

iPrint Manager Health Monitor Administration Guide

**Novell®
NetWare®**

6.5 SP8

November 2009

www.novell.com



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About This Guide

This guide describes how to monitor and manage your print system using the Print Manager Health Monitor in Novell® Remote Manager for NetWare®.

- ♦ Chapter 1, “An Overview of the Print Manager Health Monitor,” on page 9
- ♦ Chapter 2, “Understanding the Print Manager Health Monitor Screens,” on page 11
- ♦ Chapter 3, “Advanced Print Manager Information Page,” on page 23
- ♦ Chapter 4, “Using the Print Manager Health Monitor,” on page 45
- ♦ Chapter 5, “Troubleshooting Print System Errors,” on page 53
- ♦ Chapter 6, “Examples of Troubleshooting Print Problems,” on page 63

Audience

This guide is intended for administrators involved in managing and monitoring iPrint.

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, or go to www.novell.com/documentation/feedback.html and enter your comments there.

Documentation Updates

The latest version of this documentation is available at the [NetWare 6.5 SP8 Documentation Web site \(http://www.novell.com/documentation/nw65\)](http://www.novell.com/documentation/nw65).

Additional Documentation

For documentation on installing and running iPrint and Novell® Distributed Print Services™, see the *NW 6.5 SP8: iPrint 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.

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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 UNIX*, should use forward slashes as required by your software.

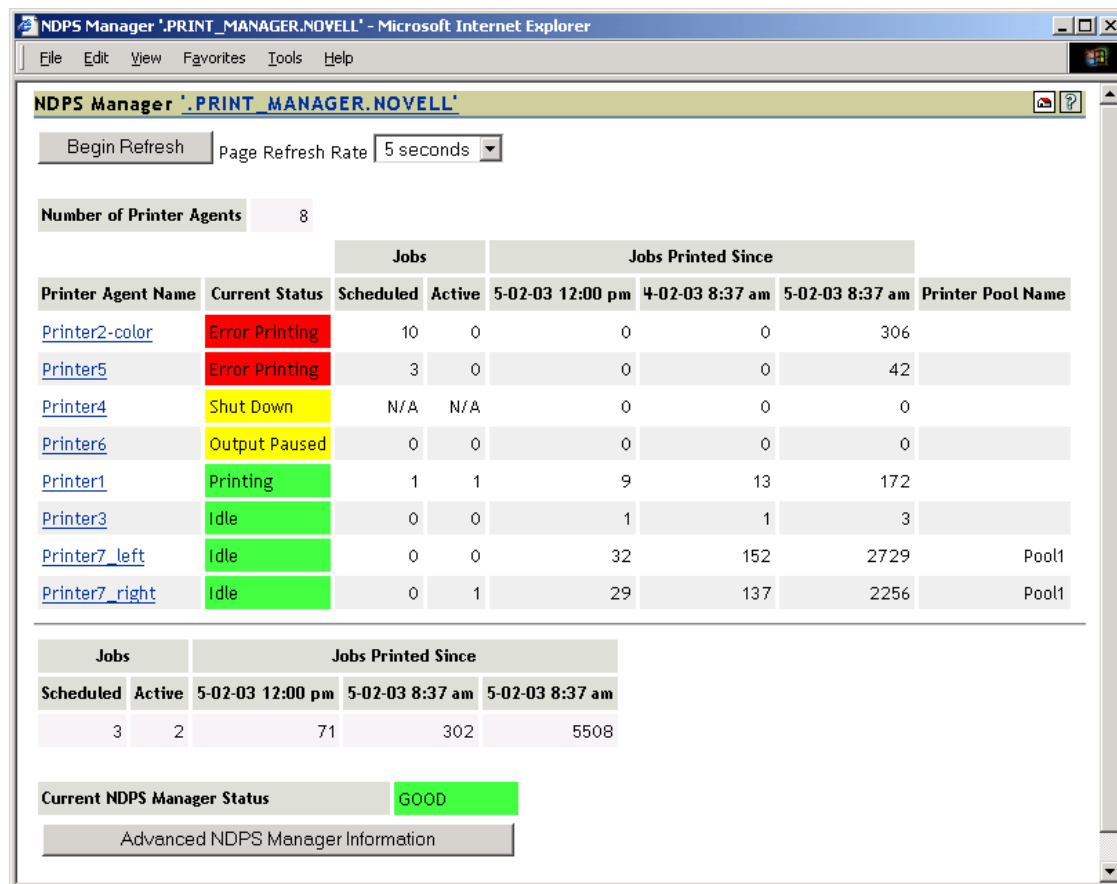
An Overview of the Print Manager Health Monitor

1

The Print Manager Health Monitor provides administrators with a global view of their print system. The Health Monitor shows you the current status of Printer Agents and lets you configure settings and generate reports about your print system. The Print Manager Health Monitor is a part of Novell® Remote Manager.

The Print Manager Health Monitor lets you quickly evaluate your printing system and troubleshoot errors associated with printing.

Figure 1-1 Print Services Manager Health Monitor Main Page



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

- 1 User your Web browser to log in to Novell Remote Manager.
For more information about accessing Novell Remote Manager, see the *NW 6.5 SP8: Novell Remote Manager Administration Guide*.
- 2 Under *Diagnose Server*, click *Print Manager Health*.

You can now view current Printer Agent states, start up and shut down Printer Agents, and view other information about your print system.

Understanding the Print Manager Health Monitor Screens

2

Although the default settings in Novell® Distributed Print Services™ (NDPS®) allow your users to print without further configuration being necessary, you probably want to modify some of those settings so that you can manage your printing resources more effectively. Before making changes, you should monitor your print system using the Print Manager Health Monitor to determine which changes benefit your configuration.

The Print Manager Health Monitor is divided into two main areas. From these two areas you can access all the information you need to monitor and troubleshoot your print system.

This section discusses the following:

- ♦ [Section 2.2, “Print Manager Health Monitor Main Page,” on page 11](#)
- ♦ [Section 2.3, “Printer Agent Information Page,” on page 14](#)

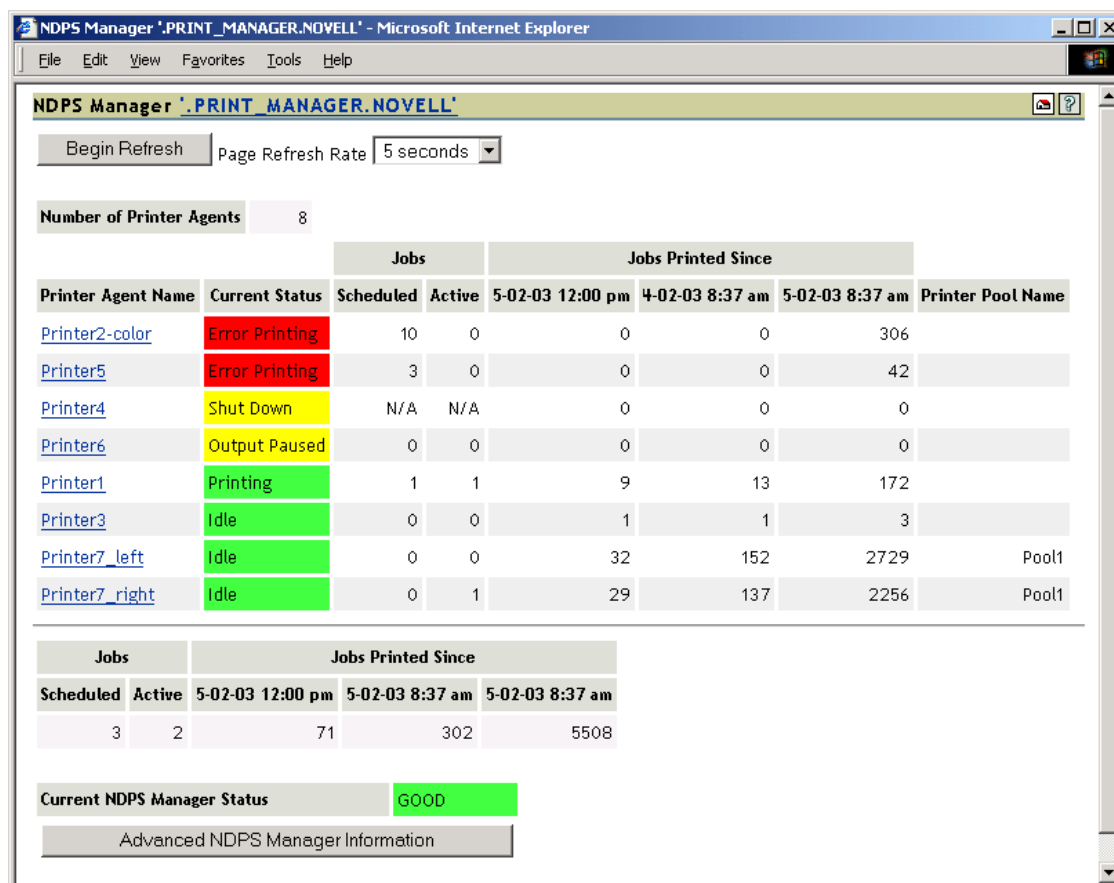
2.1 Navigating in the Print Manager Health Monitor

Navigating to different screens in the Print Manager Health Monitor is just a matter of selecting the link you want to view. To return to the main page above the page you are currently viewing, you should use the Back Button in the Health Monitor that is located in the upper right corner. Using the browser's Back button takes you back to the previously viewed page.

2.2 Print Manager Health Monitor Main Page

When you first access the Health Monitor, the main page shows you a list of all the Printer Agents and their current state, print job statistics, and the status of the Print Manager.

Figure 2-1 *Print Manager Health Monitor Main Page*



Use the following list to find out more information about the fields displayed on the main page.

- ♦ [NDPS Manager NDPS_Manager_Object Context \(page 12\)](#)
- ♦ [Begin/Stop Refresh \(page 13\)](#)
- ♦ [Number of Printer Agents \(page 13\)](#)
- ♦ [Printer Agent Name \(page 13\)](#)
- ♦ [Jobs and Jobs Printed Since \(for Printer Agents\) \(page 14\)](#)
- ♦ [Current NDPS Manager State \(page 14\)](#)
- ♦ [Advanced NDPS Manager Information \(page 14\)](#)

2.2.1 NDPS Manager *NDPS_Manager_Object Context*

Displays the name and context of the Print Manager that the Health Monitor is monitoring. If you have manager or admin rights, this becomes a link you can use to view the NDS® attribute information for this Print Manager object.

Traversing NDS Tree

Displays the eDirectory™ attributes for the Print Manager Object if you have manager or admin rights.

2.2.2 Begin/Stop Refresh

Starts or stops refreshing the current screen. You can set the refresh interval. When the page is refreshed, you are returned to the top of the page.

2.2.3 Number of Printer Agents

Indicates the number of Printer Agents serviced by this Print Manager.

2.2.4 Printer Agent Name

Displays links to the Printer Agent information page for every Printer Agent associated with this Print Manager. For more information, see [Section 2.3, “Printer Agent Information Page,” on page 14.](#)

Current Status

Displays the current status of each Printer Agent. A Printer Agent can have one or more of the following status messages.

Table 2-1 *Types of Status Error Messages*

Status	Description
Error Printing	See Printer Agent’s information page for details about the problems.
Idle	Waiting for a printable job to print.
Input Paused	Printer Agent does not accept new jobs.
Not Bound	No gateway is attached.
Output Paused	Printer’s output is paused.
Printing	Job was opened by the gateway and is not yet closed.
Shutdown	Printer Agent is not accessible.

In addition to the status messages above, the column uses the following colors to indicate status.

Table 2-2 *Status Color Indicators*

Color	State
Red	Critical - Users cannot print to this printer.
Yellow	Warning - The printer is available to users, but the printer or Printer Agent might need attention to successfully print the job.
Green	Good - Users can print to the printer.

Scenarios

- ♦ If the status is idle and color is red, then the gateway has not requested a job.
- ♦ If the status is printing and the color is yellow, then the printer is not requesting data.

To configure how the Print Manager should handle the different status, use [“Configuring the Monitoring Thresholds” on page 40](#) along with the Advanced Print Manager Information page.

Jobs and Jobs Printed Since (for Printer Agents)

Displays statistics about print jobs for the Printer Agent. The statistical information includes jobs that are scheduled to be printed; the number of jobs that the gateways currently have open; and the number of jobs printed in approximately the last hour, since midnight, and since the Print Manager was started. These numbers are reset when the Print Manager is stopped and restarted. This information is useful when troubleshooting issues.

2.2.5 Jobs/Jobs Printed Since (for Print Manager)

This listing below the dividing line displays a summary of job statistics for all Printer Agents associated with this Print Manager.

2.2.6 Current NDPS Manager State

The Print Manager can monitor itself for potential problems. This displays whether the Print Manager is operating within configured limits. For more information on configuring the Print Manager Health Monitor, see [Section 3.7, “Configure Settings and Thresholds,” on page 38](#).

2.2.7 Advanced NDPS Manager Information

If there is a problem with the Print Manager’s status, click the Advanced NDPS Manager Information button for additional information. Also see [“Advanced Print Manager Information Page” on page 23](#).

2.3 Printer Agent Information Page

If you select a Printer Agent from the Print Manager main page, the following page appears. This section describes the information presented on the Printer Agent Information page.

Figure 2-2 Printer Agent Information Page

Printer Agent 'Printer1' Information - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Printer Agent 'Printer1' Information

Previous Printer Next Printer Back

Printer Agent Status: Idle Shutdown Printer Apply

Printer Console: POWER SAVE ON

Printer Agent Status Details	Event Time	Associated Message from Printer
Input Media Supply Empty	5/2/2003 12:19:54 pm	TRAY 1 EMPTY
Input Media Supply Empty	5/2/2003 12:19:54 pm	TRAY 3 EMPTY
Other Problem	5/2/2003 12:26:53 pm	POWER SAVE ON

[Job List](#) [Shutdown/Startup History](#) [Message from Admin](#) [Configuration Options](#)

Job Processing Information	Scheduled	Active	Requested	Last Job Finished Printing
Jobs	0	0	1	(none)

Job History	5-02-03 12:00 pm	5-02-03 8:37 am	4-02-03 8:37 am	Printer Reset
Pages Printed Since	0	0	0	
Jobs Printed Since	0	0	0	0
Jobs Canceled Since	0	0	0	
Jobs Aborted Since	0	0	0	
Average Job Size Since (KB)	0	0	0	
Maximum Job Size Since (KB)	0	0	0	

Date Printer Agent Created: 5-01-03 12:32 pm

Module Type	Module Status	Module Autoload Command
Gateway	Active	NDPSGW PORT=LPR HOSTADDRESS=156.62.44.4 PRINTERNAME=PASSTHROUGH
Accounting	Not active	(none)
Scheduler	Active	First In, First Out (Internal)

	Printer Model	Printer Manufacturer
From Printer	HP LaserJet 55i	Hewlett-Packard
Win 95/98 Driver	HP LaserJet 55i/55i MX PS	HPLaserPrinter
Win NT4 Driver	HP LaserJet 55i/55i MX PS	HP

Security Level: Medium

Event Notification Service: (none)

Resource Management Service: .BROKER.NOVELL

Associated NDS Printer Objects

[Printer1.novell](#)

iPrint Information		
Enabled	SSL Required	Printer URL
TRUE	FALSE	uri=ipp://nw65doc.provo.novell.com/ipp/Printer1

2.3.1 Previous/Next Printer

Click to move to the previous or next Printer Agent in the list on the main page. If a printer's status changes while you are on the Printer Agent Information page, the list is automatically updated. Therefore, the next printer you expect might no longer be in the same order.

2.3.2 Printer Agent Status

Displays the current status of each Printer Agent. A Printer Agent can have one or more of the following status messages.

Table 2-3 *Types of Status Error Messages*

Status	Description
Error Printing	See Printer Agent's information page for details about the problems.
Idle	Waiting for a job to print.
Input Paused	Printer Agent does not accept new jobs.
Not Bound	No gateway is attached.
Output Paused	Printer's output is paused.
Printing	Job was opened by the gateway and is not yet closed.
Shutdown	Printer Agent is not accessible.

In addition to the status messages above, the column uses the following colors to indicate status.

Table 2-4 *Status Color Indicators*

Color	State
Red	Critical - Users cannot print to this printer.
Yellow	Warning - The printer is available to users, but the printer or Printer Agent might need attention to successfully print the job.
Green	Good - Users can print to the printer.

To configure how the Print Manager should handle the different status, use [“Configuring the Monitoring Thresholds” on page 40](#) along with the Advanced Print Manager Information page.

Shutdown or Startup/Pause Input or Output for Printer

Select the action you want from the drop-down list, then click *Apply*. You can shut down or start up the Printer Agent or pause input or output on the printer. When the Printer Agent starts up, the most current printer status might not be returned. You might need to refresh the page. The drop-down list appears only if you have manager or admin rights to the Printer Agent.

2.3.3 Printer Console

Displays the information that the printer's display (usually the LCD) is showing. If the Printer Console field displays None, then the Health Monitor does not have access to the information. If the field displays Unknown, the Health Monitor was able to get the information, but it no longer can access the printer's display. This usually occurs when the gateway is changed. This feature uses SNMP to gather the information. If there is more than one message, additional Printer Console lines are displayed.

2.3.4 Printer Agent Status Details, Event Time, Message

The Printer Agent Status Details, Event Time, and Message table displays only when problems have been detected for this Printer Agent. The table lists current problems and the time the problem was reported along with any associated message. Red entries indicate problems that prevent printing. Yellow entries indicate warnings that should not stop printing.

