Xprint V7.0

User's and Administrator's Guide

Edition June 2002

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1 Preface

Xprint V7.0　is the output management system developed by Océ Software Laboratories Namur S.A. for use in heterogeneous networks. It is available for many open system platforms, for Microsoft Windows NT® and Windows 2000®. It can also interact with systems such as MS-DOS®/MS Windows, BS2000 and BSD UNIX.

Some limitations exists according to the platform, please refer to chapter 9 "Xprint V7.0 for Windows".

This manual describes how to install, configure and use Xprint V7.0, the different chapters being designed to meet the specific requirements of different groups of users.

1.1　Target groups

This manual is written for the following target groups:

● Users

  If you want to print files via Xprint V7.0 as a general user, this manual tells you what options are available for doing this and how to manage existing print jobs.

● System administrators

  This manual contains information for the system administrator on how to install and configure Xprint V7.0 locally on his/her　system.

● Xprint V7.0 administrators

  If you are responsible for administering Xprint V7.0 in a network, this manual informs you of the options you have for doing this and how to make the best use of these to achieve your goals.

1.2 Structure of the manual

The individual chapters of this manual deal with various aspects of using and configuring Xprint V7.0 on UNIX systems. All the special features of Xprint V7.0 on the Windows platforms are presented in a separate chapter. You should read the following chapters, depending on which tasks you have to perform:

● Chapter 2 - "Introduction to Xprint V7.0" starting on page 5

   This chapter describes Xprint V7.0 from the points of view of the user and the administrator. You should in any case read the sections relevant to you. These will tell you about the possibilities you have for printing under Xprint V7.0 and what steps you might have to take when configuring Xprint V7.0.

● Chapter 3 - "Producing Output with Xprint V7.0" starting on page 15

   This chapter describes how to print documents using the Xprint V7.0 commands.

● Chapter 4 - "Managing print jobs" starting on page 49

   This chapter describes how to manage existing print jobs using the Xprint V7.0 commands.

● Chapter 5 -"Introduction to administering Xprint V7.0" starting on page 67.

   This chapter provides an introduction to managing Xprint V7.0 and describes the basic aspects of this task.

● Chapter 6 - "Configuring Xprint V7.0" starting on page 95

   This chapter describes how to configure Xprint V7.0 on a stand-alone system or in a network using the Xprint V7.0 commands. Furthermore, it tells you how to manipulate the various Xprint V7.0 objects in order to achieve specific goals.

● Chapter 7 -"Interoperability" starting on page 207

   This chapter describes the possible ways of having Xprint V7.0 interact with other spooler systems.

● Chapter 8 - "Installing Xprint V7.0" on page 235

   This chapter tells you how to install Xprint V7.0 on your system and what to consider when doing this.

● Chapter 9 - "Xprint V7.0 for Windows" on page 249

  While the other chapters of this manual describe Xprint V7.0 on UNIX systems, this one presents the differences on the Windows platforms.

● The "Appendix" starting on page 259 contains important tables, summaries and a worksheet for configuring Xprint V7.0.

● The glossary explains the most important terms in connection with Xprint V7.0.

● The index helps you to quickly find the information you need.

1.3   Notational conventions

The following notational conventions are used throughout this manual:

Convention	Use
"double quotes"	For references within the manual and to other manuals.
italics	For variable parts of commands.
`fixed pitch`	In continuous text for commands, options, file names, constants, and screen output and menu texts as well as invariable parts of examples.
bold	For emphasis in continuous text.
`fixed pitch and bold`	For your input in sample dialogs.
●	Actions you must perform.
i	Refers to important information which you should note.
⚠	Refers to important information which warns of potential damage.

1.4 Other publications in this set

Xprint V7.0 - Application Programming Interface (API)

This manual is written for application programmers with a sound knowledge of the C programming language who also have a basic knowledge of the administration and general operation of Xprint V7.0 . API (Application Programming Interface) allows the programmer access to the functions of the Xprint V7.0 system via a programming interface. This manual contains information on the C functions and C data structures comprising the API.

Xprint V7.0 - Reference Manual

This manual serves primarily as a reference book. It contains detailed information on commands and the corresponding options.

Xprint V7.0 - Graphical User Interface

Mercator is the graphical user interface for Xprint V7.0. This manual gives an introduction to the product and an overview of the functions available.

2   Introduction to Xprint V7.0

This chapter describes the concepts of Xprint V7.0, which you must be familiar with in order to use this product. It describes the objects comprising Xprint V7.0 and how these objects interact.

2.1   Xprint V7.0 from the user's point of view

From the point of view of the user, Xprint V7.0 represents a number of commands and a graphical interface used for printing files. For the user, the entire Xprint V7.0 system consists of a number of output devices on which documents can be produced (see figure below). Output devices can be printers, fax devices and e-mail addresses. For historical reasons, the word *printer* is often used instead of *output device* in the rest of this manual. Similarly, you should understand the term *printing* as *producing an output*.
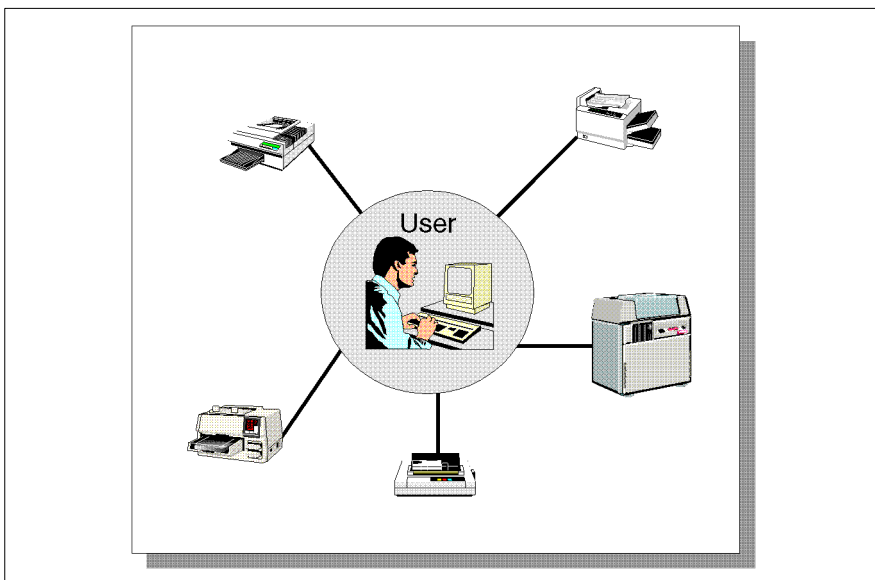
Figure 1: The Xprint V7.0 system

As a user, the first things you deal with are the local workstation on which you are working, and the output devices of the Xprint V7.0 system. You can use any of the visible output devices for printing your documents. It may however be the

case that you are unable to access some of the visible output devices because you have not been granted the necessary rights to use them.
There may also be groups of output devices available. These device groups combine several output devices to provide quicker spoolout. When printed via a device group, the print jobs are distributed evenly over the devices in the group so that jobs can be processed quickly even at times of high print load. In a network, Xprint V7.0 is completely transparent. This means that it does not matter whether an output device is connected to your host or to another host in the network. You can use the output devices just as if they were connected directly to your host.

It is even possible to send print jobs to output devices outside your own Xprint V7.0 domain, provided that the required gateways are configured. In addition to the devices of other Xprint V7.0 domains, you can also use devices which are not connected to the Xprint V7.0 of a   system but to a computer running BSD-UNIX,
MS-DOS/MS-Windows or BS2000 (see the following figure).
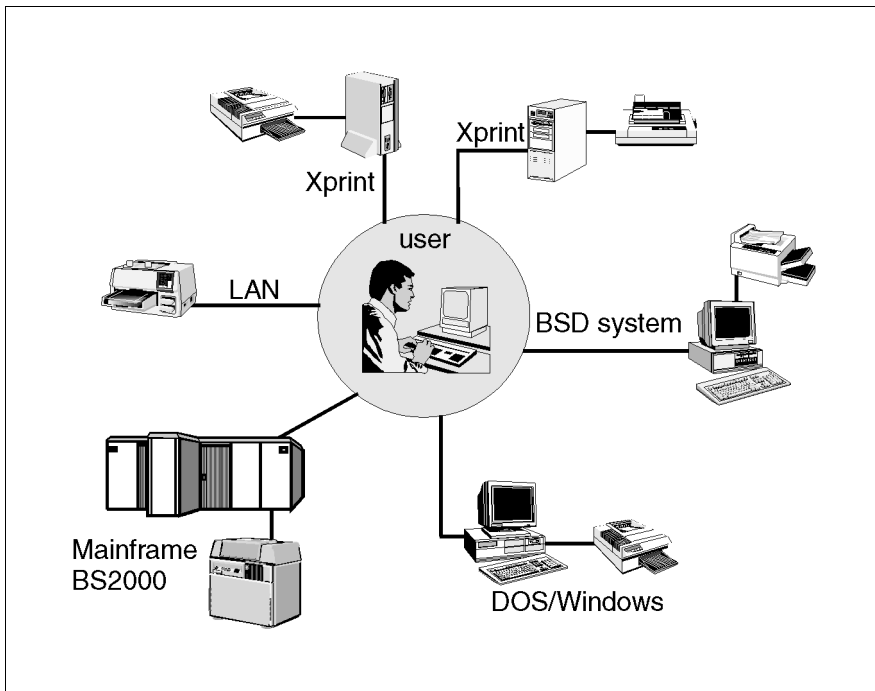
Figure 2: Using Xprint V7.0

As an Xprint V7.0 user you can also decide which interface you want to use on your system.

See the following figure for your options:
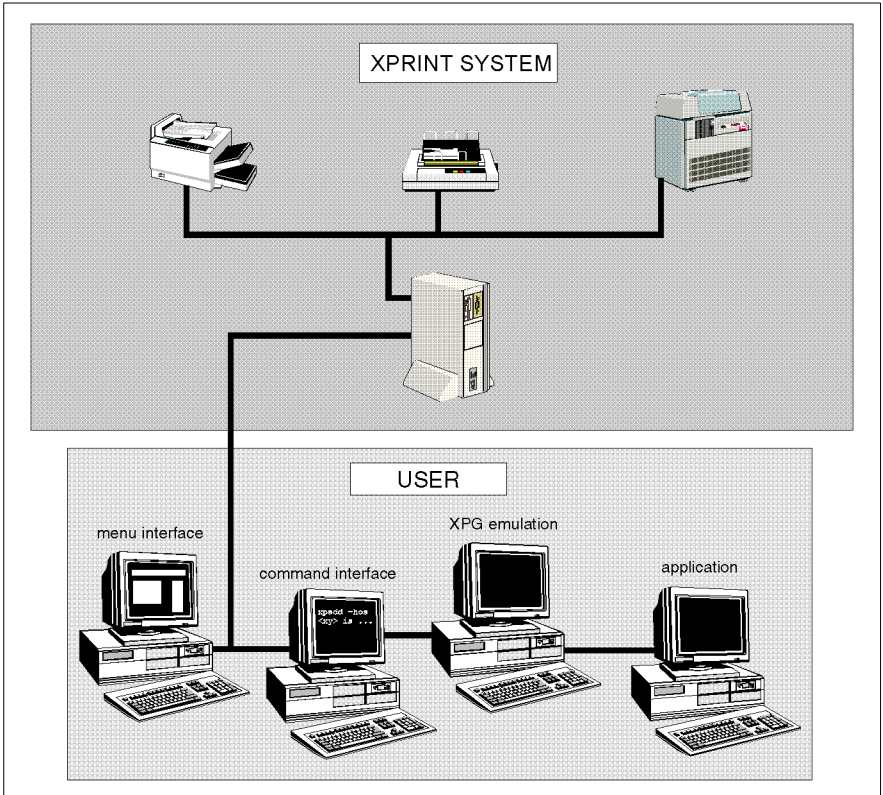
Figure 3: User's options

The various interfaces offer you the following options:

● The menu interface allows you to perform all actions via a graphical user interface.

● Using the command line interface, you can perform all actions by entering Xprint V7.0 commands.

● The XPG emulation allows the use of the X/Open commands `lp`, `lpstat`, `cancel`.

● The application programming interface API enables applications to access the Xprint V7.0 system via C function calls.

2.2   Mercator

Mercator is the graphical user interface for Xprint V7.0. It allows the administrator to have easy access to Host, Devices, Device groups and Job properties. It also provides a quick overview of what is happening in the whole print domain or a subset of it.

One can interface Mercator with several third party viewers, in order to preview the pcl or PostScript files to print (Windows platforms only).

The User Guide gives you an introduction to the product. For more detailed information, see the online help which is available for each window.

2.3   Xprint V7.0 R/3 kit

Xprint V7.0 can be optimally interfaced with SAP R/3 V4.x, and has been certified by SAP as an Output Management System (certification BC-XOM). The Xprint V7.0 R/3 kit offers the following advantages:

– accurate and timely information on the print documents
– real-time asynchronous status feed-back
– tracking of documents
– improved performance
– better support of output devices

You can find more information on the Xprint V7.0 R/3 kit in the Xprint V7.0 Reference Manual.

2.4   Xprint V7.0 elements

This section describes the elements comprising Xprint V7.0 and the possibilities Xprint V7.0 offers its users.

2.4.1   Xprint V7.0 objects

Xprint V7.0 is an object-oriented system. This is also reflected in the way Xprint V7.0 is used. Almost all the Xprint V7.0 commands can be used with the different object types, which is why the number of Xprint V7.0 commands is relatively low. The following section provides an overview of the available objects and their use.

The following objects are defined in Xprint V7.0. The parentheses contain the short name of the Xprint V7.0 objects for use in Xprint V7.0 commands:

● The Xprint V7.0 system (−sys)

  The **Xprint V7.0 system** refers to all the Xprint V7.0 objects which are combined in a common administrative unit, what is called an **Xprint V7.0 domain**. Within the Xprint V7.0 system the **Xprint V7.0 administrator** is allowed to perform all the administrative tasks.

● Gateways (−gtw)

  Gateways allow you to make a connection from one Xprint V7.0 domain to another Xprint V7.0 domain or to other spooler systems. Via these gateways you can use the output devices and device groups of the other system involved.

  Gateways to DPRINT (spooler system for BS2000 systems) or BSD spooler systems (spooler systems supporting the BSD lpr protocol) allow users of the local Xprint V7.0 domain to access the output devices and device groups in these spooler systems. Conversely, it is also possible to access the printers and printer groups of the local Xprint V7.0 domain from DPRINT and BSD spooler systems.

  i Exchanging data with DPRINT requires that the local gateway be defined on a platform which has openFT installed.

● Hosts (−hos)

  Under Xprint V7.0 the term **host** refers to every computer defined in an Xprint V7.0 domain. Hosts are divided into different classes: master, slave and parasite hosts. The difference lies in the way they handle the Xprint V7.0 database.

The **Xprint V7.0 database** contains all the data Xprint V7.0 needs to access Xprint V7.0 resources. This includes information on the defined hosts, users, devices and device groups as well as on forms and all the other Xprint V7.0 objects. Only the print jobs are stored on the server responsible for their execution.

● Servers (−srv)

Servers are the Xprint V7.0 objects which administer incoming print jobs and are responsible for scheduling them. Each **server** administers its own print queue which contains all the print jobs for the devices whose **supervisors** are controlled by the server.

● Supervisors (−spv)

A **supervisor** is directly responsible for controlling one or more devices. It obtains the job data from the superordinate server and forwards it to the backend program (see the glossary entry "Backend" on page 273). One supervisor may control several local devices.

● Device groups (−dgr)

Devices can be combined to form what are called **device groups** to achieve better loading of all the devices in the group. If a print job is sent to a device group, it is printed on the first device to become available in this group.

● Devices (−dev)

Xprint V7.0 can use devices of many different types. The devices are controlled by a **supervisor** and assigned tools, called backends. Also, a **PCL** is assigned to the device.

● Print jobs (−job)

Print jobs are submitted by users and, as described in the previous section, can be modified. They are administered by the **servers** responsible for the respective print queues.

In addition to the normal manipulation options, you can redirect all print jobs for a given device to another device.

● Forms (−frm)

Forms are a convenient way of influencing the appearance of **print jobs**. Forms can be used to define paper and page formats, the layup (portrait or landscape), font, appearance of the information pages and user privileges. Xprint V7.0 differentiates between automatic and manual forms. Jobs using **automatic forms** can be printed at any time: these forms are mounted on

the printer by default and usually only define the hopper or the page format (margins) or the font. If a specific form requires that special paper be mounted in the printer manually or that a font cassette be changed, a **manual form** makes sure that the job is only printed when the printer has been prepared.

● PCLs (−pcl)

PCLs (**printer capability lists**) are used to define what printing options a device provides. Furthermore, the PCL contains information on how the options specified when the job is submitted can be converted to device commands. Xprint V7.0 is supplied with a number of PCLs for the most common printers, and with one generic PCL which in most cases also allows printing on unknown devices. A list of all the PCLs supported by Xprint V7.0 is provided in the Reference Manual.

● Users (−usr)

Xprint V7.0 differentiates between two types of user: there are **users,** who are not defined in the Xprint V7.0 system, and **Xprint V7.0 users, who** are defined in the Xprint V7.0 system. users are all users of the system on which Xprint V7.0 is running; the default settings for Xprint V7.0 apply to them. If these settings are not sufficient, the users can be defined in the Xprint V7.0 system.

The administrator can make more settings for Xprint V7.0 users than for users:

– Xprint V7.0 users can access their print jobs from all the hosts for which they are registered.

– They can be assigned a **security level** and thus be granted access to devices with a corresponding security level.

