Gathering Accounting and Auditing Data about Print Jobs

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Infoprint allows you to gather accounting information about print jobs from two sources:

- The Infoprint Manager server (applies to all destination support systems (DSSs)). For more information, see Working with Infoprint Manager Accounting Information below.

  You should use accounting information from the Infoprint Manager if you:

  – need to track accounting information for all types of Infoprint DSSs.
  – want to take advantage of the **pdaccount** command to summarize data in a spread sheet program.

- The PSF auditing and accounting user-exit programs (applies only to the PSF DSSs). For more information, see Working with PSF Accounting and Auditing User-Exit Programs.

  You should use accounting information from the PSF auditing and accounting user-exit programs if you:

  – use only PSF attached printers.
  – need more detailed information than that provided by the **pdaccount** command.

Working with Infoprint Manager server accounting information

While all DSSs can store accounting information about the jobs processed, the information from some DSSs is more accurate than the information from others. All actual destination accounting logs are enabled through the server and actual destination **log-accounting-data** attribute. When you specify `log-accounting-data=true`, Infoprint stores data into server accounting logs (one for each destination), which you can either view directly through your editor of choice (such as Notepad) from the command-line or by specifying the **pdaccount** command. The **pdaccount** command allows you to obtain summary information in a comma-delimited format (`Printer1,12997,1989787763`). This information can be saved in a file, which can be imported into a spread sheet to calculate the cost of consumables, the usage rate of printers, or the cost of printing by individual user. The summary information includes both the total pages and total octets (the number of bytes) printed, either by destination or by user as requested for a specified time period. You can also obtain the complete accounting records (information for all print jobs) for a specified time period, instead of the summary data.

How does the pdaccount command collect Infoprint Manager accounting information?

To activate Infoprint Manager account log support, you must change the **log-accounting-data** value. By default, the Infoprint Manager value is `log-accounting-data=false`, and the actual destination default is to use the server setting. As a result, you must **log-accounting-data** attribute as follows:

- To activate accounting for all destinations on a server:

set the server's **log-accounting-data** attribute to **True** (if an actual destination hasn't specified this attribute, the server's **log-accounting-data** attribute is used).

- To activate accounting for a specific actual destination:

  set the **log-accounting-data** attribute to **True** for that specific actual destination. If you have not set an actual destination, the value of the **log-accounting-data** attribute for the server is used.

- To deactivate accounting for all destinations on a server, :

  set the **log-accounting-data** attribute to **False** . If an actual destination hasn't specified this attribute, the server's **log-accounting-data** attribute is used.

- To deactivate accounting for a specific actual destination:

  set the **log-accounting-data** attribute to **False** for that specific actual destination. If an actual destination hasn't specified this attribute, the server's **log-accounting-data** attribute is used.

You may change the **log-accounting-data** attribute with either a **pdset** command or the Infoprint Manager Administration GUI. For more information on the Infoprint Manager Administration GUI, see the Chapter 6: ″Using the Infoprint Interfaces″ in the *Infoprint Manager for Windows NT and Windows 2000: Getting Started* .

The **pdaccount** command obtains the following accounting information from one or more Infoprint Manager servers:

- **actual destination name**
- **job owner**
- **global job-id**
- **submission time**
- **completion time**
- **pages-completed**
- **octets-completed**
- **data stream**
- **job name**

Note: You only get all these accounting options if you specify pdaccount –t all on the command line.

If you wanted to request summary information grouped by destinations on an Infoprint Manager server named Server1 from 8 AM 9/20/99 to 8 AM 9/27/99, specify the following from either the Windows **Command prompt** or **MS-DOS prompt** window:

```
pdaccount -t destination -s '08:00:00 09/20/99' -e '08:00:00 09/27/99'
Server1
```

Infoprint displays the information in a format similar to the following:

```
Destination Name,Pages Completed,Octets Completed
Printer1,12997,1989787763
Printer2,2455,17676836
Printer3,86673,189808083
```

where Printer1 specifies the actual destination, 12997 indicates the pages completed, and 1989787763 indicates the octets completed within the specified start and end times (in this example, one week).

For more information about using the **pdaccount** command, see *Infoprint Manager: Reference.*

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How do you manage the Infoprint Manager accounting logs?

Once you specify `log-accounting-data=true` on either an Infoprint Manager server or an actual destination, these accounting logs start growing without bound. As part of your scheduled system maintenance, the accounting logs should be managed carefully to avoid potential performance problems. Periodically, the log files must be either deleted or moved to a different folder. If you do not perform either of these tasks, your server will run out of space on the disk drive, preventing you from printing any more jobs.

