR Host: The server name where the Print Manager is running.

LPR Printer/Queue: The same as the printer agent's name. The printer agent name cannot contain any spaces; otherwise, LPR does not work properly.

- 5 (Optional) Enable the following options:

Filter All LF to CRLF and Append FF to Jobs: Selecting this check box changes bytes in the LPR data stream of all incoming LPR print jobs from Line Feeds to Carriage Returns with Line Feeds and appends a Form Feed to the end of the print job. Typically, these changes are made at the LPR client; however, if you are sure of your users' configurations, you can implement this option.

Address Ranges: Add an address range only if you want to restrict access to this printer to LPR clients within the address range. When the list is empty, all addresses are allowed to print (default).

- 6 Click *Apply* or *OK* to update the printer settings.
- 7 From the UNIX, Macintosh or other LPR client, set up a printer using the *LPR Host* and *LPR Printer/Queue* information displayed in [Step 4](#).

7.2.14 Migrating NDPS Printers to iPrint

You can migrate installed NDPS printers to iPrint printers following the steps outlined in [“Upgrading from NDPS to iPrint” on page 32](#).

7.2.15 Migrating Queue-Based Printers to iPrint

You can migrate existing queue-based printers to iPrint printers following the steps outlined in [“Migrating from Print Queues” on page 32](#). Once your iPrint system is configured, use iManager to select the queues you want to migrate and associate an iPrint printer.

To associate iPrint printers to your print queues:

- 1 In Novell iManager, click *iPrint > Migrate QMS to iPrint*.
- 2 Browse to and select the printers you want to migrate.
- 3 Associate iPrint printers with each print queue.

If you make a mistake repeat, the steps above to reassociate an iPrint printer.

When you are ready to have iPrint migrate users queue-based printers to iPrint, edit the `iprint.ini` as explained in [“Upgrading QMS Printers to iPrint Printers” on page 56](#).

7.2.16 Supporting Queue-Based Client Workstations

If your network includes clients that are not able to send jobs to Printer Agents directly (such as Macintosh and OS/2), the backward compatibility of the Novell print system allows these clients to submit jobs to the same queues they always have. Then the Printer Agent can retrieve jobs from these queues and print them.

To set up a printer to service legacy queues:

- 1 In Novell iManager click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want.
- 3 Click *Client Support > QMS Support*.
- 4 Modify (add to/delete from) the *Service Jobs from NetWare Queues* list.
- 5 Click *OK* or *Apply* to save the settings.

7.3 Managing the Broker

Although the default settings lets users print without additional configuration, you probably want to modify some settings so that you can manage your printing resources most effectively.

- ♦ [Section 7.3.1, “Accessing the Broker Health Monitor,” on page 98](#)
- ♦ [Section 7.3.2, “Adding or Updating Brokered Resources,” on page 98](#)
- ♦ [Section 7.3.3, “Changing the Location of a Broker,” on page 98](#)

- ◆ [Section 7.3.4, “Adding Banner Pages,” on page 98](#)
- ◆ [Section 7.3.5, “Adding or Updating Printer Drivers,” on page 101](#)
- ◆ [Section 7.3.6, “Enabling Event Notification Delivery Methods,” on page 102](#)
- ◆ [Section 7.3.7, “Enabling and Disabling Brokered Services,” on page 102](#)
- ◆ [Section 7.3.8, “Reconfiguring a Broker,” on page 103](#)
- ◆ [Section 7.3.9, “Broker Startup Switches,” on page 104](#)

7.3.1 Accessing the Broker Health Monitor

You can use the Broker Health Monitor to monitor and view statistics about the brokered services. To access the Health Monitor from Novell Remote Manager, complete the following:

- 1 Use your Web browser to log in to Novell Remote Manager at `https://server_ip_address:8009`.
- 2 Under *Diagnose Server*, click *NDPS Broker Health*.

7.3.2 Adding or Updating Brokered Resources

The following procedure explains how to add banner pages, printer drivers, and printer definition (NPD) files to the resource database available through a Broker’s Resource Management Service.

To add new resources through the Resource Management Service:

- 1 Make sure the Resource Management Service is enabled either in Novell iManager or by going to your server console and viewing the Broker status page.
- 2 In Novell iManager, click *iPrint > Manage Broker* and then browse to and select the Broker you want to work with.
- 3 Click *Resource Management Service*, then select the resource you want to work with.
- 4 *Add or Delete* resources.
- 5 Click *OK*.

7.3.3 Changing the Location of a Broker

You can customize your printing setup for maximum efficiency. You might occasionally want to change the location of one or more Brokers. For example, you might want a Broker to be in a different eDirectory container. If you want to change the location of a Broker after it has been created, you can use NetWare Administrator to move the Broker object into the desired container, provided you have Supervisor or equivalent rights to the new container.

7.3.4 Adding Banner Pages

IMPORTANT: Beginning with NetWare 6.5 Support Pack 2, we recommend that you transition to using the Printer Banner Configuration task in iManager. Although you can still use the banner pages as discussed in this section, the Printer Banner Configuration task provides reliable and consistent banners that should be flexible enough to meet your organization’s needs without requiring you to create a separate banner file. For more information, see [Section 7.2.7, “Using Printer Banner Pages,” on page 89](#).

Banner pages are pages that are printed at the beginning of a print job and that normally contain job identification information. Banner pages can be configured for PostScript, PCL*, and text formats.

There are a variety of options for creating and selecting banner page designs. You can choose from several ready-to-use banner page designs, or you might create a unique design that includes your company's logo, a drawing, or even a photograph.

When you add a new banner, it is immediately available for printer configurations. If you want a banner page to be printed, you can select which banner design you want to use at the General tab on the Configuration page. The Configuration page lists only banners available in the format your printer supports. For example, if you are using a PostScript printer, only banners in PostScript format are available at the General configuration page.

Each banner page includes the following information in an information box at the bottom of the page: Job Name, Job Owner, Time Printed, Date Printed.

If your client, printer, and server are not all configured for the same language, you might experience problems with the output of your banner pages, such as the job name being corrupted. If you are working in this type of mixed environment, you should consider not using banner pages.

Banners are added to the resource database through the Broker's Resource Management Service.

Adding Banners to the Resource Management Service

Make sure the Resource Management Service is enabled either in Novell iManager or by going to your server console and viewing the Broker status page.

- 1 In Novell iManager, click *iPrint > Manage Broker* and then browse to and select the Broker you want to work with.
- 2 Click *Resource Management Service > Banners*.
- 3 *Add* or *Delete* banners.
- 4 Click *OK*.

What Printer Types Support What Kind of Banner

A list of supported banners is supplied by both the Novell Gateway (through the PDS) and third-party gateways. The gateway first determines which file extension (.pcl, .ps, or .txt) is appropriate for the way the Printer object (or Printer Agent) was configured during creation. It then queries the associated Broker for a list of banner page files with that extension. For a list of formats supported by a specific printer, go to the main *Printer Details* page and click the *Features* button.

Creating Banner Files

Administrators with knowledge of printer languages can create custom banners. Three types of custom banners are currently supported:

- ♦ **PCL** (.pcl extension). See [“Creating a PCL Banner” on page 100](#).
- ♦ **PostScript** (.ps extension). See [“Creating a PostScript Banner” on page 100](#).
- ♦ **Generic text** (.txt extension). See [“Creating a Generic Text File” on page 101](#).

All custom banners that are created should have one of these extensions. When creating custom banners, keep in mind that complex banners increase the print time for jobs. Here are some tips for creating an efficient banner:

- ♦ Use internal/resident printer fonts instead of rasterized system fonts.
- ♦ When using graphics, use vector graphics when possible. Bitmaps take up a lot more space.
- ♦ Avoid halftone images.

Creating a PCL Banner

A working knowledge of the Hewlett Packard* (HP) PCL printer language is needed in order to create a custom PCL banner. The easiest way to create a PCL banner is to create the banner using a word processor. Be sure to leave the lower third of the custom banner page blank because the print system overlays the following information in a PCL banner page:

- ♦ Job Name
- ♦ Job Owner
- ♦ Time Printed
- ♦ Date Printed

- 1 After formatting the banner page, print the banner document to a file using the appropriate PCL printer definition.

The driver properties need to be changed from printing to a port/network to printing to a file on disk. All PCL banners must have the .pcl extension.

- 2 Remove the form feed and reset commands in the file that was printed to disk.

You need a binary editor to remove the form feed and any reset commands from the file. The form feed and reset commands are in the overlay that the print system provides. A form feed in PCL is a decimal 12 (hex 0C). There are several possible reset commands that need to be removed. Decimal 27, 69 (hex 1B,45) is the printer reset in PCL. The following Universal Exit Command (UEL) also needs to be removed:

Decimal 27, 37, 45, 49, 50, 51, 52, 53, 88

(Hex 1B, 25, 2D, 31, 32, 33, 34, 35, 58)

After the form feed and reset are removed, you have a banner file that can be used.

- 3 Add the banner to the Resource Management Service.

See [“Adding or Updating Brokered Resources” on page 98](#) for more information.

Creating a PostScript Banner

A working knowledge of the Adobe* PostScript printer definition language is needed in order to create a custom PostScript banner. The easiest way to create a PostScript banner is to create the banner using a word processor. Be sure to leave the lower third of the custom banner page blank because the print system overlays the following information in a .ps banner page:

- ♦ Job Name
- ♦ Job Owner

- ♦ Time Printed
- ♦ Date Printed

- 1 After formatting the banner page, print the banner document to a file using the appropriate PostScript printer definition.

The driver properties need to be changed from printing to a port or network to printing to a file on disk. All PostScript banners must have the .ps extension.

- 2 Using a text editor, remove the PostScript operator named showpage from the file that was printed to disk.

The driver probably has a procedure that includes the showpage command. (The showpage command is in the overlay.) Sometimes showpage is embedded in another function within the driver and you must use care in removing it.

- 3 Add the banner to the Resource Management Service.

See “Adding or Updating Brokered Resources” on page 98 for more information.

Creating a Generic Text File

A generic text banner must have a .txt extension. The banner can be formatted in any printer language. The print system does not overlay any additional information on this banner page.

7.3.5 Adding or Updating Printer Drivers

A printer driver is a software entity that directly supports a physical printer, enabling it to carry out the functions it is intended to perform.

Hardware vendors develop printer drivers, which are specific to each printer. Most printers require different printer drivers for each operating system they interact with. You can view a complete list of printer drivers currently loaded in the Broker’s Resource Management Service (RMS) for Windows, and to add additional printer drivers from diskettes and Windows .cab files.

The print system ships with only English-language drivers. To make drivers in other languages available for installation on workstations, you first need to add those drivers to the RMS through the procedure described in this section.

While the majority of printer drivers in common use today can be used, some cannot. A few drivers do not work on a network at all, while others might not contain an index file or have an index file that is incorrectly formatted. If you attempt to add a printer driver to the Resource Management Service from a diskette and receive an error message stating that a printer driver cannot be found, you should contact the driver’s vendor.

Procedure

Make sure the Resource Management Service is enabled either in Novell iManager or by going to your server console and viewing the Broker status page.

- 1 In Novell iManager, click *iPrint > Manage Broker* and then browse to and select the Broker you want.
- 2 Click *Resource Management Service* and then the type of printer driver you want to add.
- 3 Click *Add From File* to add drivers from a printer driver .inf file.

or

Click *Add From System* to add drivers from the workstation where you are running iManager. The drivers installed on your workstation are made available for upload to the Broker. You can only upload drivers to the same platform as the workstation.

- 4 Click *OK* or *Apply* to save your changes to the database.

The drivers are not added to the database until you do this.

The process described above might not work if the driver installation `.inf` file uses subdirectory paths in filename designations within the Copy Files sections of the `.inf` file. This format is not currently supported. There are two possible solutions for this problem:

- ♦ Look for an `.inf` file that does not use this format for filenames.
- ♦ Edit the `.inf` file and remove path information from filenames. Then ensure that all the files are in the same directory as the `.inf` file.

7.3.6 Enabling Event Notification Delivery Methods

The Broker provides an Event Notification Service (ENS) that allows printers to send customized notifications to users and operators about printer events and print job status. ENS supports a variety of delivery methods, including pop-up messages, log files, e-mail, and programmatic. Third parties can also develop additional methods.

The Event Notification Service allows you to enable delivery methods such as e-mail and third-party methods not provided directly. The executable files for these methods have an `.enm` extension (`filename.enm`) and must be added to the `server\sys:\system` directory or another location in the server's search path.

For more information about Event Notification, see [“Enabling and Disabling Brokered Services” on page 102](#).

Be sure the Event Notification Service is enabled by going to your server console and viewing the Broker status page.

- 1 In Novell iManager, click *Manage Broker* and then browse to and select the Broker you want.
- 2 Select the *Event Notification* view.
- 3 Click the *Load* or *Unload* button.