– **Print quotas** can be defined for the number of jobs or print pages allowed, thus preventing users from making unlimited numbers of printouts.

● Filters (−flt)

Filters have the function of converting the data sent to the device by the user into the format required by the device. This makes it possible, for example, to print normal ASCII files on PostScript printers, as Xprint V7.0 is supplied with the filter vppost. Two types of filter are distinguished under Xprint V7.0: slow filters which are executed before the Xprint V7.0 process, and fast filters which are used to provide a link to objects other than standard components.

- Fonts (`-fnt`)

  Font types supported by the printers in use can be easily accessed through the definition of fonts.

- Job templates (`-jtp`)

  Job templates serve to simplify the use of frequent print commands by allowing the options of the `xpadd` command, which must normally be specified individually, to be combined in groups. These can then be specified via the job template.

- Loadable resources(`-lrs`)

  Loadable resources allow faster printing of jobs that use the same background, logo, soft font etc. They also improve job recovery. A loadable resource must be downloaded to the printer before it can be called by a print job.

  Public loadable resources can be created, modified or deleted for the whole system by the Xprint V7.0 administrator. Individual users can create, modify or delete *private* loadable resources, that is loadable resources that are for their use only.

- Permission lists (`-prm`)

  Permission lists make it possible to define who may use which Xprint V7.0 resources by granting the relevant privileges. The administrator can define the following privileges for users under Xprint V7.0:

  – Which users may/may not use a device or a device group in Xprint V7.0 or other environments.

  – Which users may/may not use a specific form.

  – Which forms may/may not be used on a specific printer.

- Recovery rules (`-rec`)

  Recovery rules are used to describe how specific device conditions are handled. The default recovery procedure in the case of a device error can be overridden by a recovery rule. In the case of the device error "paper_end", for example, the default is for the Xprint V7.0 system to continue trying to print the job until the paper cassette is refilled. You could use a recovery rule to specify a different procedure (for example, to suspend the print job and set the device to `NOT_ACTIVE` until the administrator intervenes).

2.4.2   Options for printing documents

In a network as well as on a stand-alone system, Xprint V7.0 provides extensive functionality for printing documents (see also the Reference Manual):

● Selecting the output device of your choice

   You can print your documents on any device in the Xprint V7.0 system which you are allowed to use. You can choose either an individual device or a device group as the destination. You can also define your personal default device to which every print job is sent for which you do not explicitly specify a destination, and you can access devices which are not available in your own Xprint V7.0 domain via what are called gateways.

● Automatic adjustment of the document type

   Xprint V7.0 allows you to send any document to any device. If the relevant filters are defined, the document type is automatically adjusted to the device type. This makes it possible, for example, to print normal ASCII files on PostScript printers (the filter for this conversion is supplied with Xprint V7.0).

● Printing several copies of a document

   For every print job you can specify how many copies of the entire job are to be printed. Provided the printer supports this option, you can also print several copies of each individual page. In this case, each page is printed several times before the next page is printed.

● Printing parts of a document

   You can also print parts of a document. Here it is possible to define the part to be printed by specifying a range of pages or strings ("print from `abc` to `xyz`").

● Printing at specific times

   For every print job, you can specify a time when it is to be printed. This allows you, for example, to schedule longer print jobs for nighttime printing. In addition, you can define that print jobs which have not been printed by a specific time are deleted automatically.

● Printing at a low priority

   Xprint V7.0 allows priorities to be assigned to print jobs. These priorities are user-specific, which enables print jobs of specific users to be given preference over those of others. Less important jobs can be assigned a lower priority.

- Printing confidential documents

  Every user and every device under Xprint V7.0 has what is called a "security level". This allows you to ensure that confidential jobs are only printed on those devices which feature a corresponding security level.

- Selecting forms

  If there are several forms defined for a device, you can specify which of these forms you want to use for printing. Forms define the page format and the font attributes of a printout. However, you can always change the specifications for an existing form to make it meet your specific needs, for example by specifying a different typeface for a specific job. This also applies if only the default form is defined.

- Using resources that are external to the document

  Documents can be printed using external resources like logos, soft fonts etc. Calls to these resources may belong to the document, or they can be inserted automatically by Xprint V7.0 at the top of the page.

- Notification of the result

  Xprint V7.0 allows you to define how you want to be notified of the status of your print jobs. You can define, for example, that in the event of an error you want user Brown to be notified by mail.

- Direct printer control

  You can also control a specific printer directly and define specific printer settings, such as the line spacing.

- Defaults for print jobs

  Xprint V7.0 allows you to combine all the options mentioned above in what are called job templates. In this way, you can define frequently recurring settings once and then simply retrieve them whenever required. These job templates can be defined by each user.

- Individual, national-language user interface

  By default, Xprint V7.0 uses the national language set for you for displaying messages or menus. You can easily change this language by altering the setting of the environment variable `LANG`.

3 Producing Output with Xprint V7.0

This chapter describes how to print documents using the command line interface. To begin with, it introduces the basic structure of the Xprint V7.0 commands available to the normal Xprint V7.0 user and describes how and where you can obtain additional information on the commands. This is followed by several sections explaining the most important options for printing documents.

3.1 Basic information

This section provides an introduction to using the Xprint V7.0 commands, their basic structure, and how you can access the online help for these commands at any time.

Available Xprint V7.0 commands

Xprint V7.0 provides a number of commands with which you can manipulate the Xprint V7.0 objects. The following table shows the Xprint V7.0 commands you can call as a user:

Command	Use
xpadd	adding print jobs
xpchange	changing the job status
xpdel	deleting print jobs
xpmod	modifying existing print jobs
xpshow	displaying information on Xprint V7.0 objects
xpstat	displaying the status of Xprint V7.0 objects

Table 1: Xprint V7.0 commands

As an ordinary user, you can only use all these commands for the job object. For all other objects you can only use the xpstat and xpshow commands. Only the administrator can also use all the other commands for other objects.

Structure of Xprint V7.0 commands

This section describes the general structure of the Xprint V7.0 commands.

```
Command Object type [Selection] Options
-------------------------------------------------
xpadd    -job              -dr file1 -ct SIMPLE
xpshow   -job        13     -di LONG
xpdel    -job        13
```

Every Xprint V7.0 command is called using this format. The name of the command, e.g. xpadd, is followed by the short identifier for the object type consisting of three characters, e.g. -job. Furthermore, you can select from the objects available of the selected object type, e.g. in the case of the object type -job, you can select one or more specific print jobs. Finally, there are a number of options available for most commands which have an effect on the behavior of the individual commands. For detailed information on the various Xprint V7.0 commands see the "Xprint V7.0   - Reference Manual".

Online help

For every command, you can call online help with the -? option. This online help works on two levels: command and option level.

If you call an Xprint V7.0 command followed by the -? option (e.g. xpadd -?), command level help will be displayed, providing the general form of this command. This type of help displays the objects supported by the command. It also shows the options that are independent of the object type. Not all the options are displayed, however, because these depend on the use of a command and an object together.

Option level help displays all the possible options of a specific object type used with an Xprint V7.0 command. To call the online help at option level, you must specify the command name as well as the relevant object type before the -? option (e.g. xpshow -dgr -?).

3.2   Printing files

This section describes the simplest way of printing files with Xprint V7.0. This might be sufficient for some users while other users will require further options.

Use the following basic command to print a complete document on your default printer:

```
xpadd [−job] −dr selection
```

If you want to print a file, you do not have to specify the object type −job for the xpadd command as this is the default for xpadd. The −dr option (**d**ocument **r**eference) is used to select one or more files for printing. After this option, for *selection*, specify the names of the files to be printed. The command could have the following format:

```
xpadd −dr file

xpadd −dr file1 file2.txt file3.xyz
```

If you have specified only one file, only this file is sent to the printer; if you have specified several files, these are sent to the printer as one block. This block of combined files or the solitary file is called a **print job**.

Instead of the xpadd command you can also use the X/Open command lp to submit a print job. As with the other X/Open commands lpstat and cancel, the lp command is described in the "SINIX - Commands" manual and in the appendix of the "Xprint V7.0   - Reference Manual".

In addition to the −dr option, there are numerous possible options for controlling the printing process. In the following sections many of these options are listed according to topics. A complete alphabetical overview of all the available options can be found in the "Xprint V7.0   - Reference Manual" under the command xpadd −job. The table below serves as a guide through this section.

If you want to ...	Read ...
print a document on a specific device	section "Selecting a printer" on page 19
print parts of a document	section "Printing parts of a document" on page 21
print a document with special data not suitable for the printer	section "Printing files with special content types" on page 23

Table 2: Options for controlling the printing process

If you want to ...	Read ...
print a document with a specific appearance	section "Creating printouts with special formats" on page 24
print the current state of the document	section "Copying print files before printing and deleting them after printing" on page 33
add separator pages between documents or files	section "Defining separator pages" on page 34
print several copies of a document	section "Printing several copies of a document" on page 35
be notified of the completion of your print job or of other events	section "Requesting notification of the result" on page 36
print a document using further Xprint V7.0 options	section "Using further options" on page 37
print a document using predefined fonts or forms	section "Using other Xprint V7.0 objects" on page 41
print a document using loadable resources	section "Using Resources" in the "Reference Manual"
print a document using a predefined job template	section "Printing a document via a globally defined job template" on page 44
print a document with a private job template	section "Defining customized job templates" on page 46

Table 2: Options for controlling the printing process

3.3 Selecting a printer

Xprint V7.0 allows you to print documents on any printer within your Xprint V7.0 domain. You can select any printer for your printout for which you have the required privileges.

There are two possible ways of selecting printers or printer groups for printing in Xprint V7.0. Firstly, you can specify one specific printer (group) for a print job, and secondly, you can define one or more printers as your personal default printers:

If you do not specify a specific printer (group) for your print job, Xprint V7.0 will select a suitable printer according to the options specified for the print job (e.g. double-sided printing, landscape format).

Specifying a printer or printer group for a print job

You can select the printer on which you want to print your document according to various criteria. There are the following options:

-de *destination*

> This option allows you to select a printer or printer group. If you select a printer group, Xprint V7.0 sends your job to a device which belongs to this group. Xprint V7.0 has a load balancing procedure which ensures the jobs will be distributed effectively between the printers in the group. You can display a list of the available printers via the `xpshow -dev` command. The available printer groups can be displayed with the `xpshow -dgr` command.

-pc *pcl*

> Instead of selecting a specific printer by its name, you can also use the printer capability list `pcl` as a criterion, e.g. `POSTSCRIPT`, `HP-LASERJET` or `HP-DESKJET`. In this case, Xprint V7.0 sends your job to any available printer which uses the selected PCL.

Addressing a printer via a gateway

You can also select a printer (group) which is not defined in your Xprint V7.0 domain, provided it can be reached via a gateway. This applies to printers/printer groups which are available in other Xprint V7.0 domains or which are connected to computers running the DPRINT printer spooler (for BS2000 systems) or the BSD printer spooler (for BSD-UNIX systems and other systems with an lpd print server).

To address a printer (group) via a gateway, you must specify both the name of the gateway and the name of the desired destination, separating the names with the `!` character. Only the administrator can find out the name of all the gateways available using the `xpshow -gtw` command.

To address a printer via a gateway, specify the combination *gateway*`!`*printer* as the printer name with the `-de` option.

Defining a default destination

With the shell variable `XP_DESTIN` you can define one or more printers of your Xprint V7.0 domain as the default destination for your print jobs. In this case, each print job for which you do not explicitly specify a target printer will be printed on this default destination. If you have defined more than one printer as the default destination, Xprint V7.0 will select a suitable printer.

To define a default destination, you must set the shell variable `XP_DESTIN` to the names of the desired printers and export it before submitting a print job. The individual printers must be separated by spaces. If you want to define the default destination for every session with your computer, it is recommended that you set `XP_DESTIN` in a file which is processed for every login (e.g., depending on the shell, the file `.profile` or `.xsession` in your HOME directory).

Examples

– To print a document on device `printer1`:

```
xpadd -dr file1 -de printer1
```

– To print a document on printer `printer1` via the gateway `linuxgtw`:

```
xpadd -dr file1 -de linuxgtw!printer1
```

– To print a document on any device belonging to the device group `SP211`:

```
xpadd -dr file1 -de SP211
```

– To print a PostScript file on any PostScript printer in the network:

```
xpadd -dr file2.ps -pc POSTSCRIPT
```

– To print a document on a device with the PCL `HP-LASERJET` belonging to the device group `SP211`:

```
xpadd -dr file2 -de SP211 -pc HP-LASERJET
```

– To configure printer `printer2` as the default destination:

```
XP_DESTIN=printer2; export XP_DESTIN
```

To print `file1` on printer `printer2`:

```
xpadd -dr file1
```

– To configure printers `printer1` and `printer2` as the default destination:

```
XP_DESTIN="printer1 printer2"
export XP_DESTIN
```

To print the file `file1` on one of the printers `printer1` or `printer2`:

```
xpadd -dr file1
```

3.4   Using Xprint V7.0 options

This section describes further options for printing files with Xprint V7.0. The individual subsections describe the various possibilities offered by Xprint V7.0 for printing documents.

3.4.1   Printing parts of a document

i   In raw mode, printing parts of documents is not supported.

By default, all pages of a document are printed when `xpadd` is used. If you want to print only specific parts of the file, use one of the following options to select the sections to be printed:

-ps *page_select*

You can select individual pages or ranges of pages for printing by using one of the following methods:

You can specify individual page numbers separated by commas, e.g.

1,6,7,16
    pages 1, 6, 7, and 16 are printed.

You can specify a range of pages *a-b* where *b* **must always** be larger than *a*:

18-34
    pages 18 through 34 are printed.

3-
    all pages from page 3 onward are printed

--23

> pages up to page 23 are printed.

You can specify combinations of page ranges:

--15,17-

> all pages are printed except for page 16.

--15,27-30,35-

> all pages up to page 15, from page 27 through page 30, and from page 35 onward are printed.

--15,30,35

> all pages up to page 15, page 30, and all pages from page 35 onward are printed.

Finally, you can combine individual pages and page ranges.

> **i** The two hyphens are indispensable and must always be specified if you want to print up to a certain page without specifying a start page.They prevent the minus sign from being interpreted as the beginning of a new option.

If you do not specify any page numbers after the –ps option, all pages of the document are printed (exactly as if the –ps option had not been specified).

-fr *string*

> A string in your document where printing is to start. If Xprint V7.0 does not find the specified string, nothing is printed.

-to *string*

> A string in your document where printing is to stop. If Xprint V7.0 does not find the specified string in your document, the document is printed up to the end.

If the –ps option is combined with the –fr and/or –to option, Xprint V7.0 searches the specified strings in the page ranges defined with –ps.

> **i** If the print job is sent to a device that does not use a PCL, i.e. prints in raw mode (see section "Using further options" on page 37), the options –ps, –fr, and –to are ignored.

Examples

– To print a document from page 5 through page 10:

```
xpadd -dr file1 -ps 5-10
```

– To print a document from page 7 to the end:

```
xpadd -dr file1 -ps 7-
```

– To print a document from page 1 through 5:

```
xpadd -dr file1 -ps --5
```

– To print a document from the string `Example 1` up to the string

```
}/* main */:
xpadd -dr file1 -fr"Example 1" -to"}/* main */"
```

– To select the page range from page 5 to page 19 and print the section starting with the string `abc` up to the string `xyz` in this range:

```
xpadd -dr file1 -ps 5-19 -fr abc -to xyz
```

3.4.2 Printing files with special content types

The basic print command requires that the contents of the specified files can be processed by the printer. However, sometimes this is not the case. For example, a PostScript printer cannot print ASCII files directly. The simple ASCII data in the file must be converted to PostScript format before printing.

Xprint V7.0 can make such conversions automatically if it knows the content type of the file and what the printer expects. The administrator specifies the supported content type when configuring the printer, while the content type of the print data must be specified by the user when defining the print job.

If the two types match, Xprint V7.0 can send the print job directly to the printer; if they do not match, Xprint V7.0 will try to convert the print job data into a format suitable for the printer.

If you do *not* specify a content type, the following will occur automatically:

● Xprint V7.0 will read the start of the data. If `%!` are the *very first* characters, or the string `%!PS` occurs in the first 15 characters, then the content type will be set to `POSTSCRIPT`.

● If this is not the case and only `SIMPLE` characters are detected in the first 15 characters, then the content type is set to `SIMPLE`.

● Otherwise, the content type is set to COMPATIBLE.

If you are printing more than one document, then the content type than is determined for the first document will be used for all the other documents in the job.

3.4.3   Creating printouts with special formats

Usually, a printer is not only capable of printing data on paper but can also do this in different formats. Therefore Xprint V7.0 also allows you to influence the formatting by specifying font settings, the page format, and the character set to be used.

Printing a document with different font settings

The following options allow you to change the default font for a printout. What you can modify depends on the printer you use. If you use the xpshow −pcl command and specify the PCL set for the selected printer, you can display a list of the fonts, styles, character pitches etc. that are supported by the printer, e.g.: xpshow −pcl HP−LASERJET −di LONG.

| i | A font always consists of several components such as typeface, style or font size. You can override these at any time, for example by modifying the font size. |

If you often want to print with such customized settings, you can also define a special job template for this purpose. For more detailed information see section "Defining customized job templates" on page 46.

-tp *typeface*
> This option selects the specified typeface for the print job. Printers are supplied with a number of predefined typefaces. A list of the typefaces available for your printer under Xprint V7.0 can be displayed using the command

> xpshow −pcl −di LONG.