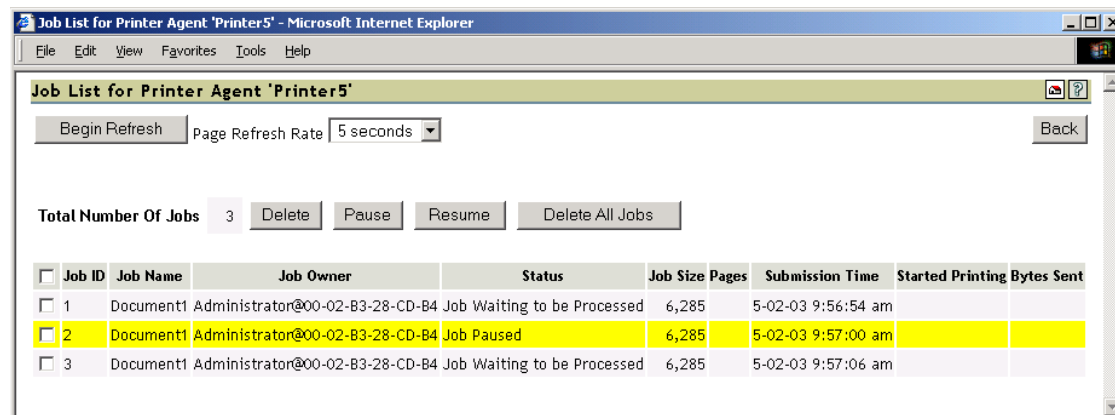
2.3.5 Job List

Displays the current job list for this Printer Agent. This option is available only to administrators; the link appears only if you have manager or admin rights to the Printer Agent. Jobs in the Job List are associated with one of the following colors:

Table 2-5 Job Status Color Indicators

Color	Description
Gray	Job is waiting to be printed.
Cyan	Job is printing.
Yellow	Job is not in a printable state because of a Job Hold or Printing Pause.

Figure 2-3 Job List Page



2.3.6 Shutdown/Startup History

Displays a history of the startup and running times for this Printer Agent since the last time the Print Manager was loaded. When a Printer Agent has been restarted many times, it usually indicates that a problem exists and warrants further investigation. This link appears only if you have manager or admin rights to the Printer Agent.

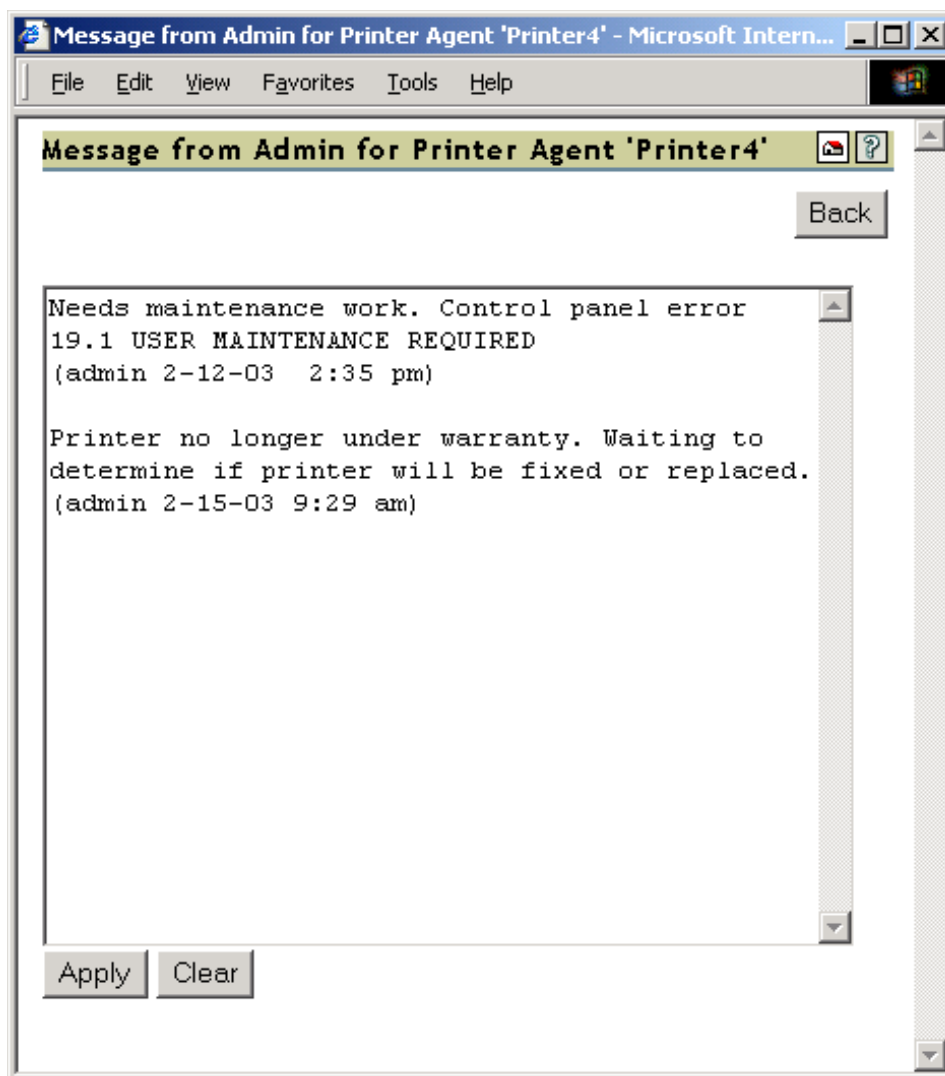
Figure 2-4 *Print Manager Shutdown and Startup History*



2.3.7 Message from Admin

Lets you attach a note about this Printer Agent. When a message exists, this link is highlighted in Yellow. To remove the message, you must delete the characters in the message box and then click *Apply*. This link appears only if you have manager or admin rights to the Printer Agent.

Figure 2-5 *Message from the Administrator Page*



This is useful for notes about the state of this printer. For example, you can leave a message when a printer is offline due to maintenance so that other administrators cannot delete the Printer Agent for the printer.

2.3.8 Configuration Options

Lets you configure the following options for the printer. After modifying this page, you must click *Apply* for the changes to be saved.

Figure 2-6 Configuration Options Page

Configuration Options for Printer Agent 'Printer4' - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Configuration Options for Printer Agent 'Printer4'

Back

☐ Enable Auditing

☒ Enable iPrint

☐ Require SSL

Printer Location

Gateway Autoload Command

NDPSGW PORT=LPR HOSTADDRESS=156.62.44.4 PRINTERNAME=PASSTHROUGH

Note: Printer agent restart required.

Apply Cancel

Table 2-6 Configuration Options Descriptions

Option	Description
Enable Internal Auditing	Enables auditing for this printer, which tracks who printed how many printers to this printer.
Enable iPrint	Allows this printer to be seen as an iPrint printer.
Require SSL	Clients must use SSL to communicate with this printer. This option requires the printer to be an iPrint printer.
Printer Location	Lets you specify a printer location associated with this printer. Use this field to add information that helps you and users locate this printer.
Gateway Load String	Lets you edit the gateway load string for this printer. You must restart the Printer Agent for the changes to take effect.

2.3.9 Job Processing Information

Displays information about processing jobs and about the last job that finished printing. This information is useful when troubleshooting.

2.3.10 Job History

The Job History includes the following fields:

- ♦ “Jobs Printed, Canceled, and Aborted Since” on page 21
- ♦ “Average Job Size Since (KB)” on page 21
- ♦ “Maximum Job Size Since (KB)” on page 21

Jobs Printed, Canceled, and Aborted Since

Displays statistics about the number of jobs that have been printed, canceled, and aborted in the last hour, in the last day, and since the Print Manager was started.

Jobs Printed Since refers to the number of jobs that have been printed since this value was reset to 0 (zero). This value was initialized to 0 when a Printer Agent was created. There should not be a need to reset this value to 0.

Average Job Size Since (KB)

Displays the size of the average print job (in kilobytes) that was processed since the indicated time. This information coupled with *Maximum Job Size Since (KB)* is useful in troubleshooting print problems as well as determining the throughput of your print system.

Maximum Job Size Since (KB)

Displays the size of the largest print job (in kilobytes) that was processed since the indicated time. This information coupled with *Average Job Size Since (KB)* is useful in troubleshooting print problems as well as determining the throughput of your print system.

2.3.11 Date Printer Agent Created

Displays the date and time this Printer Agent was created. You can use this information with the print job statistics to determine the printer’s overall use. For example, if the Printer Agent was created a long time ago and it has processed only a few print jobs, you might want to move the printer to a more useful location.

2.3.12 Module Information

The Print Manager works in conjunction with several other NLM™ programs. This information indicates the NLM programs that this Printer Agent can use. It also indicates the current status of those NLM programs and displays the information stored in the Print Manager database used to autoload the given NLM. You can use this information to double-check the IP address for a printer.

2.3.13 Printer Model and Manufacturer Information

The gateway populates the Print Manager’s database with the printer model and manufacturer information, if available, obtained by communicating with the printer. The first row of this table displays the manufacturer and model of the physical printer. Subsequent rows display which driver is to be downloaded for the specified client operating system. This information is used by the Print Manager for automatic driver download.

2.3.14 Security Level

Displays the security level associated with this Printer Agent. This is set in Novell iManager. For more information, see “[Setting Up a Secure Printing Environment](#)” in the *iPrint Administration Guide*.

2.3.15 Event Notification Service and Resource Management Service

These fields display the current provider of the indicated services. If there are no current providers, the field displays (none) in red.

2.3.16 Associated NDS Printer Objects

Displays a list of the NDS Printer objects associated with this Printer Agent. Access to these links is restricted to managers of this Print Manager object. If no NDS objects are associated with a printer, then the printer is a Public Access Printer.

Clicking a link displays the NDS attribute information for the object.

2.3.17 Printer Location

Displays the printer location, if one was entered. Use this field to add information that helps you and users locate this printer. To edit this field, click [Configuration Options](#).

2.3.18 iPrint Information

Displays information regarding the implementation of iPrint.

Table 2-7 *iPrint Information Fields*

Information	Description
Enabled	Indicates if iPrint is enabled for this Printer Agent.
SSL Required	Indicates if SSL is required to print.
Printer URL	Displays the URL associated with this Printer Agent.

NOTE: When using iPrint, you should use a DNS name rather than an IP address for portability. For more information about using DNS names with iPrint, see “[Setting Up DNS for the Print Manager](#)” in the *iPrint Administration Guide*.

Advanced Print Manager Information Page

3

The Advanced Print Manager Information page lets you view statistical information to help you monitor and troubleshoot your print system. By monitoring your system and creating a baseline, you become familiar enough with your print system to understand what statistics affect your configuration.

Figure 3-1 Print Manager Health Monitor Page

The screenshot shows a web browser window titled "NDPS Manager '.PRINT_MANAGER.NOVELL' - Microsoft Internet Explorer". The address bar shows "File Edit View Favorites Tools Help". The main content area has a title bar "NDPS Manager '.PRINT_MANAGER.NOVELL'" and a "Begin Refresh" button. Below this is a "Page Refresh Rate" dropdown set to "5 seconds" and a "Back" button.

Interface	Current Status	Latest Event Log
Client Interface	GOOD	Latest Client Events
Gateway Interface	GOOD	Latest Gateway Events
Broker Interface	WARNING	Latest Broker Events
Queue Interface	Not Monitored	Latest Queue Events
NDS Interface	GOOD	Latest NDS Events
NDPS Manager Internal	Not Monitored	

NDPS Manager Information

Version	Up Time	DNS Name	IP Address	IPX Address
3.1a	0:04:17:03	nw61doc.provo.novell.com	137.65.71.235	N/A

[NDPS Manager Up Time History](#)
[View Log File](#)
[Generate Report](#)
[Auditing](#)
[Configure Settings and Error Thresholds](#)

This section discusses the following areas of the Advanced Print Manager Information page:

- ♦ [Section 3.1, “Interface, Current Status, and Latest Event Log Information,” on page 24](#)
- ♦ [Section 3.2, “NDPS Manager Information,” on page 35](#)
- ♦ [Section 3.3, “NDPS Manager Up Time History,” on page 36](#)
- ♦ [Section 3.4, “View Log File,” on page 36](#)
- ♦ [Section 3.5, “Generate Report,” on page 37](#)
- ♦ [Section 3.6, “Internal Auditing,” on page 38](#)
- ♦ [Section 3.7, “Configure Settings and Thresholds,” on page 38](#)

3.1 Interface, Current Status, and Latest Event Log Information

This table displays the different interfaces of the Print Manager.

Interface: Contains links to pages that display statistics to profiled time and errors for the indicated interfaces.

Current Status: Indicates the state of each interface for the last hour.

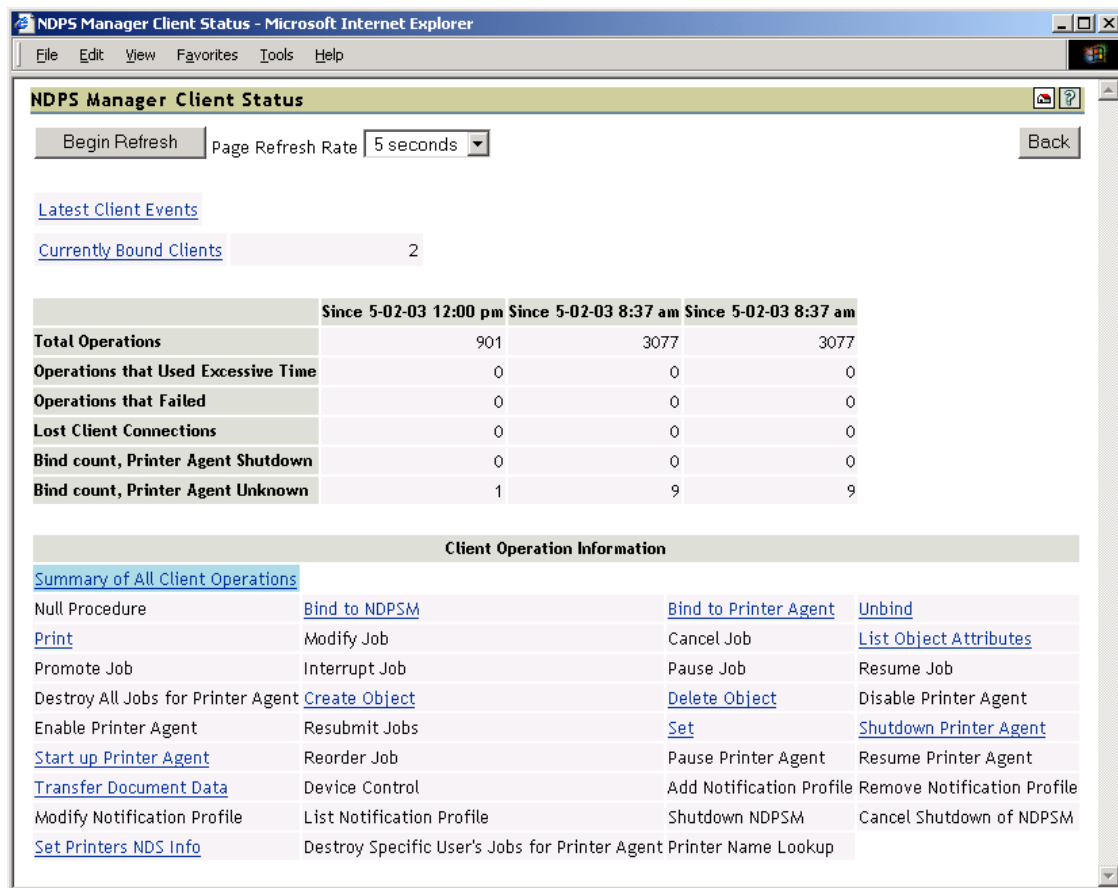
Table 3-1 *Interface Color Indicators*

Status	Description
Bad	Color: Red Running outside configured thresholds in a manner designated as an error.
Good	Color: Green Running within configured thresholds.
Not Monitored	Monitoring for the interface has been turned off or does not apply.
Warning	Color: Yellow Running outside configured thresholds in a manner designated as a warning.

Latest Event Log: Displays the last 20 events for the given interface.

3.1.1 Client Interface

Figure 3-2 Client Interface Page



Begin Refresh Rate

Use the *Begin Refresh* button to have the page refresh automatically at the indicated interval. To stop the page from being refreshed automatically, click the button again.

Latest Client Events

Displays the last 20 events for the given interface.

Currently Bound Clients

Displays statistics on clients currently bound to this Print Manager. Queues are listed first. Typically, most binds are transitory except for administrators that are using management tools.

Client Operations Statistics

Displays statistics regarding the operations that have occurred since the referenced time, typically in the last hour, since midnight, and since the Printer Agent was started.

Table 3-2 *Client Operations*

Statistic	Description
<i>Total Operations</i>	Total number of client operations that have occurred since the referenced time.
<i>Operations That Used Excessive Time</i>	Number of client operations that succeeded, but exceeded the configured threshold for maximum client operation time.
<i>Operations That Failed</i>	Number of client operations that failed.
<i>Average Time Used</i>	Average time used to perform operations of the selected type.
<i>Max Time Used</i>	Maximum time used to perform an operation of the selected type.
<i>Lost Client Connections</i>	Number of times the Print Manager attempts to respond to a request when the client is no longer communicating. Causes for the lost client connection include slow links or routers and a client machine being rebooted. This statistic can indicate when users are having difficulty printing. This displays only when you select <i>Summary of All Operations</i> .

Client Operation Information

Lists all of the client operations that might occur with the Print Manager. These operations become selectable if any operation of that type has occurred. The statistics at the top of this page apply to the currently selected field.

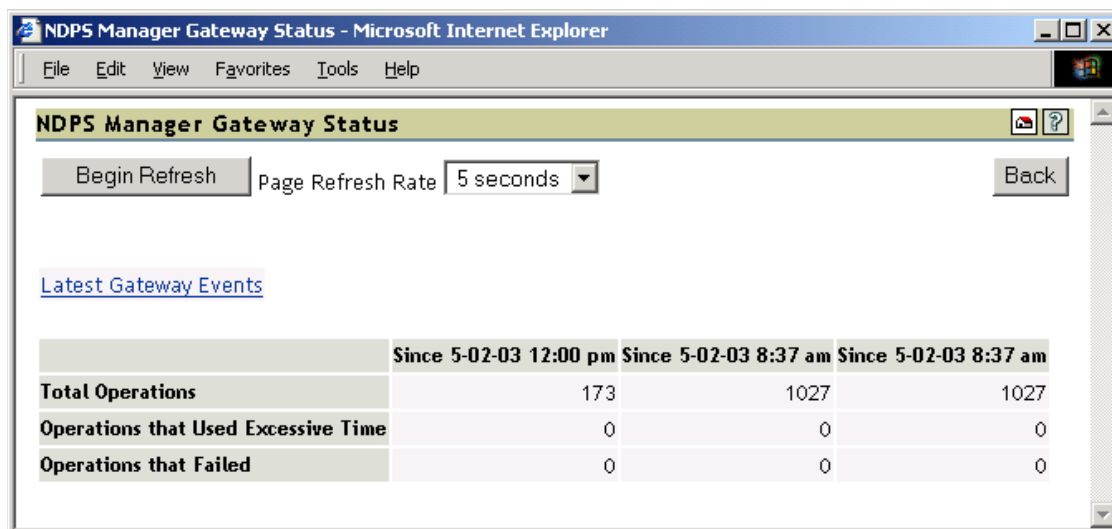
When an operation event occurs, the operation is changed to a link. When you click a link, the statistics for that operation for the last hour are displayed above the Client Operation Information and the operation is highlighted with the color Cyan. The following are all the colors that can be used.