WARNING: Do not unload the RPC and SPX Programmatic Notification methods. These are needed for communication between printers and the workstation Printer Manager utility and for driver download.

- 4 Specify the ENM filename for the notification method you want to load.

This ENM must be in your `server\sys:\system` directory or in another location in your server's search path in order to be loaded.

7.3.7 Enabling and Disabling Brokered Services

When the print system is initially installed, the three network services provided by the Broker are automatically enabled on the Broker object. As your printing needs grow or change and you add additional Brokers to your network, you might want to disable certain services provided through a Broker on a specific server and allow them to be provided through a different Broker (to save disk

space on the first server, for example), or you might want to enable services on a Broker that is currently disabled.

- 1 In Novell iManager, click *iPrint > Manage Broker*.
- 2 Browse to and select the Broker you want.
- 3 On the *Broker Control* tab, deselect the Broker services you want to disable.
To enable a service, select that service's check box.
- 4 Click *OK*.

Printer Agents using the services that were disabled automatically search for another Broker on the network that provide these services, so normally these printers should continue to be available for processing jobs.

However, if you want to specify a preferred Broker for a Printer Agent to use for these services, you must do this from each printer's Printer Control page in NetWare Administrator by selecting *Features/Services*.

If a Broker is unloaded and then is brought back up, Printer Agents that have designated that Broker as their preferred service provider are not automatically reconnected to it. In order to reconnect to the preferred service provider, you must either unload each Printer Agent and bring it back up, or unload the Print Manager that controls the affected Printer Agents and bring it back up, thus bringing up all the Printer Agents with it.

If the Resource Management Service cannot be enabled, check for one of the following conditions:

- ♦ The Broker object does not have rights to access the RMS data storage area (the default is `ndps\resdir\`). Use NetWare Administrator to grant the Supervisor right to the Broker for that subdirectory.
- ♦ The RMS data storage area has a directory name that is longer than eight characters or includes invalid characters.

7.3.8 Reconfiguring a Broker

In most instances, the default configuration for the three support services the broker provides result in satisfactory performance. However, in certain circumstances you might want to change that configuration. Here are a couple of examples:

- ♦ As you gain experience with your print system setup, you might want to reconfigure the default properties assigned to the Broker.
- ♦ If disk space on your volume is limited, you might want to move the managed resources database accessed by the Resource Management Service to a different volume on the same server or to a different server in the same eDirectory tree where more disk space is available. (The default location for the RMS resources is `server\sys:ndps\resdir\`)

Prerequisites

- ♦ To reconfigure a Broker, you should have Supervisor rights for the container where the Broker resides.
- ♦ If you change the location of your Resource Management Service database, you need to have rights to the new location.

- ♦ If you change the location of your Resource Management Service database, you need to have an existing Resource Management Service database directory to point to when you specify the volume for the RMS during this process. The path you specify must point to a directory that currently exists and that already contains resources. (The RMS data storage area must not have a directory name that is longer than eight characters or includes invalid characters.) If you point to an empty directory, you receive an error message from the server when loading the Broker saying that the Broker cannot be enabled. (You can copy resources from another RMS to this directory if you want.)

Procedure

To reconfigure an existing Broker object or move your brokered resources to a different location

- 1 In NetWare Administrator, select the Broker object you want to reconfigure.
- 2 If you want to change the location of your resources, complete the following:
 - 2a Click *Resource Management*.
 - 2b Enter the resource path you want to use for storing these resources.
You might need to assign the Broker all rights (Supervisor right) to the new area.
- 3 If you want to modify the Access Control list, click *Access Control* and *Add* or *Remove* users from the Managers list.
See [Section 7.3, “Managing the Broker,” on page 97](#) for more information.
- 4 If you want to enable or disable your Service Registry, click *Service Registry Service*.
See [“Enabling and Disabling Brokered Services” on page 102](#) for more information.
- 5 If you want to load or unload Notification methods, click *Event Notification*.
See [“Enabling Event Notification Delivery Methods” on page 102](#) for more information.

7.3.9 Broker Startup Switches

To always load a Broker with the same startup switch, add the switch to the load Broker entry in the server's `autoexec.ncf`.

Syntax:

```
load broker broker_name_and_context /startup_parameter
```

Example:

```
load broker .sales_manager.corp.acme /dbvolume=sales_sys
```

The following table lists the startup switches you can use when loading `broker.nlm`.

Table 7-4 *Broker Startup Switches*

Startup Parameter	Description
noui	Loads the Broker without displaying the user interface.

Startup Parameter	Description
noipx	The Print Manager does not support the IPX™ protocol.
noip	The Print Manager does not support the IP protocol.
allowdup	The NLM™ does not check for two Brokers using the same Broker object.
noadvert	Prevents an SRS from ever being loaded. If the SRS is loaded manually after loading the Broker, it prevents the SRS from communicating with other services on the network. This switch is useful for large networks with many Brokers in the environment. For more information, see TID 10069799 (http://support.novell.com/docs/Tids/Solutions/10069799.html) . Use this switch in conjunction with the /nosrs switch on the NDPS Manager.
/p=password	Used when SETPASS has been run on the Broker object and a password set on the broker. You would put the password after the /p= to allow the NDPS Broker object the ability to login with a password.

7.4 Configuring LDAP

iPrint uses LDAP to verify rights to perform various iPrint operations, including authenticating users for printing and performing management tasks such as uploading drivers. During the installation of the iPrint software, iPrint attempts to identify the top-most container of the eDirectory tree and sets the basedn to this container for the AuthLDAPURL entry in

`sys:\apache2\iprint\ipp.conf`. For most installations, this is adequate because users are often distributed across containers. However, if you have multiple peer containers at the top of your eDirectory tree, you might need to modify the basedn entry so the LDAP search begins at the root of the eDirectory tree.

Here is the syntax for the AuthLDAPURL entry:

```
ldap://host:port/basedn?attribute?scope?filter
```

Here is an example of a typical AuthLDAPURL entry where the basedn is set to a container called DivisionA:

```
"ldaps://server1.my_company.com/C=DivisionA??? (objectClass=user) "
```

Here is an example of a modified AuthLDAPURL entry where the basedn is removed so the search begins at the root of the eDirectory tree:

```
"ldaps://server1.my_company.com/??? (objectClass=user) "
```

TIP: For fault tolerance, you can specify additional LDAP servers in the event an LDAP server is unavailable. Additional servers use the attributes prescribed on the first server. An AuthLDAPURL entry specifying multiple LDAP servers appears like "ldaps://server1.my_company.com/C=DivisionA??? (objectClass=user) ldaps://server2.my_company.com"

Setting Up a Secure Printing Environment

8

Setting up a secure printing environment can be done on three different levels.

- ♦ **Access Control** lets you assign users to a User, Operator, or Manager role to control printers, Print Managers, and Brokers.
- ♦ **Printer Security** defines how rights to a printer are determined and enforced.
- ♦ **Using SSL with iPrint** requires users to authenticate before installing and printing to a printer.

8.1 Setting Access Control for Your Print System

Your print system is designed to take full advantage of eDirectory™. You receive all the benefits of eDirectory security and the easy management provided by the industry's most advanced and robust directory service. The Access Control feature lets you specify the access that each User, Group, or container object has to your printing resources.

Access control roles are mutually exclusive, even though the same individual might need to perform tasks reserved for different roles. For example, only printer Managers can add or delete printer Operators or printer users. In a similar way, Managers and Operators must also be designated as Users for a printer before they can submit print jobs to it.

In actual implementation, the defaults prevent most problems that might occur from these distinctions. For example, a Manager is automatically designated an Operator and User, an Operator of a printer is automatically designated a User of that printer. You cannot remove the User role from an Operator, and you cannot remove the Operator and User roles from a Manager.

The creator of an object is automatically granted privileges for all available roles for the type of object being created.

The following sections describe some of the security issues and features you might find useful as you plan your print system setup:

- ♦ **Section 8.1.1, "Setting Access Control for Printers," on page 107**
- ♦ **Section 8.1.2, "Setting Access Control for the Print Manager," on page 110**
- ♦ **Section 8.1.3, "Setting Access Control for Brokers," on page 111**

8.1.1 Setting Access Control for Printers

Printer security is ensured through the assignment of the Manager, Operator, and User access control roles and by the strategic placement of your printers and printer configurations.

You can assign multiple Printer objects to represent a single Printer Agent. You can then make different access control assignments to each Printer object. This can be an especially useful option if you want to allow users in different containers to use the same printer, because each group of users can be given different rights to the printer.

A physical printer cannot be a controlled access printer and a public access printer at the same time. However, if you delete all the Printer objects representing a Printer Agent, that printer becomes a public access printer.

IMPORTANT: We recommend that you do not use public access printers because you lose management capabilities. Using controlled access printers lets you manage printers through iManager, use the printer with iPrint, and take advantage of advanced iPrint features such as downloading printer drivers.

The following sections describe security options for printers in more detail:

- ♦ [“Printer Access Control Roles” on page 108](#)
- ♦ [“Assigning Printer Access Control Roles through Printer Objects” on page 109](#)
- ♦ [“Assigning Printer Access Control Roles through User Objects” on page 109](#)
- ♦ [“Planning Your Printer Connections and Locations for Better Security” on page 109](#)

Printer Access Control Roles

Different User, Group, or Container objects can have different access rights to the same printer. For example, if you want only certain users to be able to send jobs to a particular printer, you can specify which users should have access and what access roles each should have.

The following table describes the rights and privileges associated with each of the printer access control roles.

Table 8-1 *Printer Access Control Roles*

Role	Description
Manager	<p>Tasks performed exclusively by the Printer Manager are those that require the creation, modification, or deletion of Printer objects, as well as other eDirectory administrative functions. Printer Managers are automatically designated as printer Operators and Users, so they can perform all tasks assigned to those roles. Typical Manager functions include the following:</p> <ul style="list-style-type: none">♦ Modifying and deleting Printer objects♦ Adding or deleting Operators and Users for a printer♦ Adding other Managers♦ Configuring interested-party notification♦ Creating, modifying, or deleting printer configurations
Operator	<p>Printer management tasks performed by the Operator include the following:</p> <ul style="list-style-type: none">♦ Performing all of the functions available through the Printer Control page♦ Pausing, restarting, or reinitializing printers♦ Reordering, moving, copying, and deleting jobs♦ Setting printer defaults, including locked properties♦ Configuring print job spooling <p>Operators cannot create, modify, or delete eDirectory objects or perform other eDirectory administrative functions.</p>

Role	Description
User	<p>Tasks performed by Users include the following:</p> <ul style="list-style-type: none"> ♦ Submitting print jobs ♦ Managing print jobs they own (users cannot copy, move, reorder, or remove jobs they do not own) <p>To simplify administration, the container a printer resides in is automatically assigned as a User for that printer, so all users in that container and its subcontainers can use that printer without being added to the list. You can delete the container from the list if you want to limit access to certain users, groups, or roles.</p>

Assigning Printer Access Control Roles through Printer Objects

Different User, Group, or container objects can have different access rights to the same printer. For example, if you want only certain users to be able to send jobs to a particular printer, you can specify which users should have access and what access roles each should be given.

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want to enable Access Control for.
- 3 Click *Access Control*.
- 4 Add or delete Users, Groups, or Container objects to the different access control roles.
- 5 Click *OK*.

Assigning Printer Access Control Roles through User Objects

In addition to configuring access control through printers, you can also configure access control through User objects.

The following procedure assumes that you are modifying the attributes for an existing User. You can also adapt this procedure if you are creating a new User object.

- 1 From the NetWare Administrator browser's *Object* menu, select the User object you want to configure access control for, and then click *Printer Access Control*.

A list of available printers is displayed with icon representations of the three Access Control roles: *User*, *Operator*, and *Manager*.

- 2 Select the printer that you want to assign this user an access control role for.
- 3 Select the roles you want this user to be assigned for this printer.

If you select *Manager*, this user is automatically assigned *Operator* and *User* roles as well. *Operator* and *User* roles are assigned independently. Keep in mind that a User object must be assigned the access control role of *User* in order to submit print jobs to that printer.

- 4 (Optional) Click the *Event Notification* button to configure event notification for this user.
- 5 Click *OK*.

Planning Your Printer Connections and Locations for Better Security

Depending on your organization's needs, you can attach printers directly to NetWare® servers or to the network. Both types of setup can provide security and administrative advantages. The ideal

combination for each installation is different and changes as needs change. Be sure to consider the advantages of each approach when you set up your network.

Connecting the printer to the server places the two resources in close proximity to each other. If the server is in a secure location, this means that the printer is locked up with the server. This might be an advantage. For example, your company might use that printer to print confidential documents. Having the printer in a secure location protects these documents.