-cs *character_style*
> You can choose between two character styles: STRAIGHT and ITALICS. The default is STRAIGHT.

-hm *horizontal_motion*
> The value *horizontal_motion* specifies the number of characters printed horizontally per inch.

-vm *vertical_motion*

> This option is used to specify the number of lines to be printed per inch.

Selecting the layup

Many printers can print in PORTRAIT and in LANDSCAPE format. In most cases the default is PORTRAIT. The following figure illustrates the possible settings:
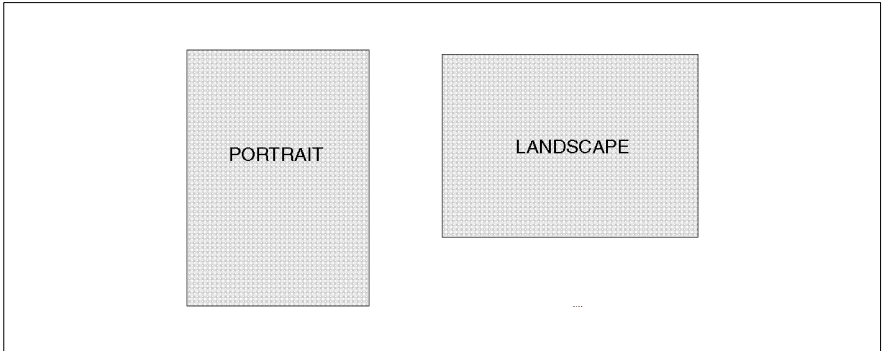
Figure 4: Layup settings

The page layup can be changed with the following option:

-ls *layup_specification*

> This option specifies whether a print job is to be printed in PORTRAIT or in LANDSCAPE format.

Defining the margin settings

When printing under Xprint V7.0, you can also define which part of a page is to be printed on. The following figure provides an overview of the possible settings and is followed by a description of the individual options.

T, B, L and R mark the printer-dependent non-printable area.

The values for the non-printable margin are retrieved from the values nppl and npll of the corresponding PCL object:

    T = B = nppl/2
    L = R = npll/2
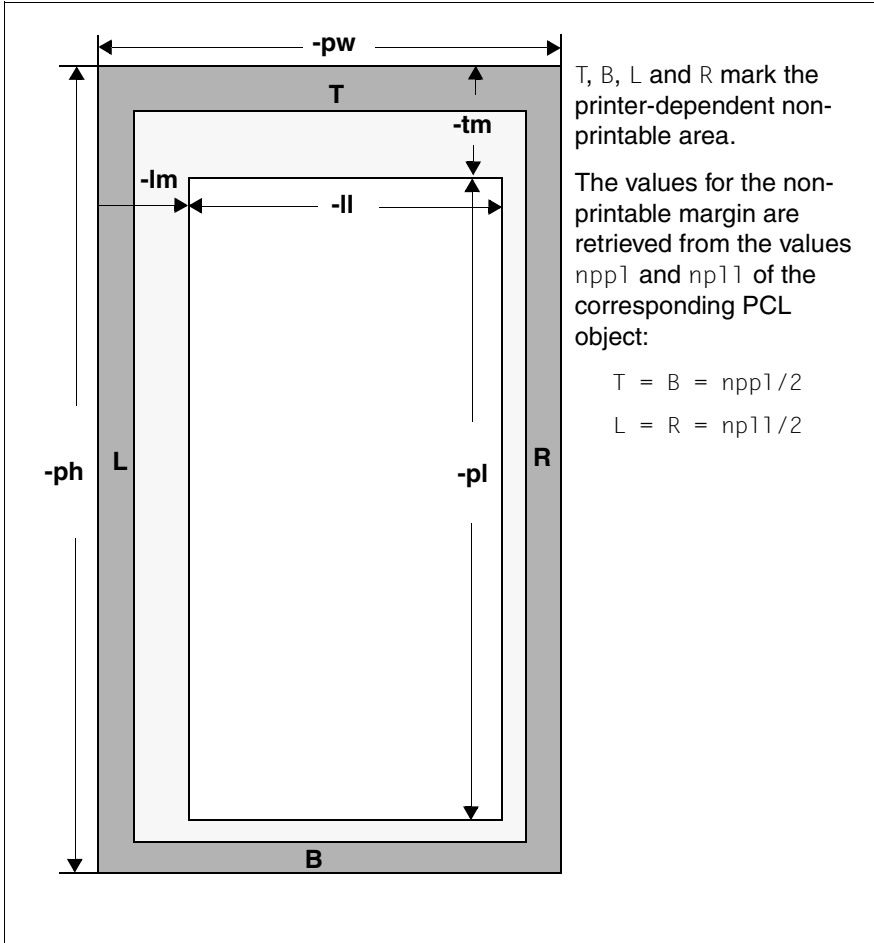
Figure 5: Margin settings

Xprint V7.0 always defines its printable area by means of the logical page specified with the options −pl (page length) and −ll (line length). The margin options −tm (top margin) and −lm (left margin) can also be used for defining the printable area within the physical page. If only the margin settings −tm and −lm are specified, the bottom and right margin of the logical page are defined via the non-printable area. If a logical page is not given, the size of the printable area is calculated from the size of the physical page (−ph for the page height, −pw for the page width) minus the non-printable margins.

-lm *left_margin*

    This option specifies the width of the left margin in inches (*i*), centimeters (*c*) or millimeters (*m*) or, if no unit is specified, in characters.

-ll *line_length*

    This option defines the maximum length of a print line, which indirectly also determines the right margin. This can also be specified in inches (*i*), centimeters (*c*) or millimeters (*m*). If no measurement is specified and no left margin is defined, the value is interpreted as the number of characters per line. If no value is specified, the page width specified with the −pw option minus the printer-specific non-printable margin widths is used.

    This option is controlled by the option −wm (wrap mode), i.e. the line length is modified if the printable line length is exceeded. For more information refer to the "Xprint V7.0   - Reference Manual".

-tm *top_margin*

    This option is used to specify the width of the top margin in inches (*i*), centimeters (*c*) or millimeters (*m*) or, if no unit is specified, in characters.

-pl *page_length*

    This option defines the maximum length of a printed page, and thus indirectly also the bottom margin. This can also be specified in inches (*i*), centimeters (*c*) or millimeters (*m*). If no measurement is specified, the value is interpreted as the number of lines per page. If no value is specified and no top margin is defined, the page height specified with the −ph option minus the printer-specific non-printable top and bottom margins is used.

i   Depending on the printer, the margins on the printout may differ from the set values. Therefore it is advisable to print a sample copy first in order to adjust the values for the printer. Also bear in mind that the printable area is controlled by the −wm option (wrap mode) of the xpadd −job command.

Switching double-sided printing on/off

When printing jobs which comprise several pages, it often makes sense to change the page settings for even- and odd-numbered pages in such a way that they face each other as in a book. The margin settings should be set alternately to result in a symmetrical overall image. The following figure shows the various options for double-sided printing under Xprint V7.0:
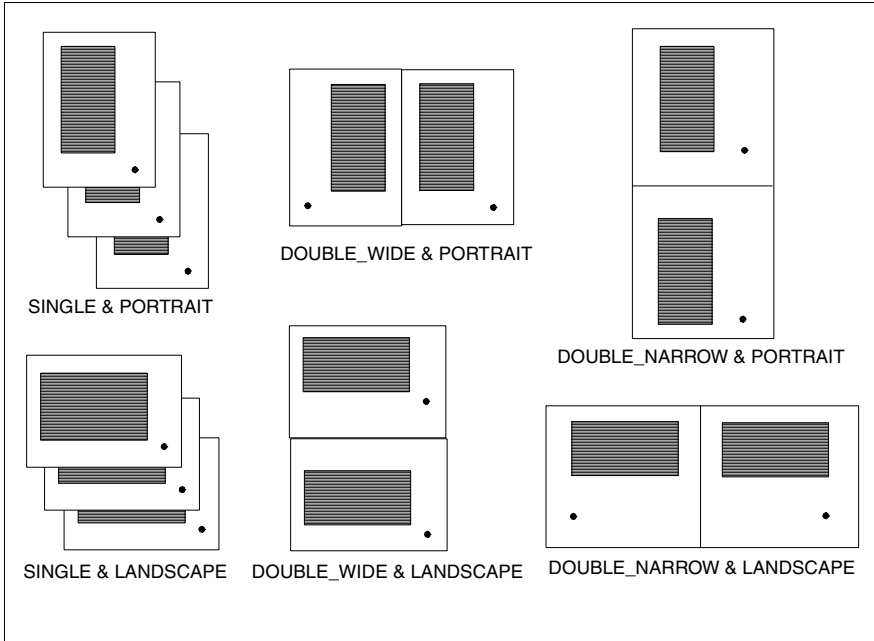
Figure 6: Options for double-sided printing

-sd *side _specification*

> This option is used to specify whether a form is to be printed only on one side (`SINGLE`) or on both sides. In the case of double-sided printing you specify the gutter for the portrait side (`DOUBLE_WIDE`) or for the landscape side (`DOUBLE_NARROW`). By default, single-sided printing (`SINGLE`) is set.

Selecting specific character sets

Depending on the PCL, a printer supports a number of special character sets, e.g. `ENGLISH`, `FRENCH`, `INTERNATIONAL` etc. If you want a job to be printed using a specific character set table, e.g. the character set `INTERNATIONAL`, you must specify this with the option −la *character_set*.

The supported character sets can be seen in the `Language` field of the output of the `xpshow −pcl pcl_name −di LONG` command.

Examples

– To print the document `file1` with a left margin of 5 cm and a top margin of 34 mm:

```
xpadd −dr file1 −lm 5c −tm 34m
```

– To print the file `file1` double-sided (with a vertical gutter):

```
xpadd −dr file1 −sd DOUBLE_WIDE
```

– To print file `english` (created using the English character set) using the character set `INTERNATIONAL`:

```
xpadd −dr english −la INTERNATIONAL
```

3.4.4   Using Loadable Resources

The figure below gives a simplified view of how loadable resources work. This is explained more fully in the following paragraphs.
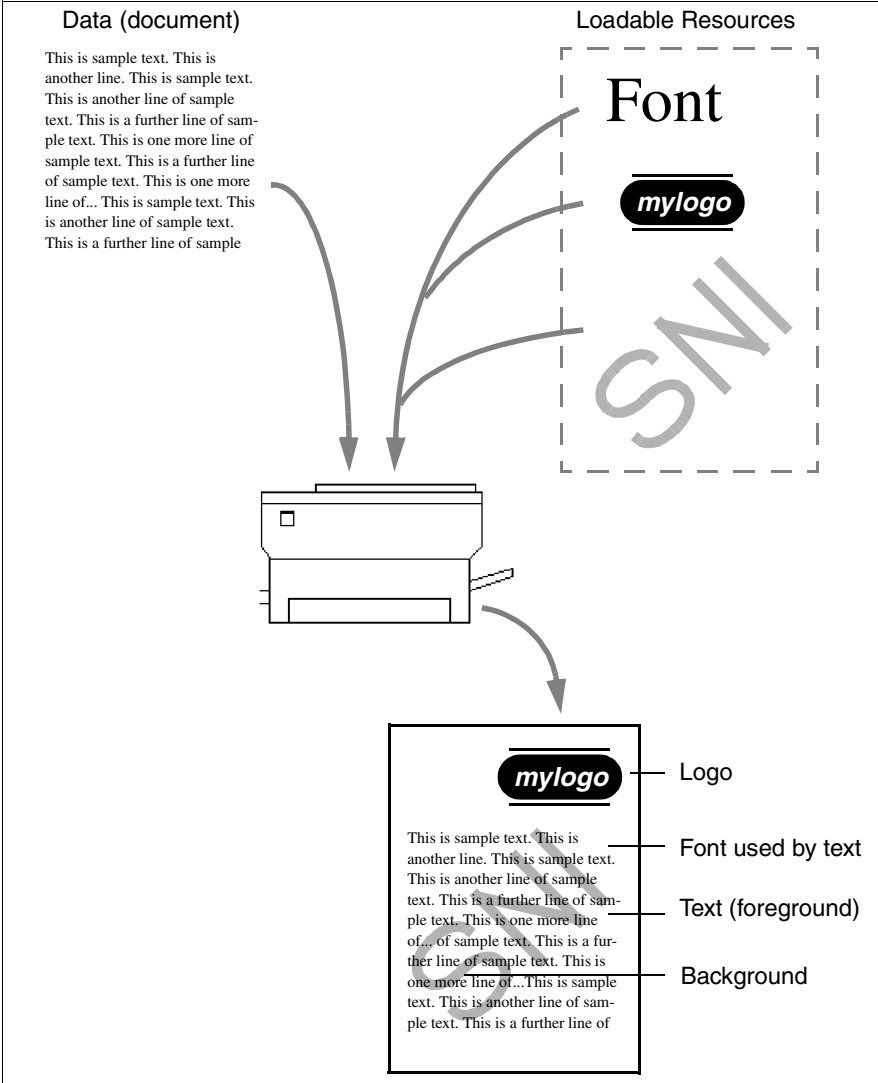
Figure 7: Function of loadable resources

Loadable resources (such as fonts, logos etc.) can be sent to the printer separately from the document. The printer will merge the data and the loadable resource to give the required printed output.

The resources external to the document can be defined as Xprint V7.0 objects called "loadable resources". They can either be predefined by the administrator for the entire system and made available to all users, or they can be defined by each individual user as "private loadable resources". For further information on creating and using loadable resources, see Chapter 4 in the "Reference Manual".

3.4.4.1   Using Public Loadable Resources

The administrator may have configured loadable resources in the system. To print a document that uses resources, use the following option:

-lr *loadable resources*
> With this option, you can reference a list of loadable resources.

Examples

– To display the loadable resources available in the system, use the command
  `xpshow -lrs`

  The system displays a list of all loadable resources that can be used. For example, you could use any of the loadable resources listed below.

```
Name   Type       Administrator   PCL
————   ————       —————————————   —————————
logo   Overlay    root            PJL-PCL5e
font   Softfont   root            PJL-PCL5e
```

> **i**   Please note that only those loadable resources are displayed which have been defined by the Xprint V7.0 administrator. Your own job loadable resources in the `$HOME/.Xprint` file are not displayed but can also be used.

– To print a document with a logo on every page:

  `xpadd -dr mydocument -lr logo -cr ALL`

  Xprint V7.0 is only able to insert calls to resources at the top of a page in a document. Other cases must be dealt with by the user. The user must call the resource with the appropriate escape sequence (see the printer manual) and with the identifier known by the printer. This identifier is shown in the `Internal Id` field in the `xpshow -lrs -di LONG` display.

3.4.4.2   Using Private Loadable Resources

Only administrators can create public loadable resources, but users can create private loadable resources. To do this, create a file named `.Xprint` in your home directory. You can insert as many comment lines as you like, which must start with the "#" character. The definition of a loadable resource starts with its name followed by any options allowed by `xpadd -lrs`. If a definition continues on the next line, the current line must end with a backslash character.

Resources first have to be created with dedicated tools such as FGL or SIEFONT from Siemens. These tools will generate the data to be downloaded to the printer. The name of the generated file can be saved in a loadable resource object. Each resource needs its own identifier in the printer. This identifier has to be reflected in the resource object as the "printer internal identifier". The description of a resource can be registered in a loadable resource object.

Resources may be called from documents if they include printer commands that call the resource.

Examples

– The following example shows the definition of several loadable resource objects.

```
# Private .Xprint file
#
# Loadable resources
# everypage logo
mylogo -pi 101 -pc HP-LASERJET -tp Overlay -ec
       -fi $HOME/lrs/mylogo.hp -cr ALL
mybckgrd -pi 102 -pc HP-LASERJET -tp Overlay -ec
        -fi $HOME/lrs/mybckgrd.hp
```

– Jobs can use the loadable resources as follows:

```
xpadd -dr mydocument -lr mylogo
xpadd -dr mydocument -lr mylogo mybckgrd
```

> **i** If a private loadable resource has the same name as a predefined (public) loadable resource, the private one is given preference when the name is selected. This means that first your `.Xprint` file is searched for private loadable resoures. If none can be found, or the `.Xprint` file does not exist, or the `.Xprint` file is not readable, then the resource is assumed to be a public loadable resource.

For inter-domain printing, resources are assumed to be available in the remote domain. This restricts resources to public ones.

3.4.5 Copying print files before printing and deleting them after printing

The basic command `xpadd −dr file` prints the specified file by adding to the job queue a reference to the original file. If there is some time between job submission and the actual printing, any changes made to the document during this time also affect the printout. This is not always desirable. For this reason, Xprint V7.0 allows you to make a copy of the data to be printed. This can be done using the following option:

-cp (cp stands for **c**op**y** file)

This option causes a copy to be made of the document to be printed. This way the original file can immediately be edited further or can be deleted without these modifications affecting the printout.

Another option causes a file to be deleted immediately after printing:

-rm (rm stands for **rem**ove file after printing)

This option causes all the specified files to be deleted after the printout. If the printout is not finished, for example due to an error or because the job was canceled, the files are not removed from the system. If a retention period was specified with the −rp *retention_period* option, this file is only deleted when this period of time has elapsed. If Xprint V7.0 is not active on the relevant host system at the scheduled delete time, the files cannot be removed.

i If the options −cp and −rm are used simultaneously, the −rm option is ignored without notice and only −cp is interpreted.

3.4.6   Defining separator pages

With printers which are used by many users at the same time or when listing
paper is used, it can make sense to add separator pages between the different
print jobs. This makes it easier to distinguish the print jobs of the individual users
or two different print jobs. For this purpose, Xprint V7.0 offers the option of
defining print jobs with a start or end sheet. Additionally, individual files of one
job can be separated by adding separator sheets.