Table 3-3 *Operation Color Indicators*

Color	Description
Cyan	Currently selected event operation
Magenta	Currently selected event operation with an event worthy of notice
Yellow	Event worthy of notice has occurred

3.1.2 Gateway Interface

Figure 3-3 Gateway Interface Page



Begin Refresh Rate

Use the *Begin Refresh* button to have the page refresh automatically at the indicated interval. To stop the page from being refreshed automatically, click the button again.

Latest Client Events

Displays the last 20 events for the given interface.

Gateway Operations

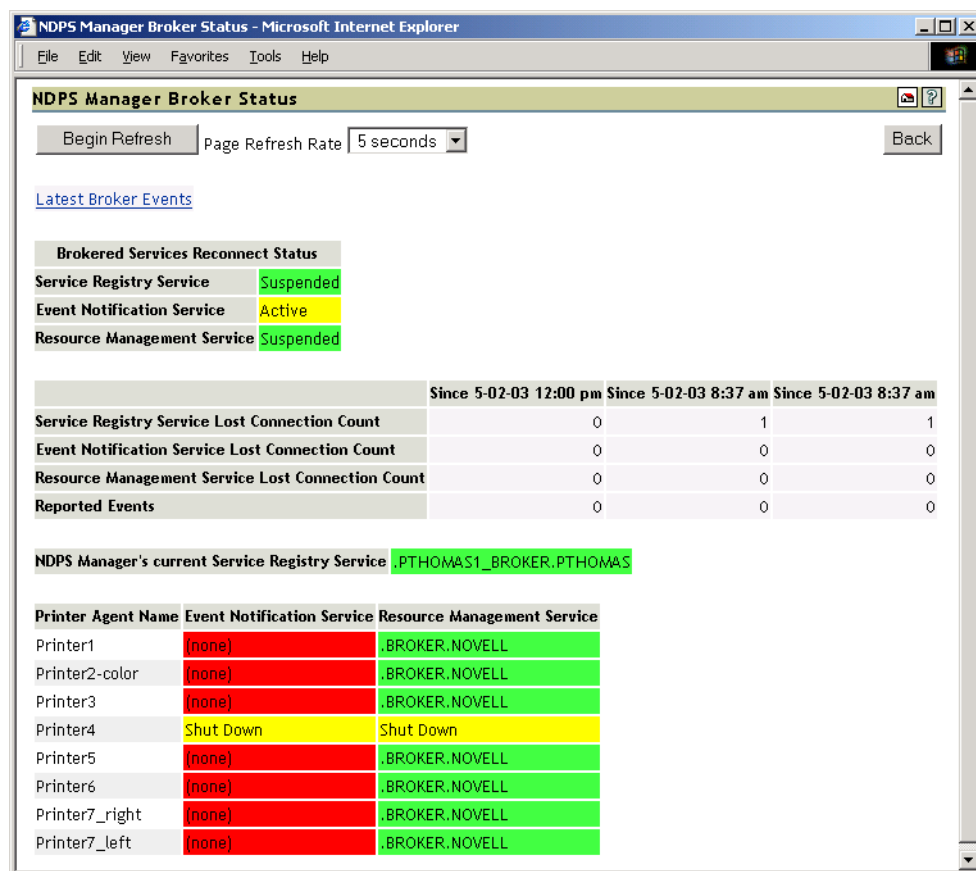
Displays statistics regarding the operations that have occurred since the referenced time, typically the last hour, since midnight, and since the Printer Agent was started.

Table 3-4 Gateway Operations

Statistic	Description
<i>Total Operations</i>	Total number of operations that have occurred since the referenced time.
<i>Operations That Used Excessive Time</i>	Number of operations that succeeded, but exceeded the configured threshold for maximum client operation time.
<i>Operations That Failed</i>	Number of operations that failed.

3.1.3 Broker Interface

Figure 3-4 *Broker Interface Page*



Begin Refresh Rate

Use the *Begin Refresh* button to have the page refresh automatically at the indicated interval. To stop the page from being refreshed automatically, click the button again.

Latest Broker Events

Displays the last 20 events for the given interface.

Brokered Services Reconnect Status

Lists the reconnect status for each brokered service.

Table 3-5 *Brokered Service Status*

Status	Description
Active	Attempting to reconnect to the indicated service.
Suspended	No Reconnect is currently required.

Service Registry Service

Displays the broker currently being used by the Service Registry Service. Green indicates the service is up and running. Red indicates that the service is not.

Lost Connection Count Statistics

Show how many times the Print Manager has lost connection to each of the indicated servers.

Event Notification Service

Displays the number of events that have been reported by the Print Manager.

Printer Agent's Event Notification and Resource Management Information

Displays the broker currently being used by the Event Notification Service and Resource Management Service for each of the associated Printer Agents.

Table 3-6 *Broker Status Color Indicators*

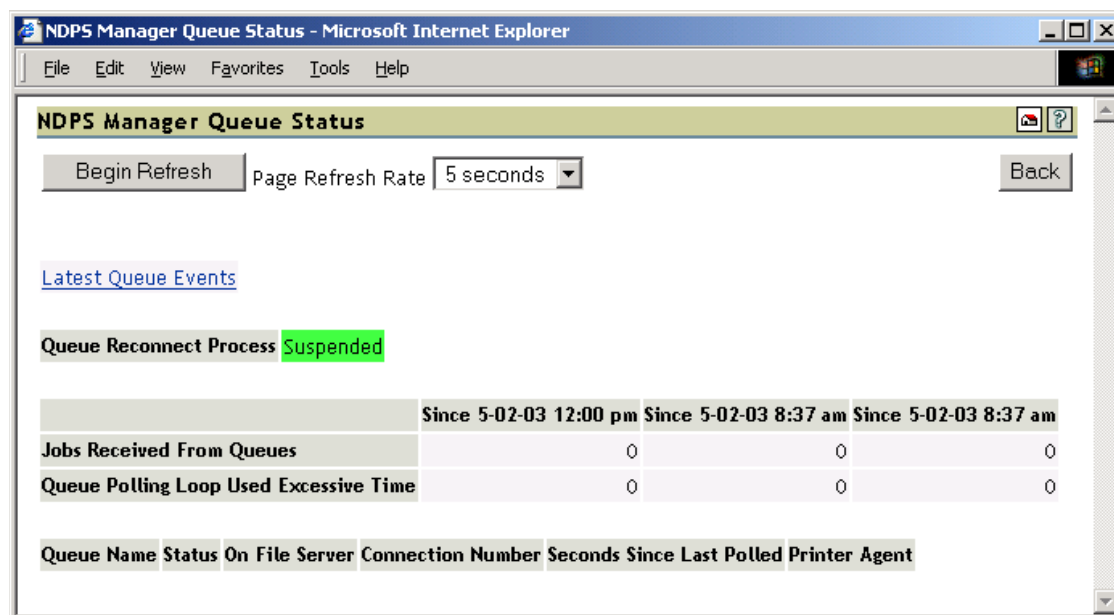
Color	Status Message	Description
Red	none	No server with the service was found.
Yellow	Shut Down	The Printer Agent is shut down and no communication with the service is required.
Yellow	<i>Server_Name</i>	A service on <i>Server_Name</i> is being used, but is not the preferred server.
Green	none	The service on the preferred server is being used.

You can set the preferred server that the service is suppose to use in iManager. See “[Managing the Broker](#)” in the *iPrint Administration Guide*.

3.1.4 Queue Interface

Use the Queue interface to view information when you Print Services is servicing a legacy queue.

Figure 3-5 Queue Interface Page



Begin Refresh Rate

Use the *Begin Refresh* button to have the page refresh automatically at the indicated interval. To stop the page from being refreshed automatically, click the button again.

Latest Queue Events

Displays the last 20 events for the given interface.

Queue Reconnect Process

Displays the status of the queue reconnect process.

Status	Color	Description
Active	Yellow or Red	No service. Attempting to reconnect to the indicated service.
Suspended	Green	Service acquired. No reconnect is currently required.

Operations

Statistic	Description
<i>Jobs Received from Queues</i>	Displays the number of jobs received from queues since the referenced time.
<i>Queue Polling Loop Used Excessive Time</i>	Displays the number of times the queue polling loop exceeded the configured threshold time for polling all queues.

Queue Information

The following sections explain the various queue information fields:

Queue Name: Links to the queue's NDS information page. Access to this link is restricted to managers of this Print Manager object.

Status: Displays the queue's status.

Status	Description
Attaching	The file server is verifying the Print Manager's rights to service the queue.
Being Serviced	Everything is okay; the queue is being polled.
Failed to Attach	The file server did not allow the Print Manager to service the queue. Verify that the Print Manager has rights to the queue.
Reconnecting	The Print Manager is re-establishing its connection to the file server that contains the queue.

On File Server: Displays the name of the file server where the queue resides.

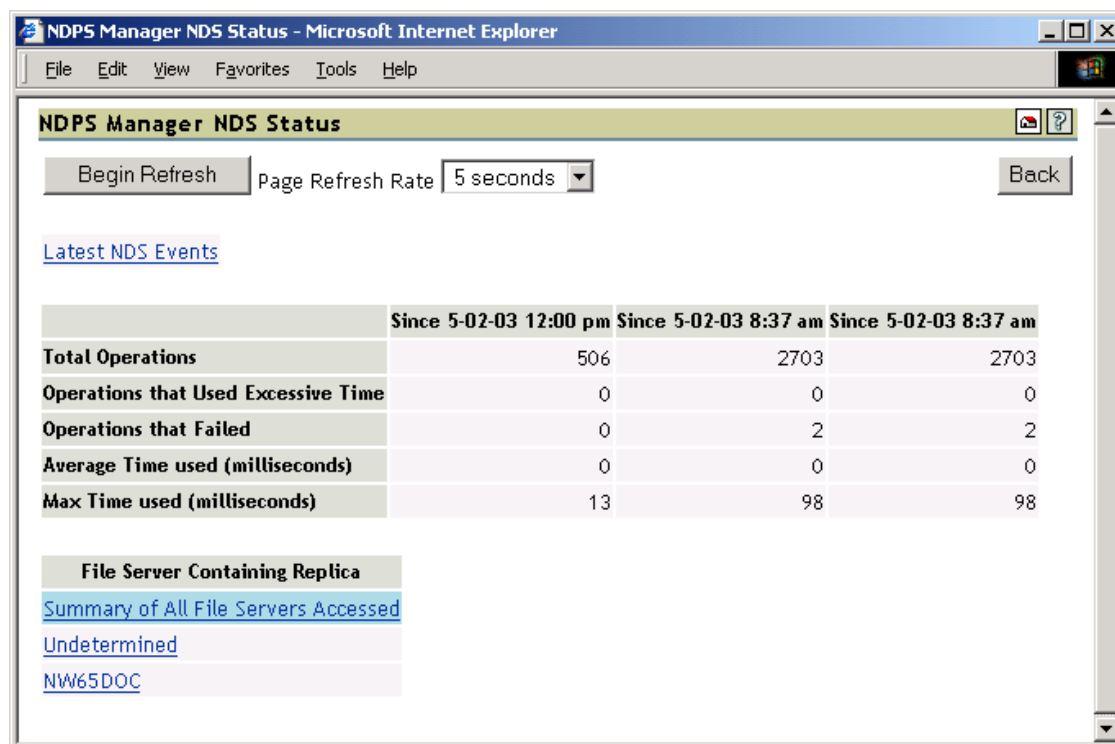
Connection Number: Displays the Print Manager's connection number on the given file server.

Seconds Since Last Polled: Displays the number of seconds since the Print Manager last polled the given queue for a print job.

Printer Agent: Links to the Printer Agent Information page.

3.1.5 NDS Interface

Figure 3-6 NDS Interface Page



Begin Refresh Rate

Use the *Begin Refresh* button to have the page refresh automatically at the indicated interval. To stop the page from being refreshed automatically, click the button again.

Latest NDS Events

Displays the last 20 events for the given interface.

Operations

Table 3-7 NDS Operations

Statistic	Description
Total Operations	Total number of client operations that have occurred since the referenced time.
Operations That Used Excessive Time	Number of client operations that succeeded, but exceeded the configured threshold for maximum client operation time.
Operations That Failed	Number of client operations that failed.
Average Time Used	Average time used to perform NDS operations to the selected server.

Statistic	Description
<i>Maximum Time Used</i>	Maximum time used to perform NDS operations to the selected server.

File Server Containing Replica

The statistics on this page apply to the currently selected replica in the list. The links are explained in the following table.

Table 3-8 *NDS Replica Information*

Options	Description
<i>Summary of All File Servers Accessed</i>	Statistics for all monitored NDS operations.
<i>Undetermined</i>	Any operation where the Print Manager cannot determine which replica was accessed.
<i>File_Server_List</i>	The first 15 file servers accessed by the Print Manager for NDS information within the last hour. Any server highlighted in yellow indicates that there has been a recent problem while processing an NDS operation to that server.

Clicking the link displays operations associated with that file server's replica. The following colors are used.

Table 3-9 *Operation Color Indicators*

Color	Description
Cyan	Currently selected event operation.
Magenta	Currently selected event operation with an event worthy of notice.
Yellow	An event worthy of notice has occurred.

Last Access of Replica

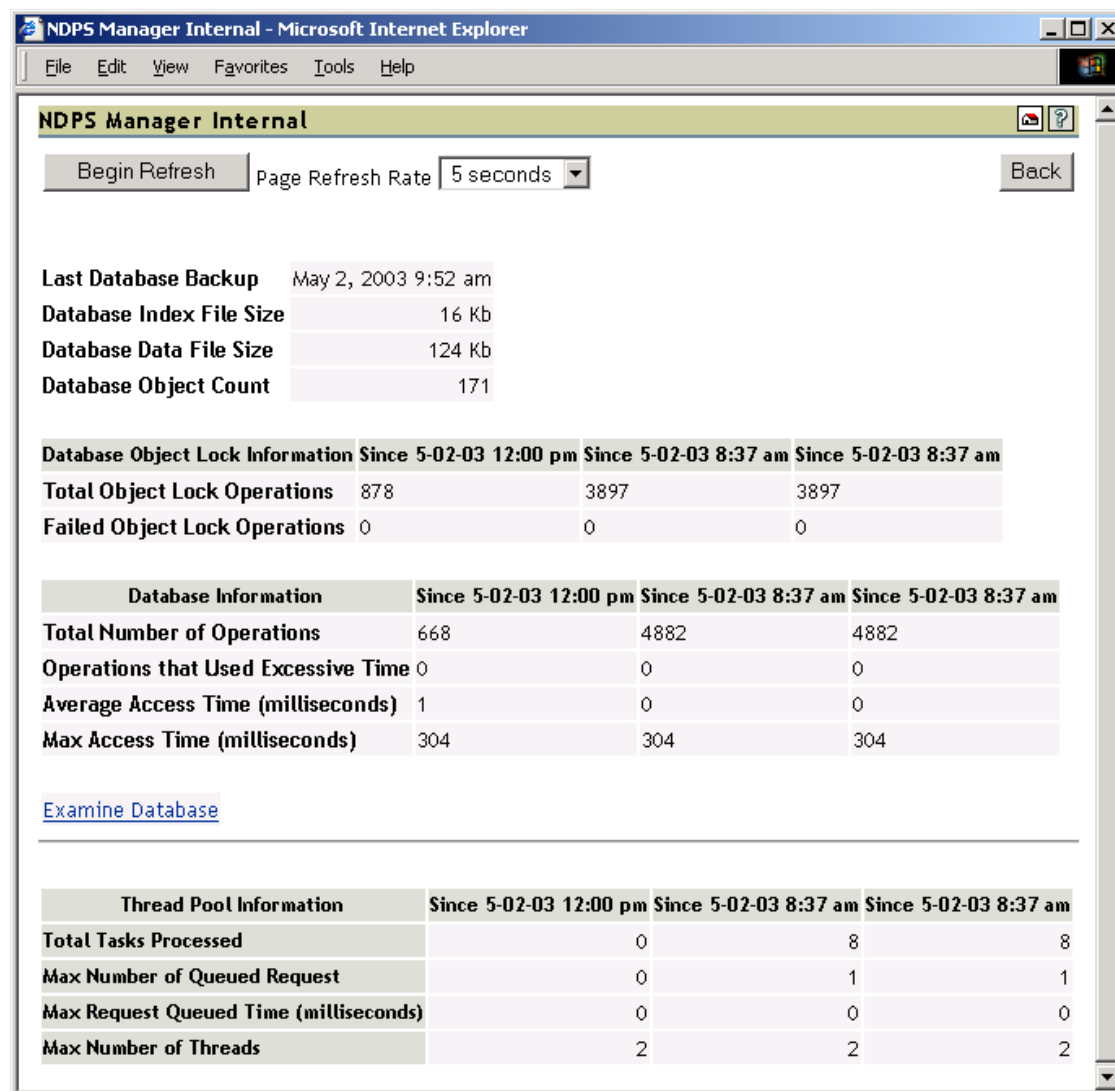
If a file server has been selected under File Server Containing Replica, this displays the date and time that the Print Manager last accessed a replica on that file server.

Lost Connection Count

Displays the number of times the Print Manager eDirectory™.

3.1.6 NDPS Manager Internal

Figure 3-7 Print Manager Internal Page



Database Backup and File Size Information

Displays general information about the Print Manager's database. The index file and the data file together comprise the Print Manager's database. The index should be roughly one-tenth the size of the *Database Data File Size*.

A large index file is indicative that a large number of database objects have been deleted. While this does not affect performance, you can resynchronize the database to update the index file size, if necessary.