Because most printers are already network-enabled, the most common type of network setup includes printers attached directly to the network. This allows the printer to be placed in a convenient location for all users, and places it away from the server for security reasons. Users who use the printer do not usually have access to the server console. Security is still maintained by requiring users to use a password to log in to the network before they can use the printer.

8.1.2 Setting Access Control for the Print Manager

Print Manager security is ensured through the assignment of the Manager access control role.

- ♦ [“Print Manager Access Control Role” on page 110](#)
- ♦ [“Assigning the Manager Role for Print Managers” on page 110](#)

Print Manager Access Control Role

The only access control role available for the Print Manager is that of Manager. The following table explains the tasks performed by the Manager role.

Table 8-2 *Print Manager Access Control Role*

Role	Description
Manager	<p>Tasks performed exclusively by the Manager are those that require the creation, modification, or deletion of eDirectory objects, or that involve other eDirectory administrative functions. Typical Manager functions include the following:</p> <ul style="list-style-type: none">♦ Creating printer agents and Print Manager objects♦ Adding or deleting Operators and Users for a printer♦ Adding other Managers♦ Configuring interested-party notification♦ Creating, modifying, or deleting printer configurations

Assigning the Manager Role for Print Managers

- 1 In Novell iManager, click *iPrint > Manage Print Manager*.
- 2 Browse to and select the Print Manager you want to enable access control for.
- 3 Click *Access Control*.
- 4 Add or delete Users, Groups, or Containers to the Manager role.
- 5 Click *OK*.

8.1.3 Setting Access Control for Brokers

Broker security is ensured through the assignment of the Manager access control role and by the optional assignment of a password to the Broker.

Broker Access Control Roles

The access control roles available to the Broker are Manager and Public Access User. The following table explains the roles.

Table 8-3 *Broker Access Control Roles*

Role	Description
Manager	<p>Tasks performed exclusively by the Broker Manager are those that require the creation, modification, or deletion of Broker objects, as well as those that involve other eDirectory administrative functions. Typical Manager functions include the following:</p> <ul style="list-style-type: none">♦ Creating, modifying, and deleting Broker objects♦ Adding other Managers♦ Enabling or disabling brokered services♦ Adding resources to the Resource Management Service♦ Assigning or changing a Broker password
Public Access User	<p>A public access user is a role assigned to all individuals on the network who are users of printers receiving services and resources provided by the Broker. This role is assigned by default and does not require specific administrative action by the Broker Manager.</p>

Assigning Managers for Brokers

To make Manager assignments for your Broker objects

- 1 In Novell iManager, click *iPrint > Manage Broker*.
- 2 Browse to and select the Broker you want to enable access control for.
- 3 Click the *Access Control*.
- 4 *Add* or *Delete* Users, Groups, or Containers to the Manager role.
- 5 Click *OK*.

8.2 Setting Printer Security Levels

Printer security levels affect how rights to a printer are determined and enforced. The default security level is Medium. With sensitive print data, you might want to set the security level to High; however, performance is affected.

Table 8-4 *Printer Security Levels*

Printer Security Level	Secure Printing Enabled
Low	Security is enforced by the client applications only.
Medium (default)	Security is enforced by the Print Manager if print data integrity is involved. Otherwise, security is enforced by the client applications.
High	Security is enforced by the Print Manager for all operations.

To set a printer's security level:

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want to enable Access Control for.
- 3 Click *Access Control > Security*.
- 4 Select the level of security you want for the printer.
- 5 Click *OK* or *Apply* to save your changes.

8.3 Secure Printing Using SSL/TLS

Secure printing takes advantage of SSL, which requires users to authenticate using their eDirectory usernames and passwords. Users authenticate once per eDirectory tree per session. Between the client and the Print Manager, the print data is encrypted and all print communication uses port 443. Without secure printing, the printer is available to anyone inside the firewall on the network and the print data is not encrypted to the server. Secure printing works in conjunction with the security level set for the printer. All print data between the server and the printer is not encrypted because most printers do not support encrypted data.. Also, when you enable iPrint Direct, data is not encrypted between the client and the printer.

If you are using the latest iPrint Client and server software, iPrint automatically attempts to use TLS for printing on port 631. TLS printing supports encrypted and nonencrypted print communication through port 631. Whether or not encryption is used is dependent on the secure printing setting of the Printer Agent. If secure printing is enabled on a printer, the user is required to authenticate and the print data is encrypted. If secure printing is not enabled, the user does not authenticate and the print data is not encrypted.

Beginning with Open Enterprise Server and the iPrint Client v4.05, both non-secure and secure printing URLs use `ipp://`.

Prior to Open Enterprise Server, printer URLs were based on `http://` and `https://`. When a no-nsecure printer using an `http://` URL changes to a secure printer, the URL changes to `https://` or `ipp://` and users must delete the printer and reinstall the new secure printer.

The following table shows how access is determined, depending on the level of printer security and whether secure printing is enabled or disabled.

Table 8-5 *Printing Access for Printer Security and Secure Printing*

Printer Security Level	Secure Printing Disabled (No SSL/TLS)	Secure Printing Enabled (with SSL/TLS)
Low	Full access.	eDirectory authentication.
Medium (Default)	Users granted access as if they had been assigned the User role.	eDirectory authentication and check for user's effective rights.
High	Users must use SSL and authenticate to eDirectory. Users might receive an error if SSL is not enabled. (See "High Security Requires User Authentication" on page 113.)	eDirectory authentication, check for user's effective roles, and connection verification. SSL is automatically enabled when a printer's security is changed to High when using Novell iManager.

For more information on printer security levels, see [Section 8.2, "Setting Printer Security Levels," on page 111.](#)

8.3.1 Considerations When Changing Printer Security

When changing printer security, you should consider the following:

- ♦ ["High Security Requires User Authentication" on page 113](#)
- ♦ ["Lowering Printer Security" on page 113](#)

High Security Requires User Authentication

If you change the printer agent's security level to high, the Requires SSL/TLS and User Authentication check box (enabling SSL) on the IPP Support page of the printer's Client Support Page in Novell® iManager is enabled automatically.

NOTE: When setting printer agent security at the server console, SSL is not enabled automatically, and users might receive the following error:

Error message: iPrint Client - "The request requires user authentication."

To avoid the error, ensure that the Requires Security check box is checked when a printer agent's security is changed to High. For more information, see ["Enabling SSL/TLS" on page 113.](#)

Lowering Printer Security

Once a printer's security is set to High and SSL is enabled with the Requires SSL and User Authentication check box, SSL remains enabled even if the security level is lowered.

8.3.2 Enabling SSL/TLS

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the Printer object you want to modify.

- 3 Click *Client Support > iPrint Support*.
- 4 Select *Enable Secure Printing*.
- 5 Click *Apply* or *OK* to update the printer settings.

8.3.3 Saving Passwords for Secure Printers

When users print to a secure printer, they are prompted for the eDirectory username and password. Users can select to have their workstations remember their password for printing. For Windows NT/2000 users, passwords are saved on a per-user basis.

To disable this feature, see [Section 4.7, “Using iPrint Client Management,” on page 56](#).

For more information, see [“Managing Passwords for Remote iPrint Servers” on page 48](#).

8.3.4 Configuring TLS Printing with Proxies

IMPORTANT: Implementing the following changes lets your users print using TLS; however, there are security risks involved. Contact your Security Administrator before completing these steps.

To use a proxy with secure printing:

- 1 Modify `sys:\apache2\conf\httpd.conf`.
- 2 Comment out the following lines:

```
LoadModule proxy_module modules/proxy.nlm
LoadModule proxy_connect_module modules/proxycon.nlm
LoadModule proxy_http_module modules/proxyhttp.nlm
```

- 3 Add the following lines to the end of the file:

```
ProxyRequests On
ProxyVia On
<Proxy *>
    Order deny,allow
    Allow from All
</Proxy>
AllowCONNECT 443 563 631
```

Supported Browsers for iPrint

A

The section provides information on which Web browsers are supported for different iPrint tasks and operations.

- ♦ [Section A.1, “iPrint Client Supported Browsers,” on page 115](#)
- ♦ [Section A.2, “Supported Browsers with the iPrint Plug-In and Novell iManager,” on page 115](#)
- ♦ [Section A.3, “Supported Browsers for the iPrint Map Designer,” on page 116](#)

A.1 iPrint Client Supported Browsers

The following table indicates which browsers are supported with the various iPrint Client platforms:

Table A-1 *iPrint Client Supported Browsers*

iPrint Client Platform	Supported Browsers
Linux	♦ Mozilla-based browsers such as Firefox
Macintosh	♦ Safari 1.2 or later ♦ Safari 2.0.1 or later
	NOTE: iPrint has not been tested with Safari 3.x.
Windows	♦ Microsoft Internet Explorer 5.0 or later ♦ Netscape [*] 4.76 (iPrint is not supported on Netscape 6) ♦ Mozilla-based Web browsers such as Firefox
Windows Vista	♦ Internet Explorer 7 or later

A.2 Supported Browsers with the iPrint Plug-In and Novell iManager

The iPrint plug-in with Novell iManager supports the following browsers:

- ♦ Internet Explorer 5.5 with Service Pack 2 or later
- ♦ Mozilla-based browsers

NOTE: If you are running Windows XP Service Pack 2 or other browsers with pop-up blocking, you might encounter problems with pop-up windows. To manage iPrint in iManager and to install printers with iPrint clients, turn off pop-up blocking or allow the URL.

When uploading printer drivers and PPD files, you should use the following browsers for the operations indicated:

A.2.1 Uploading PPD Files Using iManager

Table A-2 *Supported Browsers for Uploading PPD Files*

iPrint Client platform	Supported Browser	Upload PPD file to Driver Store on Linux	Upload PPD file to Broker on NetWare
Linux	Mozilla-based browsers	Only supported using the <i>Add from System</i> button.	Only supported using the <i>Add from System</i> button.
Windows	Internet Explorer 5.5 or later	Supported	Supported

A.2.2 Uploading Windows Printer Drivers Using iManager

Table A-3 *Supported Browsers for Uploading Windows Printer Drivers*

Client	Supported Browser	Upload Windows Printer Driver to Driver Store on Linux	Upload Windows Printer Driver to Broker on NetWare
Linux	Mozilla-based browsers	Not supported	Not supported
Windows	Internet Explorer 5.5 or later	Supported	Supported
	Mozilla-based browsers	Not supported	Not supported

A.3 Supported Browsers for the iPrint Map Designer

The iPrint Map Designer works only with Microsoft* Internet Explorer 5.5 or later.

Configuring the iPrint HTML Interface

B

This section discusses the HTML parameters and operations used in the iPrint interface for Internet Explorer 5.5 Web browsers. This information is provided to give administrators insight into how to customize their HTML files.

Using this information, HTML developers can create and edit iPrint Web pages to customize them for their companies.

The iPrint HTML files are located in the `/var/opt/novell/iprint/httpd/htdocs/ippdocs` directory.

The following sections help you customize the HTML interface:

- ♦ [Section B.1, “iPrint Client HTML Interface Description,” on page 117](#)
- ♦ [Section B.2, “HTML Parameters,” on page 119](#)
- ♦ [Section B.3, “Supported Operation Strings,” on page 121](#)

B.1 iPrint Client HTML Interface Description

The list of operations and identifiers is the same for each browser. The printer name and the operation to be performed are required parameters for all operations except [op-client-interface version \(page 122\)](#) and [op-client-version-info \(page 122\)](#). All other parameters are operation-specific or optional. Operation-specific parameters that are used out of context are ignored.

If the desired output from the plug-in is HTML, a frameset needs to be used. This is to prevent some browsers from failing when they try to write to the document that invoked the plug-in. The name of the frame to receive the HTML page generated by the plug-in can be passed in using the target frame option. This target frame needs to be a named frame in the same frameset as the frame invoking the plug-in.

B.1.1 Internet Explorer Browser Customization

- ♦ [“HTML Script Example” on page 117](#)
- ♦ [“HTML Code Example” on page 118](#)

HTML Script Example

The `ExecuteRequest()` entry point simplifies HTML coding when working with Internet Explorer. It lets you pass/get information from the iPrint without having to reload a Web page.

A result type called object is implemented and should be used only in conjunction with `ExecuteRequest()`. You can use `ExecuteRequest()` and have it return results via HTML, URL, message box, or cookie. All data can be passed via the `ExecuteRequest()` second parameter. The first parameter is the operation. Both of the parameters are strings.