-js *job_start_sheet*
-je *job_end_sheet*
-sp *separator_sheet*

> With a print job you can specify whether start and end sheets are to be
> printed, or in the case of several documents also separator sheets between
> the documents. The variables of these options can be set to the following
> values: BRIEF, FULL and NONE. The default is NONE.

Example

To insert a start sheet of type BRIEF and separator sheets of type FULL for print
job job1:

```
xpadd -dr file1 file2 file3 -jt job1 -js BRIEF -sp FULL
```

3.4.7 Printing several copies of a document

There are two possible ways of printing several copies of a document. Firstly, you can print the entire document, and secondly you can print each page of the document several times. The difference is that in the first case the copies of the document are sorted while in the second case they are not. The second option, however, might be faster if the printer itself can print several copies of individual pages (e.g. HP-LASERJET printers).

You can define the number of copies for the entire document using the following option:

-fc *number*

> *number* defines the number of copies of the specified documents to be printed. If this option is not specified, exactly one copy of each document is printed.

If you have access to a printer supporting multiple printouts (e.g. an HP-LASERJET printer), you can use the following option to print several copies of each individual page:

-fp *number*

> In this case, *number* defines how often each page of the job is to be printed.

> **i** This option is not supported by PostScript printers.

Examples

– To print three copies of a document:

```
xpadd -dr file1 -fc 3
```

– To print five copies of pages 1 through 5 of a document one after the other:

```
xpadd -dr file1 -ps 1-5 -fp 5
```

3.4.8   Requesting notification of the result

Xprint V7.0 allows you to have a message about the result of a print job sent to you. This is particularly useful if the period of time between the job's submission and its execution is fairly long (e.g. in the case of scheduled print jobs and jobs with a low priority). For this purpose, Xprint V7.0 provides several options for the `xpadd` command:

-ev *events*

> With this option you can specify the events of which you want to be notified. Possible events are: `ALL`, `DEVICE_ERROR`, `MOUNTING` and `NONE`. The default is `NONE` for local jobs, or `REJECTED_FROM_REMOTE_DOMAIN` if the job was sent via a gateway (or `ALL` if either of the options `-nm` or `-na` is specified). Further settings are `STARTED`, `COMPLETED`, `ABORTED`, `SUSPEND`, `RESUMED`, `DEVICE_ERROR`, `USER_ERROR`, `MODIDFIED` and `SENT_TO_REMOTE_DOMAIN` (a detailed description of these keywords is given in the "Xprint V7.0   - Reference Manual").

-nm *notification_method*

> With this option you can specify how you want to be notified. The default is `MAIL`, other possible settings are `WRITE`, `COMMAND` and `FILE` (see the "Xprint V7.0   - Reference Manual" for details).

-na *notification_address*

> With this option you specify where the message is to be delivered.

-nd *comment* (nd stands for **n**otification **d**escriptor*)*

> Allows you to define a comment that is to be added to the message.

Examples

–   To request a message to be sent to yourself via the `write` command when the job is completed or aborted:

```
xpadd -dr file1 -ev COMPLETED ABORTED -nm WRITE
```

–   To log all the events of the print job in the file `/home/baxter/print.log`:

```
xpadd -dr file1 -nm FILE -na /home/baxter/print.log
```

–   To notify user `smith` of every modification of the print job via `mail`:

```
xpadd -dr file1 -ev MODIFIED -na smith
```

–   To send a job to a gateway and request information in the event of an error:

```
xpadd -dr file1 -de gateway1!printer1 \
      -ev REJECTED_FROM_REMOTE_DOMAIN
```

3.4.9 Using further options

This section describes further useful options of the xpadd command.

Printing in raw mode

Besides printing on predefined forms, Xprint V7.0 allows you to specify
formatting and printer control sequences for the printer yourself. This can be
done with the −rw option (raw mode). Xprint V7.0 sends the document to the
selected printer without making changes to your formatting. This option is
particularly useful if you use the xpadd command as a print command for an
application program which formats the print data itself.

Retention period of print jobs

When the print process is finished, the information which can be displayed with
xpshow and xpstat is also deleted from the spooler system. If you want this
information to still be available, you can specify a period of time in minutes with
the option -rp *retention_period*. This defines how long the print job is to be
retained in the system after its completion. The default is 0 (remove immedi-
ately).

> **i** If you specify the keyword INFINITE, the print job remains in the system
> permanently.

Printing a document directly

To send a document directly to the printer by bypassing the print queue, you can
use the option −dp (stands for **d**irect **p**rinting). This option allows quick printing
of a document; you cannot, however, modify the print job (xpmod or xpchange) or
request information on the job (xpshow). You can only select one printer, which
must be disabled for normal Xprint V7.0 spoolout by the Xprint V7.0 adminis-
trator. You are only assigned a local rather than a global ID for the print job you
submit. This local ID can be used to delete the job (xpdel) or display its status
(xpstat).

Initial state of a print job

When a print job is transferred to the spooler, it is automatically assigned the
status WAIT (waiting for printout). You can, however, also assign it the status
SUSPEND (to defer it) or TOP (to move it to the top of the print queue) with the −st
option if your Xprint V7.0 administrator has given you the required permission.

The −wa option (wait activation) allows you to assign the status SCHEDULED to the print job. This means that the print job is added to the print queue and moves in it according to its priority. When it comes to the top position, the printer to which the job is assigned is no longer available for other jobs. Only when the print job is explicitly assigned the status ACTIVE (xpchange −job, option −st ACTIVE), is printing started. When the print job is completed, the printer is released for use by other print jobs again.
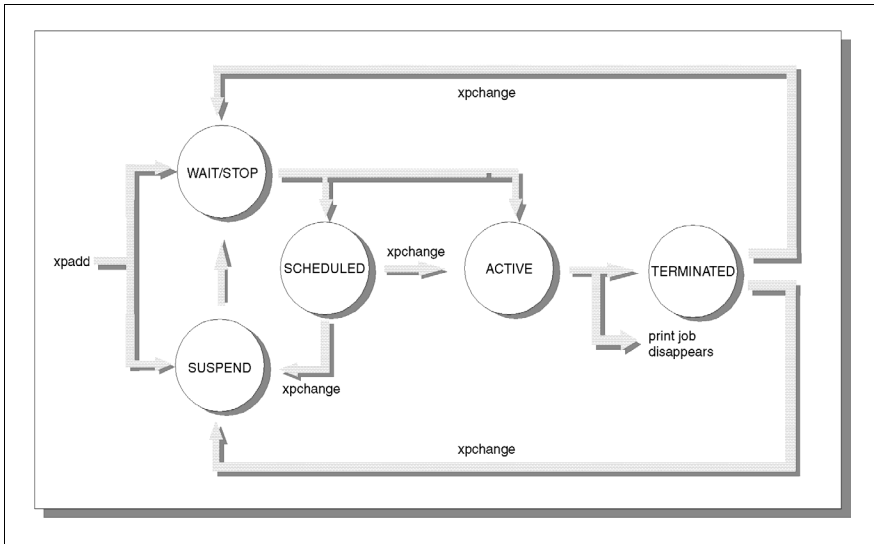
Figure 8: States of print jobs

Extended options

The -ex flag has been introduced to extend the set of pre-defined object attributes in a flexible way.

The purpose of this option is twofold:

● adapt product behavior via predefined variables.

● collect and store any interesting information for the user or the administrator in a structured way.

   Example:

– the room number where the printer is located

– the page cost of a printer

– the e-mail adress of a user

– the operating system of a host...

It consists in a list of strings that can be stored in all Xprint V7.0 objects. Each string must respect the following format: "`<variable>=<value>`".

Example:

```
<command_name> <object_type> name [...] [operand] [options] −
ex "variable1=value1" "variable2=value2" [...]
```

Besides the options mentioned above, there are numerous additional options for printing files with Xprint V7.0. For a complete overview of all the possible options see the description of the `xpadd −job` command in the "Xprint V7.0 - Reference Manual".

3.5   Using other Xprint V7.0 objects

The previous section has already mentioned a number of options which are in some cases closely related to each other. For example, the options for defining font settings and the options for defining page settings are logically connected.

Xprint V7.0 responds to this fact by providing two objects which combine logically connected settings. These are the objects font (−fnt) and form (−frm). With the help of objects of these types, the corresponding settings can be defined globally and called up for printing.

Instead of specifying several options, e.g. for defining the font settings, you only need to specify a single option which will activate a predefined font. Here the following applies:

A font comprises all the options for font settings, a form comprises a font as well as all the options for page and margin settings for a printout. Fonts are assigned to forms and these in turn are assigned to printers. By default, every printer is assigned the GENERIC form which defines the default settings for the printer. An administrator can define new fonts or forms and assign these to printers. A user can only assign these objects to his/her print jobs, thus overriding the default settings.

Selecting a font or form does not mean, however, that all the options defined by this object must be accepted exactly as they are. Every user can assign to a job a predefined form and additionally specify single options which will override the settings defined by the form.

Fonts and forms are selected with the following options:

-ft *font_name*

> If you want to use a predefined font for printing your document, select the font *font_name* with the −ft option. You must, however, make sure that the printer to which your print job is sent supports the selected font. You can display a list of the defined fonts with the xpshow −fnt command.

-fm *form_name*

> *form_name* is the name of a predefined form on which you want to print your document. You can display a list of all the available forms with the xpshow −frm command.

There are two types of form: AUTOMATIC and MANUAL. This differentiation is due to the fact that there are forms which require manual intervention at the printer (e.g. changing paper or font cassettes) and others which do not.

i	Jobs using forms of the type MANUAL, which require manual intervention at the printer, are only printed when Xprint V7.0 is informed that the required steps for printing these jobs have been performed. For this purpose Xprint V7.0 provides the xpmount command which sends this information to Xprint V7.0.

Printing a document with a MANUAL form

To print a document with a MANUAL form, proceed as follows:

● Submit the print job and select the required form:

```
xpadd −job −dr file −fm form
```

● Prepare the target printer accordingly.

● Now tell the system that the form is mounted and printing can thus be started. Use the following command:

```
xpmount
```

By means of menus the system then asks you to specify the mounted form and target printer (see example). When the required specifications are made, the system starts printing the document.

The xpmount command also provides the options −f *form*, −d *printer* and −s (silent mode, i.e. the user is not asked for mount confirmation); this allows you to avoid the menu selection by explicitly specifying the relevant values.

● If you need to print with normal settings again, make the required changes on the printer.

● Notify the system of this:

```
xpmount −f− −d  printer
```

where the option −d *printer*, i.e. the printer from which the form was removed, **must** be specified.

Examples

– To display all defined forms :

```
xpshow -frm
```

A list of all the available forms is displayed, which might read as follows:

```
Name       Default font   Layup        User perm.   Mount method
----       ------------   -----        ----------   ------------
GENERIC    GENERIC        PORTRAIT                  AUTOMATIC
LETTER     COURIER        PORTRAIT      perm1       AUTOMATIC
A5LAND     GENERIC        LANDSCAPE                 MANUAL
MANUAL     GENERIC        LANDSCAPE                 MANUAL
```

> **i** Forms with the value MANUAL in the Mount method column require specific manual settings to be made (e.g. mounting the correct paper, see section "Printing a document with a MANUAL form" on page 41).

– To print a document using the form LETTER:

```
xpadd -dr file1 -fm LETTER
```

– To print a document via the form A5LAND, but using the font COURIER:

```
xpadd -dr file1 -fm A5LAND -ft COURIER
```

– To print the document file1 on the printer printer1 with the (manual) form A5LAND:

```
xpadd -job -dr file1 -de printer1 -fm A5LAND
```

The user mounts the required form.

```
xpmount
```

The following menu query is displayed:

```
Please select the manual form to mount on the device.
Selection:
    0. Unmount the form
    1. manual
    2. A5LAND
Type number or"?" for help:
```

Input: *2*

```
Form"A5LAND" has been selected.
```

```
Please select the device where the form"A5LAND" will be
mounted.
```

```
Selection:
    1. printer1
    2. printer2
    3. printer3
Type number or"?" for help:
```

Input: 1

```
Device"printer1" has been selected.
Please mount"A5LAND" on device"printer1".
Type "y" when finished or"?" for help:
```

Input: y

```
Form"A5LAND" is now mounted on device"printer1".
```

The printer now starts printing the document `file1`. When printing is finished, the user removes the form from the printer and notifies the system of this:

```
xpmount -f- -d printer1
```

Again the confirmation is displayed on the screen:

```
Form unmounted for"printer1"
```

– To print the document `file2` on printer `printer2` using the form `manual`:

```
xpadd -job -dr file2 -de printer2 -fm manual
```

The user mounts the required form.

Then he/she enters the command `xpmount`, this time avoiding the query by specifying the required values explicitly:

```
xpmount -f manual -d printer2 -s
```

Xprint V7.0 confirms with the following message:

```
Form"manual" is now mounted on device"printer2".
```

The printer starts printing the document `file2`.

When printing is finished, the user unmounts the form on the printer and notifies the system of this:

```
xpmount -f- -d printer2
```

Again the confirmation is displayed on the screen:

```
Form unmounted for"printer2"
```

3.6   Job templates

Just as different font settings can be combined in the font objects, print job settings can be combined in an Xprint V7.0 object. This is called a job template (−jtp). Job templates can either be predefined by the administrator for the entire system and made available to all users, or they can be defined by each individual user as private job templates.

In Xprint V7.0, jobs are sent to a device, a device group, or to an unspecified target. This is different to a number of other print spoolers, where jobs are sent to a qualified print queue. Sending jobs to a qualified print queue allows administrators to associate print characteristics with each queue (e.g. a form, a print density etc.). For the users, this means that selecting a queue automatically selects the characteristics associated with that queue. Using this approach, each physical printer can be associated with several logical queues, each logical queue having its own characteristics.

The Xprint V7.0 job templates work in a similar way. Administrators can define job templates, to which they assign a job destination (device or device group), with print characteristics. If users submit their jobs by using templates instead of specifying a destination, this has the same effect as using the qualified queues of the other spoolers.

3.6.1   Printing a document via a globally defined job template

The Xprint V7.0 administrator might have configured job templates in the system. These contain all the options required for frequently submitted print jobs of a specific type. Users no longer have to enter the individual options but simply select the appropriate template.

To print a document with a job template use the following option:

-te *job_template*

   With this option you can use exactly one predefined job template or a job template you have defined yourself for your print job.

Examples

–　To display the job templates available in the system:

```
xpshow -jtp
```

The system displays a list of all the job templates the Xprint V7.0 adminis-
trator has defined. This list can look, for example, as follows:

```
Name           Destination     Form      Font        fc    pr
rm
────           ──────────      ────      ────        ──    ──    ──
letter1     printer1                                 001   020   RESET
letter2     printer1                                 001   001   RESET
template1                    A5LAND    TIMES         001   001   RESET
```

You can use any of the listed templates for your print jobs.

> **i** Please note that only those job templates are displayed which have
> been defined by the Xprint V7.0 administrator. Your own job templates
> in the $HOME/.Xprint V7.0 file are not displayed but can also be used
> (see next page).

–　To use the predefined job template template1 and overwrite the template's
priority, making it 5:

```
xpadd -dr file1 -te template1 -pr 5
```

For the printout, the options defined for this template are used instead of the
-te option.

> **i** Do not confuse option -te *job_template* with -jt *job_title*.
>
> You can modify the options defined in the selected job template by
> explicitly specifying the relevant options with the modified values in
> the command line:

```
xpadd -jtp my_job -pr 10
```

```
xpadd -dr file_1 -te my_job -pr 15
```

The job is spooled in with the priority 15.

3.6.2 Defining customized job templates

Not only the system administrator but also the users themselves can define job templates. To do this, create a file named .Xprint V7.0 in your home directory.

You can insert as many comment lines as you like. Comment lines must start with the '#' character. The definition of the job template starts with the template name. This is followed by the options for this template. All xpadd options are allowed. Strings must be enclosed in inverted commas or quotes, e.g. -jc 'a comment'. If a definition is to be continued in the next line, the current line must end with a backslash.

i	Job templates are a convenient way of combining recurring option sequences to form a template (e.g. if you want to assign a specific font to a specific paper format). In this way you do not have to specify all your selected settings for every print job. When defining a customized job template, you do not necessarily have to define all settings but you can also modify the settings of an existing template such that it meets your requirements.

Examples

– The following example shows several simple job templates:

```
# Private .Xprint file
#
# JOB TEMPLATE
# for letters:
letter     -de printer1 -fm form3 -la USA -jt letters -cp
#
# for ASCII files on PostScript printer printer2:
a2ps     -de printer2 -ct SIMPLE -cp
#
# with notification of success or failure:
notification  -ev COMPLETED ABORTED -nm WRITE\
              -nd 'Send message on termination'
```

– This example shows the templates letter and notification. The templates are then used as follows:

```
xpadd -dr file1 -te letter

xpadd -dr file1 -te notification -pr 5
```

For the printout, the options defined for this template are used instead of the specified -te option.

i If a customized job template has the same name as a predefined job template, the customized one is given preference over the predefined template when this name is selected. This means that your `.Xprint V7.0` file is searched first for the customized job template. If it cannot be found, the `.Xprint V7.0` file does not exist or is not readable, the job template is assumed to be a globally defined template.

4 Managing print jobs

This section shows the possible ways of displaying, modifying or deleting a submitted print job. The following table serves as a guide through this section:

If you want to ...	Read ...
display a print job	section "Displaying print jobs" on page 55
modify a submitted print job	section "Modifying a submitted print job" on page 61
delete a print job	section "Deleting print jobs" on page 65

Table 3: Managing print jobs

As you have to select submitted print jobs to be able to delete or modify them, the following section "Selecting a print job" first describes the possible ways of selecting print jobs.