The Windows NT and Windows 2000 accounting logs reside in a subfolder of the server's folder. The following describes the subdirectory where the files reside:

  install_path**var\pd\accounting.logs**

Infoprint provides one accounting log for each destination, named *actual_destination_name* .**accounting.log.v1**, where *actual_destination_name* specifies the actual destination where the job is processed.

To save a record of Infoprint Manager server accounting data, you need to move the existing log files to a new drive. Be sure that these logs are not being written to, then use the following procedure:

1. Create a new directory in the location where you want to archive the existing (prt1.**accounting.log.v1**) log file by moving to that location on your system (from the command line prompt, specify `E:`, then `cd \ntserver`).

   To create the new directory, type: `mkdir 3qrt2001logs`

2. Go back to your **C** drive to the folder where the log file resides. Then access that location, for example `prt1`.**accounting.log.v1** on `server1`, by specifying:

   `cd` *install_path*\var\pd\accounting.logs

3. Copy the **prt1.accounting.log.v1** file to a new directory on a different drive (**E** for this example) named **3qrt2001** by specifying:

   `copy prt1.accounting.log.v1 E:\ntserver\3qrt2001logs\`

   This command copies the existing file to the new directory.

4. Remove the original **prt1.accounting.log.v1** file from the *install_path***var\pd\accounting.logs** folder:

   `del prt1.accounting.log.v1`

   When the next job is processed on **prt1**, Infoprint creates a new **prt1.accounting.log.v1** file.

IBM recommends you move the data to another disk drive rather than deleting it from the system. This allows you to store accounting data and delete it from the system when you no longer need to refer to it. If you want to delete the **prt1.accounting.log.v1** file,

1. Specify `cd` *install_path*\var\pd\accounting.logs

   This command moves you into the correct path.

2. Enter

   `del prt1.accounting.log.v1`

   When the MS-DOS command-line prompt returns, you know that the **prt1.accounting.log.v1** file has been deleted from the system.

3. Enter

   `dir`

This command displays the contents of your directory for you to verify that the file has been deleted. When the next job is submitted for printing to that actual destination, Infoprint creates a new **prt1.accounting.log.v1** file and writes the data into that file.

The **pdaccount** command only finds and processes the information in the log files in the original location. Once you move or rename the files, you cannot use the **pdaccount** command to summarize the data. You may want to use the **pdaccount** command to find and process the information and summarize it, store the summaries in a different location, and then delete the logs.

Attention: Requesting information for **all** accounting records can consume a lot of the server's memory since all the data is read into memory to be sent to you. If you have a lot of data to retrieve, you should consider requesting it for smaller time periods and concatenating the returned data.

For example, if you want to retrieve all the accounting records for a one month period, you could issue four **pdaccount** commands like this:

```
pdaccount -t all -s '00:00:00 03/01/00' -e '00:00:00 03/08/00' Server A
>March1.accting.data

pdaccount -t all -s '00:00:00 03/08/00' -e '00:00:00 03/15/00' Server A
>March2.accting.data

pdaccount -t all -s '00:00:00 03/15/00' -e '00:00:00 03/22/00' Server A
>March3.accting.data

pdaccount -t all -s '00:00:00 03/22/00' -e '00:00:00 03/31/00' Server A
>March4.accting.data
```

Usage considerations by DSS for accounting information

This section contains more information about server accounting information by DSS. It also gives suggestions for working with the various DSSs when using the accounting information in Infoprint Manager.

In general, Infoprint Manager logs jobs that complete or are paused, cancelled, or are cleaned while being processed by the actual destination. Infoprint Manager **does not** log jobs that are not completed but are put back into the queue because the printer is shutdown when a printer problem is encountered.

PSF DSS with TCP/IP attachment type

- On jobs that complete successfully, the page count shown in the accounting log is the number of AFP pages stacked on the printer, including start pages, separator pages, and end pages.

  Note: For n-up documents, up to *n* pages are counted for each sheet-side that prints.

- **Limitations:**
  - When printing a multiple-document job in which all the documents are ASCII, the accounting log only shows pages for the last document printed.
  - If a job is paused or cancelled, the page count shown in the accounting log may not be accurate.
  - On paused jobs, the octet count is always zero (0).
  - The number of Intelligent Printer Data Stream (IPDS) pages printed is based upon the number of **begin**-**page** and **end**-**page** structured field pairs in the data. As a result, a **2–up** document printed duplex could provide a page count of four for a single sheet of paper.