Syntax: `variable=variable.ExecuteRequest("operation_string",additional_operation_strings);`

```

<object ID=iPrintAccess classid=clsid:36723f97-7aa0-11d4-8919-
ff2d71d0d32c>

</object>

<script Language="javascript1.1">

var pStatus;

var params;

params = "printer-url=" + printerNameHere + "&result-type=object"

pStatus=iPrintAccess.ExecuteRequest("op-printer-get-status", params);

alert(pStatus);

</script>

```

HTML Code Example

The following example defines the interface between HTML pages and the browser plug-in. The HTML element <OBJECT> is used to invoke the Internet Explorer plug-in (ienipp.ocx).

```

<OBJECT ID=TESTID

CLASSID="clsid:36723f97-7aa0-11d4-8919-FF2D71D0D32C"

CODEBASE=v:\ipp\ieNIpp\final\novipp.ocx>

<PARAM NAME=operation VALUE=op-printer-get-status>

[XXX]
<PARAM NAME=printer-url VALUE=http://172.16.123.25/ipp/lpr>

<PARAM NAME=result-type VALUE=html>

```

```
<PARAM NAME=target-frame VALUE=displayFrameName>
```

```
</OBJECT>
```

B.2 HTML Parameters

The following parameters can be used to enhance the iPrint HTML pages. They are used in the HTML files as `PARAM NAME=parameter VALUE=identifier` statements.

- ♦ [call-back-url](#) (page 119)
- ♦ [debug](#) (page 119)
- ♦ [error-type](#) (page 119)
- ♦ [file-path-name](#) (page 120)
- ♦ [job-list](#) (page 120)
- ♦ [job-list-options](#) (page 120)
- ♦ [printer-url](#) (page 121)
- ♦ [result-type](#) (page 121)
- ♦ [target-frame](#) (page 121)

B.2.1 call-back-url

Targets the results from the onchange JavaScript function associated with selecting jobs from the job list. The JavaScript function causes the browser to reload the indicated control frame passing the list of selected jobs as a parameter.

Example:

```
PARAM NAME=call-back-url VALUE=CONTROL.HTM
```

B.2.2 debug

If set to True, displays message boxes with debug and profiling information.

Example:

```
PARAM NAME=debug VALUE=true
```

B.2.3 error-type

Determines how the plug-in reports errors associated with the requested operation. The plug-in has the ability to return the errors.

Option	Description
cookie	Puts the error information in a cookie.

Option	Description
html	Displays results as an HTML page generated by the plug-in.
msgBox	Displays results in a message box.
none	No response.
url	Passes the results as a URL parameter.

The plug-in defaults to the same reply mechanism that is specified in **results-type** if **error-type** is not specified.

Example:

```
PARAM NAME=error-type VALUE=html
```

B.2.4 file-path-name

Specifies a printer-ready file that can be passed to the plug-in for printing. This mechanism bypasses the print provider and the printer driver. The printer does not need to be installed on the workstation to use this operation.

Example:

```
PARAM NAME=file-path-name VALUE=directory path\filename
```

B.2.5 job-list

The plug-in can perform several operations on jobs. The job-list parameter is a comma-delimited string of job IDs that indicates which jobs to operate on. A job list with the job ID of -1 is equivalent to selecting all jobs

Example:

```
PARAM NAME=job-list VALUE=3,5,7
```

B.2.6 job-list-options

When the plug-in creates the HTML for job-list, it can add buttons to allow the user to hold, resume, delete, or display information for selected jobs. The job-list-options parameter specifies which of the following possible buttons to display and support:

- ♦ **op-job-cancel** (page 123)
- ♦ **op-job-get-info** (page 123)
- ♦ **op-job-hold** (page 123)
- ♦ **op-job-release-hold** (page 123)

Example:

```
PARAM NAME=job-list-options VALUE=op-job-hold,op-job-release-hold,op-job-cancel, op-job-get-info
```


B.2.7 printer-url

Indicates which printer the operation should be directed to.

Example:

```
PARAM NAME=printer-url VALUE=ipp://MyPrinter.com/ipp/Printer1
```

B.2.8 result-type

Determines how the plug-in reports the results of the requested operation. The plug-in has the ability to return the results in any of the following ways:

Option	Description
cookie	Puts the results in a cookie.
html	Displays results as an HTML page generated by the plug-in.
msgBox	Displays results in a message box.
none	No response.
url	Passes the results as a URL parameter.

The plug-in defaults to none if **results-type** is not specified.

Example:

```
PARAM NAME=result-type VALUE=html
```

B.2.9 target-frame

Specifies the name of the frame to put the results or error information into. If the operation results type is url, the target frame is the one reloaded with the indicated URL.

Example:

```
PARAM NAME=target-frame VALUE=FrameName
```

B.3 Supported Operation Strings

All requests to the plug-in have two required parameters. The first is operation, and the second is result-type. All operations except **op-client-interface-version** and **op-client-version-info** require the parameter **printer-url**. All requests support the optional parameter **error-type**.

With the exception of **op-printer-send-test-page** and **op-printer-remove**, the printer does not need to be installed to use the following operations:

- ♦ **op-client-interface version** (page 122)
- ♦ **op-client-is-printer-installed** (page 122)
- ♦ **op-client-version-info** (page 122)
- ♦ **op-job-cancel** (page 123)

- ♦ [op-job-get-info \(page 123\)](#)
- ♦ [op-job-hold \(page 123\)](#)
- ♦ [op-job-release-hold \(page 123\)](#)
- ♦ [op-printer-get-info \(page 123\)](#)
- ♦ [op-printer-get-status \(page 124\)](#)
- ♦ [op-printer-install \(page 124\)](#)
- ♦ [op-printer-list-all-jobs \(page 124\)](#)
- ♦ [op-printer-pause \(page 124\)](#)
- ♦ [op-printer-purge-jobs \(page 124\)](#)
- ♦ [op-printer-remove \(page 125\)](#)
- ♦ [op-printer-resume \(page 125\)](#)
- ♦ [op-printer-send-file \(page 125\)](#)
- ♦ [op-printer-send-test-page \(page 125\)](#)

B.3.1 op-client-interface version

Description:	Determines a version associated with the plug-in's HTML interface. Can also determine if a client upgrade needs to be invoked for any other client plug-in/HTML file compatibility issues.
Required information:	None
Supported return types:	URL, Cookie, Object

B.3.2 op-client-is-printer-installed

Description:	Determines if the indicated printer is installed on the workstation.
Required information:	Printer URL
Supported return types:	URL, Cookie, Object

B.3.3 op-client-version-info

Description:	Determines the version of the Novell® iPrint Client files running on the workstation.
Required information:	None
Supported return types:	Cookie, URL, Object

B.3.4 op-job-cancel

Description:	Deletes the indicated jobs.
Required information	Printer URL, job-list
Supported return types:	None, Message box, HTML, URL, Cookie

B.3.5 op-job-get-info

Description:	Gets job information for indicated jobs. The information returned depends on the printer's capabilities. This information can include job name, ID, owner, size, bytes processed, hold until, priority, time created, time started printing, and time finished printing.
Required information:	Printer URL, job-list
Supported return types:	Message box, HTML, URL, Cookie

B.3.6 op-job-hold

Description:	Puts a hold on the indicated jobs. A job that is printing might not be held.
Required information:	Printer URL, job-list
Supported return types:	None, Message box, HTML, URL, Cookie

Supported parameter is indefinite.

B.3.7 op-job-release-hold

Description:	Removes the hold on the indicated jobs.
Required information:	Printer URL, job-list
Supported return types:	None, Message box, HTML, URL, Cookie

B.3.8 op-printer-get-info

Description:	Gets additional information about the printer. The information returned depends on the printer's capabilities. This information can include printer location, printer make and model, and supported document formats (PDLs).
Required information:	Printer URL
Supported return types:	Message box, HTML, URL, Cookie

B.3.9 op-printer-get-status

Description:	Gets status information from the indicated printer. The information returned depends on the printer's capabilities. Status can include printer state, printer state reasons, printer state message, printer accepting jobs, and printer job count.
Required information:	Printer URL
Supported return types:	Message box, HTML, URL, Cookie

B.3.10 op-printer-install

Description:	Installs the indicated printer to this workstation.
Required information:	Printer URL
Supported return types:	None, Message box, HTML, URL, Cookie

B.3.11 op-printer-list-all-jobs

Description:	Lists jobs for this printer.
Required information:	Printer URL
Supported return types:	Message box, HTML, URL, Cookie

B.3.12 op-printer-pause

Description:	Pauses the printer. If results are requested for this operation, the op-printer-get-status operation is executed to provide the new printer status.
Required information:	Printer URL
Supported return types:	None, Message box, HTML, URL, Cookie

B.3.13 op-printer-purge-jobs

Description:	Deletes all jobs for this printer.
Required information:	Printer URL
Supported return types:	None, Message box, HTML, URL, Cookie

B.3.14 op-printer-remove

Description:	Deletes the indicated printer from this workstation.
Required information:	Printer URL
Supported return types:	None, Message box, HTML

B.3.15 op-printer-resume

Description:	Resumes the printer. If results are requested for this operation, the op-printer-get-status operation is executed to provide the new printer status.
Required information:	Printer URL
Supported return types:	None, Message box, HTML, URL, Cookie

B.3.16 op-printer-send-file

Description:	Sends a printer-ready file to this printer.
Required information:	Printer URL, file-path-name
Supported return types:	None, Message box, HTML, URL, Cookie

B.3.17 op-printer-send-test-page

Description:	Sends a test page to this printer.
Required information:	Printer URL
Supported return types:	None, Message box, HTML, URL, Cookie

Troubleshooting Your Print System

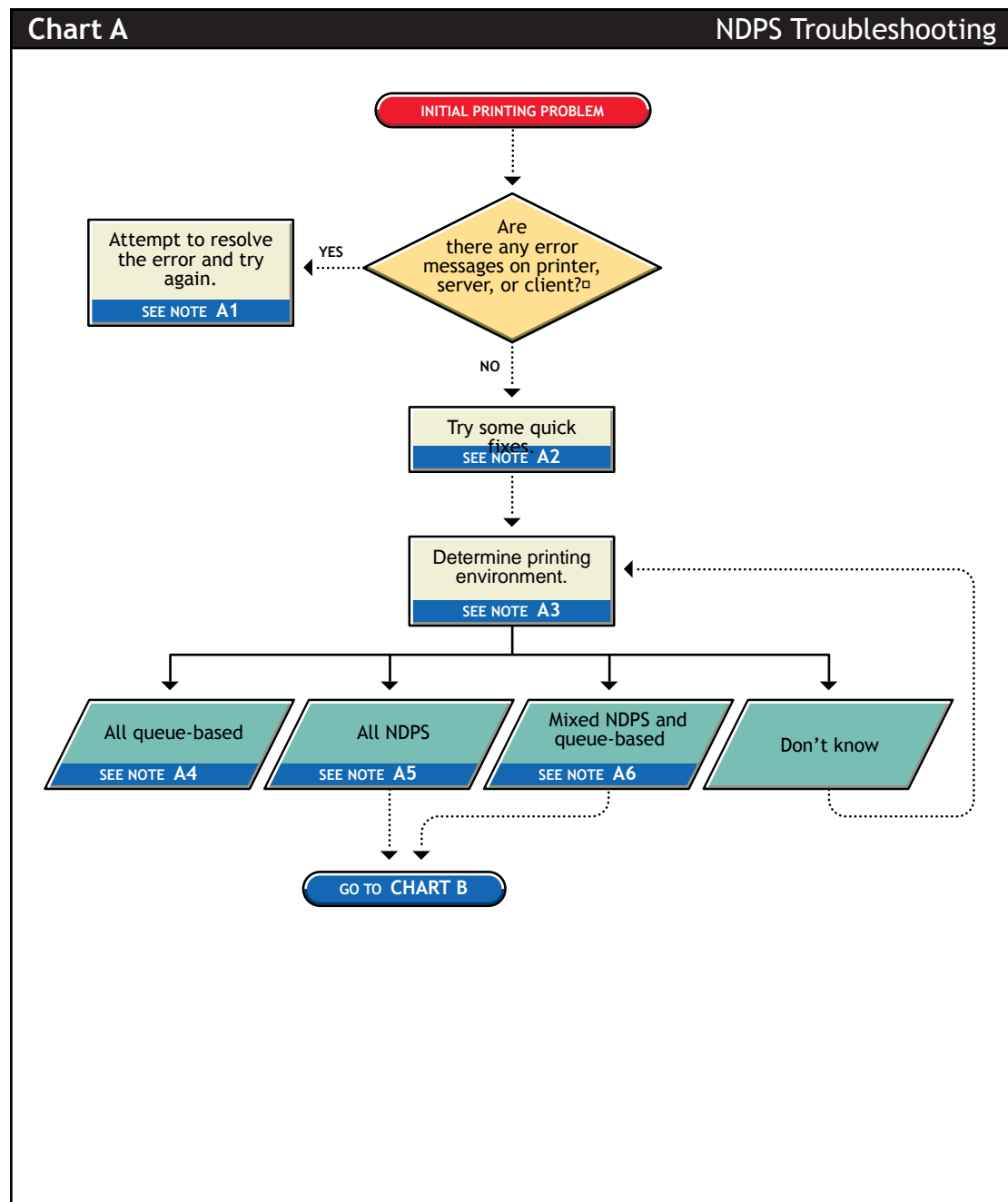
C

This section focuses on troubleshooting issues that might arise during printing. It also presents general principles that can be of value for a variety of network printer configurations, and it provides help for troubleshooting problems with the printer itself.