Database Lock Operations

The Print Manager uses locks when accessing objects in its database. If the lock for an object cannot be acquired, the object cannot be accessed and that database operation fails. *Database Lock Operations* displays how many object lock operations have been attempted and how many have failed for the specified time.

Database Information

Displays statistics on the performance of the Print Manager's database. Excessive time is defined as 10 seconds. The *Average Access Time* should be 0 (zero).

Statistics for the *Max Access Time* is expected, and most entries are associated with file system backups.

Examine Database

Links to a page that gives details about the database objects.

Thread Pool Information

The Print Manager has a thread pool that it uses to process a variety of tasks. This table displays some statistics to monitor the performance and load on this thread pool.

Statistic	Description
<i>Total Tasks Processed</i>	Total number of tasks that have been processed by the thread pool since the referenced time.
<i>Max Number of Queued Requests</i>	Maximum number of request that were queued up (waiting) to be processed.
<i>Max Request Queue Time</i>	Longest time that a task waited to be processed.
<i>Max Number of Threads</i>	<p>The Print Manager has the ability to create and to destroy threads for the thread pool as needed. The minimum number of threads in the thread pool is two. <i>Max Number of Threads</i> displays the maximum number of threads that were needed to process tasks.</p> <p>If this number consistently exceeds five, you should monitor the print system's performance and determine if you need an additional Print Manager.</p>

3.2 NDPS Manager Information

Displays information about this Print Manager, including its version, how long it has been loaded on the server, associated DNS name, IP address, and IPX™ address. For more information on setting up a DNS name, see “[Setting Up DNS for the Print Manager](#)” in the *iPrint Administration Guide*.

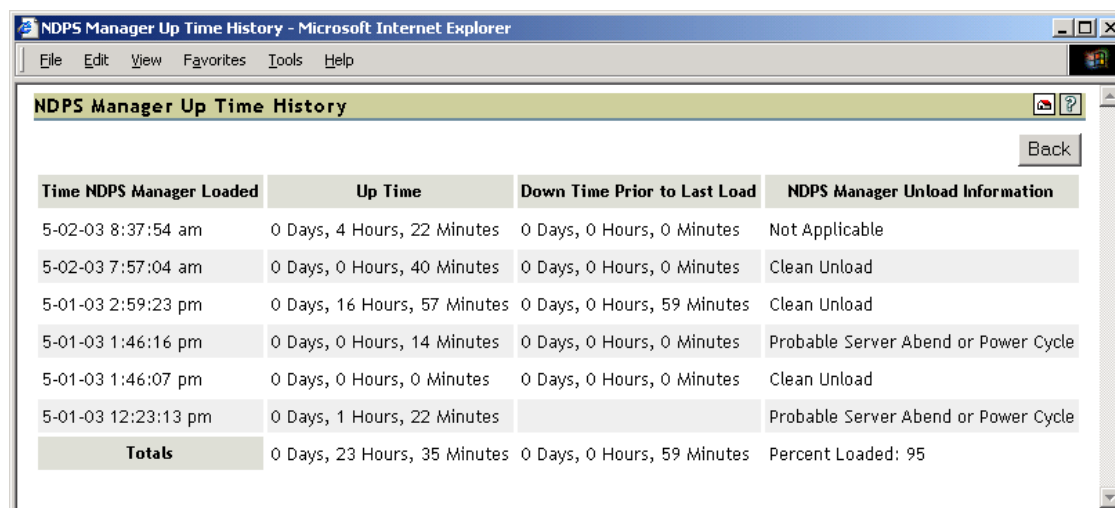
Figure 3-8 NDPS Manager Information Page

NDPS Manager Information				
Version	Up Time	DNS Name	IP Address	IPX Address
3.1a	0:04:17:03	nw65doc.provo.novell.com	156.62.44.1	N/A

3.3 NDPS Manager Up Time History

Links to a page that displays how long the Print Manager has been running, the amount of time it was down in between loads, and information about how the Manager was unloaded. If the Manager was shut down properly by bringing down the server or unloading the `ndpsm.nlm`, *Clean Unload* is displayed. For all other situations, *Probable Server Abend or Power Cycle* is displayed.

Figure 3-9 Print Manager load history



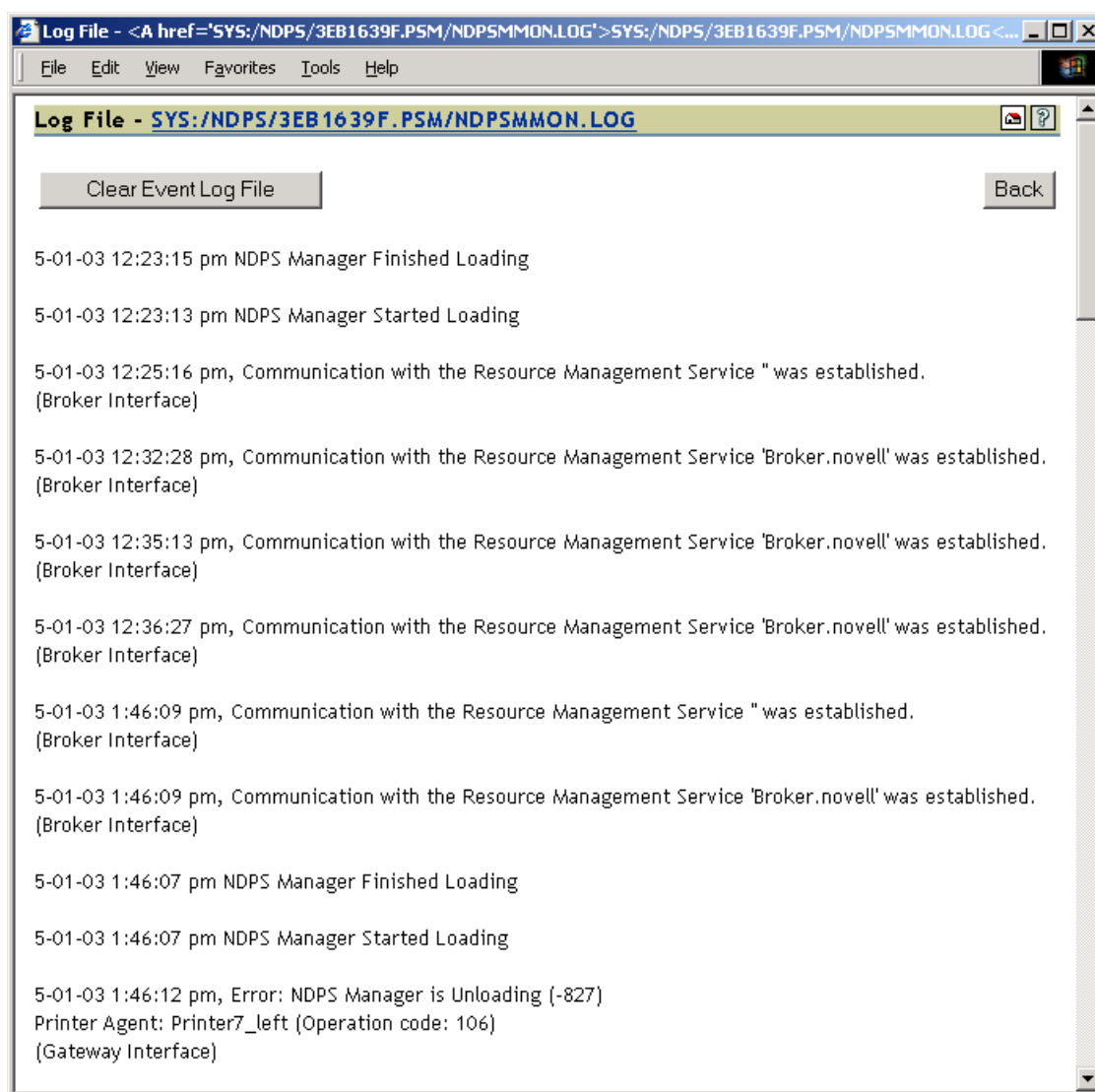
Time NDPS Manager Loaded	Up Time	Down Time Prior to Last Load	NDPS Manager Unload Information
5-02-03 8:37:54 am	0 Days, 4 Hours, 22 Minutes	0 Days, 0 Hours, 0 Minutes	Not Applicable
5-02-03 7:57:04 am	0 Days, 0 Hours, 40 Minutes	0 Days, 0 Hours, 0 Minutes	Clean Unload
5-01-03 2:59:23 pm	0 Days, 16 Hours, 57 Minutes	0 Days, 0 Hours, 59 Minutes	Clean Unload
5-01-03 1:46:16 pm	0 Days, 0 Hours, 14 Minutes	0 Days, 0 Hours, 0 Minutes	Probable Server Abend or Power Cycle
5-01-03 1:46:07 pm	0 Days, 0 Hours, 0 Minutes	0 Days, 0 Hours, 0 Minutes	Clean Unload
5-01-03 12:23:13 pm	0 Days, 1 Hours, 22 Minutes		Probable Server Abend or Power Cycle
Totals	0 Days, 23 Hours, 35 Minutes	0 Days, 0 Hours, 59 Minutes	Percent Loaded: 95

At the bottom of the page is a *Totals* row showing uptime, downtime, and the percent of time the Print Manager was loaded.

3.4 View Log File

The Print Manager's log file contains all the events collected from each interface. This link displays the last 20 KB of the file. The filename and path are displayed at the top of the View Log File page.

Figure 3-10 Sample Log File



3.5 Generate Report

Use this link to create reports about your printing system. For information on recommended reports, see [Section 4.2, “Generating Reports,” on page 45](#).

Figure 3-11 Generate Report Options Page

Report Options for '.PRINT_MANAGER.NOVELL' - Microsoft Internet Expl...

File Edit View Favorites Tools Help

Report Options for '.PRINT_MANAGER.NOVELL'

Back

File Options - SYS:/NDPS/3EB1639F.PSM/NDPSMRPT.CSV

☐ Write Results to File ☒ Append to File ☐ Replace File

Configuration Options	Status Options
<input type="checkbox"/> LPR Enabled	<input type="checkbox"/> Printer Agent Status
<input type="checkbox"/> iPrint Enabled	<input type="checkbox"/> Printer Agent State Reasons
<input type="checkbox"/> iPrint Printer URL	<input type="checkbox"/> Printer Console
<input type="checkbox"/> SSL Required for iPrint Access	<input type="checkbox"/> Jobs Printed Today
<input type="checkbox"/> Printer Agent Security Level	<input type="checkbox"/> Jobs Printed Since Load
<input type="checkbox"/> Gateway Load String	<input type="checkbox"/> Jobs Printed Ever
<input type="checkbox"/> Accounting Load String	<input type="checkbox"/> Average Job Size Today
<input type="checkbox"/> Windows 95/98/ME Driver	<input type="checkbox"/> Average Job Size Since Load
<input type="checkbox"/> Windows NT Driver	<input type="checkbox"/> Date Printer Agent Created
<input type="checkbox"/> Windows 2000/XP driver	<input type="checkbox"/> Date Last job Printed
<input type="checkbox"/> Associated NDS Printers	<input type="checkbox"/> Message From Admin
<input type="checkbox"/> Associated Queues	
<input type="checkbox"/> Printer Model	
<input type="checkbox"/> Printer Location	
<input type="checkbox"/> Auditing Enabled	

Generate Report

3.6 Internal Auditing

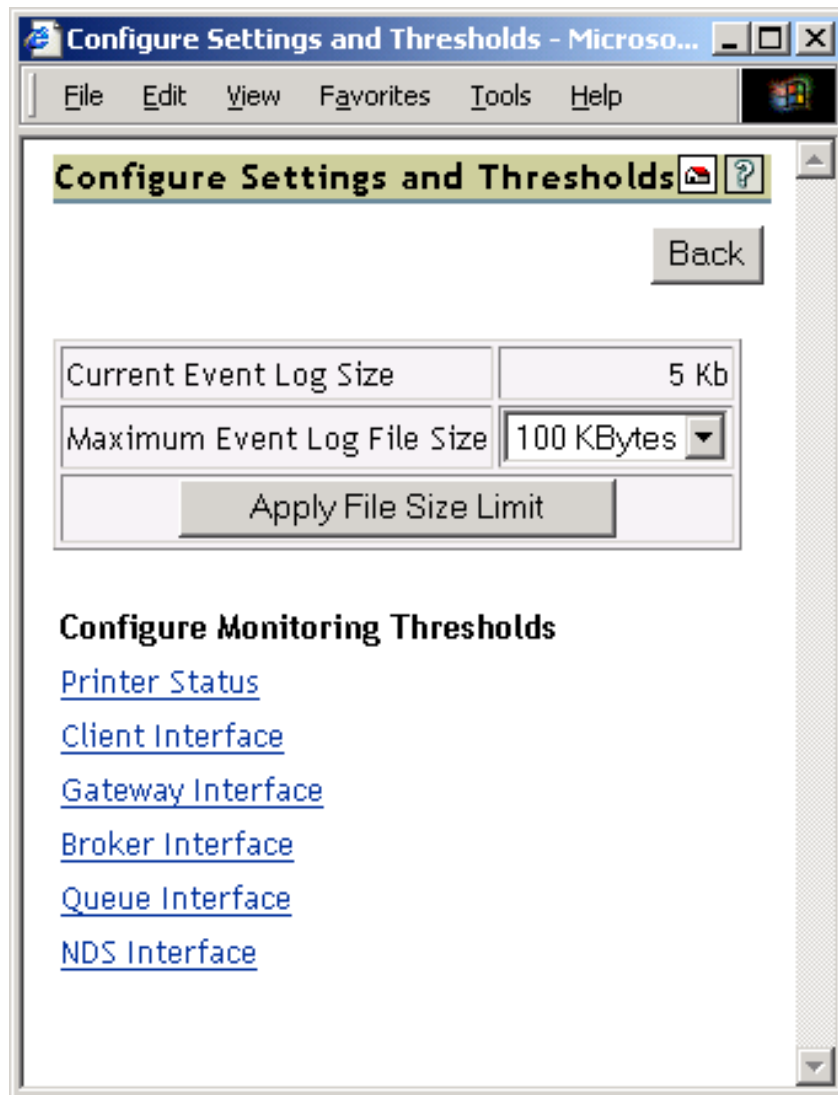
Internal auditing creates an audit log file of who printed how many pages to which printer on a given date for printers that have internal auditing enabled. You can enable auditing for all or just a few Printer Agents using Novell iManager, or you can use the Printer Agent page in the Health Monitor to enable internal auditing for a Printer Agent. For more information, see [Section 4.6, “Using Print Auditing,” on page 47](#)

3.7 Configure Settings and Thresholds

Use the Configure Settings and Thresholds page to modify the default settings for the Print Services Manager Health Monitor. For most print systems, you do not need to change the default settings. This link is accessible only to managers of the Print Manager. For other users, or if you are not logged in, this link is not displayed.

NOTE: These settings are global. Changes made earlier by an administrator are overwritten by subsequent modifications to the settings.

Figure 3-12 *Configure Settings and Thresholds page*



3.7.1 Current Event Log Size

Displays the current size of the event log file.

3.7.2 Maximum Event Log File Size

Sets the maximum file size for the event log. When the indicated file size is reached, the log file is restarted.

3.7.3 Configuring the Monitoring Thresholds

This list links to configuration pages where error definitions and thresholds can be set. Changing these settings can impact how printing effects the overall server health as displayed in NetWare® Remote Manager.

- ♦ “Printer Status” on page 40
- ♦ “Client Interface” on page 40
- ♦ “Gateway Interface” on page 41
- ♦ “Broker Interface” on page 42
- ♦ “Queue Interface” on page 42
- ♦ “NDS Interface” on page 43

Printer Status

Define Printer Status Severity: Lets you define the severity of the associated printer states. The following table shows the default settings.

Table 3-10 *Default Printer Severities*

State	Severity Setting
Error Printing	Error
Input Paused	Warning
Not Bound	Warning
Output Paused	Warning
Shut Down	Warning

Use Printer Status in Determining Print Manager Status: Lets you decide whether printer status should be used in determining the Print Manager status in the Server Health Monitoring page. The default is set to false so that toner low, out of paper, etc., do not affect the overall server health of Novell Remote Manager.

Default = False (printer status not used)

Client Interface

Threshold for Excessive Time Used in an Client Operation: The amount of time (in seconds) it takes the Print Manager to accomplish a task can fluctuate. For example, network conditions, file server load, or hardware can affect processing time. *Threshold for Excessive Time Used in an Operation* allows the user to define a reasonable time limit. Any operation that takes longer than the specified time is considered to have used excessive time.

Default = 10

Maximum Allowed Percentage of Operations That Use Excessive Time: Occasionally it takes longer than normal to accomplish an operation. This is to be expected. *Maximum Allowed Percentage of Operations That Use Excessive Time* lets you set a threshold to indicate a problem with this interface by selecting the percentage of operations that use excessive time.

Default = .5%

Maximum Allowed Percentage of Operations That Fail: Select a failure percentage rate to indicate a problem with this interface. Some errors are to be expected; however, if you are in the process of modifying your print system, you might want to set this higher so that your modifications do not impact the printing health. After the modifications are complete, you can lower this setting to an acceptable level and create a baseline for you system.

Default = .5%

Minimum Required Problems before Indicating an Error State: Select the minimum number of errors, because of failures and excessive time usage, that must occur to indicate a problem with this interface. If this is set too low, the Health Monitor displays an error when the Print Manager is initially loaded or becomes active after a slow period. This is because the printing statistics are low or 0 during these times.

Default = 5

Use Client Interface Problems in Determining NDPS Manager Status: Lets you decide whether problems with this interface are considered in determining Print Manager status in the Server Health Monitoring page.

Default = True (problems are considered)

Gateway Interface

Threshold for Excessive Time Used in a Gateway Operation: The amount of time (in seconds) it takes the Print Manager to accomplish a task can fluctuate. For example, network conditions, file server load, or hardware can affect processing time. *Threshold for Excessive Time Used in a Gateway Operation* lets the you define a reasonable time limit. Any operation that takes longer than the specified time is considered to have used excessive time.

Default = 10

Maximum Allowed Percentage of Operations That Use Excessive Time: Occasionally it takes longer than normal to accomplish an operation. This is to be expected. *Maximum Allowed Percentage of Operations That Use Excessive Time* lets you set a threshold to indicate a problem with this interface by selecting the percentage of operations that use excessive time before an error state.