4.1 Selecting a print job

To manage a submitted print job, you must first select the job. You can only select print jobs which are still in a print queue.

There are several different ways of doing this. This section describes how to select individual print jobs via the job's default identifier or how to select one or more print jobs via a selection criteria list.

The job identifier

When you submit a print job, it is placed in a print queue. If your print job is accepted for printing, Xprint V7.0 automatically returns unique IDs by which you can identify your print job in the print queue. These IDs have the following formats:

<local ID><global ID>

or

<global ID><permanent ID>

The *local ID* is a number specifying the serial number of the job for your host. It can only be used on the host on which the print job was started.

The *global ID* consists of the name of the server which processes the print job and a serial job number for this server. This ID can be used from any host on which you are registered as a user.

The *permanent ID* is an extension of the local ID, intended to be unique in time, i.e. never reused for another job. The permanent job ID is made of the client host name, a counter that garantees the permanence of this identifier and the local ID.Please refer to page 51 for a complete description of the permanent ID.

A job ID might, for example, read as follows:

```
<18><se1:97>
```

In this example, `18` is the local job ID, `se1` is the server name and `97` is the serial job ID on this server.

You should note these IDs in case you need to access the print job before its execution is completed. If you do not know the ID of the print job you want to access, you can request a list of all your print jobs (see section "Displaying print jobs" on page 55).

In addition, the print job is always assigned a job title, which is either the same as that of the print file (in the case of a job with several files it is the name of the first file), or which has been specified explicitly with the $-jt\ job\_title$ option.

If you select a print job via its identifier, you can use the number as well as the job title.

This is illustrated by the following example:

```
xpadd -dr file1
XP000002: Job <18><se1:97> added
```

You can select this print job using the following methods:

```
xpstat 18
xpstat file1
xpstat se1:97
xpstat se1:file1
```

| i | Note that, unlike the job ID, the job title is not always unique. If there are several jobs with the same title, specifying this title selects all of them. |

You can also use the wildcards `*` and `?` when specifying the job title. These have the same meanings as with UNIX commands. `*` represents any number of characters, `?` represents exactly one character. The following example selects all the print jobs at the server `se1` whose job title starts with `da`:

```
xpstat -job se1:da*
```

The permanent job identifier

The permanent job identifier is usable in the same way as the local job id in the

PRISMAnet domain.

A new key has been integrated in the job structure to garantee the permanence

of the job identifier, which means it will never be assigned to another job.

The permanent job identifier format is: H@C@L

Where

H:is the client host name to make the permanent id single in a domain.

@:is the first separator character.

C:is a counter of 10 digits (it will never be reset).

@:is the second separator character.

L:is the local job id.

It will be possible to select a job with a permanent job id in the following commands:

– `xpchange`

– `xpdel`

– `xpmod`

– `xpshow`

– `xpstat`

When a job is submitted, Xprint V7.0 displays the permanent-id or the local job id if the value of the extended option of xpadd or whether the environment variable "`XP_SHOW_PERMANENT_ID`" is set to "1".

Example:

```
# xpadd -de device -dr filename -ex "XP_SHOW_PERMANENT_ID=1"
```

```
XP000002: Job <d241s081@0000000245@1> (<d241s081:8>) added
```

Or

```
# XP_SHOW_PERMANENT_ID=1
```

```
# export XP_SHOW_PERMANENT_ID
```

```
# xpadd -de device -dr filename
```

```
XP000002: Job <d241s081@0000000245@1> (<d241s081:8>) added
```

The permanent job id is only usable locally on the submission host as it is the case with the local job id.

Example:

A job with the permanent job id "host1@0000003049@5" has been added on host1 and the following command is submitted from host2:

```
# xpshow host1@0000003049@5

L. jid Global jid Originator Destination Form fc  pr

–––––– –––––––––– –––––––––– –––––––––––– –––– –– ––

XP000093: <host1@0000003049@5> not accessible
```

Selection criteria lists

You can also access submitted print jobs via what are called **selection criteria lists**. In this case you can select print jobs via specific criteria, such as the printer to which the job was sent, its priority, the scheduled print time, etc.

Selection criteria may be specified for all commands with which you can display, modify or delete print jobs. Use the following option:

-scl "*selection_criteria_list*"
> This option allows you to select print jobs according to criteria which must be enclosed in double quotes. The selection criteria are all the options which were specified when the print job was defined, except for $-jt$ *job_title*, -te *job_template* and $-sx$ (silent execution).
>
> In the case of options without arguments (Boolean options) you can select the relevant option by means of a following $+$ (set) or $-$ (not set) sign.
>
> In the case of options which allow for the use of several combined values, normally those jobs are selected for which at least the specified values are set. For an exclusive search for print jobs with exactly the specified values, the option must be followed by the $=$ sign.
>
> The wildcards $*$ and ? are allowed for non-numerical arguments.

Examples

– To delete all print jobs for printer printer1:

```
xpdel [–job] –scl "–de printer1"
```

– To display all print jobs with the priority 5 and the content type SIMPLE:

```
xpshow [-job] -scl "-pr 5 -ct SIMPLE"
```

– To display all print jobs for which the option −cp was specified:

```
xpshow [-job] -scl "-cp+"
```

or

```
xpshow [-job] -scl "-cp"
```

– To display all the print jobs for which the option −cp was **not** specified:

```
xpshow [-job] -scl "-cp-"
```

Examples of the output formats SHORT and LONG

– To obtain a SHORT display, enter the following command:

```
xpshow [–job] –scl "–de printer1" [–di SHORT]
```

You will obtain the following display:

```
L.jid  Global jid  Originator  Destination   Form  fc   pr
–––––  ––––––––––   ––––––––––  –––––––––––   ––––  ––   ––
1      si511:7      xprintadm    printer1           001  001
```

– To obtain a LONG display, enter the following command:

```
xpshow [–job] –scl "–de printer1" –di LONG
```

You will obtain the following display:

```
LOCAL JOB ID: 2
Global job id: si511:8 si511:/etc/passwd
Permanent job id.: d241psap@0000000036@2
Document references: etc/passwd
Destination: printer1    pcl:    Original job size:2788
Candidate printers: printer1
Form:        Font:  No validation: RESET
Job priority: 020 File copies: 001   Page copies: 001
Page select:
From string:          To string:
Originator: xprintadm   Security level: UNCLASSIFIED
Submission time: Wed Aug 30 16:44:04 MET 1995
Submission host: nile
Print after: Wed Aug 30 16:44:04 MET 1995   Retention time:
Retention period: 0   Remove: RESET   File(s) copied: RESET
FF mode:    Wait activation: RESET
Wrap mode: NONE   Tab space: 08   Raw printing: RESET
Hopper number: 00 Output bin: 00 First page behaviour: RESET
Loaded files:
Map table:   Content type: COMPATIBLE   No filter: RESET
Special print modes:
Notification events: NONE
Delivery method: MAIL     Delivery descriptor:
Delivery address:
Slow filters:
Submitted command: xpadd –de printer1 –dr/etc/passwd
Extended options:
Comment:
```

4.2   Displaying print jobs

You can display individual or all print jobs in the print queue. Information on your print jobs can be obtained with the commands xpshow and xpstat which also allow you to view the status of your print jobs :

i	The xpshow and xpstat commands can be used to display the attributes of all objects in Xprint V7.0. Therefore the following applies not only to print jobs but to all Xprint V7.0 objects.

xpshow provides all the static attributes of objects (i.e. those which are not modified by the Xprint V7.0 system itself), while xpstat provides information on the dynamic criteria. The two corresponding commands xpmod and xpchange can be used to modify or change the settings of Xprint V7.0 objects. xpmod modifies the static settings while xpchange changes the dynamic state.

List of print jobs

You can display a list of print jobs to find out, for example, the names of the existing print jobs.

● To display a list of all the existing print jobs, use the following command:

xpshow [−job]

This command returns a table with all the print jobs you can access. This table contains only the most important information.

Detailed information on print jobs

You can output more detailed information on one or more print jobs to find out, for example, which options are set for the print jobs.

● To display detailed information on a print job, use the following command:

xpshow [−job] [*job*] −di LONG

For *job* you can specify either a job identifier or a selection criteria list. Information on the selected print jobs is then displayed job by job. If you omit *job*, you receive information on all the existing print jobs.

The output of xpshow −job is self-explanatory and therefore not described here.

Selected information on print jobs

You can also display only specific attributes of print jobs. This is again achieved by means of parameter lists or templates.

Displaying attributes via parameter list

● If you only want to display specific attributes for print jobs, use the following command:

  `xpshow −di "parameter_list"`

  The selected attributes must be specified for *parameter_list*, listing the individual parameters in one string.

  In addition to the options of the `xpadd −job` command, the following options can be used:

  -lj   to display the local job ID

  -id   to display both the local and global job IDs

  -gj   to display the global job ID

  -pj   to display the permanent job ID

By default, both the local and the global job identifier are output first in two separate columns. To override this, you can use the `−id−` option. If you want these identifiers to be output at a different position, insert `−id` at the position you want in the parameter list.

Furthermore, specifying `−lj` or `−gj` also overrides the default output of both identifiers.

| i | The options `−te` and `−sx` of the `xpadd −job` command cannot be used as they do not correspond to an attribute of the job definition. |

Displaying attributes using display templates

If you frequently use specific attributes for the display of print jobs, you can define a template containing all these attributes. Then, to obtain a display, you only call the name of this template; i.e. you do not have to specify a list of attributes each time. The template is stored in the special file `.Xprint V7.0` in your login directory.

● Use the following command to call a display template:

  `xpshow −di display_template`

where *display_template* represents the name of the template you want to use.

Defining a display template

To define a display template, proceed as follows:

● Open the `.Xprint V7.0` file in your login directory.

● Enter the new display template as follows:

display_template parameter_list

display_template is the name of the template under which the display template will be called with the `xpshow ... −di` *display_template* command.

parameter_list represents a list of options of the `xpshow −job` command. Here you use exactly the same options as described under "Displaying attributes via parameter list" on the previous page.

> **i** Your system administrator can also define display templates. These are saved in the `.Xprint V7.0` file in the `/var/spool/Xprint/config` directory. This file is searched if the template is not found in your private `.Xprint V7.0` file.

Further display settings

By means of environment variables which you set before calling the display template, you can define various characteristics of the display:

`XP_FS`:

> With this variable you define the character which is to be used to separate the horizontal fields. If you do not specify a value, a tab space is set by default.

`XP_FW`:

> This variable defines the field size in characters. If you explicitly specify a value, e.g. 10 characters, the entries exceeding this length will be truncated. If you specify 0, the values will not be truncated but displayed in full. The default is 7 (characters).

`XP_LS`:

> With this variable you define the separator to be used to separate values within one field. If this variable is not set, the space character is used by default.

Basically, there are two ways of setting these variables:

You can define them globally, i.e. the selected settings are used for all invocations of the xpshow command until the variables are modified again:

```
Variable=value
[Variable2=value]
[Variable3=value]
export Variable [Variable2 Variable3]
```

If you only want to use the display settings once, enter the variables, separated by spaces, in one line together with the command:

```
Variable=value [Variable2=value Variable3=value] xpshow -job ...
```

Status of print jobs

● The xpstat command allows you to display the status of a submitted print job:

xpstat [-job] [*job*] [-di LONG]

For *job* you can specify either a job identifier or a selection list. Information on the selected print jobs is then displayed job by job. If you omit *job,* you receive information on all the existing print jobs.

If you do not specify the option -di LONG, the SHORT format will be displayed by default.

The State field contains information, for example, on the status of the printout, on error messages, etc.; for a complete list of the messages see the "Xprint V7.0 - Reference Manual".

The Rank field contains the print job's position in the print queue: the lower the value, the sooner it will be printed.

| i | If a print job is waiting for execution on a printer in a printer group, the Rank field contains its position in the job queue of the printer with the lowest load in this printer group. |

Display examples

– Job status display (SHORT):

```
L jid   Global jid   Destination   Rank   Percentage        State
-----   ----------   -----------   ----   ----------        -----
1       se1:511      P1            0001   000               WAIT
```

– Job status display (LONG):

```
LOCAL JOB ID.: 3
Global job id.: d241s052_006:14
State: SUSPEND
State information:
Destination: hplj4m
Rank: 1
Requested copies: 1
Copies printed: 0
% already printed: 0
Last printed page: 0
Related document:
```

– To display print job information containing only the attributes Destination and Release time, use the following command:

```
xpshow -di "-de -at"
```

You will obtain a display similar to the following:

```
1    se1:14  P1    Thu Aug
2    se1:16  P1    Thu Aug
```

– To define and then apply the display template my_template which is to include the job ID, local ID, files to be printed, destination printer, form used and the pages to be printed:

Open the file .Xprint V7.0 and enter the following line:

```
my_template -id -lj -dr -de -fm -ps
```

Display information on all print jobs using the display template my_template:

```
xpshow -job -di my_template
```

Display:

```
9   se1:14  9    /tmp/file1    P1
10  se1:16  10   /tmp/file2    P1
```

– To globally change the display of the xpshow command such that the individual fields are not truncated and are separated by "...":

```
XP_FW=0
```

```
XP_FS=...
export XP_FW XP_FS
```

– To use the display settings of the previous example only once for a display
   with my_template:

```
XP_FW=0 XP_FS=... xpshow −job −di my_template
```

4.3 Modifying a submitted print job

When a print job is submitted, you can still modify its attributes as long as the job has not yet been printed. You can, for example, redirect a print job to another printer or select a different form. You can also redirect a print job to a remote domain.

● To change the attributes of a submitted job, you can use the xpmod command:

  xpmod [−job] *job* [*modifications*]

  For *job* you can specify either a job identifier or a selection criteria list. If you omit *job,* all the existing print jobs are modified.

  For *modifications* you can use all the xpadd options except for −dr, −jt, −cp, −ct, −rm+, −te, −dp, −st, −nv, −sc, −sm and −nf.

  Options can be set or reset to the default by appending the suffixes + or - .

There are two possible ways of redirecting print jobs to another printer. You can either use the xpmod −job command and the −de *printer* option or you can use the xprdir command. Using this command you can specify the required values (old printer, new printer, jobs etc.) either explicitly or via an Xprint V7.0-driven menu query. For more information on the xprdir command, refer to the Xprint V7.0 Reference Manual.

| i | When redirecting a print job to another printer, the new printer must support the data format of the original target printer as no filters can be specified. |

Examples

– A print job with the ID se2:4 is to be redirected to printer1, given priority 15 and printed from string fgh through string str:

  xpmod −job se2:4 −de printer1 −pr 15 −fr fgh −to str

– All print jobs you have submitted for printer3 are set to the default priority:

  xpmod −job −scl "−de printer3" −pr−

–   To redirect a print job:

Spoolin print job `job1` on printer `printer1`, which only supports the data format `POSTSCRIPT`; there is a filter available, however, for converting the format `SIMPLE` to `POSTSCRIPT`:

```
xpadd -job -dr job1 -de printer1 -ct SIMPLE
```

If the print job is then redirected to the printer `printer2`, this must be able to handle the data format `POSTSCRIPT`, as `job1` was automatically converted at spoolin:

```
xpmod -job job1 -de printer2
```

–   To redirect a print job to a remote domain, specify the remote printer by *partner_gateway_name!destination name*:

```
xpmod -job job1 -de gtw1!printer31
```

4.4   Redirecting print jobs

The xprdir command can be used to redirect print jobs assigned to a specific printer to another printer, but you can only redirect the entire print queue of a printer, not individual print jobs. This redirection is permanent, i.e. it also applies to all subsequent jobs for the original printer, and must be canceled explicitly.

Please note that xprdir is provided for compatibility purpose only. You should use xpchange -dev -rd instead.

xprdir assigns to the original printer the status NOT_ACTIVE and activates the printer which is to be the new destination. The active job on the original printer is handled as specified with the -j option by the user. Then the entire print queue is redirected from the old printer to the new destination, all the print jobs keeping their original status.

> **i** The xprdir command can be used by every user, no specific privileges are required. If the Xprint V7.0 administrator wants to restrict its use, he/she can protect the command by means of access rights and user definitions.

● To redirect the print jobs of one printer to another, enter the following command:

xprdir -d *old_destination* -r *new_destination* [*options*]

-d *old_destination*

specifies the printer whose job queue is to be redirected to another printer.

-r *new_destination*

specifies the printer to which the job queue of the original printer is to be redirected.

> **i** The device names specified with **-d** and **-r** must not be identical.

For *options* the following options are possible:

-j *job_handling*

requests Xprint V7.0 to perform an action on the active job on the original device. The following values can be specified for *job_handling*:

DELETE

The active job is to be deleted.

RESTART-BEGINNING

> When the job has been redirected to the new destination it is put at the top of the job queue and printed from the beginning.

RESTART-FROM

> When the job has been redirected to the new destination it is put at the top of the job queue and printed starting with the page specified with option −p.

SUSPEND

> When the job has been redirected to the new destination it is assigned the status SUSPEND.

TERMINATE

> The active print job is printed to the end and not redirected to the new destination.

> **i** In this case, the original printer is set to the status SPOOLIN_OFF until the active job has finished printing. If there is a printer error, the user must correct it, for example by setting the printer to the correct physical status. When the job is finished, the printer is set to the status NOT_ACTIVE.

-p *page*:

> If the value RESTART-FROM is used with the −j option, the number *page* specifies the page number from which the active job is to be reprinted.