- ♦ [Section C.1, “Initial Troubleshooting Steps,” on page 128](#)
- ♦ [Section C.2, “Narrowing Your Focus,” on page 131](#)
- ♦ [Section C.3, “Determining Your Platform When Problem Affects Only One Workstation,” on page 133](#)
- ♦ [Section C.4, “Isolating Printing Problems Affecting Only One Windows Workstation,” on page 135](#)
- ♦ [Section C.5, “Tracking Jobs from a Workstation,” on page 138](#)
- ♦ [Section C.6, “Checking Printer Output and Using Test Files,” on page 140](#)
- ♦ [Section C.7, “Printing Problems Affecting All Users,” on page 142](#)
- ♦ [Section C.8, “Problems Integrating with Queue-Based Components,” on page 145](#)

C.1 Initial Troubleshooting Steps

Figure C-1 Initial Troubleshooting Flowchart



C.1.1 Attempt to resolve the error and try again (A1)

With many printing problems, an error is reported on the printer, the client trying to print, or the server. If an error condition exists, use the information provided to try to resolve the problem and then try again. If the error is on the printer, see your printer's operating manual.

C.1.2 Try some quick fixes (A2)

Many times, printing problems occur due to simple or temporary conditions. The following are some common quick-fix techniques.

If the problem is limited to a single workstation client, try the following:

- ♦ Check the printer's job list to ensure the job is getting to the spooling area.
- ♦ Review what has changed since the printer was working properly.
- ♦ Check printer forms and job configurations.

If the problem is affecting other workstation clients, try the following:

- ♦ Check Printer Information in Novell® iManager for printing error messages.
- ♦ Look for printer error conditions (such as beeps or LCD panel lights) and printing error messages.
- ♦ Turn the printer off and on.
- ♦ Check the printer's cabling.
- ♦ Look for messages on the server console.
- ♦ Check the printer's job list to ensure the job is getting to the spooling area.
- ♦ Review what has changed since the printer was working properly.
- ♦ Check printer forms and job configurations.
- ♦ Search the Novell Support online for known issues.
- ♦ Make sure you have the most current iPrint software.

C.1.3 Determining your printing environment (A3)

If there is no obvious solution to the problem, then you need to begin analyzing your printing system. In order to find the problem, the printing environment being used must be identified.

NetWare® provides two printing environments: the legacy queue-based printing (see [“All queue-based environment \(A4\)” on page 130](#)) and iPrint (see [“All iPrint environment \(A5\)” on page 130](#)). Either print system can be used alone or the two can be used together (see [“Mixed iPrint and queue-based environment \(A6\)” on page 130](#)). Here are some ways to determine your printing environment:

- ♦ **User.** If the client platform is DOS, Macintosh, OS/2*, or UNIX, these clients are not directly supported by iPrint and can only print to a network printer by submitting jobs to queues or use LPR printing.

If the client platform is Windows, then they can be using either iPrint or queues. Check the printer configuration under the Windows control panel and check its network setting. Identify the network object being printed to and determine if it is a Queue object or a Printer object.

- ♦ **Server files.** At the server console look to see if the following are loaded:

`ndpsm.nlm` (the server providing print services)

`pserver.nlm` (the server has been, or still is, using queue-based printing)

- ♦ **Novell iManager.** Load Novell iManager and look at printing object configurations to determine printing setup.

C.1.4 All queue-based environment (A4)

If clients are submitting jobs to NetWare queues and the jobs are sent to the printer through the pserver.nlm, then you are using queue-based printing.

Printing in a queue-based system consists of submitting jobs to a queue, from which the print server sends the job to the printer based on the settings of the Printer object. In queue-based printing, a problem usually occurs in one of three general areas:

- ♦ Getting the print job into the print queue
- ♦ Transferring the job to the printer in the proper format
- ♦ Printing the job properly

For more information, see [Troubleshooting General Printing Problems \(http://www.novell.com/documentation/lg/nw51/printenu/data/hlgnavvum.html\)](http://www.novell.com/documentation/lg/nw51/printenu/data/hlgnavvum.html) in *NetWare 5.1 Queue-Based Print Services*.

C.1.5 All iPrint environment (A5)

If you have the new client software and are submitting jobs to the printer through Printer Agents and a Print Device Subsystem, then you are using iPrint. See [Section C.2, “Narrowing Your Focus,” on page 131](#) for more information.

C.1.6 Mixed iPrint and queue-based environment (A6)

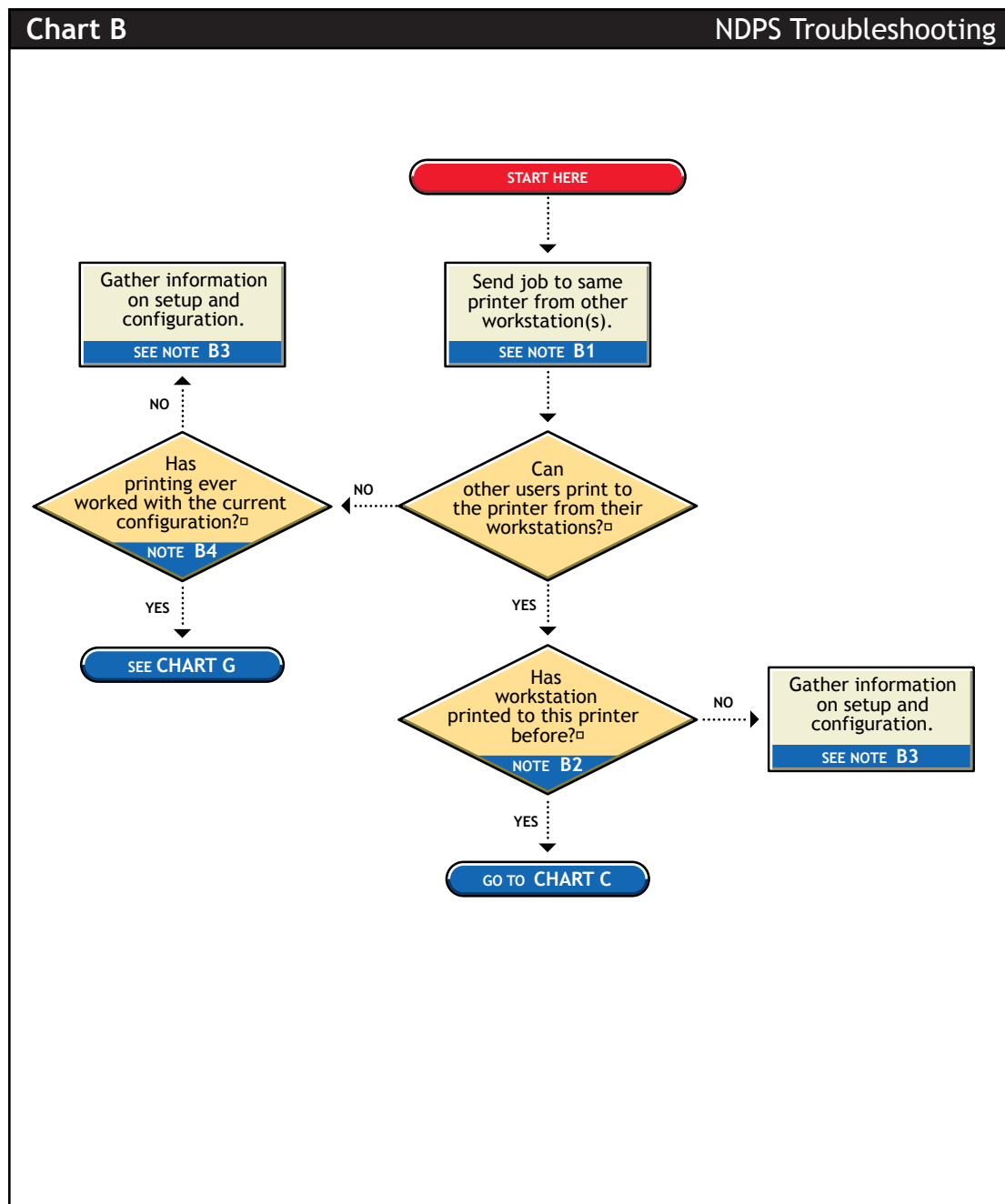
For backward compatibility, it is possible to be using both queue-based printing and iPrint together. Here are the two ways this can happen:

- ♦ Clients such as DOS, Macintosh, OS/2, and UNIX are unaware of iPrint and are unable to submit jobs to Printer Agents directly. The clients must therefore send jobs to a print queue. A Printer Agent can be configured to emulate a print server and service jobs from the queue to an iPrint printer.
- ♦ Some network printers can receive jobs only from a NetWare queue and print server. If a client is configured to send jobs only to a Printer Agent, the Printer Agent might be configured to transfer the job to a queue where it can be serviced by a print server.

Because two different print systems are being used, the problem could exist in either print system. See [Section C.2, “Narrowing Your Focus,” on page 131](#) to continue.

C.2 Narrowing Your Focus

Figure C-2 Narrowing your Focus Flowchart



C.2.1 Send job to same printer from other workstations (B1)

Try printing to the same printer from one or more different workstation. This helps you narrow your search to the specific workstation or to the whole printing system.

C.2.2 Has workstation printed to this printer before? (B2)

Has this workstation submitted jobs to this printer that printed successfully? Determine the following:

- ♦ Is this a new setup?
- ♦ Is this the first time printing was attempted from this workstation since any changes were made?
- ♦ Has this setup been working before and now is not?

If this is a new setup or a new configuration, then something might not be configured.

If a job sent from this workstation has been printed successfully before, go to [Section C.3, “Determining Your Platform When Problem Affects Only One Workstation,” on page 133](#) to further track the problem.

C.2.3 Gather information on setup and configuration (B3)

The initial setup might have been done incorrectly. Refer to [Section 3.7, “Creating a Printer,” on page 30](#) for more information.

C.2.4 Has printing ever worked with the current configuration? (B4)

Have any users been able to print jobs from their workstations using this configuration? Determine the following:

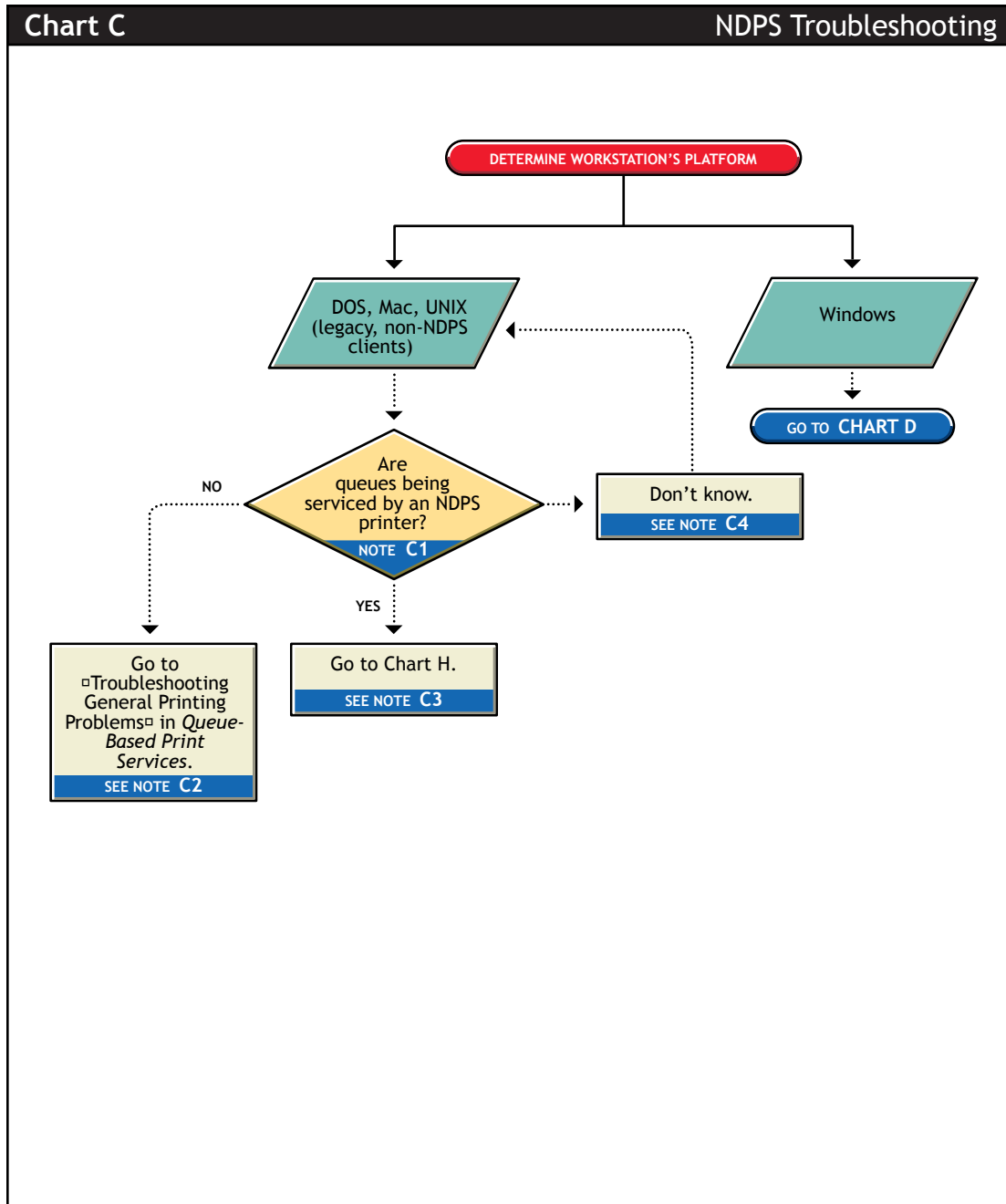
- ♦ Is this a new setup?
- ♦ Is this the first time printing since any changes were made?
- ♦ Has this setup been working before and now is not?