Default = .5%

Maximum Allowed Percentage of Operations That Fail: Select a failure percentage rate to indicate a problem with this interface.

Default = .5%

Minimum Required Problems before Indicating an Error State: Select the minimum number of errors, because of failures and excessive time usage, that must occur to indicate a problem with this interface. If this is set too low, the Health Monitor displays an error when the Print Manager is initially loaded or becomes active after a slow period. This is because the printing statistics are low or 0 during these times.

Default = 5

Use Gateway Interface Problems in Determining NDPS Manager Status: Lets you decide whether problems with this interface are considered in determining Print Manager status in the Server Health Monitoring page.

Default = True (problems are considered)

Broker Interface

Printer Agents without Event Notification Service: Select whether a Printer Agent without a notification service should be treated as an Error or a Warning or should not be considered as a problem (Off).

Default = Warning

Printer Agents without Resource Management Service: Select whether a Printer Agent without a Resource Management Service should be treated as an Error or a Warning or should not be considered a problem (Off).

Default = Warning

Use Broker Interface Problems in Determining NDPS Manager Status: Lets you decide whether problems with this interface are considered in determining Print Manager status in the Server Health Monitoring page.

Default = True (problems are considered)

Queue Interface

Excessive Time Threshold for the Queue Polling Loop: If the Print Manager uses more than the selected time limit (in minutes) to service all of its queues, the polling loop is considered to have used excessive time.

Default = 2

Queue Polling Loop Used Excessive Time: Select whether queue polling loops that use excessive time should be treated as an Error, a Warning, or should not be considered a problem (Off).

Default = Warning

Unable to Service Specific Queues: The Print Manager might be unable to service a queue for any number of reasons. Select whether this should be treated as an Error or a Warning or should not be considered a problem (Off).

Default = Warning

Use Queue Interface Problems in Determining NDPS Manager Status: Lets you decide whether problems with this interface are considered in determining Print Manager status in the Server Health Monitoring page.

Default = True (problems are considered)

NDS Interface

Threshold for Excessive Time Used in an NDS Operation: The amount of time (in seconds) it takes the Print Manager to accomplish a task can fluctuate. For example, network conditions, file server load, or hardware can affect processing time. *Threshold for Excessive Time Used in an NDS Operation* lets you define a reasonable time limit. Any operation that takes longer than the specified time is considered to have used excessive time.

Default = 10

Maximum Allowed Percentage of Operations That Use Excessive Time: Occasionally it takes longer than normal to accomplish an operation. This is to be expected. *Maximum Allowed Percentage of Operations That Use Excessive Time* lets you set a threshold to indicate a problem with this interface by selecting the percentage of operations that use excessive time.

Default = 1%

Maximum Allowed Percentage of Operations That Fail: Select a failure percentage rate to indicate a problem with this interface.

Default = .5%

Minimum Required Problems before Indicating an Error State: Select the minimum number of errors, because of failures and excessive time usage, that must occur to indicate a problem with this interface. If this is set too low, the Health Monitor displays an error when the Print Manager is initially loaded or becomes active after a slow period. This is because the printing statistics are low or 0 during these times.

Default = 5

Use Interface Problems in Determining NDPS Manager Status: Lets you decide whether problems with this interface are considered in determining Print Manager Status in the Server Health Monitoring page.

Default = True (problems are considered)

Using the Print Manager Health Monitor

4

This section discusses the following:

- ♦ Section 4.1, “Accessing the Print Manager Health Monitor,” on page 45
- ♦ Section 4.2, “Generating Reports,” on page 45
- ♦ Section 4.3, “Configuring Health Monitor Settings That Affect Novell Remote Manager,” on page 47
- ♦ Section 4.4, “Posting Administrator Messages about a Printer,” on page 47
- ♦ Section 4.5, “Viewing a Printer’s Job List,” on page 47
- ♦ Section 4.6, “Using Print Auditing,” on page 47

4.1 Accessing the Print Manager Health Monitor

The Health Monitor can be accessed from NetWare® Remote Manager at http://server_address/PsmStatus or from the Manage NDPS Manager page in iManager.

In Novell Remote Manager, complete the following.

- 1 User your Web browser to access Novell Remote Manager.
For more information about accessing Novell Remote Manager, see the *NW 6.5 SP8: Novell Remote Manager Administration Guide*.
- 2 Under *Diagnose Server*, click *NDPS Manager Health*.

You can now view current Printer Agent states, start up or shut down Printer Agents, and view other information about your print system.

4.2 Generating Reports

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

- 1 On the NDPS Manager Health Monitor main page, click *Advanced NDPS Manager Information > Generate Report*.
- 2 Select the information you want included in the report by checking the corresponding check boxes.
- 3 (Optional) If you want to save the report as a file, select the *Write Results to File* check box.
- 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:

- ♦ LPR Enabled

- ♦ iPrint Enabled
- ♦ SSL Required
- ♦ Auditing

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 Type
- ♦ Gateway Load String

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

- ♦ Windows 95 Driver
- ♦ Windows NT Driver
- ♦ Windows 2000 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.

Printer Agents and Queues: To view the number of queues associated with a Printer Agent, select Associated Queues.

Creating a Baseline of Your Print System: After your print system is configured, you can create a baseline report by selecting all report items. This baseline report should be saved. Then you can use the report to periodically compare statistics, re-create a Printer Agent, and track changes to your print system.

4.3 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.

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

See the online help for more information about the available settings.

4.4 Posting Administrator Messages about a Printer

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

- 1 On the NDPS Manager Health Monitor main page, click the printer you want.
- 2 Click *Message from Admin*.
- 3 Type the text you want displayed for this printer in the NDPS® Manager Health Monitor.
- 4 Click *Apply*.

To remove a message, follow the steps above but delete the text.

4.5 Viewing a Printer's Job List

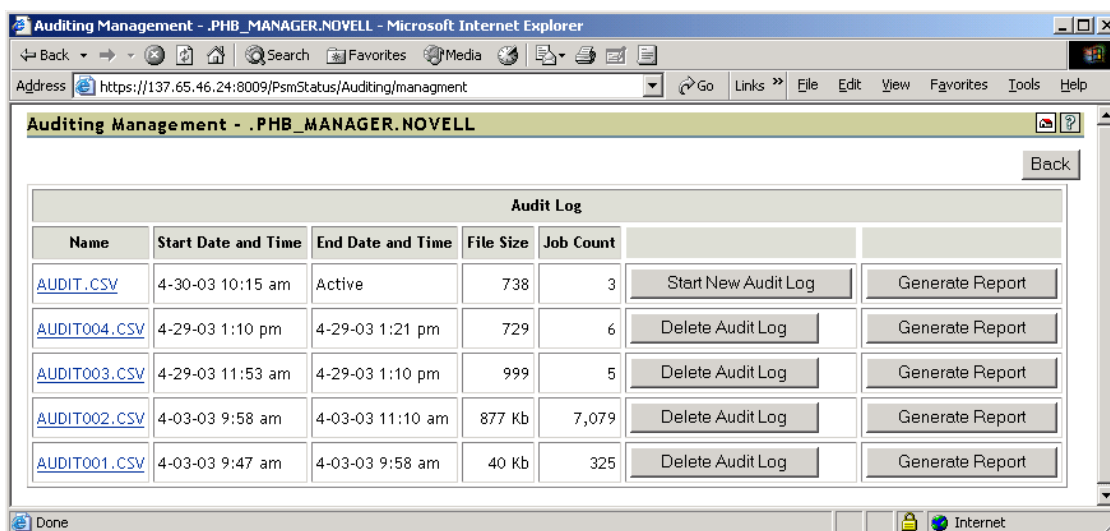
Often it is useful to view the job list for a printer to troubleshoot printer communication problems. To view a printers job list requires admin rights.

- 1 On the NDPS Manager Health Monitor main page, click the printer you want.
- 2 Click *Job List*.
- 3 Select print jobs and use the buttons to take the desired action (*Delete*, *Pause*, *Resume*, *Delete All Jobs*)

4.6 Using Print Auditing

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 4-1 Auditing Page



From the Internal Auditing page you can complete the following tasks:

- ♦ Viewing Auditing Information (page 49)
- ♦ Managing Audit Logs (page 51)
- ♦ Downloading an Audit Report (page 52)

4.6.1 Enabling Auditing

You can use either Novell iManager or the NDPS Manager Health Monitor to enable auditing.

Using Novell iManager to Enable Auditing

You need to enable auditing for each printer you want to audit.

- 1 In Novell iManager, click *iPrint > Enable Auditing*.
- 2 Select the printers you want to enable auditing for by clicking the check box in the *Auditing* column. Click 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

You need to enable auditing for each printer you want to audit.

- 1 On the NDPS Manager Health Monitor main page, click the printer you want to enable auditing for.
- 2 Click *Configuration Options*.
- 3 Click the *Enable Auditing* check box.

4.6.2 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 Novell Remote Manager, click *NDPS Manager Health Monitor > Advanced NDPS Manager Information > Auditing*.
- 2 Click *Generate Report*.
If there is more than one audit log, click *Generate Report* for the audit log you want to view.
- 3 (Optional) Filter the search by using the *Limit Search by User* and *Limit Search by Printer* filters.

The screenshot shows a web browser window titled "Audit File 'AUDIT.CSV' - Microsoft Internet Explorer". The address bar shows the URL "https://137.65.46.24:8009/PsmStatus/Auditing?srcFile=AUDIT.CSV". The main content area has a title bar "Audit File 'AUDIT.CSV'" and a "Back" button. Below this are two filter sections: "Limit Search by User" and "Limit Search by Printer". Each section has a "Starts With" dropdown menu and a "Search" button. The "Limit Search by User" section shows a list with "All Users" and "BART@00-B0-D0-E4-45-00". The "Limit Search by Printer" section shows a list with "All Printers", "PCL XL", and "PCL5". At the bottom of the form is a "Generate Report" button.

- 4 Click *Generate Report* to view the report.
Only 250 print jobs are listed at a time. To view more print jobs in the report, click *Next*.

Report Summary							
NDPS Manager	.Print_MANAGER.NOVELL						
Audit Log	AUDIT004.CSV						
Selected User	BART@00-B0-D0-E4-45-00	Number of Jobs Currently Displayed	6				
Selected Printer	All Printers	Page Count for Displayed Jobs	12				
Audit Log Entries Scanned	6 of 6						

Job Owner	Printer	Time Submitted	Time Completed	Completion Status	Page Count	Job Size	Job Name
BART@00-B0-D0-E4-45-00	PS	4-29-03 12:37 pm	4-29-03 1:10 pm	Completed	1	26204	Document
BART@00-B0-D0-E4-45-00	PS	4-29-03 12:37 pm	4-29-03 1:10 pm	Completed	1	25956	Document
BART@00-B0-D0-E4-45-00	PS	4-29-03 12:55 pm	4-29-03 1:10 pm	Completed	1	28809	Document

The following table describes what is displayed in the report.

Table 4-1 Report Summary Information

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

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

Table 4-2 Report Fields

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

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

4.6.3 Managing Audit Logs

You can manage your audit logs by using the displayed 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 [Section 4.6.4, “Configuring Automatic Log Rotation,” on page 51](#).

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* button, 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.

4.6.4 Configuring Automatic Log Rotation

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

- 1 In the Print Manager Health Monitor, click *Advanced iPrint Manager Information > Auditing > Configure Log Rotation*.
- 2 Select *Enable Audit Log Rotation*.
- 3 Enter 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 years worth of logs, set the number of audit logs to keep to 12 and the select the *By Date* and *By Month* options.

- 4 Choose the criteria used for log rotation:

By Job Count: Enter the maximum number of print jobs that a 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 kilobytes before a new log is created. The maximum file size is 4 gigabytes.

4.6.5 Downloading an Audit Report

- 1** On the NDPS 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 your desired location.

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.

Troubleshooting Print System Errors

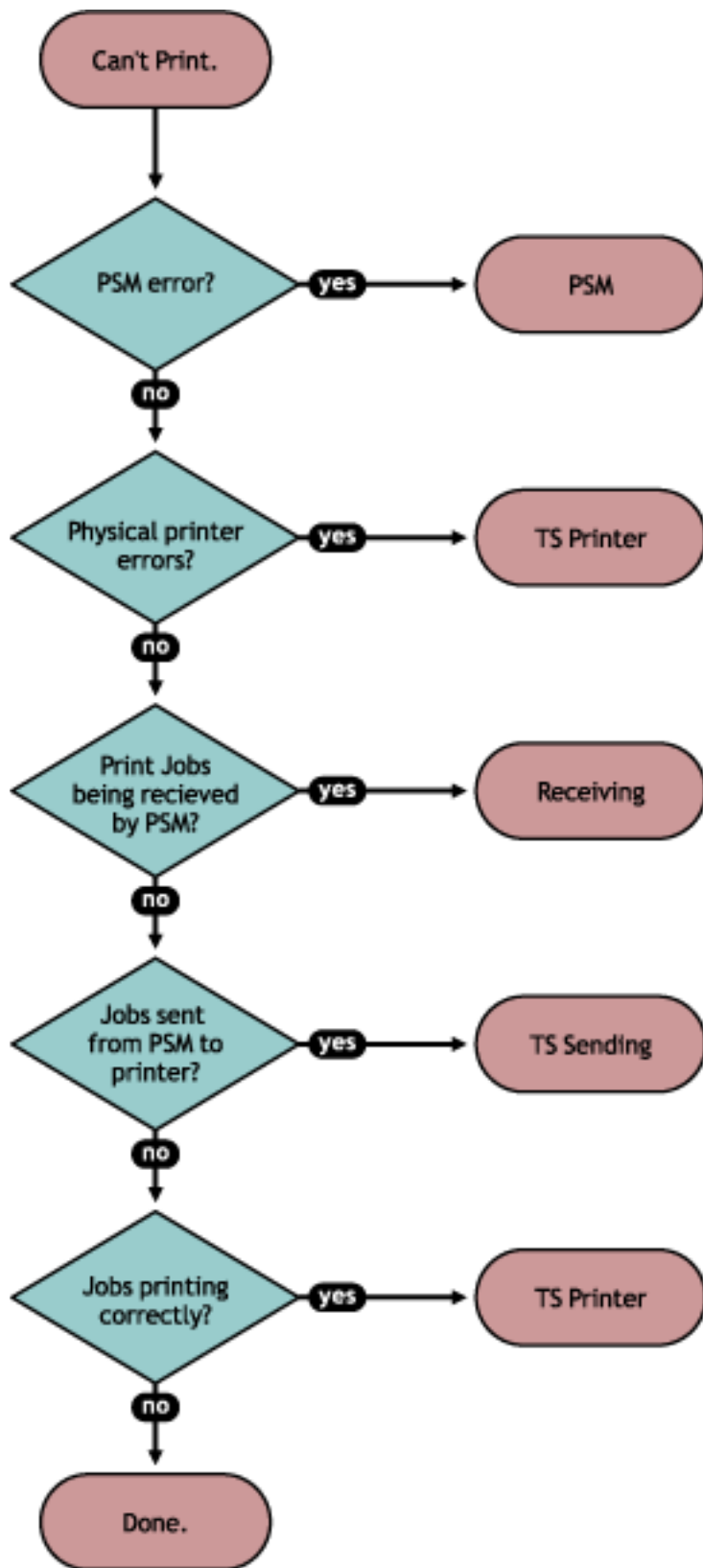
5

Using the Print Manager Health Monitor, you can determine and resolve many printing problems. This section discusses how to troubleshoot print system errors. The following flowcharts show you the basic steps you can do to quickly determine errors.

Most printer problems can be identified or localized by answering the following questions. If any answer is No, follow the link to the correct troubleshooting section.

- ☐ [Is the Print Manager healthy? \(page 55\)](#)
- ☐ [Is the physical printer reporting errors? \(page 56\)](#)
- ☐ [Are print jobs being received by the Print Manager? \(page 56\)](#)
- ☐ [Are jobs being sent from the Print Manager to the printer? \(page 58\)](#)
- ☐ [Is the job printing correctly? \(page 59\)](#)

Figure 5-1 Flowchart for Troubleshooting

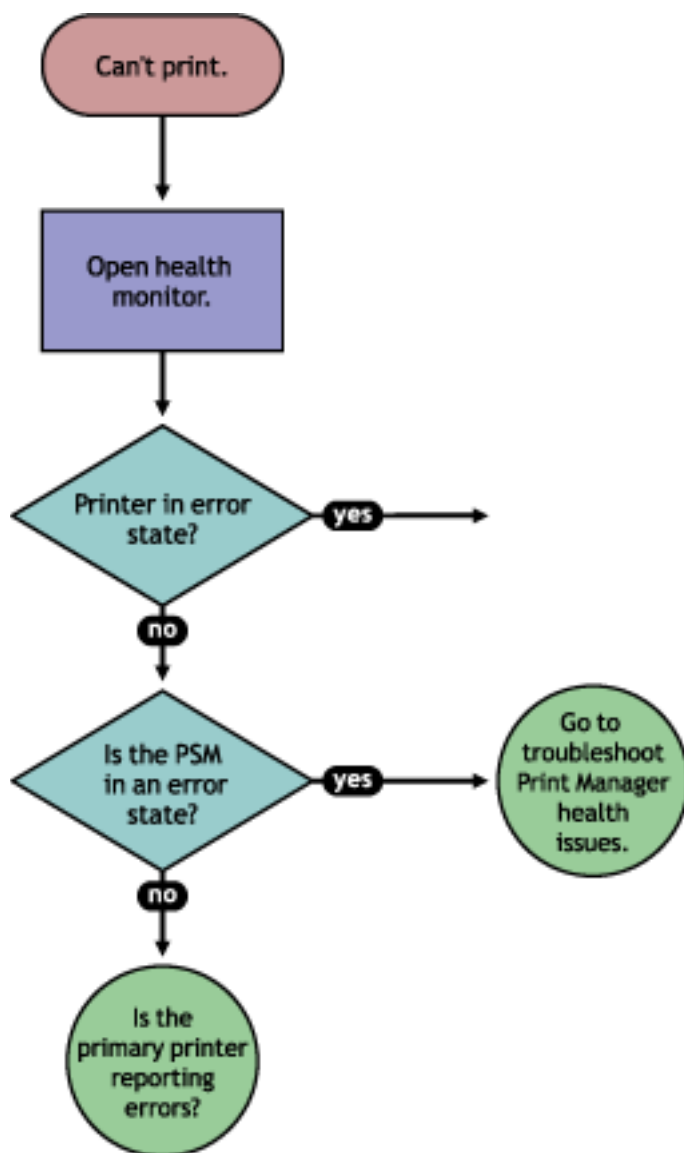


Issues not resolved by using this process might require technical support from the printer vendor or from Novell®, Inc.