PSF DSS with Other-Driver attachment type

- If you are using the IBM TCP/IP Port Monitor and the job completes successfully, then the page count shown in the accounting log is the number pages stacked at the printer. For example, a three-page document printed simplex records three pages in the accounting log and three pages stacked; a four-page document printed duplex reports four pages in the accounting log even through only 2 sheets are stacked.

  A duplexed four-page job with a header sheet provides a page count of four, because the auxiliary sheets are not included in the count, but both sides of each page are counted.

- If you are not using the IBM TCP/IP Port Monitor, the page count is not based on the number of pages stacked on the printer. Instead, the page count recorded in the accounting log is the number of pages PSF reports it has sent to the printer driver, including start pages, separator pages, and end pages.

- If you have set the **document**-**formats**-**ripped**-**at**-**destination** actual destination attribute for a PSF DSS with Other-Driver attachment type actual destination, the accounting is handled as if it had been submitted to a Passthrough DSS actual destination.

- **Limitations:** The page count and octet count reported in the accounting log for cancelled and paused jobs is not accurate.

PSF DSS with Command attachment type

The page count recorded in the accounting log for destinations using the command is the number of pages PSF generates and sends to the printer. It is not based on the number of pages received or printed by the printer. The page count does include start pages, separator pages, and end pages.

BSD DSS

The page count recorded in the accounting log for destinations using the BSD DSS is based on the following criteria:

- If the user specifies a **job**-**page**-**count** job attribute or a **page**-**count** document attribute with the print job, Infoprint Manager records that number in the accounting log.

- If the user has not specified **job-page-count** or **page-count**, and the data being printed is PCL or PostScript, Infoprint Manager attempts to calculate the page count and records the calculated page count in the accounting log.

Internet Printing Protocol (IPP) DSS

The page count recorded in the accounting log for destinations using the IPP DSS is based on the following criteria:

- Depending upon the capabilities of the your particular IPP printer, if the printer reports pages completed information through the Internet Printing Protocol and the job completes successfully, that information is used. The auxiliary sheet is not added to the count.
- If the user specifies a **job-page-count** job attribute or a **page-count** document attribute with the print job, Infoprint Manager records that number in the accounting log. The auxiliary sheet is not added to the count.
- If the user has not specified **job-page-count** or **page-count**, and the data being printed is PCL or PostScript, Infoprint Manager retrieves the page count from the printer, if the particular printer supports that function. The auxiliary sheet is not included in the count.
- **Limitations:** Because all information is obtained through the Internet Printer Protocol, the attributes required for **pages-completed** might not be supported by a particular printer model.
- **Note:** For accurate results with this DSS, ensure that you set the sides default (whether simplex or duplex) in the printer to match the value on the **sides** actual destination attribute.

Passthrough DSS

The page count recorded in the accounting log for destinations using the Windows DSS is based on the following criteria:

- If you are using the IBM TCP/IP Port Monitor and the job completes successfully, then the page count shown in the accounting log is the number pages stacked at the printer. For example, a three-page document printed simplex records three pages in the accounting log and three pages stacked; a four-page document printed duplex reports four pages in the accounting log even through only 2 sheets are stacked. Auxiliary sheets are not included in hte count
- If you are using the IBM TCP/IP Port Monitor and the job does not complete successfully, or if you are not using the IBM TCP/IP Port Monitor and the user specifies a **job-page-count** job attribute or a **page-count** document attribute with the print job, Infoprint Manager records that number in the accounting log.

  A duplexed four-page job with a header sheet provides a page count of four, because neither the auxiliary sheets nor the back sides of each page are included in the count.
- If the user has not specified **job-page-count** or **page-count**, and the data being printed is PCL or PostScript, Infoprint Manager attempts to calculate the page count and records the calculated page count in the accounting log. The auxiliary sheet is not included in the count.

Note: For accurate results with this DSS, ensure that you set the sides default (whether simplex or duplex) in the printer to match the value on the **sides** actual destination attribute.

Working with PSF accounting and auditing data about the job

The accounting and auditing PSF DSS user-exit programs record data about jobs. For each job printed, Infoprint Manager activates the PSF DSS user-exit programs specified by the actual destination's **accounting-exit** attribute values before processing the print job's trailer page. More than one Infoprint actual destination can use the same user-exit program to write into the same log file.