If this is a new setup or a new configuration, then something might not be configured properly.

If other users have been printing successfully, then go to [Section C.5, “Tracking Jobs from a Workstation,” on page 138](#) to further track the problem.

C.3 Determining Your Platform When Problem Affects Only One Workstation

Figure C-3 Determining Workstation Problems Flowchart



C.3.1 Are queues being serviced by an iPrint printer? (C1)

Clients running on DOS, Macintosh, OS/2, and UNIX platforms are either queue-based, meaning that they print to network printers by redirecting jobs to a queue, or set up for LPR printing. You

need to determine whether the network printer is being serviced by a queue-based print server (such as pserver.nlm) or if iPrint is redirecting jobs through a Printer Agent.

C.3.2 All queue-based printing (C2)

If clients are submitting jobs to a queue that is being serviced by a print server, then the printing environment is all queue-based. For more information, see [Troubleshooting General Printing Problems \(http://www.novell.com/documentation/lg/nw51/printenu/data/hlgnavvum.html\)](http://www.novell.com/documentation/lg/nw51/printenu/data/hlgnavvum.html) in *NetWare 5.1 Queue-Based Print Services*.

C.3.3 Queue-iPrint integration (C2)

The clients are unaware of iPrint and are unable to submit jobs to Printer Agents directly. The clients must therefore send jobs to a print queue. A Printer Agent can be configured to emulate a print server and service jobs from the queue to a printer. See “[Supporting Queue-Based Client Workstations](#)” on page 97 for more information. Then go to [Section C.7, “Printing Problems Affecting All Users,”](#) on page 142.

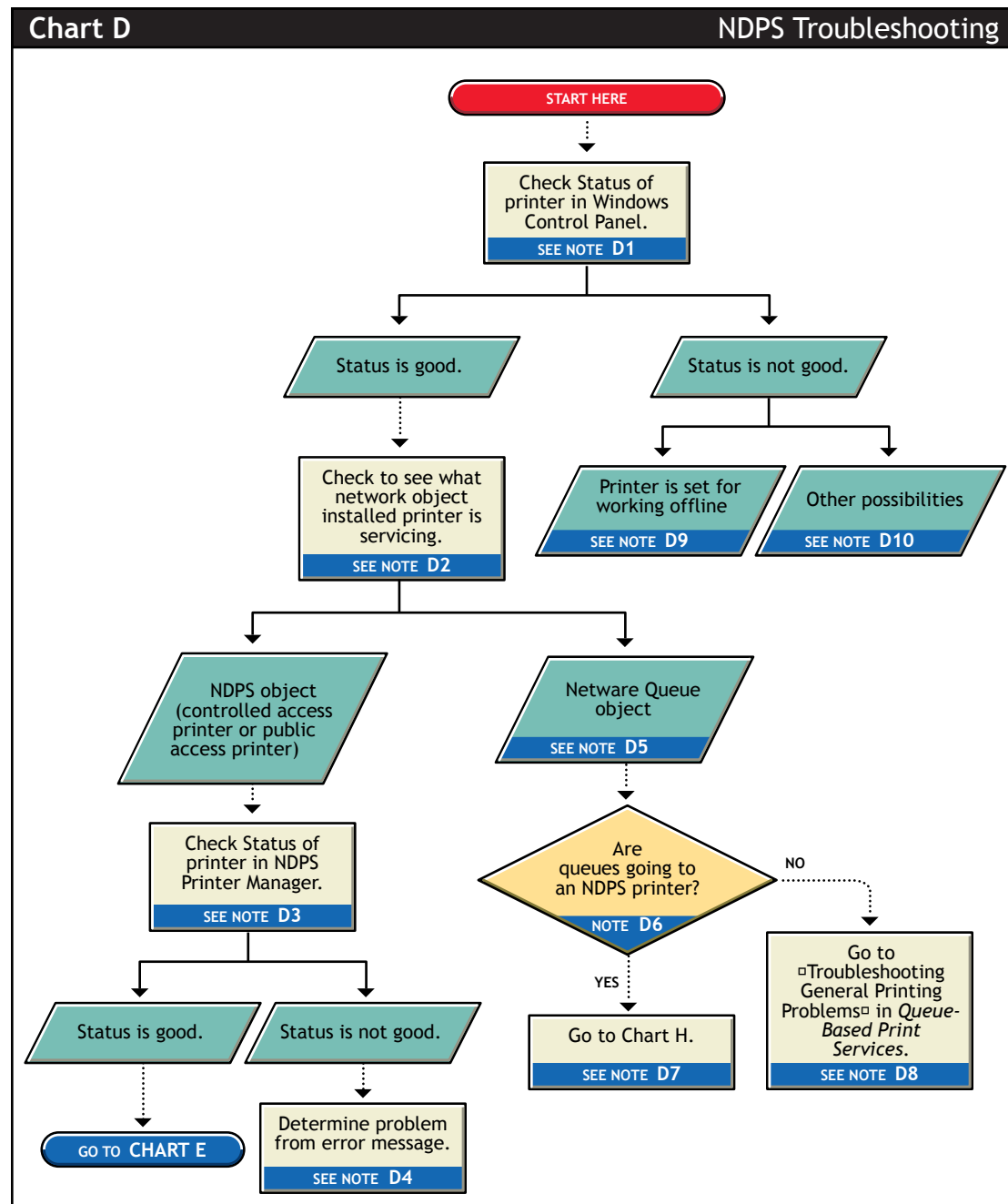
C.3.4 Look in Novell iManager for Printer objects (C4)

Load Novell iManager and look to see if any Printer objects are defined.

- ♦ If no Printer objects are defined, there should be a Print Server object. Check the configuration of the print server to if the queue is configured to be serviced by it.
- ♦ If there are objects defined, look at the Printer objects to see if they are configured to emulate a print server and service jobs from a queue.

C.4 Isolating Printing Problems Affecting Only One Windows Workstation

Figure C-4 Isolating Printing Problems Flowchart



C.4.1 Check status of printer in Windows Control Panel (D1)

Printing from a Windows environment introduces several complexities which might or might not be related to the network or the printer. Some problems can be found and resolved right in the Windows

environment. Check the status of the printer in the Windows Control Panel to see if any problems are evident.

C.4.2 Check to see what network object the installed printer is servicing (D2)

Determine the network object print jobs are being redirected to.

- 1 Select the Printers folder from the Windows Control Panel or the Start/Settings menu.
- 2 Select the installed printer and click *File/Properties* (or use the right-click *Properties* option).
- 3 Click the *Details* tab.
- 4 Look at *Print to the Following Port*.

Identify the network object being printed to and determine if it is a Queue object or a Printer object.

C.4.3 Check status of printer in NDPS Print Manager (D3)

If the job did not appear in the job list, view information about the specific installed printer using the NDPS® Print Manager Health Monitor, which is part of the Novell Remote Manager.

C.4.4 Determine problem from error message (D4)

With many printing problems, an error is reported on the printer, the client trying to print, or the server. If an error condition exists, use the information provided to try to resolve the problem and then try again. If the error is on the printer, see your printer's operating manual.

C.4.5 NetWare queue object (D5)

This printer is queue-based, meaning that the printer driver prints to network printers by redirecting jobs to a queue.

C.4.6 Are queues going to a printer? (D6)

The next thing you need to know is whether the network printer is being serviced by a queue-based print server (such as pserver.nlm) or if iPrint is redirecting jobs through a Printer Agent. Load Novell iManager and look to see if any iPrint Printer objects are defined.

- ♦ If no Printer objects are defined, there should be a Print Server object. Check the configuration of the print server to see if the queue is configured to be serviced by it.
- ♦ If there are Print objects defined, look at the Printer objects to see if they are configured to emulate a print server and service jobs from a queue.

C.4.7 Queue-iPrint integration (D7)

The clients are submitting jobs to a print queue which is then being serviced by Printer Agents. See [Section C.8, "Problems Integrating with Queue-Based Components," on page 145](#) for more information.

C.4.8 All queue-based printing (D8)

If clients are submitting jobs to a queue that are being serviced by a print server, then the printing environment is all queue-based. For more information, see [Troubleshooting General Printing Problems \(http://www.novell.com/documentation/lg/nw51/printenu/data/hlgnavvum.html\)](http://www.novell.com/documentation/lg/nw51/printenu/data/hlgnavvum.html) in *NetWare 5.1 Queue-Based Print Services*.

C.4.9 Printer is set for working offline (D9)

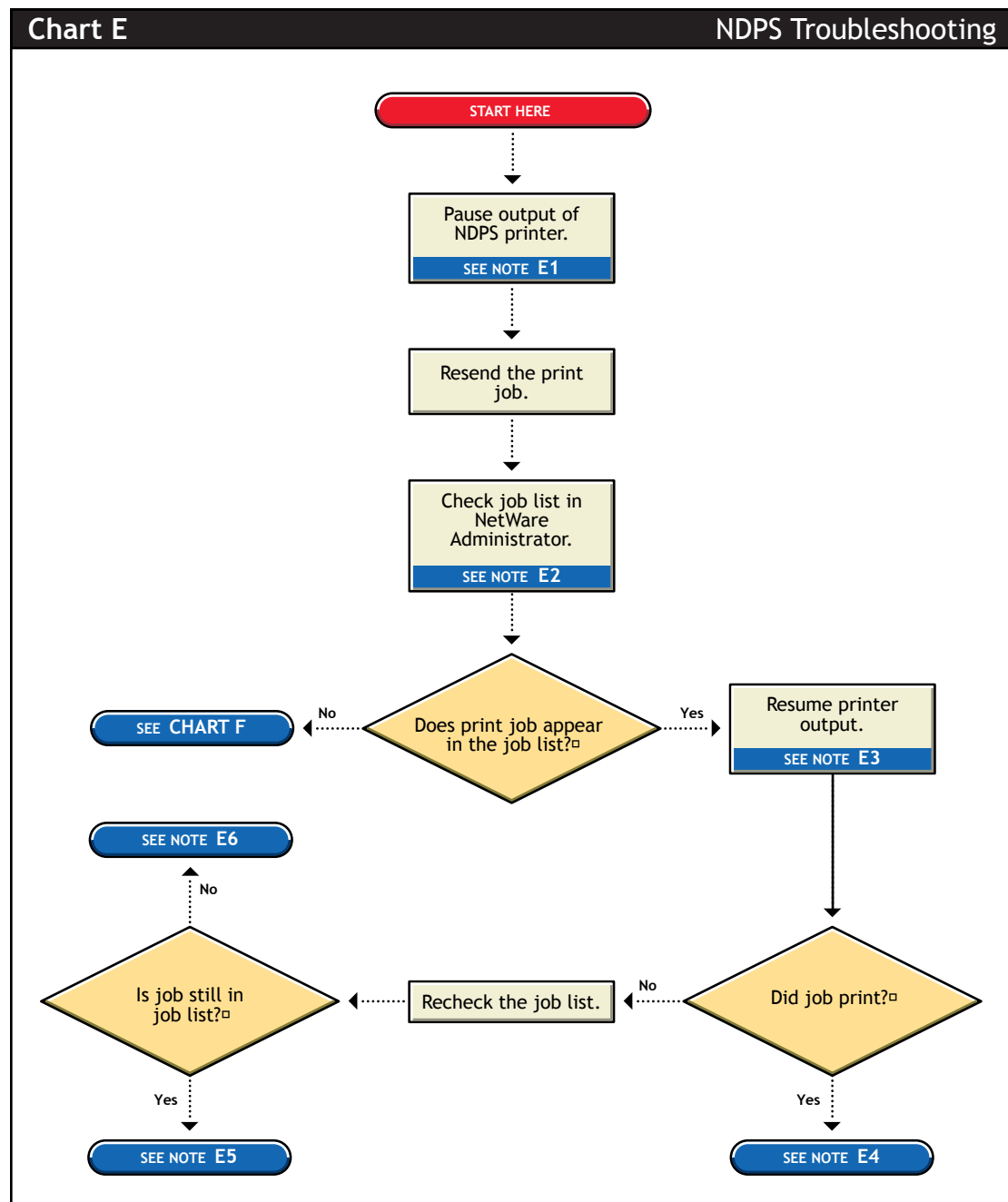
Under certain circumstances, the printer might be set for working offline. This can happen if Windows loses communication with the network, for example. A user can also set it offline. If the printer is set to work offline, reset it to online and try to print. If you cannot set the printer to online, then Windows has lost communication with the network print system. Reboot the workstation and if the condition still exists, check the client's connection to the network.