5.1 Is the Print Manager healthy?

Using the Print Manager Health Monitor page in NetWare® Remote Manager, you can quickly determine the health of your print system and the Print Manager.

Figure 5-2 Flowchart to Resolve Physical Printer Errors

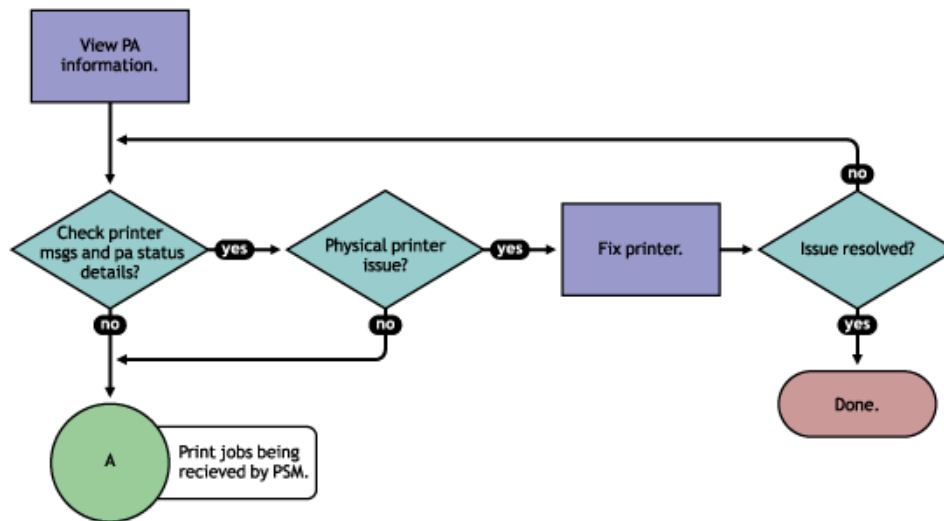


If the Print Manager is not green, click *Advanced NDPS Manager Information* to troubleshoot the Print Manager. For more information see [Section 5.6, “Troubleshooting Print Manager Health Issues,”](#) on page 60.

5.2 Is the physical printer reporting errors?

Using the Print Services Health Monitor, you can view printer status details and printer console errors being displayed on the printer, if the printer supports SNMP. Use this information to correct any errors on the physical printer. You can also use this to help prevent printer errors. For example, you can see when a printer is low on toner and change the toner before users see the problem and cannot print.

Figure 5-3 Flowchart to Determine Physical Printer Errors



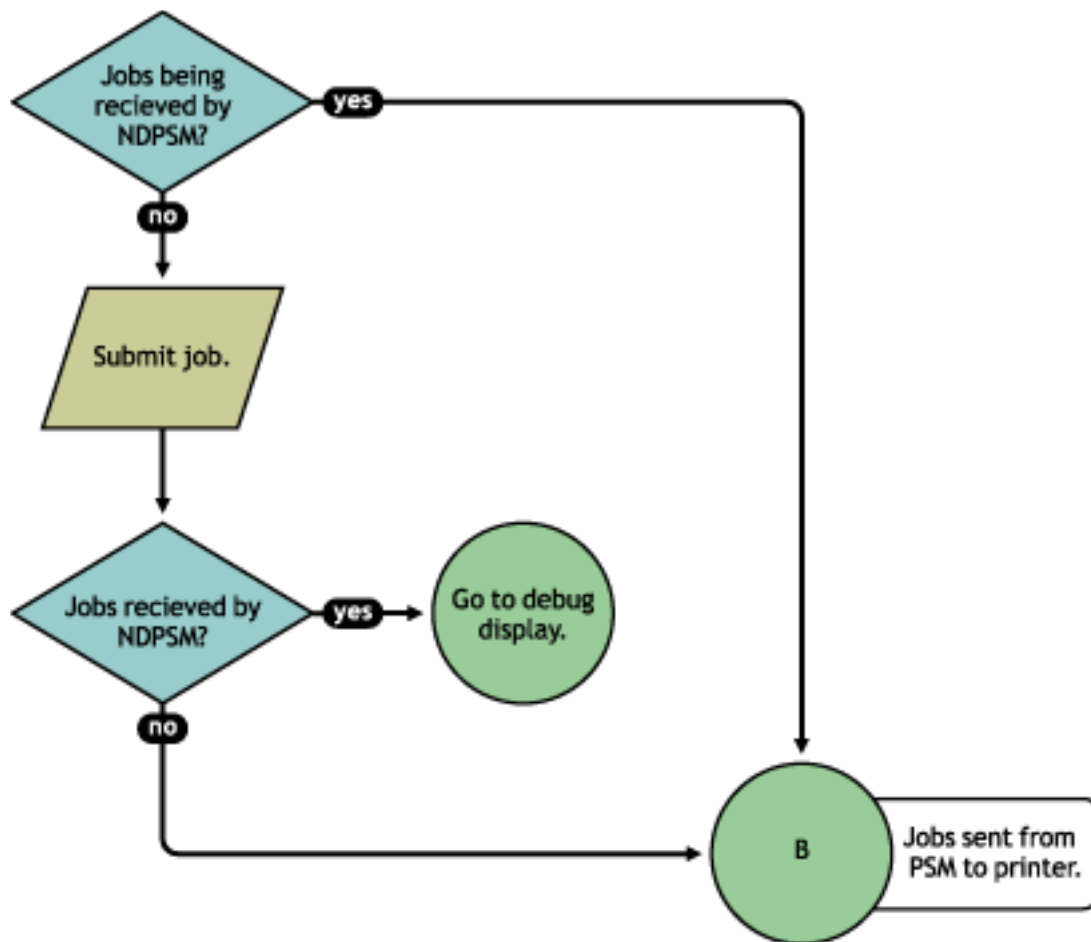
To view printer status and printer console errors:

- 1 On the NDPS Manager Health Monitor main page, click the Printer Agent that is in a suspect (yellow) or error (red) state.
- 2 View the *Printer Agent Status* and *Printer Console Message* fields.
The *Printer Console Message* field appears only if the Health Monitor can communicate with the printer and the printer responds to SNMP requests.
- 3 Correct any errors on the printer.
- 4 Repeat **Step 2** until all Printer Console errors have been resolved.

5.3 Are print jobs being received by the Print Manager?

When troubleshooting printing problems, you need to track the print job. By determining if the Print Manager is receiving the print job, you know where communication is breaking down. If the server is not receiving print jobs, you should check the communication between the client and the server. Questions to ask include: Is the servers HTTP stack communicating? Is the Web server functioning properly?

Figure 5-4 Flowchart to Determine If Print Manager Is Receiving Print Jobs



Complete the following to determine if print jobs are being received by the Print Manager:

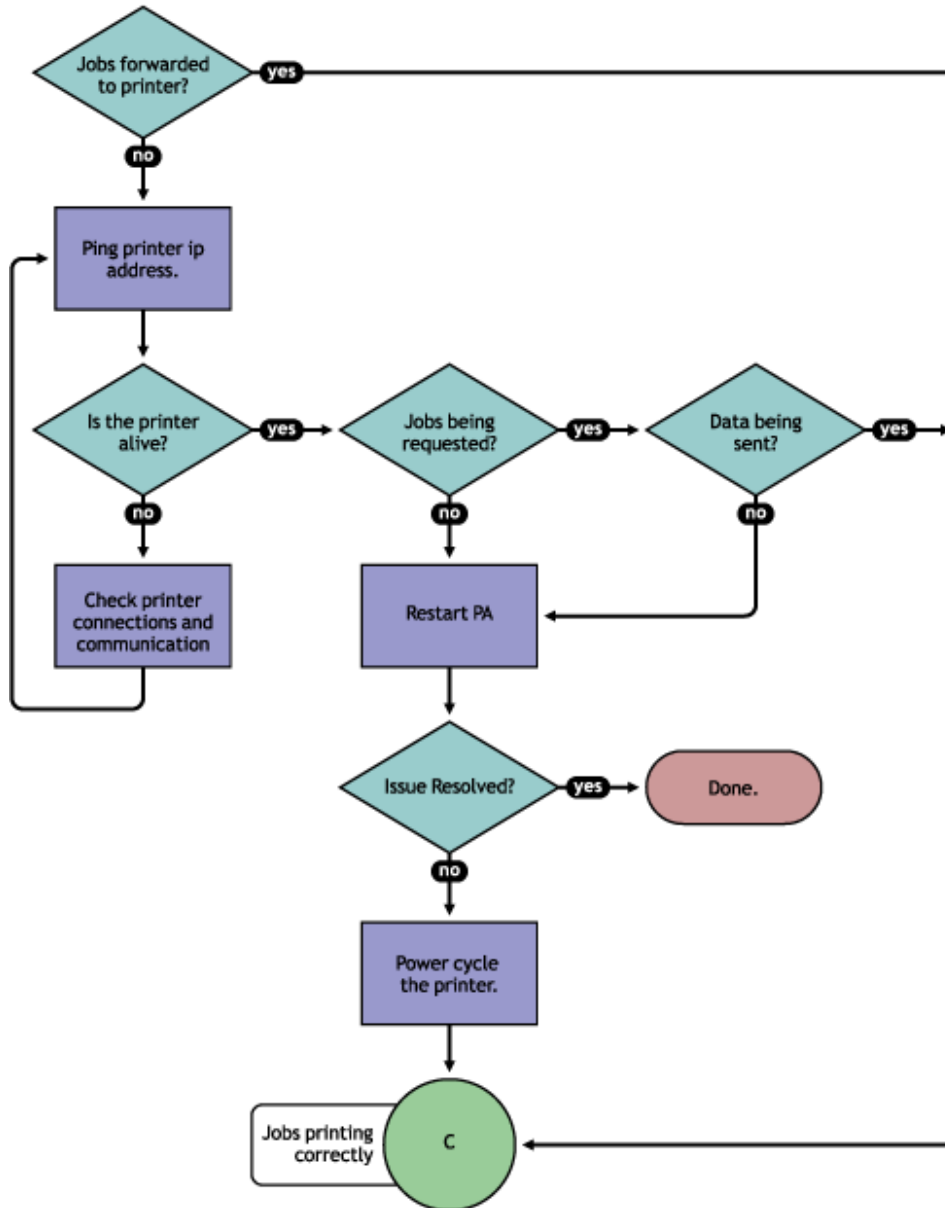
- 1 On the NDPS Health Monitor main page, click the Printer Agent for the problem printer.
- 2 Review the job processing information.
- 3 Submit a print job to the printer.
- 4 Review the job processing information again.

If the *Jobs Scheduled* count increased by one, then the Print Manager is receiving print jobs. You can continue to [Section 5.4, “Are jobs being sent from the Print Manager to the printer?”](#), on page 58.

If the *Job Scheduled* count did not increase by one, then the Print Manager is not receiving print jobs. Check to make sure the workstation sending the print job is not receiving any errors, that the correct printer is installed, and that the user has selected the correct printer. If the Print Manager is still not receiving print jobs, follow the troubleshooting techniques described in the [NDPS Manager Debug Display document \(http://www.novell.com/products/netware/printing/debug_display.pdf\)](http://www.novell.com/products/netware/printing/debug_display.pdf).

5.4 Are jobs being sent from the Print Manager to the printer?

Figure 5-5 Flowchart to Determine if Print Jobs Are Being Sent from Print Manager to the Printer



To determine if the Print Manager is forwarding print jobs to the printer:

- 1 On the NDPS Health Monitor page, click the Printer Agent for the problem printer.
- 2 Review the *Module Autoload Command*.
- 3 Ping the printer using the TCP/IP address in the module *Autoload Command* field.

If you cannot ping the printer, check the printer's physical connections and resolve the communication issue.

You should also check to see if there is a *Message from Admin* in case the printer was taken down for maintenance or some other reason.

- 4 Determine if the printer is requesting jobs by looking at the job processing information to see if a job has been requested.

- 4a If jobs are being requested, check to see if data is being sent by looking at the *Job List*.

Review the submission time and started time and if any bytes have been sent. If no bytes have been sent, then continue with **Step 4b**; otherwise, skip to **Section 5.5, “Is the job printing correctly?”** on page 59.

- 4b To determine if data is being sent to the printer, review the *Job List* and compare the job *Submission Time* and *Started Printing*.

If the job has not started printing, there is a communication issue.

- 5 Restart the Printer Agent by clicking *Shutdown Printer > Start Up Printer*.

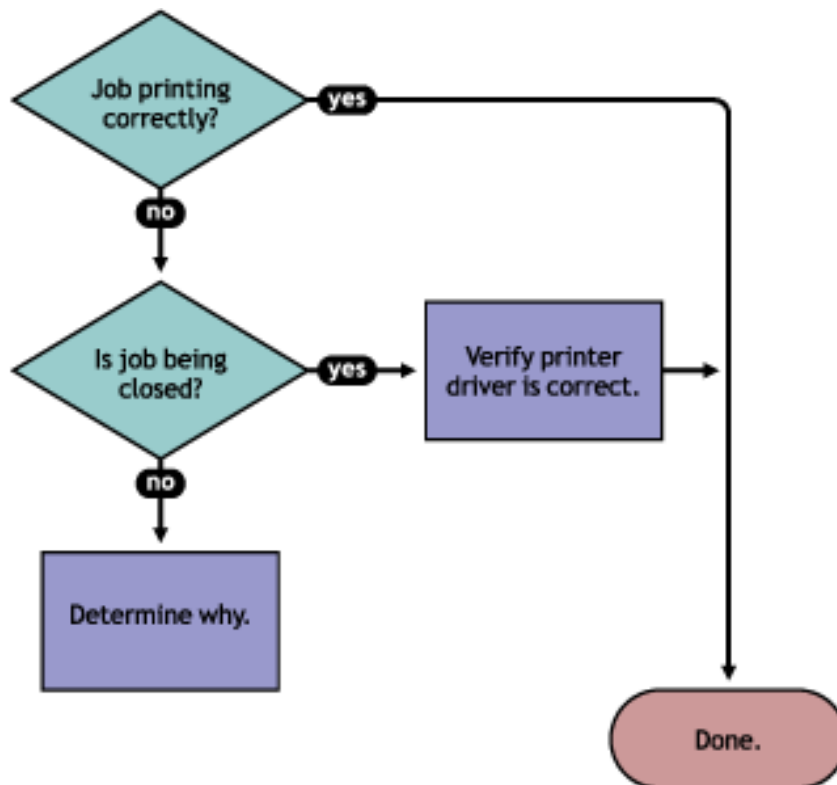
- 6 If the issue is not resolved, power cycle the printer.

After the *Jobs Requested* count is 1, continue with **Section 5.5, “Is the job printing correctly?”** on page 59.

5.5 Is the job printing correctly?

By correcting issues in the preceding sections, print jobs should be reaching the printer. Now you need to look at the printer output.

Figure 5-6 Flowchart to Determine if the Job is Printing Correctly



If the print job is not printing correctly, first check to see if the print job is being closed—the data is sent to the printer—by checking the Job list. If the print job is not closing, determine what is preventing the job from closing.

If the job is being closed correctly and the output is still unacceptable, check to ensure the correct printer driver is being used to submit the job on the workstation and that the correct printer driver is associated with the Printer Agent. You can check on the printer driver in the Printer Agent page in the Health Monitor.

The printer driver associated with a printer can have adverse effects on the print system throughput and print quality of the output. This is often manifest in the following ways:

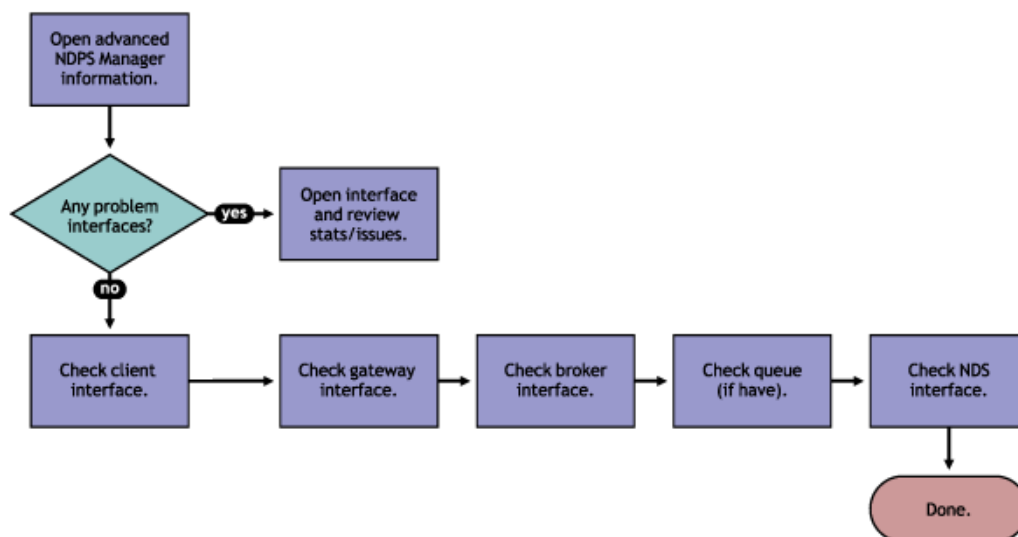
- ♦ Corrupt characters on printed output
- ♦ Slow printing
- ♦ Print job printed but no output produced

Check the printer driver installed on the client workstation to ensure the correct driver is being used. Use the Printer Agent page in the NDPS Health Monitor to view the printer drivers associated with this printer. To change a printer driver association, use iManager to reassociate the driver using the *iPrint > Manage Printer > Drivers* task. See the *NW 6.5 SP8: iPrint Administration Guide* for more information.

5.6 Troubleshooting Print Manager Health Issues

If the Print Manager Health Monitor shows that the NDPS Manager is suspect (yellow) or in an error (red) state, click *Advanced NDPS Manager Information*. Use the following flow chart and the color coding in the Health Monitor to determine where the Print Manager health issues exist and resolve those issues.