> **i** The −j RESTART-FROM −p *page option* does not work with print jobs that are to be printed in PostScript format or raw mode.

-?:

> The use of the command and its options is displayed.

If xprdir is used without options and arguments, the command starts a dialog with the user in which it asks for all the required information using selection menus.

i The xprdir command does not work if Xprint V7.0 is not active on the host on which the new printer is configured. It returns the same error messages as the commands xpchange and xpmod.

4.5   Deleting print jobs

You can delete a print job that is in the print queue or is being printed.

● To delete a print job, use the `xpdel` command:

`xpdel` *selection*

For *selection* you can either specify a list of job identifiers or, with the option `-scl` *"selection_criteria_list",* define a list of criteria according to which the jobs to be deleted are to be selected. Every entry in this list consists of an option of the `xpadd -job` command with a value assigned to it. For more information, see the section "Selection criteria list" on page 266 of the Appendix.

Examples

– To delete the print jobs `1`, `3`, `7`, and `9` (local ID):

`xpdel [-job] 1 3 7 9`

– To delete the print jobs `si_mfs1:2` and `si_mfs1:4` (global ID):

`xpdel [-job] si_mfs:2 si_mfs:4`

– To delete all print jobs with the attributes destination `printer3` and form `A5LAND`:

`xpdel [-job] -scl "-de printer3 -fm A5LAND"`

5 Introduction to administering Xprint V7.0

This chapter describes the concepts of Xprint V7.0, which you must be familiar with in order to use this product. It describes the objects comprising Xprint V7.0 and provides the basic knowledge you require for administering Xprint V7.0.

5.1 Responsibilities

To allow the privileges and tasks within Xprint V7.0 to be clearly delimited, several types of Xprint V7.0 user are distinguished:

● **users / Xprint V7.0 users**

Users, whether registered in the Xprint V7.0 database or not, cannot administer any Xprint V7.0 objects besides their own print jobs.

● **System administrator**

Every system administrator (root) of a   system may also perform specific administrative tasks concerning Xprint V7.0 on his/her   system. These tasks include:

– starting and terminating Xprint V7.0 on the local system (commands `xpstart` and `xpstop`). Only the system administrator can start Xprint V7.0.

– activating and deactivating local printers, supervisors and servers (`xpchange` command).

– setting up local Xprint V7.0 objects other than users and the Xprint V7.0 system (`xpadd` command).

– administering all local Xprint V7.0 objects (commands `xpmod` and `xpdel`).

– defining local Xprint V7.0 administrators, who can perform some of the tasks of the system administrator for the local host (`xpmod -hos` command).

● **Local Xprint V7.0 administrator** (sub-root)

Every system administrator can define one or more local Xprint V7.0 administrators who are responsible for administering the Xprint V7.0 system locally.

A local Xprint V7.0 administrator has the same privileges as the system administrator (see below), except for starting Xprint V7.0 and defining local Xprint V7.0 administrators.

● **Xprint V7.0 administrator**

The Xprint V7.0 administrator has absolute control over the Xprint V7.0 system throughout an entire Xprint V7.0 domain, i.e. over all the systems defined in the Xprint V7.0 database. He/she can administer Xprint V7.0 from any of these hosts, provided he/she is registered as a user of this host. The only exception is starting Xprint V7.0 on a remote system that is exclusively controlled by the local system administrator of that system.

The following figure illustrates the privileges of the different types of user with respect to administering Xprint V7.0:
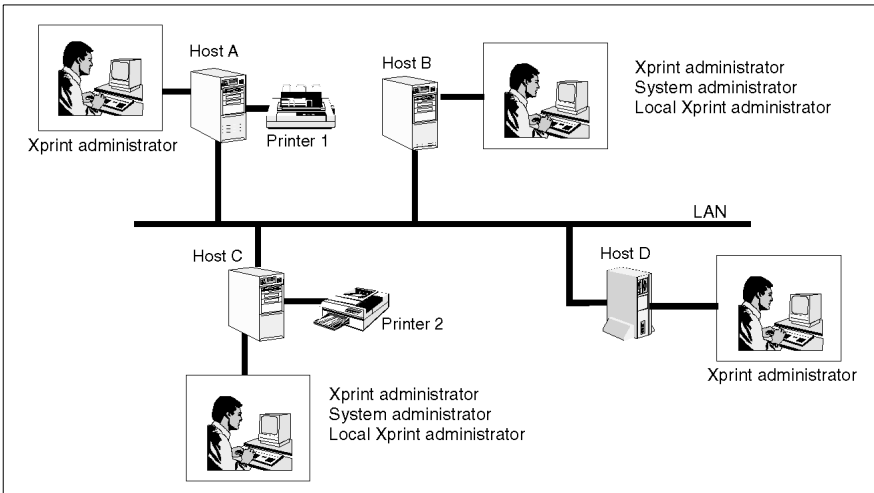
Figure 9: User privileges

This figure shows an example of a configuration of four hosts A to D and the two printers 1 and 2. The Xprint V7.0 administrator is registered as a user on all hosts and can therefore control the various objects of the Xprint V7.0 system from every host. In the figure, the Xprint V7.0 administrator can administer all the Xprint V7.0 objects in the Xprint V7.0 domain from host A, i.e. say the printers 1 and 2, the Xprint V7.0 users and also the four hosts themselves.

The system administrator of host B can administer all those Xprint V7.0 objects for which host B is defined as the administration host. Similarly, the local Xprint V7.0 administrator of host C can only administer those Xprint V7.0 objects for which host C is defined as the administration host.

However, this also means that, for example on a host which is not intercon-nected with other hosts via a network, Xprint V7.0 can be administered entirely by the Xprint V7.0 administrator, the system administrator or a specially configured local Xprint V7.0 administrator (with the exception of starting Xprint V7.0 which is restricted to the system administrator).

In this manual, the generic terms **user** and **administrator** are used as shown in the following table, unless a specific type of user is being referred to. In this case the type is expressly specified.

Term	Type of user
user	UNIX user
	Xprint V7.0 user
administrator	local Xprint V7.0 administrator
	system administrator
	Xprint V7.0 administrator

Table 4: Types of users

i   Please note that only the Xprint V7.0 administrator is allowed to admin-ister objects on remote hosts. If in the course of this manual an object is to be manipulated by an **administrator**, either this must be the Xprint V7.0 administrator or the object must be local.

5.2   Xprint V7.0 architecture

Xprint V7.0 is an object-oriented system consisting of various objects. As an administrator you can define, modify, delete and, if appropriate, activate and deactivate Xprint V7.0 objects.

The following figure shows the most important Xprint V7.0 components and how these interact.
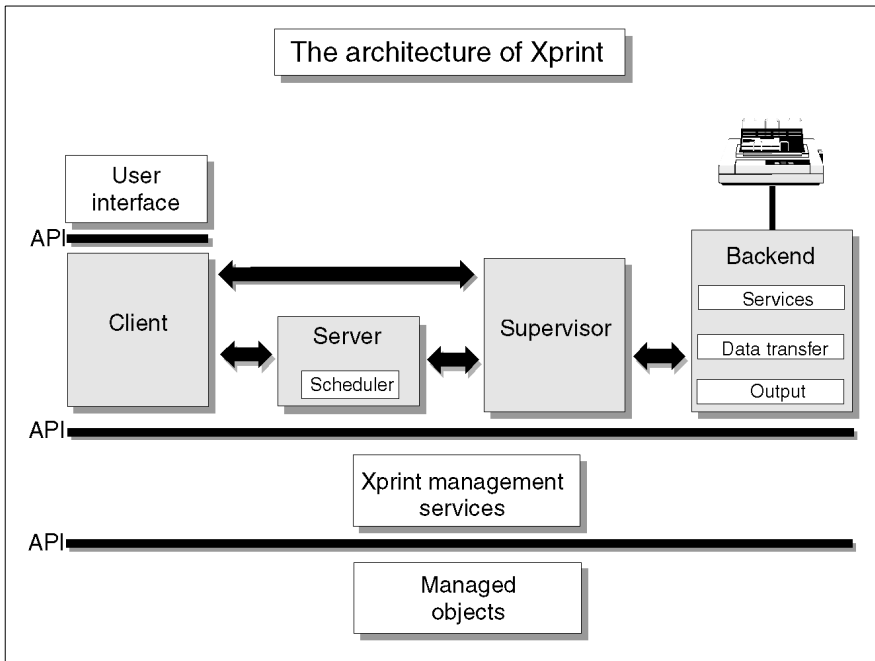
Figure 10: Xprint V7.0 architecture

The **client** (`xpadd` command or API function) requests the printing of a job. This job is directly processed by the **server** (except in the case of what is called **direct printing**). The server passes the printout on to a suitable **supervisor** which itself communicates with the **printer** via the **backend** assigned to the printer.

The following section provides a more detailed description of the available objects. Almost all the Xprint V7.0 commands can be used with the different object types.

5.2.1 The Xprint V7.0 objects

The following **objects** are defined in Xprint V7.0 (the parentheses contain the short name of the Xprint V7.0 objects for use in Xprint V7.0 commands):

● Filters (-flt)

Filters have the function of converting the data sent to the printer by the user into the format required by the printer. This makes it possible, for example, to print normal ASCII files on PostScript printers as Xprint V7.0 is supplied with the filter vppost.
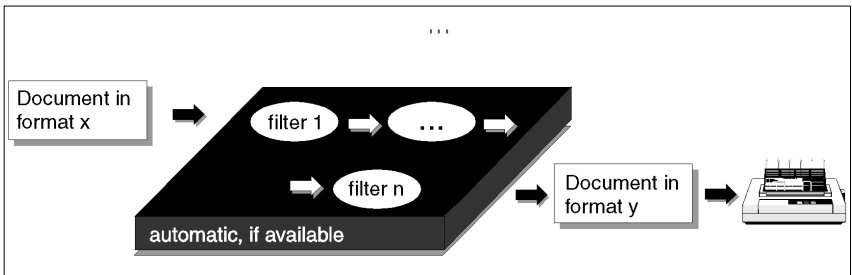
Figure 11: Filters

Two types of filter are distinguished under Xprint V7.0:

Slow filters are executed before the actual spool process, i.e. after the job is submitted but before it is printed. They convert data or allow special print modes such as printing in columns or landscape mode.

Fast filters are used to enhance the print functionality provided by Xprint V7.0. If used, they are the last link in the chain of Xprint V7.0 objects; they edit the print job and are in direct contact with the printer. Their main function is to provide a connection with objects other than the standard components. They receive the feedback from the printer and forward it to the supervisor in a form it can understand.

As an administrator you can define and compile, modify or delete your own filters (fast and slow). For a description of how to define new filters see the "Xprint V7.0 - Reference Manual".

● Fonts (-fnt)

Usually, various **fonts** are available for printing your documents under Xprint V7.0. These are composed of the following attributes:

– typeface (e.g. Courier, Helvetica, Times Roman etc.)

– style (straight or italic)

– horizontal character pitch (number of characters per inch/centimeter)

– line spacing (number of lines per inch/centimeter)

– print quality (draft or correspondence quality)

– character set (German, English, International, USA etc.)

So that you do not have to specify the desired attributes for each individual print job, Xprint V7.0 allows you to predefine various fonts. You select the desired attributes and store them under a font name. If you want to print a document using these specific font attributes, you only need to request them via this font name and Xprint V7.0 will apply them automatically to the print job.

Xprint V7.0 provides a default font (GENERIC) that has the following attributes: no specific character type, straight, a character pitch of 10 characters per inch, line spacing of 6 lines per inch and the character set INTERNATIONAL. This font must not be modified nor deleted, not even by the Xprint V7.0 administrator.

● Forms (-frm)

Forms are a convenient way of influencing the appearance of **print jobs**. Forms can be used to define paper and page formats, the layup (portrait or landscape), font, appearance of the information pages and user privileges. Xprint V7.0 differentiates between automatic and manual forms. Jobs using **automatic forms** can be printed at any time; these forms are mounted on the printer by default and usually only define the hopper, page format (margins) or the font. If a specific form requires that special paper be mounted in the printer manually or that a font cassette be changed, a **manual form** makes sure that the job is only printed when the printer has been prepared.

You can define, modify or delete forms. Furthermore, you can use permission lists to restrict the use of a specific form to specific users.

● Gateways (-gtw)

Gateways allow you to make a connection from one Xprint V7.0 domain to another Xprint V7.0 domain or to other spooler systems. Via these gateways you can use the printers and printer groups of the other system involved.

Gateways to other Xprint V7.0 domains simplify the administration of Xprint V7.0 in very large networks. In this way, the hosts of the entire network can be distributed over different Xprint V7.0 domains (e.g. by department) so that there is one Xprint V7.0 administrator for each domain who only has to administer a reduced number of Xprint V7.0 objects.

Gateways to DPRINT (spooler system for BS2000 systems) or BSD spooler systems (spooler system of Berkeley BSD UNIX systems) allow users of the local Xprint V7.0 domain to access the printers and printer groups in these spooler systems. Vice versa, it is also possible to access the printers and printer groups of the local Xprint V7.0 domain from DPRINT and BSD spooler systems. This allows a network spooler system to be configured in a heterogeneous network.

You can also assign a permission list to a gateway. This makes it possible to restrict use of remote resources for local users.

| **i** | Connections to BS2000 systems via gateways require the local gateway to be defined on a UNIX platform on which *open*FT is installed. |

As an administrator, you can set up, delete, modify and enable or disable gateways in both directions.

● Hosts (`-hos`)

Under Xprint V7.0 the term **host** refers to every computer defined in an Xprint V7.0 domain. Hosts are divided into different classes: master, slave and parasite hosts. The difference lies in the way they handle the Xprint V7.0 database.

The **Xprint V7.0 database** contains all the data Xprint V7.0 needs to access Xprint V7.0 resources. This includes information on the defined hosts, users, printers and printer groups as well on forms, and all other Xprint V7.0 objects. Only the print jobs are stored on the server which is responsible for their execution.

A **master host** holds a complete copy of this database. At any one time, one of the **potential master hosts** is the **active master**. When Xprint V7.0 is set up in a network, the first computer on which it has been installed and started assumes the function of the active master. If Xprint V7.0 is terminated on the active master, the next potential master in what is called the **host hierarchy**

assumes its function as the active master. The ranks of the potential masters can be defined by the order of their installation and can later be modified via specific commands.

Slave hosts are hosts that hold a complete copy of the Xprint V7.0 database but cannot become the active master host. This is useful, for example, for computers which are shut down frequently, are not very reliable, or which are still using an old Xprint V7.0 version.

A **parasite host** does not have a copy of the Xprint V7.0 database. It requires Xprint V7.0 to be running on a specific computer which is assigned to it as the **database server**, also referred to as the supporting host, if the parasite host is to access Xprint V7.0. This only makes sense if there is a permanently running database server available for such computers which exports its database via a network file system (NFS). The database must then be mounted into the local file system by the parasite host.

● Job templates (-jtp)

Job templates simplify the use of frequent print commands by allowing the options of the xpadd -job command, which must normally be specified individually, to be combined in groups. These can then be specified via the job template.

Job templates can be defined, modified or deleted for the whole system by the Xprint V7.0 administrator or user-specifically by each individual user.

● Loadable resources (-lrs)

Loadable resources allow faster printing of jobs that use the same background, logo, soft font etc. They also improve job recovery. A Loadable resource must be downloaded to the printer before it can be called by a print job.

Public loadable resources can be created, modified or deleted for the whole system by the Xprint V7.0 administrator. Individual users can create, modify or delete *private* loadable resources, that is loadable resources that are for their use only.

● PCLs (-pcl)

PCLs (**printer capability lists**) are used to define what printing options a printer provides. Furthermore, the PCL contains information on how the options specified when the job is submitted can be converted to printer commands. Xprint V7.0 is supplied with a number of PCLs for the most

common printers, and with one generic PCL which in most cases also allows printing on unknown printers. A list of the PCLs supported by Xprint V7.0 is provided in the Reference Manual.

As an administrator you can define, modify and delete PCLs.

● Permission lists (-prm)

With **permission lists**, you can define the following privileges under Xprint V7.0:

– Which users may/may not use a printer, a printer group or a gateway.

– Which administrators may assign a new supervisor to a specific server.

– Which users may/may not use a specific form.

– Which forms may/may not be used on a specific printer.

There are two types of permission list: "**allowed lists**" and "**denied lists**". An allowed list is used to specify which users or forms are allowed to use the relevant object, while the denied list defines which users or forms are not allowed to use a specific object. The allowed list of a printer, for example, restricts use of the printer to the users contained in the list. The denied list of a printer defines that the printer can be accessed by all users except for those contained in the list.

| **i** | The administrator of a specific object (printer, server, form) can always access the object, irrespective of the contents of the associated permission list. |

Basically, permission lists for objects are handled as follows: if there is an entry in the allowed list, the denied list is ignored; if the allowed list is empty, the denied list applies. If both lists are empty, access to the object is unrestricted.

● Print jobs (-job)

Print jobs are submitted by users and, as described in the previous section, can be modified. They are administered by the **servers** responsible for the respective print queues. Print jobs are not part of the Xprint V7.0 database like printers, servers etc., but they are stored in the server spoolin directory.

In addition to the normal modification options, as an administrator you can redirect all print jobs for a printer to another printer.

● Printers (-dev)

Xprint V7.0 can use printers of many different types.

The printers are controlled by a **supervisor** and assigned tools, called **backends**. A **PCL** is assigned to the printer.