This section contains the following topics:
- "What do the accounting and audit PSF DSS user-exits provide?"
- "How do you format accounting and audit data for viewing?"
- "How do you manage the contents of the accounting data file?" on page 8

What do the accounting and audit PSF DSS user-exits provide?

The accounting and audit PSF DSS user-exit programs record statistical data on jobs processed by Infoprint Manager actual destinations. The following table shows the most common accounting and audit user-exit programs, the files where they record data, and the types of data that they record.

Program	Log File	Records
install_path\ **bin\ainuxaccp**	*install_path* **var\psf\podaccount.log**	Job submitter, job ID, actual destination, submission machine (nodeid), pages printed, sheets from bin 1, sheets from bin 2, end time, start date, start time, copies per job
install_path\ **bin\ainacclog**	*install_path* **var\psf\accounting.log**	Job submitter, job name, actual destination, submission machine (nodeid), pages printed, sheets from bin 1, sheets from bin 2, end time, start date, start time, fonts, resident fonts, overlays
install_path\ **bin\ainaudlog**	*install_path* **var\psf\audit.log**	Job submitter, job name, actual destination, pages per job, pages per actual destination, jobs per output bin, start date, start time, fonts, resident fonts, overlays

Note: Both*install_path*\ **bin\ainacclog** and *install_path*\ **bin\ainaudlog** record the same information in different files.

This information is specified in flat ASCII format, with a single line for each job that is processed. You can use this information to determine billing procedures, to assess the workload of different output devices, or to determine how resources are used at your installation.

How do you format accounting and audit data for viewing?

To view this data, you can use one of the following executable reporting utilities that are provided with Infoprint Manager. These reporting utilities only work if you open a **Command Prompt** window, navigate to the *install_path*\bin directory, and run the program from the command line.

ainupod1

Reports accounting data stored in **podaccount.log** in a summary format (one line per user), sorted by customer ID.

ainupod2

Reports accounting data stored in **podaccount.log**, sorted by job ID.

ainupod3

Reports detailed entries of times and pages printed for each job by the customer ID from **podaccount.log**.

ainurpt1

Reports accounting data stored in **accounting.log**, sorted by actual destination.

ainurpt2

Reports summary accounting data (one line per job submitted) stored in **accounting.log**, sorted by job submitter.

ainurpt3

Reports detailed entries of times and pages printed for a specific job submitter from **accounting.log**.

ainurpt4

Reports audit data stored in **audit.log**, sorted by actual destination.

ainurpt5

Reports summary audit data stored in **audit.log**, sorted by job submitter.

ainurpt6

Reports detailed entries of times and pages printed for a specific job submitter from **audit.log**.

How do you manage the contents of the accounting data file?

An installation with a regular schedule of printing jobs will accumulate accounting and audit data that must be managed carefully to avoid potential performance problems. Periodically, the log files must be either purged or moved to a different folder. If you do not perform either of these tasks, your installation may run out of space on the file system, preventing you from printing any more jobs. To avoid this problem, you should purge or move the accounting and audit logs as part of your system maintenance.

IBM recommends that you move the data to another file system rather than deleting it from the system. That way, you can store accounting data and delete it from the system when you no longer need to refer to it. The following procedure describes one way to copy the data to a new location.

1. On your Infoprint Manager server system, open the Management Console and select **Edit –> Service Configuration**.
2. Make note of the directory that is listed in the **Install path** field.
3. Open Windows NT Explorer or Windows 2000 Explorer and navigate to the *install path*\bin directory.
4. In that directory, find the accounting or audit log that you need to move, for example, **podaccount.log** and select it.
5. With the file selected, click **Edit –> Copy**.
6. Navigate to the directory that you want to archive the log file in and select the directory.

   Note: This directory may be on a different Windows system than the one you are currently working on.

| 7. With the directory selected, click **Edit –> Paste**.

| 8. Verify that the log file appears in the new directory.

| 9. Navigate back to the *install path*\bin directory.

| 10. In that directory, find the accounting or audit log that you need to move, for example, **podaccount.log** and select it.

| 11. With the file selected, click **File –> Delete**.

| If you want to delete the **podaccount.log** file without storing the data in another folder, use the procedure above, skipping steps five through ten.

| When the next job is submitted for printing, Infoprint creates a new **podaccount.log** file and writes the data into that file.

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