C.4.10 Other possibilities (D10)

Other negative status flags.

C.5 Tracking Jobs from a Workstation

Figure C-5 Tracking Jobs Flowchart



C.5.1 Pause output of printer (E1)

One method of troubleshooting is putting stops in the printing process and then resending a job and testing how far in the process the job gets. The first stop you can make is pausing the printer output.

Pausing printer output is a common technique used when troubleshooting printing; it forces iPrint to spool your print job and save it as a file. Stopping and evaluating the printing process midway helps you to identify early problems and limits your troubleshooting to a few components.

To pause printer output for a controlled access printer:

- 1 In Novell iManager, click *iPrint > Manage Printer*.
- 2 Browse to and select the printer you want.
- 3 Click the *Pause Output* button.

The *Pause Output* button changes to *Resume Output*.

C.5.2 Check job list in Novell iManager (E2)

You can view the job list for a printer from Novell iManager, the server console, or the workstation Printer Manager. To view the job list from Novell iManager, see “[Managing Print Jobs](#)” on page 87.

C.5.3 Resume printer output (E3)

To resume printer output for a controlled access printer, do the following:

- 1 In Novell iManager, click *iPrint > Manage Printer*, then select the printer you want to control.
- 2 Click the *Resume Output* button.

The *Resume Output* button changes to a *Pause Output* button.

C.5.4 Job printed this time but nothing was changed (E4)

If the job printed now, there is no authoritative explanation as to why it didn't print the first time. If you followed these steps, no configurations have been changed; the job was only paused and released. Try printing the job again and see if normal printing continues. If not, try pausing the printer again and see if any other symptoms occur.

C.5.5 Job did not print and is still in the job list (E5)

If the job does not print and is still in the job list, then check for job holds, delays, and priority settings.

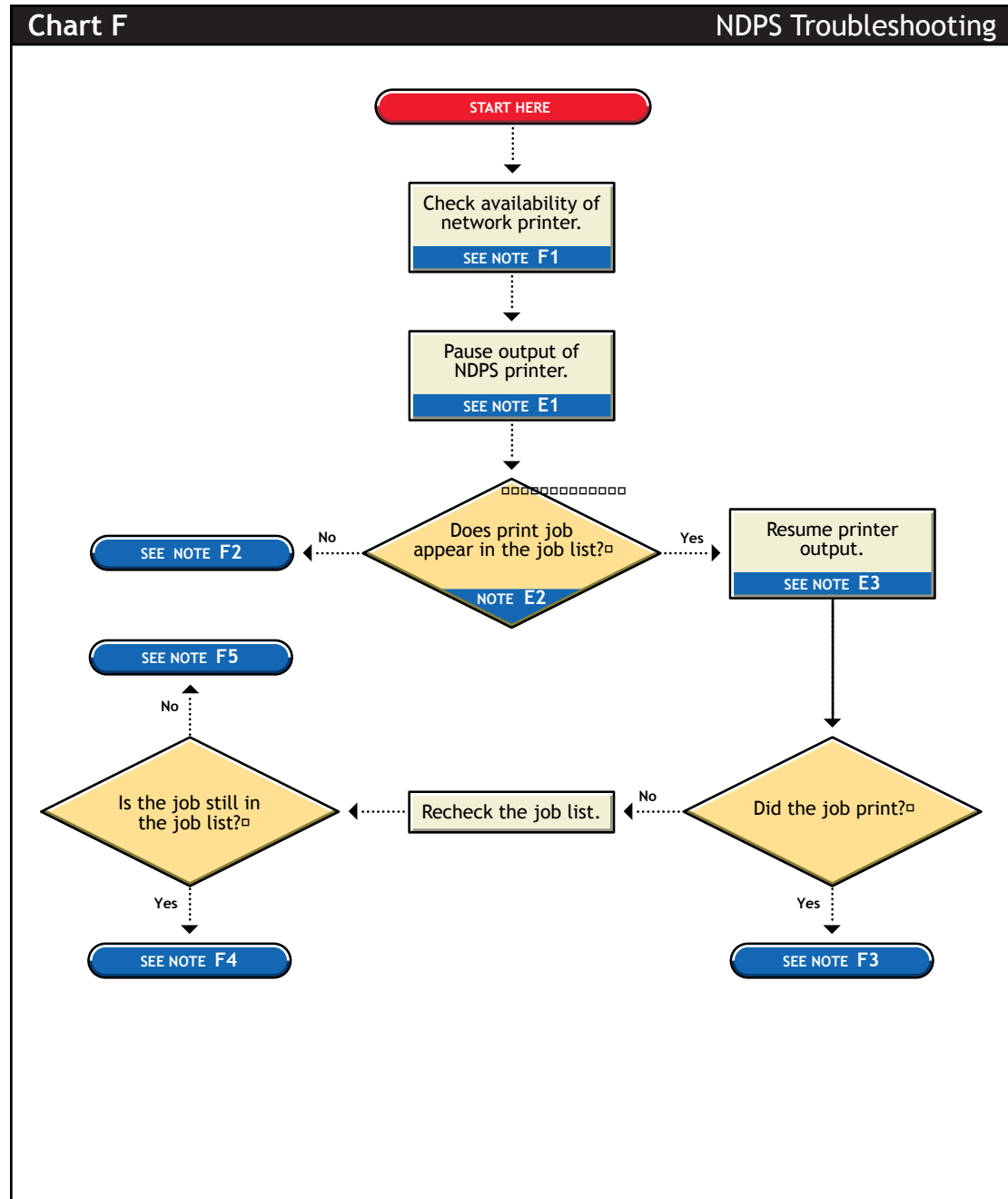
C.5.6 Job did not print but is no longer in the job list (E6)

If the job did not print, but it is not in the job list, then the job was sent to the printer and no error was reported back to the system. Check these issues:

- ♦ Are you are checking the correct physical printer?
- ♦ Are you are using the correct printer driver in your application?
- ♦ Are your drivers and printers talking the same language (for example, Postscript or PCL)?

C.6 Checking Printer Output and Using Test Files

Figure C-6 Problems with Printer Output Flowchart



C.6.1 Check availability of network printer (F1)

Make sure that the printer is set to accept jobs. In Novell iManager, verify that input is not paused.

C.6.2 Check for error messages (F2)

With many printing problems, an error is reported on the printer, the client trying to print, or the server. If an error condition exists, use the information provided to try to resolve the problem and then try again. If the error is on the printer, see your printer's operating manual.

Also confirm that your Print objects are configured properly.

C.6.3 Test file prints but jobs from application do not (F3)

If the test file prints but jobs from the application do not, then there is a problem with the way the job is being formatted by the application or handled by the driver. Reinstall the current printer driver provided by the printer manufacturer. Also try printing from different applications to determine whether one application works while another does not. If this is the case, the problem is related to the application itself.

C.6.4 Job is being held in spooler (F4)

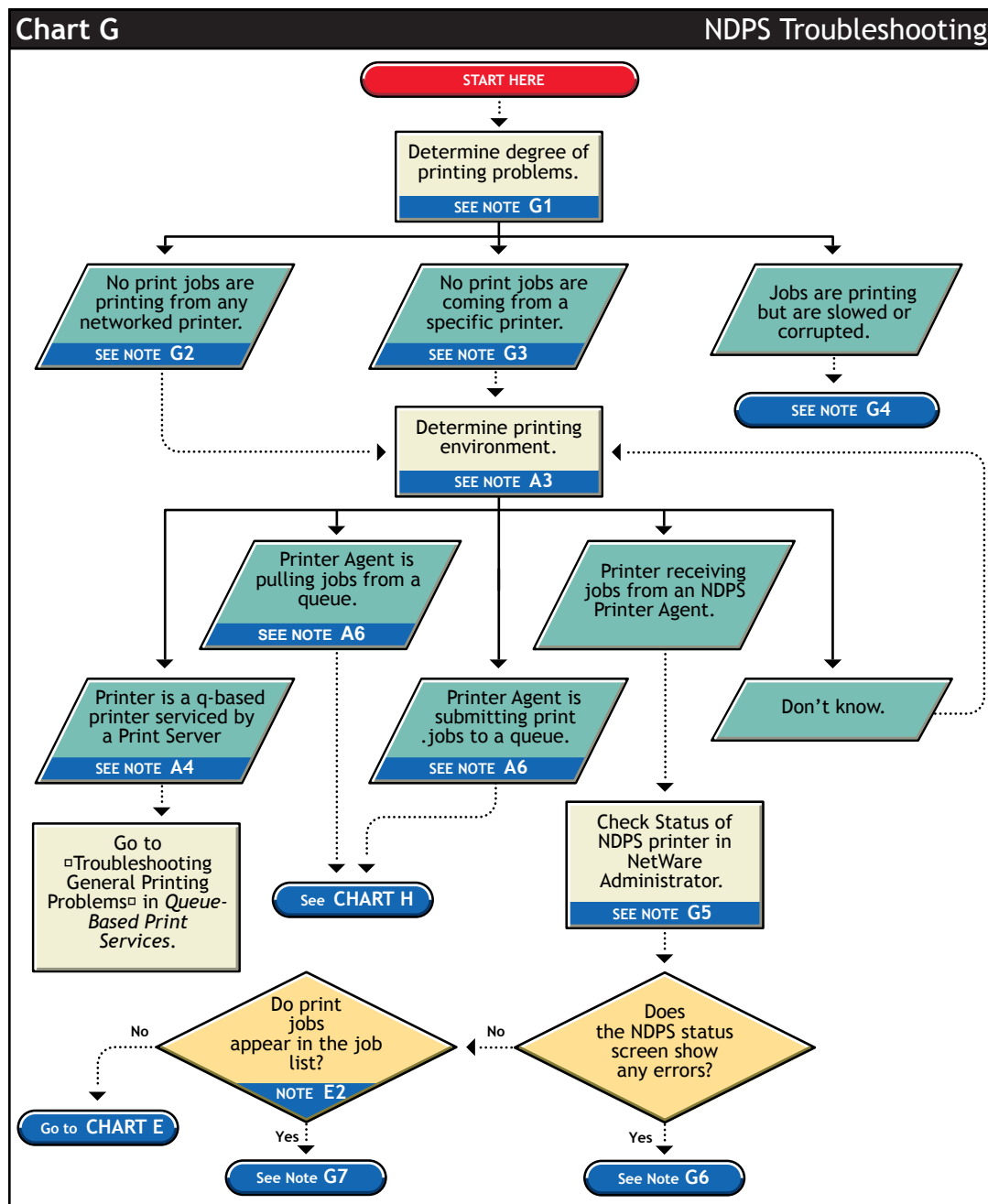
The job is being held in the job spooler. Check for job holds, delays, and priority settings. If one of these conditions exists, change the status to print the job. If the job prints, then see [“Test file prints but jobs from application do not \(F3\)” on page 141](#).

C.6.5 Job did not print but is no longer in the job list (F5)

If the job did not print but it is not in the job list, then the job was sent to the printer and no error was reported back to the system. Make sure you are checking the right physical printer.

C.7 Printing Problems Affecting All Users

Figure C-7 Printing Problems Affecting All Users Flowchart



C.7.1 Determine severity and scope of printing problems (G1)

If printing is affecting all users, determine the degree of severity of the printing problems. Can no users print from specific printers, or are no jobs printing from any network printer? Or are jobs printing, but printing slowly?

C.7.2 No print jobs are printing from any network printer (G2)

If no users can print at all from any network printer, the problem is probably a universal problem such as

- ♦ The printing system is disabled or printing system files are unloaded.
- ♦ The servers are in a critical state due to problems with memory, disk space, LAN connections, etc.
- ♦ The LAN has a bottleneck or is otherwise dysfunctional.