Figure 5-7 Flowchart to Troubleshoot Print Manager Issues



5.6.1 Check Advanced NDPS Manager Information

Click *Advanced NDPS Manager Information* to display the Print Manager summary page.

5.6.2 Check for Problem Interfaces

Review the current status of the interfaces. If an interface has entered an error state, select the interface and determine what operations have caused it to enter the error state.

1. Any parameters highlighted? If yes, click and determine what statistics are irregular.
2. Check latest events for an Unknown Object error, which indicates the Printer object does not exist.
3. Check excessive time needed for events.

The key interfaces to check are the Client and NDS® interfaces. Check these to see which operations are being done and which operations are using excessive time. You can check the latest event log for more information on the events that have transpired. If you have secure printing turned on, the Print Manager must communicate with eDirectory™ to obtain the effective rights for a user submitting a print job to a specific printer. If NDS is not healthy, some operations fail or use excessive time.

You should also look at the *NDPS Manager Internal* information for operations that might be affecting the Print Manager database.

5.7 Quick Checks

Some other things you can quickly check to ensure the settings are correct include:

- ♦ [Section 5.7.1, “Is the Printer Driver Compatible?,” on page 61](#)
- ♦ [Section 5.7.2, “Does the Printer Agent have an associated NDS object?,” on page 61](#)
- ♦ [Section 5.7.3, “Is my server at capacity for handling printing?,” on page 61](#)

5.7.1 Is the Printer Driver Compatible?

The printer driver associated with a printer can have adverse effects on the print system throughput and print quality of the output. This is often manifest in the following ways:

- ♦ Corrupt characters on printed output
- ♦ Slow printing
- ♦ Print job printed but no output produced

5.7.2 Does the Printer Agent have an associated NDS object?

On the Printer Agent summary page, check the associated NDS Printer objects to see if an NDS object is associated with this printer. If a Printer Agent does not have an associated NDS object, then access control for the printer cannot be enforced.

5.7.3 Is my server at capacity for handling printing?

To determine how well your server is handling printing, generate a report of the *Average Job Size* and *Jobs Printed Today*. Compare this report to your baseline report. Now that you know if printing has increased or decreased, you can check your server’s current statistics against any baseline statistics to determine how your server has handled your change in printing.

Examples of Troubleshooting Print Problems

6

Using the flowcharts and steps from [Chapter 5, “Troubleshooting Print System Errors,”](#) on page 53, the following example scenarios step through the troubleshooting process.

- [Example 1: No Printer Output \(page 63\)](#)
- [Example 2: No Printer Output \(page 64\)](#)
- [Example 3: Printer Output Is Not Correct \(page 69\)](#)
- [Example 4: Printing Is Slow \(page 70\)](#)

6.1 Example 1: No Printer Output

Thomas reports that he is printing to Printer5, but nothing is coming out of the printer.

- 1 In Novell® Remote Manager, open the *NDPS Manager Health Monitor* and locate Printer5 in the list.

NDPS Manager 'PRINT_MANAGER.NOVELL' - Microsoft Internet Explorer

Begin Refresh Page Refresh Rate 5 seconds

Number of Printer Agents 8

Printer Agent Name	Current Status	Jobs		Jobs Printed Since			Printer Pool Name
		Scheduled	Active	5-02-03 12:00 pm	4-02-03 8:37 am	5-02-03 8:37 am	
Printer2-color	Error Printing	10	0	0	0	306	
Printer5	Error Printing	3	0	0	0	42	
Printer4	Shut Down	N/A	N/A	0	0	0	
Printer6	Output Paused	0	0	0	0	0	
Printer1	Printing	1	1	9	13	172	
Printer3	Idle	0	0	1	1	3	
Printer7_left	Idle	0	0	32	152	2729	Pool1
Printer7_right	Idle	0	1	29	137	2256	Pool1

Jobs		Jobs Printed Since		
Scheduled	Active	5-02-03 12:00 pm	5-02-03 8:37 am	5-02-03 8:37 am
3	2	71	302	5508

Current NDPS Manager Status **GOOD**

Advanced NDPS Manager Information

- 2 Check the state of the Print Manager, which is listed at the bottom of the of the page.

In this example, the Print Manager is not showing any errors.

- 3 Click the Printer Agent name and review the printers messages and status details.

Printer Agent 'Printer5' Information

Previous Printer Next Printer Back

Printer Agent Status Error Printing Shutdown Printer Apply

Printer Console TONER OUT K ADD BLACK

[Job List](#) [Shutdown/Startup History](#) [Message from Admin](#) [Configuration Options](#)

Job Processing Information	Scheduled	Active	Requested	Last Job Finished Printing
Jobs	3	1	0	(none)

Job History	5-07-03 10:00 am	5-07-03 9:56 am	5-07-03 9:56 am	Printer Reset
Pages Printed Since	0	0	103	
Jobs Printed Since	0	0	42	0
Jobs Canceled Since	0	0	0	
Jobs Aborted Since	0	0	0	
Average Job Size Since (KB)	0	0	236	
Maximum Job Size Since (KB)	0	0	1273	

There is a printer console message that the printer needs black toner.

- 4 Install black toner on the printer.

Thomas is now able to print again.

6.2 Example 2: No Printer Output

Angela reports that she is printing to Printer2, but nothing is coming out of the printer.

- 1 In Novell Remote Manager, open the *NDPS Manager Health Monitor* and locate Printer2 in the list.

NDPS Manager '.PRINT_MANAGER.NOVELL' - Microsoft Internet Explorer

File Edit View Favorites Tools Help

NDPS Manager '.PRINT_MANAGER.NOVELL'

Begin Refresh Page Refresh Rate 5 seconds

Number of Printer Agents 8

Printer Agent Name	Current Status	Jobs		Jobs Printed Since			Printer Pool Name
		Scheduled	Active	5-02-03 12:00 pm	4-02-03 8:37 am	5-02-03 8:37 am	
Printer2-color	Error Printing	10	0	0	0	306	
Printer5	Error Printing	3	0	0	0	42	
Printer4	Shut Down	N/A	N/A	0	0	0	
Printer6	Output Paused	0	0	0	0	0	
Printer1	Printing	1	1	9	13	172	
Printer3	Idle	0	0	1	1	3	
Printer7_left	Idle	0	0	32	152	2729	Pool1
Printer7_right	Idle	0	1	29	137	2256	Pool1

Jobs		Jobs Printed Since		
Scheduled	Active	5-02-03 12:00 pm	5-02-03 8:37 am	5-02-03 8:37 am
3	2	71	302	5508

Current NDPS Manager Status GOOD

Advanced NDPS Manager Information

Printer2 shows a printing error.

2 Click the Printer Agent name.

Printer Agent 'Printer2-color' Information - Microsoft Internet Explorer

Back Forward Stop Home Reload Print File Edit View Favorites Tools Help

Printer Agent 'Printer2-color' Information

Next Printer Back

Printer Agent Status **Error Printing** Shutdown Printer Apply

Printer Console POWERSAVE ON

Printer Agent Status Details	Event Time	Associated Message from Printer
LPR Communication Failed	5-7-2003 12:46:57 pm	

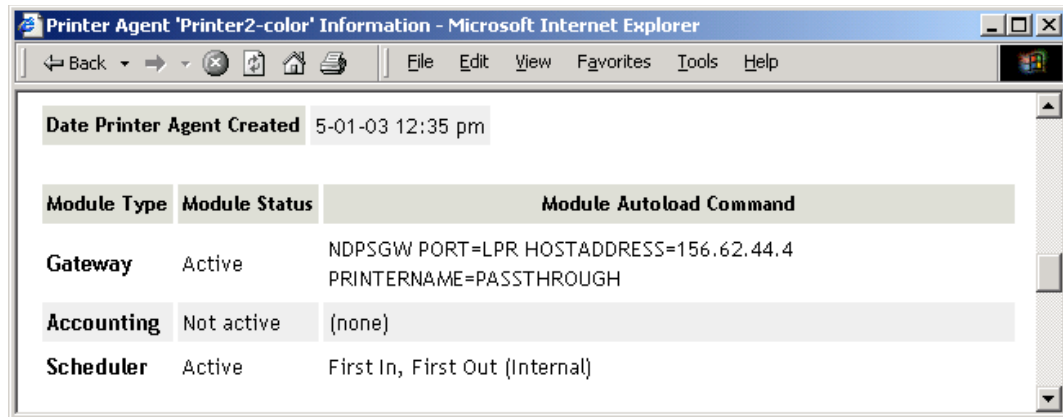
[Job List](#) [Shutdown/Startup History](#) [Message from Admin](#) [Configuration Options](#)

Job Processing Information	Scheduled	Active	Requested	Last Job Finished Printing
Jobs	0	0	1	(none)

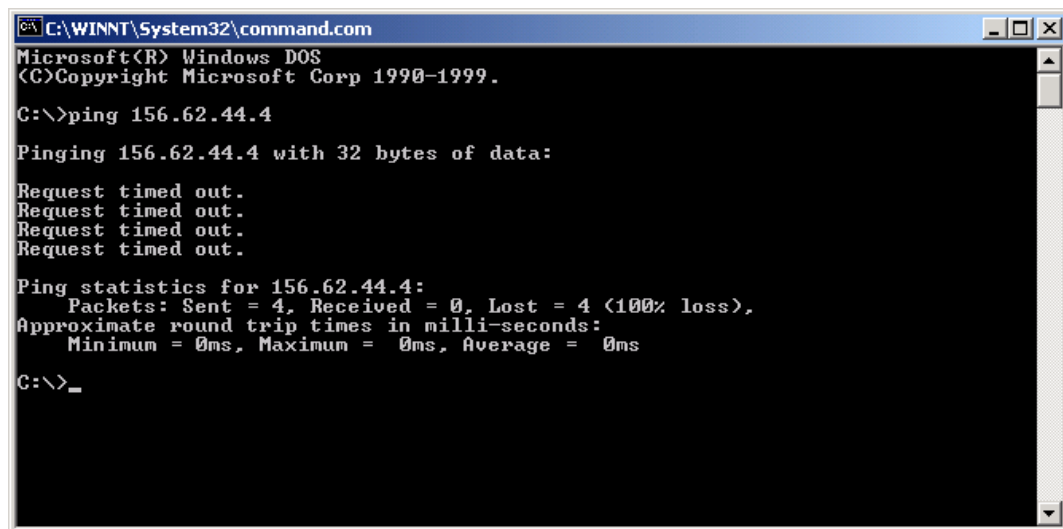
Job History	5-07-03 11:45 am	5-07-03 9:56 am	5-07-03 9:56 am	Printer Reset
Pages Printed Since	0	0	0	
Jobs Printed Since	0	0	0	0
Jobs Canceled Since	0	0	0	
Jobs Aborted Since	0	0	0	
Average Job Size Since (KB)	0	0	0	
Maximum Job Size Since (KB)	0	0	0	

Reviewing the *Printer Agent Status Details*, you determine that the Print Manager and the printer are not communicating.

- Obtain the IP address from the *Module Autoload Command* for the Gateway.



4 Ping the IP address.



You discover that you cannot ping the IP address, so the printer must be disconnected from the network or turned off.

5 Check for any messages from the administrator by clicking *Message from Admin*.

Printer Agent 'Printer2-color' Information - Microsoft Internet Explorer

Printer Agent 'Printer2-color' Information

Next Printer Back

Printer Agent Status **Error Printing** Shutdown Printer Apply

Printer Console POWERSAVE ON

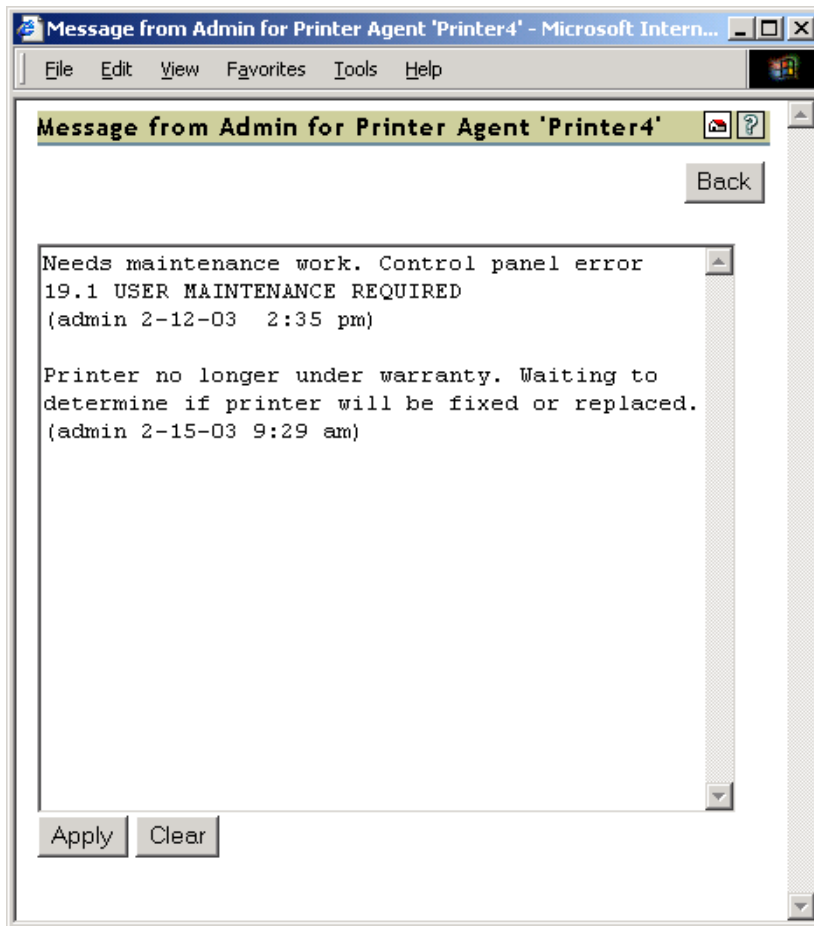
Printer Agent Status Details	Event Time	Associated Message from Printer
LPR Communication Failed	5-7-2003 12:46:57 pm	

[Job List](#)
[Shutdown/Startup History](#)
[Message from Admin](#)
[Configuration Options](#)

Job Processing Information	Scheduled	Active	Requested	Last Job Finished Printing
Jobs	0	0	1	(none)

Job History	5-07-03 11:45 am	5-07-03 9:56 am	5-07-03 9:56 am	Printer Reset
Pages Printed Since	0	0	0	
Jobs Printed Since	0	0	0	0
Jobs Canceled Since	0	0	0	
Jobs Aborted Since	0	0	0	
Average Job Size Since (KB)	0	0	0	
Maximum Job Size Since (KB)	0	0	0	

The *Message from Admin* shows that the printer has been disconnected from the network.

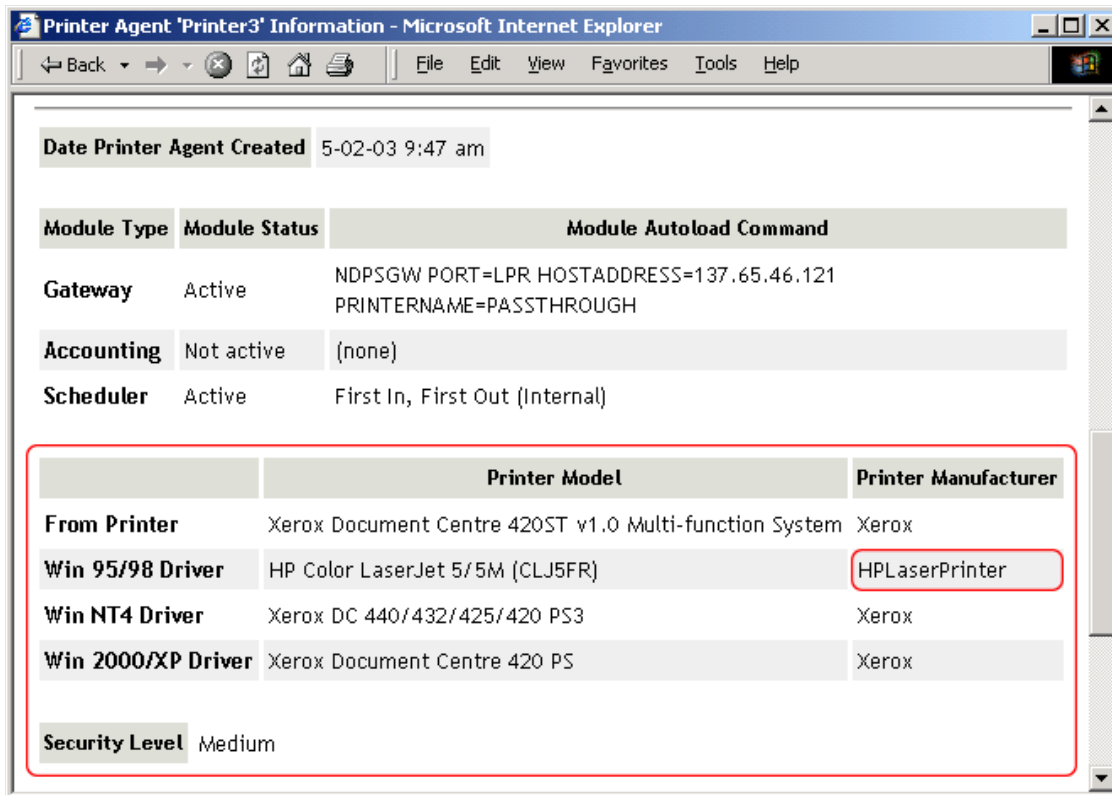


- 6 Have Angela install and print to a different printer.

6.3 Example 3: Printer Output Is Not Correct

Thomas installed a Xerox^{*} printer on his workstation. His print jobs are not printing correctly. The printout contains different ASCII characters instead of the text in his document.

- 1 Complete the procedure in [Section 6.1, "Example 1: No Printer Output,"](#) on page 63.
You do not see any errors. You know that the printer is healthy, print jobs are being received by the Print Manager, and the Print Manager is forwarding the jobs to the printer.
- 2 On the Printer Agent page of the NDPS[®] Manager Health Monitor, scroll down and look at the printer drivers that are being used.