The process of printing is controlled by a **backend** using the appropriate printer's **PCL** to provide **printer** details. Xprint V7.0 provides a general-purpose backend but additional specific backends can be defined by the administrator and incorporated into the Xprint V7.0 system. For a description of how to define new backends refer to the "Xprint V7.0   - Reference Manual".

As the backend actually controls the printer, it must interface with both the **supervisor** and the **printer**. The backend initializes the printer port and the printer. It sets the printer with any specified job options, such as the typeface and style. Furthermore, it ensures that start, end, and separator sheets are printed if required. It also makes sure that the requested number of copies of the document are printed. For this printer-specific information the backend refers to the PCL assigned to the printer.

Backend programs interpret status messages. Information is taken from the data passing through the backend. Some printers can respond to special information requests from backend programs. To enable the user to interact with the active print job (e.g. to delete or suspend the job) a special mechanism allows signals to be exchanged between the supervisor and the backend.

Permission lists enable printer access to be restricted to explicitly defined users, and you can define which forms can be assigned to this printer. By means of a **security level**, printers can be restricted to users with an appropriate security level for printing confidential data.

● Printer groups (-`dgr`)

Printers can be combined to form what are called **printer groups** to achieve better loading of all the printers in the group. If a print job is sent to a printer group it is printed on the first printer to become available in the printer group.

● Recovery rules (-`rec`)

Recovery rules are used to describe how specific printer conditions are handled. Recovery rules are defined in a source file and saved in the Xprint V7.0 database after compilation. Then they can be assigned to the printers.

The default recovery procedure in the case of a printer error can be overridden by a recovery rule. In the case of the printer error "paper_end", for example, the Xprint V7.0 system tries by default to print the job until the

paper supply is refilled. By means of a recovery rule you could define a different procedure (to suspend the print job and set the printer to NOT_ACTIVE until the administrator intervenes, for example).

You can define, modify and delete recovery rules.

● Servers (-srv)

Servers are the Xprint V7.0 objects which administer incoming print jobs and are responsible for scheduling them. Each **server** administers its own print queue, which contains all the print jobs for the printers whose **supervisors** are controlled by the server.

You can define and delete servers and change their status.

● Supervisors (-spv)

A **supervisor** is directly responsible for controlling one or more printers. It obtains the job data from the responsible server and forwards it to the backend program (see entry "Backend" on page 273 in the glossary). One supervisor may control several local printers.

As the system or Xprint V7.0 administrator, you can set up and delete supervisors, and change their status.

● Users (-usr)

Xprint V7.0 differentiates between two types of user: **UNIX users,** who are not defined in the Xprint V7.0 system, and **Xprint V7.0 users,** who are defined in the Xprint V7.0 system. UNIX users are all users of the UNIX system on which Xprint V7.0 is running; the default settings for Xprint V7.0 apply to them. If these settings are not sufficient, the UNIX users can be defined in the Xprint V7.0 system.

More settings can be made for Xprint V7.0 users than for UNIX users:

– Xprint V7.0 users can access their print jobs from all the hosts for which they are registered.

– They can be assigned a **security level** and thus be granted access to printers with a corresponding security level.

– **Print quotas** can be defined for the number of jobs or print pages allowed, thus preventing users from making unlimited numbers of printouts.

● The Xprint V7.0 system (-sys)

  The **Xprint V7.0 system** refers to all the Xprint V7.0 objects which are combined in a local administrative unit, what is called an **Xprint V7.0 domain**. Within the Xprint V7.0 system the **Xprint V7.0 administrator** is allowed to perform all the administrative tasks.

  The only operations that can be executed for the Xprint V7.0 system are displaying or changing the Xprint V7.0 administrator as well as the Xprint V7.0 system comments.

5.3   Administrative tasks under Xprint

Administering Xprint V7.0 involves a number of tasks which must be performed by the administrator. This section gives a general description of the different tasks and describes the basic procedures. For detailed information on administering the individual objects, see the next chapter.

5.3.1   Configuring Xprint V7.0 objects

With the xpadd command you can add Xprint V7.0 objects to the database, thus making them known in the Xprint V7.0 system. Only print jobs (−job) are not entered in the database but are added to the print queue administered by the corresponding server. The xpadd command may be called for all Xprint V7.0 objects with the exception of the Xprint V7.0 system itself (−sys). For a detailed description of using this command for each object type see the "Xprint V7.0   - Reference Manual".

When you add an object to the database with the xpadd command, the following rules apply:

– As an Xprint V7.0 administrator you can add any objects you choose and can define any administration hosts for them by specifying a host other than the local host with the −ah *host* option (or, for printers and gateways, with the −ho *host* option). The object you add can then be administered by yourself as well as by the system administrator and the local Xprint V7.0 administrators of this host. As a system or local Xprint V7.0 administrator you can define objects only for your local host.

– Every Xprint V7.0 object needs a unique name in the Xprint V7.0 system. This name should enable users of this object to identify it. For Xprint V7.0-internal objects like servers and supervisors it makes sense to use the name of the host on which these objects are defined. For printers a unique name indicating their location is a good choice, and for job templates, forms and fonts it is advisable to use names indicating their purpose.

– To become available to users and administrators, some objects need to be activated after being added. This applies to the following object types: printers (−dev), servers (−srv), supervisors (−spv) and gateways (−gtw). For printers and gateways you can include in their definition that they are automatically activated on the corresponding host whenever Xprint V7.0 is started on this host in future (option −aa). Servers are automatically activated

whenever the host is started. Supervisors are activated automatically when Xprint V7.0 is started if a printer they administer was configured with the −aa option.

Objects are always activated using the xpchange command (see section "Changing the status of Xprint V7.0 objects" on page 82).

5.3.2   Deleting Xprint V7.0 objects

With the xpdel command you can delete Xprint V7.0 objects from the Xprint V7.0 database. The Xprint V7.0 administrator can delete all objects from the system with the exception of the Xprint V7.0 system object (−sys), which cannot be deleted. System and local Xprint V7.0 administrators can only delete those objects which are administered on the local host. For a detailed description of using this command for each object type see the "Xprint V7.0   - Reference Manual".

The following rules apply for deleting Xprint V7.0 objects:

– Only Xprint V7.0 objects which are no longer used by any other Xprint V7.0 object can be deleted. Before deleting an object you should therefore make sure that there are no references to the specified object. Any references can be displayed using the xpshow command with the option −di REFERENCED_BY (see section "Displaying the attributes of an Xprint V7.0 object" on page 83).

   Any objects with references to the object to be deleted must be modified such that theses references are canceled.

– Printers (−dev), gateways (−gtw), servers (−srv) and supervisors (−spv) must be deactivated before they can be deleted. If necessary, this can be checked with the xpstat command (see section "Displaying the status of an Xprint V7.0 object" on page 82).

   If an object to be deleted is still active, it must be deactivated with the xpchange command used with the option −st NOT_ACTIVE (see section "Changing the status of Xprint V7.0 objects" on page 82).

– When deleting an object of the type server, you must always make sure that the print queue assigned to the server does not contain any print jobs as these will be lost when the server is deleted. For servers you are therefore advised to deactivate spoolin some time before deleting the server. In this case, any print jobs in the print queue can still be printed without any more jobs being added. Another possibility is to redirect the print queues of a printer assigned to the server to another printer.

5.3.3   Modifying Xprint V7.0 objects

With the xpmod command, you can modify the static attributes of all Xprint V7.0 objects. Dynamic attributes such as the printer status or the status of the current print quotas of a user can be changed with the xpchange command (see the following section "Changing the status of Xprint V7.0 objects" on page 82). The Xprint V7.0 administrator can modify all objects in the system, while the system and local Xprint V7.0 administrators can only modify those objects which are administered on their local host. For a detailed description of using this command for each object type see the "Xprint V7.0   - Reference Manual".

The following rules apply for modifying objects:

– Printers (−dev), gateways (−gtw), servers (−srv) and supervisors (−spv) must be deactivated before they can be modified. If necessary, this can be checked with the xpstat command (see section "Displaying the status of an Xprint V7.0 object" on page 82).

  If an object to be deleted is still active, it must be deactivated with the xpchange **command used with the option** −st NOT_ACTIVE (see section "Changing the status of Xprint V7.0 objects" on page 82).

  Remember to reactivate the object after modifying it!

– Basically you can use any option which can also be used when adding the object. However, there are a few special cases, which are described below:

  Options representing Boolean values (e.g. the option −aa for printers which switches on automatic activation) can be removed by specifying a minus sign − after the option (example: xpmod −dev printer1 −aa−).

  Options defining lists (e.g. the −dl option for printer groups which defines the printers belonging to this group) can be modified in three different ways:

  – If a minus sign is specified after the option, the objects specified behind it are removed from the list (example: xpmod −dgr pgroup1 −dl− printer4 printer5).

  – If a plus sign + is specified after the option, the objects specified behind it are added to the list (example: xpmod −dgr pgroup1 −dl+ printer6).

  – If the objects are specified directly after the option, the existing list is replaced by the specified objects (example: xpmod −dgr pgroup2 −dl printer1 printer2 printer6).

5.3.4   Changing the status of Xprint V7.0 objects

With the xpchange command, you can change the dynamic data of Xprint V7.0 objects, such as printer states or the states of the current user print quotas. For a detailed description of using this command for each object type see the "Xprint V7.0   - Reference Manual".

With some objects the status can assume several levels, i.e they have a global status and subordinate substates. A printer, for example, has a global status which is defined via the −st option. In addition to this, spoolin and spoolout can be switched on and off individually with the options −si and −so.

If the xpchange command is invoked for an object without options, it always switches on all states (ACTIVE or ON). Similarly all the states of the object are switched off when the object is deactivated with the −st NOT_ACTIVE option.

When a substate which has been switched off is switched back on, Xprint V7.0 automatically makes sure that the main status is set to ACTIVE.

5.3.5   Displaying information on Xprint V7.0 objects

With the xpstat and xpshow commands you can display information on each Xprint V7.0 object you are allowed to use or administer. For a detailed description of using these commands for each object type see the "Xprint V7.0 - Reference Manual".

Displaying the status of an Xprint V7.0 object

● To display the status of an Xprint V7.0 object, use the following command:

xpstat *object_type* [*selection*] [−di *display*]

For *object_type* you specify the object whose status you want to display (e.g. −dev for printer). If the object type is not specified, the command refers by default to print jobs (−job).

If *selection* is not specified, the command refers to all objects of the specified type in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the objects whose status you want to display, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant objects are selected.

With the option −di *display* you can determine the scope of the display as described for print jobs in the section "Displaying print jobs" on page 55.

Displaying the attributes of an Xprint V7.0 object

● To obtain more detailed information on the definition of an Xprint V7.0 object, use the following command:

xpshow *object_type* [*selection*] [−di *display*]

For *object_type* you specify the object whose attributes you want to display (e.g. −dev for printer). If the object type is not specified, the command refers by default to print jobs (−job).

If *selection* is not specified, the command refers to all the objects of the specified type in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the objects whose attributes you want to display, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant objects are selected.

To display information on printers or printer groups which can only be reached via gateways, you must specify the name of the printer or printer group in the format *gateway***!***printer_name*. Which details of the printer or printer group are displayed in such a case depends on the gateway type.

With the option −di *display* you can determine the scope of the display as described for print jobs in the section "Displaying print jobs" on page 55.

Besides the standard values SHORT, LONG and specifying a list of output parameters as for print jobs, you can also use the keyword REFERENCED_BY here, which returns a list of the Xprint V7.0 objects referring to the specified object. If you specify the option −di REFERENCED_BY (short −diR), you must specify exactly one object of the desired type!

This list is useful if you want to remove an Xprint V7.0 object from the Xprint V7.0 system as you can only remove an object if it is no longer referenced by any other object.

Examples (in this case for printer groups)

– To display the status of the printer group group1:

```
xpstat -dgr group1

NAME       Spoolin
----       -------
group1     ON

Date of last modification: Tue Dec 20 11:37:17 1994
Justification:
```

– To display the definition of the printer group group1 in a complete list:

```
xpshow -dgr group1 -di LONG
```

This returns, for example, the following output:

```
NAME: group1
Host: colorado
Administrator: xprintadm
Device list: printer1 printer2
User permission:
User comment: The printer group for all users
Administrator comment:
```

– To display a short list of all the printer groups available:

```
xpshow -dgr
```

This could return the following output:

```
Name            User perm.    Host          Administrator
----            ----------    ----          -------------
group1                        missouri      xprintadm
group2                        delaware      xprintadm
```

– To display all the references to the printer group group1:

```
xpshow -dgr group1 -di REFERENCED_BY
```

The output might appear as follows:

```
Level Name          Type
----- ----          ----
1     host1         hos
```

This output shows that an object of type host, namely the host host1, still refers to the group group1. The printer group can only be removed when the object host1 has been modified such that the reference to group1 is canceled.

5.3.6   Administering Xprint V7.0

This section describes a few basic administration tasks concerning Xprint V7.0.

If you want to...	Read...
start Xprint V7.0	section "Administering Xprint V7.0" on page 85
terminate Xprint V7.0	section "Administering Xprint V7.0" on page 86
reinitialize the Xprint V7.0 database	section "Administering Xprint V7.0" on page 86
select a language	section "Administering Xprint V7.0" on page 87
enable auditing (*users only*)	section "Auditing" in the appendix of the "Reference Manual"
enable logging (*users only*)	section "Logging" in the appendix of the "Reference Manual"

Table 5: Basic administration tasks

Starting Xprint V7.0

Only the system administrator (root) can start Xprint V7.0 with the xpstart command on his/her local host. Every host must be started individually with this command.

When you start your local host, the following objects are activated automatically:

– all the local servers belonging to this host.

– all the local printers and the associated supervisors belonging to this host. It must be possible to activate the printers automatically (see the xpadd −dev −aa command) and they must be controlled by active servers on the local host.

– all the remote printers and supervisors belonging to this host, provided the printers can be started automatically and are controlled by active servers on the local host.

When starting Xprint V7.0, you can also specify whether jobs which were not finished in a previous session are to be retained (setting WARM; default) or deleted (setting COLD). Such a setting is useful, for example, if you shut down your system while there were still print jobs on it with the status ACTIVE or jobs still in the print queue. After a WARM start, these print jobs are processed again.

● Start Xprint V7.0 with the following command:

  xpstart [−sa *system_activation*]

  For *system_activation* specify either WARM or COLD. If you do not specify a value, WARM will be used.

Stopping Xprint V7.0

With the xpstop command the system administrator (root) and the Xprint V7.0 administrator can terminate Xprint V7.0 on his/her local host. Furthermore, the Xprint V7.0 administrator can shut down Xprint V7.0 on any host in the system.

If Xprint V7.0 is terminated on a local host, the following objects are also deactivated:

– all its servers,

– all its local supervisors, even if controlled by the remote system,

– all its local printers,

– all remote printers and supervisors which are controlled by the local server.

| i | Active print jobs controlled by a server whose host is shut down are interrupted. (For more information see the command xpchange −dev −wn NOW.) |

● Deactivate the system with the following command:

  xpstop [−ho *host*]

  The *host* option can only be used by the Xprint V7.0 administrator, as only he/she is allowed to terminate Xprint V7.0 on remote systems.

Reinitializing the Xprint V7.0 database

You might need to reinitialize the Xprint V7.0 database, for example if it could not be initialized when Xprint V7.0 was installed, or if the system breaks down.

● Call DBinstall:

  /var/spool/Xprint/config/bin/DBinstall

● Enter NO when asked if this is a new installation.

● Now specify the name of a host on which Xprint V7.0 is running.

Selecting the language

For the language interface Xprint V7.0 uses the value of the NLS environment variable LANG. The following language environments are available:

Environment definition	Language
En	English
De	German

Table 6: Language environment variables

If the environment variable LANG is incorrectly or not at all defined, Xprint V7.0 uses English as the default.

● Select the language on your local host as follows:

LANG=*language_ID;* export LANG

For *language_ID* you enter the abbreviation (see above) of the relevant language.

5.4 Rules for configuring the system

This section describes the basic rules which must be observed when configuring the Xprint V7.0 system; it does not cover the actual steps that are required. You should use these guidelines to check the configuration of your Xprint V7.0 system at regular intervals in order to maintain its performance.

5.4.1 Defining an Xprint V7.0 domain

The print manager must define the Xprint V7.0 domain with respect to

- – the resources to be shared,
- – the number of hosts,
- – and some administration criteria.

Creating an Xprint V7.0 domain is always a compromise between

- – the maximum number of hosts administered to provide a maximum of print resources,
- – the assignment of administrative tasks concerning print resources to a person or association (e.g. resource locations, company strategy)
- – and a high number of hosts which might slow Xprint V7.0 down, so that there might be, say, a relatively long period of time between the submission and execution of a print job.

5.4.2   Configuring hosts

– All UNIX hosts belonging to an Xprint V7.0 domain and on which Xprint V7.0 has been installed must be defined in the Xprint V7.0 configuration.

– Every host which is to provide its print services must be defined as POT_MASTER, even if it is the only host in operation.

– The hierarchy of potential master hosts should be defined such that the host with the best equipment ranks first.

– A host without hard disk or with a limited or full hard disk should be defined as a PARASITE host. In this case, the Xprint V7.0 database must be imported from what is called a supporting host by means of an explicit command. The advantage of such hosts is the fact that less hard disk space is used, as the database is only stored on the supporting host and some processes do not have to be running (e.g. the services of the database manager).

– The other computers are defined as SLAVE hosts.

5.4.3   Configuring printers

To be able to add printers to the Xprint V7.0 system, you require at least one server (responsible for administering printers and their job queue) and a supervisor (responsible for the actual printing process). There are two different ways of defining servers or supervisors: you can either define the required settings yourself or you can add a first device to this host without any special specifications. In this case, the Xprint V7.0 system automatically creates a default server and supervisor.