C.7.3 No print jobs are coming from a specific printer (G3)

If the printing problem is limited to a certain printer, then the problem is either at the printer itself or the configuration of the printer. Continue to determine which printing environment you are using.

C.7.4 Jobs are printing slowly or are corrupted (G4)

Jobs might be printing but are either slow or appear corrupted.

Slow Printing

There are several explanations for slow printing.

If only one workstation is having problems with slow printing, the application might be generating the output for the printer. This can cause a long delay before the job is even sent to the spooler. Look at the print status of the application to determine if this is the case.

If all workstations are having the problem, one of the following conditions might exist:

- ♦ Interrupt conflicts might exist between the port and another device. Configure the printer for no interrupts (polled mode).
- ♦ The baud rate might be slow (serial printers).
- ♦ XON/XOFF might need to be enabled (serial printers).
- ♦ Your hardware (cable, port, printer) might be faulty.

Job Corruption

If jobs are printing in pieces, the printer might not have sufficient memory to hold the entire page to be printed. If it does not, it will print the part of the page it has in memory and continue printing on the next page. This problem occurs when printing jobs that contain large graphics.

C.7.5 Check status of the Printer in Novell iManager (G5)

From Novell iManager, click *iPrint > Manage Printer*, then browse to and select the printer you want to check.

C.7.6 A problem is identified in an error message (G6)

Try to determine problem from the status or error message and resolve it.

- ♦ Make sure that job input or output is not paused.
- ♦ Check for any details that are grayed out and not available; these might show you a problem.

C.7.7 Jobs are getting to the job list but the printer is unable to print them (G7)

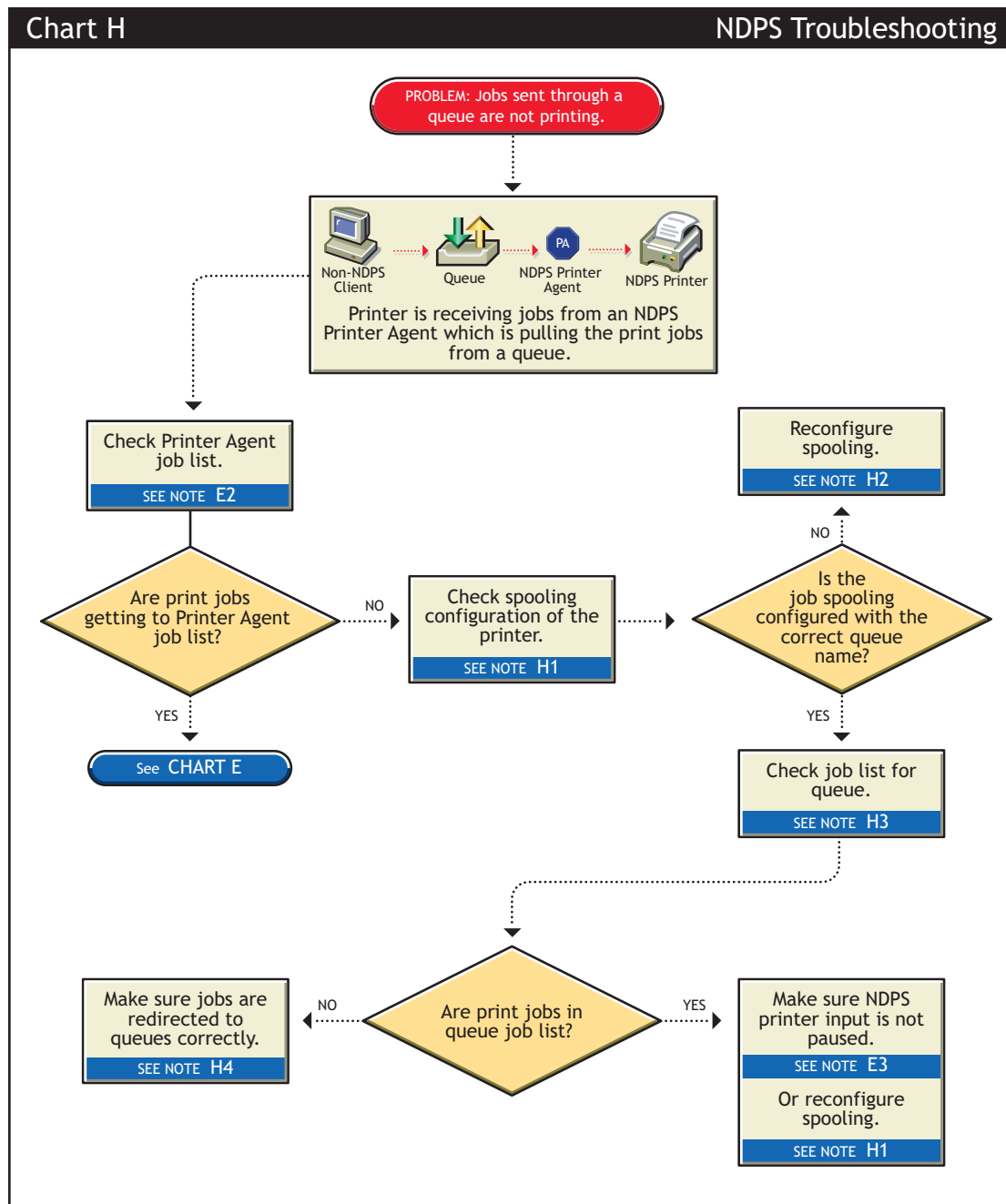
Do the following:

- ♦ Make sure there are no holds or delays.
- ♦ Make sure the printer is configured properly.
- ♦ Check the status of the gateway if one is being used.

See [Section C.5, “Tracking Jobs from a Workstation,” on page 138](#) for more information.

C.8 Problems Integrating with Queue-Based Components

Figure C-8 Queue-based Printing Issues Flowchart



C.8.1 Check the printer's spooling configuration (H1)

Make sure the printer is configured to service the queue you are expecting the job to go to. See [“Setting Print Job Spooling” on page 95](#) for more information.

C.8.2 Reconfigure spooling for this printer (H2)

The spooling configuration specifies a different queue than the one you want this printer to service. See [“Setting Print Job Spooling” on page 95](#) for information on how to configure job spooling.

C.8.3 Check the job list for the queue (H3)

Make sure the job is actually getting to the queue.

C.8.4 Make sure the job is being redirected to the queue properly (H4)

Many applications are not designed for network printing. CAPTURE is a command line utility that configures print job redirection from applications not designed for NetWare print services.

Documentation Updates

D

The *iPrint Administration Guide* has been updated with the following information on the following dates:

- ♦ Section D.1, “September 2006 (NetWare 6.5 Support Pack 6),” on page 147
- ♦ Section D.2, “December 23, 2005 (Open Enterprise Server SP2),” on page 148
- ♦ Section D.3, “September 29, 2005,” on page 148
- ♦ Section D.4, “August 19, 2005 (Open Enterprise Server SP1),” on page 148
- ♦ Section D.5, “February 2005 (NetWare 6.5 SP3),” on page 149
- ♦ Section D.6, “June 2004 (NetWare 6.5 SP2),” on page 149

D.1 September 2006 (NetWare 6.5 Support Pack 6)

Location	Change
Section 7.2.8, “Modifying the Printer’s Gateway Load Commands,” on page 91	Removed section Other information that changes less frequently, such as the level of paper in a paper tray or the amount of toner, is gathered about every four polling intervals; additional printer information, such as printer memory, is gathered every 10 polling intervals.
Section 4.7, “Using iPrint Client Management,” on page 56	Added Section
Section , “Creating a Short Printer Name Profile,” on page 54	Updated section to specify that ShortInstallNames must be unique across the network.
Section 4.6.6, “Manage Global Actions through lprint.ini,” on page 53	Updated the note because beginning with Support pack 6, you no longer need to update the latest <code>lprint.ini</code> with your own settings. The Support Pack install merges your settings with the latest <code>lprint.ini</code>
Section 7.1.6, “Enabling Printer Agent Redirection,” on page 81	Added Section.
Appendix E, “iPrint Client Version Release List,” on page 151	Updated list.

D.2 December 23, 2005 (Open Enterprise Server SP2)

Location	Change
Entire guide.	Page design reformatted to comply with revised Novell® documentation standards.
Section 4.5, "Using iprntcmd on Linux and Macintosh," on page 45 and "Using iprntcmd.exe to Install iPrint Printers" on page 51	Beginning with the iPrint Client v4.15, the printcmd on Linux was renamed to iprntcmd. The options for iprntcmd for both Linux and Windows have been updated.
"Linux: Controlling Access to the Workstation Print System" on page 36	Changed <code>novell-iprint-xclient-sl-version.i586.rpm</code> attribute to indicate that it is the default client installed from the iPrint Printer List Web page.
"Linux: Distributing the iPrint Client" on page 37	Updated the information about creating a symbolic link.
Appendix E, "iPrint Client Version Release List," on page 151	Added section.
Section 4.8.2, "Removing the Macintosh iPrint Client," on page 61	Updated uninstall steps.

D.3 September 29, 2005

Location	Change
Section 4.1.3, "Windows: iPrint Client," on page 40	Section was added.
Section 5.4, "Installing Printer as Default on Windows," on page 67	Section was added.
Section 8.3, "Secure Printing Using SSL/TLS," on page 112	Section was updated.

D.4 August 19, 2005 (Open Enterprise Server SP1)

Location	Change
Chapter 2, "What's New," on page 21	This chapter was added.
"Macintosh: iPrint Client Requirements" on page 39	Added Firefox browser to the list.
"Configuring Automatic Log Rotation" on page 80	This section was added.

Location	Change
“Modifying the Printer’s Gateway Load Commands” on page 91	Command options were updated, including Port= and NOSNMP.
Section 7.2.2, “Enabling iPrint Direct,” on page 86	This section was added.
Section 8.3.4, “Configuring TLS Printing with Proxies,” on page 114	This section was added.
Chapter 4, “Setting Up iPrint on Client Workstations,” on page 35	Because secure printing is now supported on all clients, notes stating that secure printing is not supported for Linux and Macintosh clients were removed.
“Printing to Secure Printers” on page 37	This section was added.
“Additional Configuration for Secure Printers with GNOME” on page 38	This section was added.

D.5 February 2005 (NetWare 6.5 SP3)

Changes were made to the following sections:

Location	Change
Chapter 4, “Setting Up iPrint on Client Workstations,” on page 35	Chapter reorganized and information added about the iPrint Clients for Linux and Macintosh.
Section 7.4, “Configuring LDAP,” on page 105	This section was added.
Section 2.6, “Enhancements for NetWare 6.5 Support Pack 3,” on page 22	This section was added.
Section 3.1, “Installing iPrint Software,” on page 25	Information about upgrading from NDPS® and Print Queues was added.
Section 8.3, “Secure Printing Using SSL/TLS,” on page 112	TLS information was added.

D.6 June 2004 (NetWare 6.5 SP2)

Changes were made to the following sections:

Location	Change
Section 7.2.6, “Using Printer Driver Profiles,” on page 88	This section was added.
Section 7.2.7, “Using Printer Banner Pages,” on page 89	This section was added.
“Setting up Printer Configurations”	This section was replaced by “Configuring Printer Settings” on page 92 .
Section 4.2.1, “Using the iPrint Printer List Web Page,” on page 44	This section was modified because the iPrint Client is no longer required to view the iPrint Printer List.

Location	Change
Section 5.3, "Changing Printer Driver Default Install Options," on page 66	This section was modified because this is no longer included in the map tool. See Section 7.2.6, "Using Printer Driver Profiles," on page 88.

iPrint Client Version Release List



This section details the major releases of the iPrint Client.

Table E-1 *iPrint Client Releases*

iPrint Client Version	Release
1.00	NetWare® 6
1.00a	NetWare 6 Internationalized
1.01	NetWare 6 Support Pack 1
1.03	NetWare 6 Support Pack 2
1.05	Web Release
1.06	Web Release
1.10	NetWare 6 Support Pack 3
2.01	NetWare 6.5
2.02	NetWare 6 Support Pack 4 and NetWare 6.5 Support Pack 1
3.00	Novell® Nterprise™ Linux Services Support
3.05	Novell Nterprise Linux Services Support Pack 1
3.09	NetWare 6 Support Pack 5 and NetWare 6.5 Support Pack 2
4.05	Open Enterprise Server and NetWare 6.5 Support Pack 3
4.11	Open Enterprise Server Support Pack 1 and NetWare 6.5 Support Pack 4
4.12	Web Release
4.15	Open Enterprise Server Support Pack 2 and NetWare 6.5 Support Pack 5
4.16	Web Release
4.20	Web Release with iPrint Client Management (iCM)
4.26	NetWare 6.5 Support Pack 6
4.28	Web Release
4.30	Web Release with fix for auto updating to OES 2
4.32	Open Enterprise Server 2 and NetWare 6.5 Support Pack 7