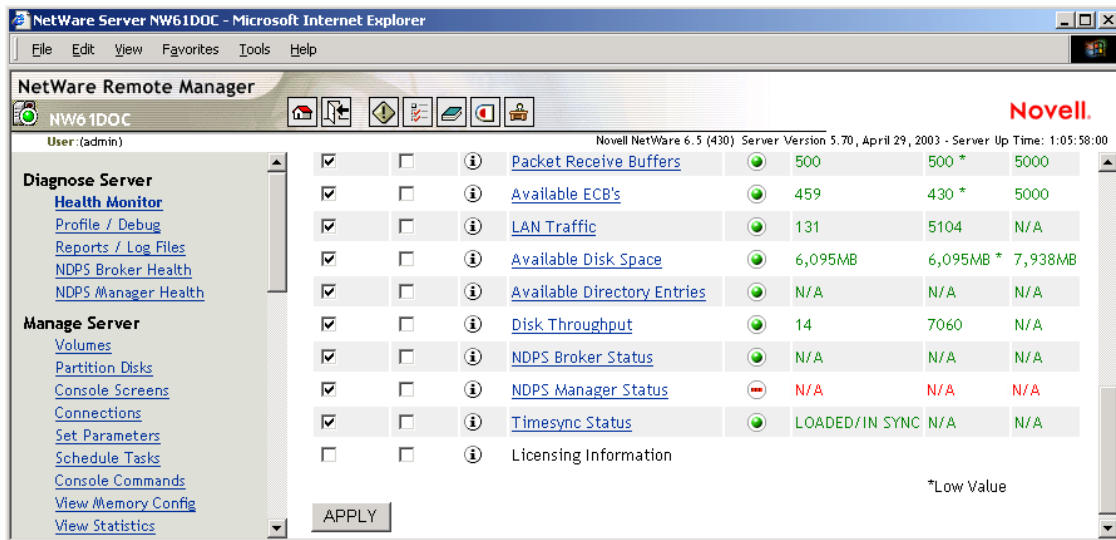
Thomas is printing from a Windows XP workstation, and you can see the wrong printer driver is installed.

- Using Novell iManager, associate the correct printer driver for this printer and have Thomas reinstall the printer.

6.4 Example 4: Printing Is Slow

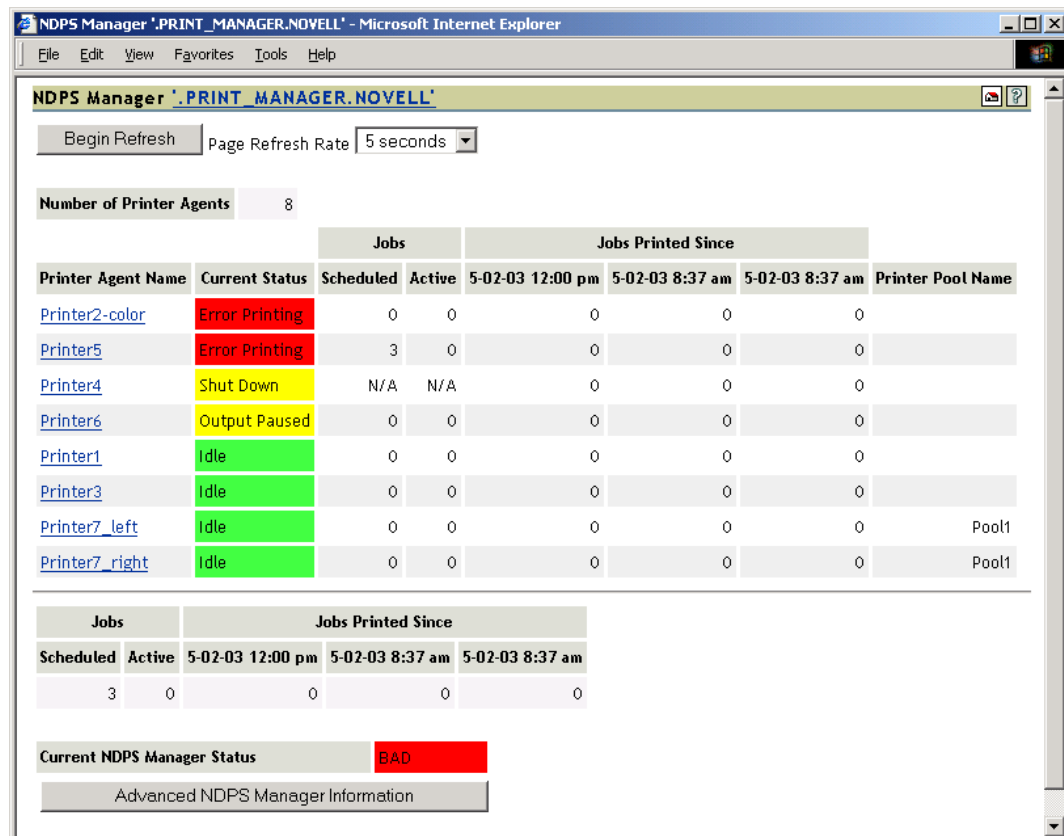
You received several reports that printing is slow.

- Open Novell Remote Manager.
You see that the Print Manager is in an error state.



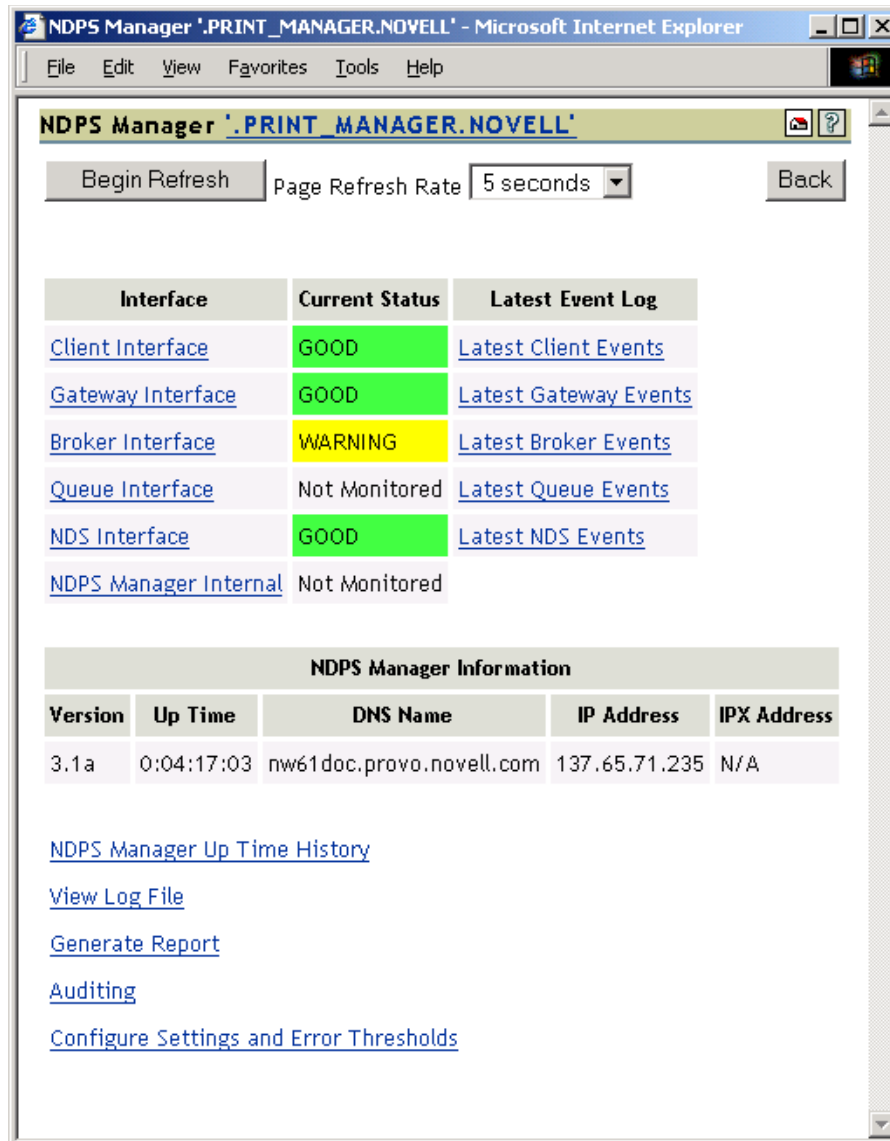
2 Click the Print Manager.

No Printer Agents appear in an error state, but the *Current NDPS Manager Status* is in an error state.



3 Click Advanced NDPS Manager Information.

Two of the interfaces, *Client* and *NDS*, are in an error state.



4 Click *Client Interface*.

The *Bind to Printer Agent* is highlighted in yellow, showing that it has exceeded the thresholds set for this statistic.

NDPS Manager Client Status - Microsoft Internet Explorer

File Edit View Favorites Tools Help

NDPS Manager Client Status

Begin Refresh Page Refresh Rate 5 seconds Back

[Latest Client Events](#)

[Currently Bound Clients](#) 0

	Since 5-02-03 12:00 pm	Since 5-02-03 8:37 am	Since 5-02-03 8:37 am
Total Operations	205	328	328
Operations that Used Excessive Time	22	22	22
Operations that Failed	0	0	0
Lost Client Connections	0	0	0
Bind count, Printer Agent Shutdown	0	0	0
Bind count, Printer Agent Unknown	1	9	9

Client Operation Information

[Summary of All Client Operations](#)

Null Procedure	Bind to NDPSM	Bind to Printer Agent	Unbind
Print	Modify Job	Cancel Job	List Object Attributes
Promote Job	Interrupt Job	Pause Job	Resume Job
Destroy All Jobs for Printer Agent	Create Object	Delete Object	Disable Printer Agent
Enable Printer Agent	Resubmit Jobs	Set	Shutdown Printer Agent
Start up Printer Agent	Reorder Job	Pause Printer Agent	Resume Printer Agent
Transfer Document Data	Device Control	Add Notification Profile	Remove Notification Profile
Modify Notification Profile	List Notification Profile	Shutdown NDPSM	Cancel Shutdown of NDPSM
Set Printers NDS Info	Destroy Specific User's Jobs for Printer Agent	Printer Name Lookup	

5 Click *Bind to Printer Agent* to display the statistics.

NDPS Manager Client Status - Microsoft Internet Explorer

File Edit View Favorites Tools Help

NDPS Manager Client Status

Begin Refresh Page Refresh Rate 5 seconds Back

[Latest Client Events](#)

[Currently Bound Clients](#) 2

	Since 5-02-03 12:00 pm	Since 5-02-03 8:37 am	Since 5-02-03 8:37 am
Total Operations	30	46	46
Operations that Used Excessive Time	22	9	22
Operations that Failed	0	0	0
Average Time used (milliseconds)	16118	10598	10598
Max Time used (milliseconds)	40189	40189	40189

Client Operation Information

[Summary of All Client Operations](#)

Null Procedure	Bind to NDPSM	Bind to Printer Agent	Unbind
Print	Modify Job	Cancel Job	List Object Attributes
Promote Job	Interrupt Job	Pause Job	Resume Job
Destroy All Jobs for Printer Agent	Create Object	Delete Object	Disable Printer Agent
Enable Printer Agent	Resubmit Jobs	Set	Shutdown Printer Agent
Start up Printer Agent	Reorder Job	Pause Printer Agent	Resume Printer Agent
Transfer Document Data	Device Control	Add Notification Profile	Remove Notification Profile
Modify Notification Profile	List Notification Profile	Shutdown NDPSM	Cancel Shutdown of NDPSM
Set Printers NDS Info	Destroy Specific User's Jobs for Printer Agent	Printer Name Lookup	

The statistics show that in the last hour, 22 of the last 30 operations used excessive time and the average time to bind was 16 seconds.

- 6 Click *Back* > *NDS Interface*.

NDPS Manager \".PRINT_MANAGER.NOVELL\"

Begin Refresh Page Refresh Rate: 5 seconds Back

Interface	Current Status	Latest Event Log
Client Interface	BAD	Latest Client Events
Gateway Interface	GOOD	Latest Gateway Events
Broker Interface	WARNING	Latest Broker Events
Queue Interface	Not Monitored	Latest Queue Events
NDS Interface	BAD	Latest NDS Events
NDPS Manager Internal	Not Monitored	

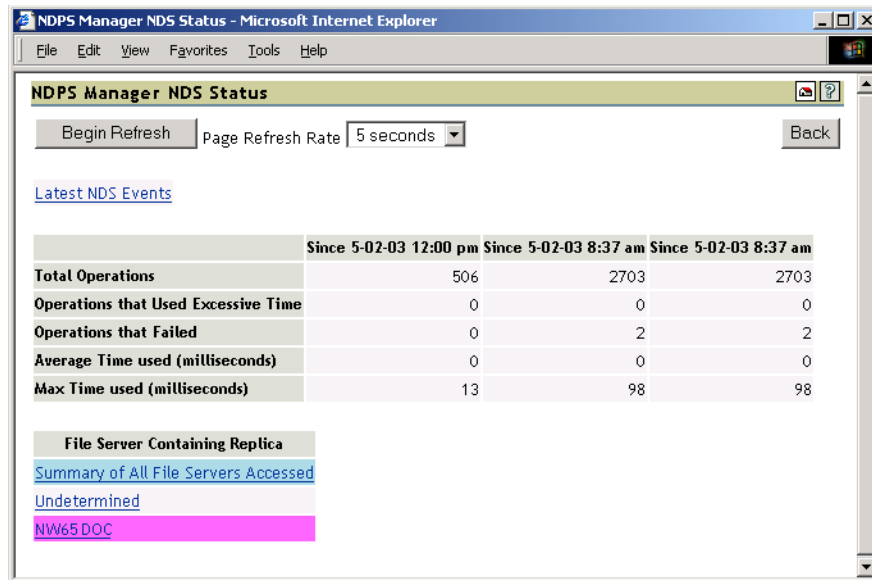
NDPS Manager Information

Version	Up Time	DNS Name	IP Address	IPX Address
3.1a	0:04:17:03	nw61doc.provo.novell.com	137.65.71.235	N/A

[NDPS Manager Up Time History](#)
[View Log File](#)
[Generate Report](#)
[Auditing](#)
[Configure Settings and Error Thresholds](#)

- 7 Click the *File Server Containing Replica* for Falcon3.

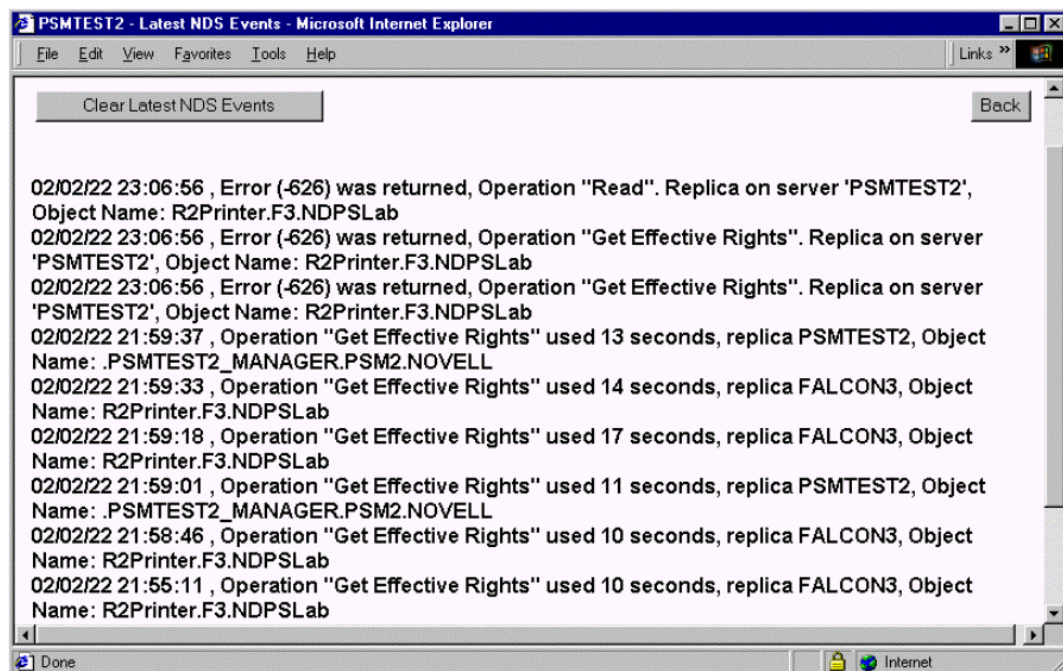
You can see that some of the statistics are using excessive time.



8 Click *Latest NDS Events* to determine the NDS events that are using excessive time.

Because some client interface operations are dependent on eDirectory™, you want to ensure that eDirectory is healthy.

Figure 6-1 Latest NDS Events Log



As you review the Latest NDS Events log, you see the Print Manager is receiving Get Effective Rights errors.

- 9** Using Novell Remote Manager, you can troubleshoot why this operation is taking so long. You can use Novell Remote Manager to view if DS is loaded and open, to view the DS thread usage, and to access NDS iMonitor for more in-depth information.

Running iPrint Manager Health Monitor in a Virtualized Environment

7

iPrint Manager Health Monitor runs in a virtualized environment just as it does on a physical NetWare server, and it requires no special configuration or other changes.

To get started with virtualization, see “Introduction to Xen Virtualization” (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/sec_xen_basics.html) in the *Virtualization with Xen* (http://www.novell.com/documentation/sles10/book_virtualization_xen/data/book_virtualization_xen.html) guide.

For information on setting up virtualized NetWare, see “Installing and Managing NetWare on a Xen-based VM” in the *OES 2 SP2: Installation Guide*.

For information on setting up virtualized OES 2 Linux, see “Installing, Upgrading, or Updating OES on a Xen-based VM” in the *OES 2 SP2: Installation Guide*.

Documentation Updates

A

The *iPrint Manager Health Monitor Administration Guide* has been updated for the following dates:

- Section A.2, “November 1, 2005,” on page 79
- Section A.3, “August 19, 2005 (NetWare 6.5 SP4),” on page 79

A.1 November 9, 2009

This guide has been modified for publication on the NetWare 6.5 SP8 Documentation Web site.

A.2 November 1, 2005

Location	Change
Entire guide.	Page design reformatted to comply with revised Novell® documentation standards.

A.3 August 19, 2005 (NetWare 6.5 SP4)

Location	Change
Section 4.6.4, “Configuring Automatic Log Rotation,” on page 51	Section added.