Servers

– A server can control any number of supervisors. In practice, however, three supervisors is a good number.

– Where possible the server should be defined on the host of the supervisors.

> ⚠ Note that in this case the availability of the printers depends exclusively on this particular host. If you distribute servers and supervisors over several hosts, you must remember that both hosts must be available in order to use the printers.

Supervisors

– Each supervisor must be controlled by a server.

– A supervisor can control any number of printers; in practice, however, fifteen printers per supervisor are recommended.

– The supervisor must be defined on the same host on which the printers are defined.

Automatic server and supervisor object creation

If no specific setting is used when creating a new device, Xprint V7.0 automatically generates default supervisors and server objects, following the rules hereafter:

– A new supervisor is created for each 15 devices.

– A new server is created for each 3 supervisors.

These defaults settings can be changed by means of 2 envivariables:

`XP_SPV_BY_DFTSRV`

Description: maximum number of supervisors by default server

Initialisation time: before `xpadd -dev`

Possible values: from 1 to 15

Behaviour if unspecified: 3 is used

Behaviour if a value larger than 15 is specified: 15 is used

`XP_DEV_BY_DFTSPV`

Description: maximum number of devices by default supervisor

Initialisation time: before `xpadd -dev`

Possible values: from 1 to 15

Behaviour if unspecified: 15 is used

Behaviour if a value larger than 15 is specified: 15 is used

Printers

– Each printer connected to the Xprint V7.0 system must be defined in the database in order to be accessible. Furthermore the host to which the printer is attached must be defined in the Xprint V7.0 database.

– Access to systems via the BSD LPD protocol is effected from one or more pseudo-printers in Xprint V7.0 by means of the fast filter `bsd`. Another possible way of accessing the printers directly is via the BSD gateway. The main difference between these two methods is the fact that in the case of the fast filter `bsd` the document is formatted (e.g. font, paper layup), while print jobs sent via the gateway are not converted.

– Access to printers via the network address is effected from one or more Xprint V7.0 devices which have `LAN` defined as the connection type in their device definition. As any host can be specified, you are advised to use the host with the best availability. If a network printer is of importance, you can define several logical printers on different hosts in the Xprint V7.0 system which all have the same address. The advantage of this is that the printer is already available when just one of the hosts is in operation.

5.4.4   Configuring gateways

Gateways provide interoperability between different Xprint V7.0 domains and between Xprint V7.0 and other spooler systems. There are two types of gateway:

The BSD gateways

These allow Xprint V7.0 users to access BSD LPD printer servers (e.g. Novell Netware with the BSD LPD emulation Flex/IP) and to share Xprint V7.0 resources with BSD LPD users (e.g. a WPRINT PC user). The functionality includes:

–   the basic job administration functions: `xpadd −job`, `xpdel −job`, `xpstat −job`, `xpshow −job`

–   restricted functions concerning the print resources: `xpshow −dev`, `xpstat −dev`

As only the BSD LPD functions are accessible with this type of gateway, the additional Xprint V7.0 options are not available.

The GIP2 gateway

This offers two possibilities:

1. Connecting two Xprint V7.0 domains. This provides the following function-ality:

    –   the complete functionality concerning job administration: `xpadd −job`, `xpmod −job`, `xpchange −job`, `xpdel −job`, `xpshow −job`, `xpstat −job`

    –   access to some options concerning Xprint V7.0 resources: `xpshow −dev/−dgr/−flt/−fnt/−frm/−jtp/−lrs/−pcl`, `xpstat −dev/−dgr`

2. Connecting Xprint V7.0 and DPRINT. This provides the following function-ality:

    –   job administration functions: `xpadd −job`, `xpdel −job`, `xpstat −job`, `xpshow −job`

    –   several functions concerning the printer resources: `xpshow −dev/−dgr`, `xpstat −dev`

In addition to the supported print protocols (e.g. BSD or GIP2) the gateways can be of the type `LOCAL` or `PARTNER`. Gateways of the type `LOCAL` represent active Xprint V7.0 objects which are responsible for exporting jobs to partner print

servers and for receiving jobs sent from partner systems. Gateways of the type PARTNER represent remote spooler clients as possible job originators for Xprint V7.0 resources or print service providers.

Notes on the configuration

– Every gateway of the type PARTNER which supports a print protocol must have at least a gateway of the type LOCAL with the same print protocol assigned in the backward-link list (−bl option). This list is required for finding a local gateway which is capable of sending jobs to this partner.

– Every BSD print server must be represented by a BSD gateway of the type PARTNER. The BSD server can also be accessed via the fast filter bsd. The advantage of the fast filter is that Xprint V7.0 converts the data. Gateways, on the other hand, provide additional functions:

– you can find out the status of jobs you have sent to a BSD server.

– you can remove jobs you have sent to the BSD spooler system from that system.

– you can display the status of the BSD print queue.

It therefore makes sense to use fast filters for sending print jobs to a BSD system; however, if you want to have access to the full BSD functionality, you must use gateways. This only works if the local BSD gateway is defined on the host of the printer that uses the fast filter bsd.

– Every BSD user should be represented by a BSD gateway of the type PARTNER. Furthermore, the gateway of the type LOCAL which receives the BSD jobs must allow the spoolin of jobs from this partner. This means the −ag option must be set to ALL for the local gateway or the name of the gateway of the type PARTNER must be specified directly.

– Every Xprint V7.0 or DPRINT domain from which jobs can be submitted for the local domain must be represented by a gateway of the type GIP2 PARTNER. Furthermore, the local gateway which receives a GIP2 job must allow the spoolin of jobs from this partner. This means the −ag option must be set to ALL for the local gateway or the name of the gateway of the type GIP2 PARTNER must be entered specifically.

– No two gateways of the type LOCAL with the same port number (−ga) can run on one host at any one time. This is prevented by the network.

6 Configuring Xprint V7.0

This chapter describes how to configure Xprint V7.0 on your system. It comprises various sections, each dealing with different activities. The following table will help you to quickly find the section you need:

If you want to...	Read...
manage hosts	section "Administering hosts" on page 96
add a predefined printer to Xprint V7.0	section "Configuring predefined printers" on page 109
manage any devices you choose	section "Administering devices" on page 114
manage device groups	section "Administering printer groups" on page 126
manage users	section "Administering users" on page 133
make use of Xprint V7.0's security facilities	section "Administering permission lists" on page 143
manage fonts	section "Administering fonts" on page 152
manage forms	section "Administering forms"
manage filters	section "Administering filters" on page 162
manage loadable resources	section "Administering public loadable resources" on page 171
manage job templates	section "Administering global job templates" on page 174
manage PCLs	section "Administering PCLs" on page 179
manage recovery rules	section "Administering recovery rules" on page 186
manage servers	section "Administering servers" on page 193
manage supervisors	section "Administering supervisors" on page 200

Table 7: Configuring Xprint V7.0

> **i** Not all the possible options for each command can be described in this chapter but only the most important ones. For more detailed information see the description of the relevant command in the "Xprint V7.0 - Reference Manual".
>
> For every command, you can call online help with the $-?$ option. This online help works on two levels: command and option level.
>
> If you call help on command level, the general form of this command will be displayed. This type of help displays the objects supported by the command. It also shows the options which are independent of the object type. Not all the options are displayed, however, as these depend on the use of a command and object together. To call online help on command level, enter `xpadd -?`, for example.
>
> Option level help displays all the possible options of a specific object type. To call the online help on option level, you must specify the `xpadd -dgr -?` command, for example.

6.1 Administering hosts

This section deals with the Xprint V7.0 objects of type host which must first be edited for new computers in an Xprint V7.0 configuration. The following table serves as a guide through this section:

If you want to...	Read...
configure Xprint V7.0 on the first host in a network or on a stand-alone system	section "Configuring the first host" on page 96
configure Xprint V7.0 on a new host	section "Configuring a new host" on page 98

Table 8: Administering hosts

6.1.1 Configuring the first host

Configuring Xprint V7.0 on a stand-alone system and configuring the first host in a network only requires a few steps. This is in most cases done by one person, who is referred to below as the Xprint V7.0 administrator. This section is only intended for the Xprint V7.0 administrator. The Xprint V7.0 administrator may be someone who is only responsible for managing Xprint V7.0 or he/she

may be one of the system administrators of the computers involved. If you, as the Xprint V7.0 administrator, want to introduce Xprint V7.0 into an existing network, you must perform the following tasks in the order given below:

– first study the network structure

– define a (primary) master host which first manages the Xprint V7.0 database (later you can specify additional computers which are to serve as reserve masters in case the defined master fails). For more information on the host hierarchy see the section "Xprint V7.0 objects" on page 9.

– configure Xprint V7.0 on the (primary) master host and define a user ID for the Xprint V7.0 administrator

– configure the other systems in the network

Then you or the respective system administrators must configure the individual printers by adding them to the Xprint V7.0 configuration.

The first two and the last step are not of interest if you configure Xprint V7.0 on a stand-alone host. The fourth step is discussed in the section "Configuring a new host" on page 98.

Determining the network structure

So that Xprint V7.0 can be introduced into an existing network without problems, you must study the network structure before configuring Xprint V7.0. For this purpose you must gain an overview of all the computers and printers in this network. You should gather data on every computer and printer. This data will be required for configuring Xprint V7.0. The Appendix contains a worksheet in which you can enter the relevant data. It is recommended that you make a copy of this worksheet for every computer in your network and fill it out carefully. If there is not enough space for the relevant printers and/or supervisors, use the back of the copy or an additional sheet which you should clip to the worksheet.

Configuring the primary master host

When you have installed Xprint V7.0 on the host which is to be the primary master host, you can start configuring Xprint V7.0 by preparing the selected system as follows:

● Log in to the selected system as `root`.

● Configure the network services for the communication with Xprint V7.0 (`/etc/services` file, see section "Configuring the local area network (LAN)" on page 235).

● If the database was not installed in the course of product installation or has failed for any reason, you must initialize it now as follows:

`/var/spool/Xprint/config/bin/DBinstall -f`

● Start the Xprint V7.0 system:

`xpstart`

Now define the new Xprint V7.0 administrator if you do not want to perform this task any longer as `root` on the host now defined as the primary master. In this manual the user ID *xprintadm* is used as an example ID for the Xprint V7.0 administrator**.** To configure the Xprint V7.0 administrator proceed as follows:

● Define the Xprint V7.0 administrator *xprintadm* as a user of this host (e.g. using the administrator interface `sysadm`).

● Add the user *xprintadm* to the Xprint V7.0 configuration:

`xpadd -usr` *xprintadm*

● Modify the Xprint V7.0 configuration such that *xprintadm* becomes the new Xprint V7.0 administrator:

`xpmod -sys -ad` *xprintadm*

Once you have performed these steps, you, as the Xprint V7.0 administrator, can configure printers and other Xprint V7.0 objects on the host.

6.1.2   Configuring a new host

Configuration hints

Xprint V7.0 allows interoperability between different administrative domains, which need to be connected by gateways. All the hosts in an administrative domain share the same database contents. Each definition of an Xprint V7.0 object or change of state involves a database update, which must be reflected on each host in the domain. This database propagation mechanism requires a reasonably fast network, which will allow connections to be opened quickly and rapid data transfer.

The required data transfer rate between hosts is in the order of megabits per second. A typical example of such a network is Ethernet. Different domains can be connected by slower networks (possibly wide area networks) as there is generally less traffic between domains than within a domain.

As a guideline, experience has shown that there is a practical limit of 50 potential masters/slave hosts in a single domain. If there are too many potential master/slave hosts, it is difficult to keep all the databases updated. If more than 50 hosts are needed then parasite hosts can be defined, or the domain can be divided into a number of smaller domains.

Parasite hosts import the database from their supporting host (potential master or slave) by means of a file sharing utility (e.g. NFS) which needs to be set up by the administrator. Parasite hosts depend on the supporting hosts, as Xprint V7.0 cannot run on the parasite if it hasn't been started on the supporting host.

If you divide the original domain into several smaller domains, printers that are now in a different domain can be accessed by prefixing their names with a gateway name. If the devices must be accessed with the same name from every host, independently of which host they belong to, then this can be achieved by replicating the definition of the *network* devices in each domain. A physical printer can then be defined with the same logical name in each network. A user can then access the printer by using this name from *any* host in the system

Procedure

Once at least the primary master host is defined, you can add all the other systems to Xprint V7.0. The order in which you configure them also determines the order of the host hierarchy. If one computer is entered after another computer it also ranks below this one in the hierarchy (see section "Xprint V7.0 objects" on page 9).

To add a new host to the Xprint V7.0 configuration, you must perform steps on both the active host and the host to be added. First the new host must be registered in the existing Xprint V7.0 configuration, then it can import the Xprint V7.0 database and become part of the Xprint V7.0 network.

To configure a new host, proceed as follows:

● Log in to an active host. If the Xprint V7.0 administrator is defined as a user there, log in as the Xprint V7.0 administrator, otherwise as `root`.

● Enter the following command to add the new host to the database:

`xpadd -hos` *host_name* `-re` *host_type* [`-sh` *supporting_host*]

where *host_name* is the name of the relevant host and *host_type* the value you have entered in the worksheet. The option `-re` *host_type* (re stands for responsibility) may be omitted for potential masters. If the value `PARASITE` is specified for *host_type,* the value *supporting_host* for `-sh` specifies on which system the database for this parasite host can be found.

i	If a computer has been set up as a `PARASITE` host, its supporting host must be running and Xprint V7.0 must be active on it for the `PARASITE` host to be able to access Xprint V7.0. Both systems must have the same hardware. The administrator must make sure that the supporting host exports the `/var/spool/Xprint/config/DB` directory to the `PARASITE` host and enters it in the parasite host's directory under the same name. The export and entry in the directory must be done manually by the administrator.

You can also specify additional options which above all affect the host hierarchy and which might depend on the network structure (see the description of the command `xpadd -hos` in the "Xprint V7.0   - Reference Manual").

● If the Xprint V7.0 administrator is also to manage Xprint V7.0 from other hosts, use the following command:

`xpmod -usr` *xprintadm* `-ho+` *host_names*

For *host_names* you specify all hosts on which the administrator is to be known.

● Log in to the new system as `root`.

● Define the Xprint V7.0 administrator as a system user there, if required (e.g. via the administrator interface `sysadm`).

● Configure the network services for the communication with Xprint V7.0 (`/etc/services` file, see section "Configuring the local area network (LAN)" on page 235).

● Initialize the database on the new host with the following command:

`/var/spool/Xprint/config/bin/DBinstall -h` *host_name*

where *host_name* represents the name of an already active host.

● Start the Xprint V7.0 system:

`xpstart`

Once all these operations have been carried out successfully, you can configure printers and other Xprint V7.0 objects on this host. The new host is now part of the Xprint V7.0 configuration.

6.2   Administering hosts (users only)

This section deals with the Xprint V7.0 objects of type host which must first be edited for new computers in an Xprint V7.0 configuration. The following table serves as a guide through this section:

If you want to...	Read....
configure a local host which is not connected to other systems in a network	section "Configuring Xprint V7.0 on a stand-alone system" on page 101
introduce Xprint V7.0 to an existing network or configure a new network for Xprint V7.0	section "Introducing Xprint V7.0 into a network" on page 103
configure Xprint V7.0 on a new system in the network	section "Configuring a new host" on page 98

Table 9: Administering hosts (Reliant UNIX users)

6.2.1   Configuring Xprint V7.0 on a stand-alone system

Configuring an individual stand-alone system in Xprint V7.0 requires only a few steps. The only measures concerning the host are the configuration of an Xprint V7.0 administrator, and (in high-availability configurations) possibly changing the host name in the Xprint V7.0 configuration in the event that a reserve host is to assume the functions of the (failed) main host.

Configuring an Xprint V7.0 administrator

You should define an Xprint V7.0 administrator for managing Xprint V7.0 on your system. Except for starting the spooler system with the `xpstart` command, which requires root privileges, the Xprint V7.0 administrator can perform all the administrative tasks concerning Xprint V7.0 on your system.

The rest of this chapter assumes the existence of an Xprint V7.0 administrator. If you have not defined an Xprint V7.0 administrator, the specified actions must be performed by `root` instead.

You can assign this task to any existing user on your system or you can first set up a separate user ID.

- Log in to your system as `root`.

- If required, set up a separate user ID for the Xprint V7.0 administrator.

- Define the Xprint V7.0 administrator him-/herself with the following commands:

  ```
  xpadd -usr xprintadm
  xpmod -sys -ad xprintadm
  ```

  where *xprintadm* (`-ad` stands for **ad**ministrator) represents the user ID of the user who is to be the Xprint V7.0 administrator.

Renaming the host computer

In high-availability configurations several hosts usually work with shared disk resources so that, should one of the two hosts fail, the other host can continue doing the work of the failed one. If the Xprint V7.0 database is stored on the shared disks of such a system, the second host becomes active in the event of the normal host failing. If this host has a different name, the Xprint V7.0 database does not correspond to the real configuration.

In such a case the configuration can be adjusted quickly. To do this, you can rename the local host for the Xprint V7.0 system with the `xppatch` command.

Observe the following to execute the `xppatch` command successfully:

1. `xppatch` only uses an Xprint V7.0 system which is defined locally. Before the command executes, it finds out whether Xprint V7.0 is installed locally or in the network.

2. The `xppatch` command can only be used by the system administrator (`root`).

3. The Xprint V7.0 system must be stopped for `xppatch` to be executed. `xppatch` checks if Xprint V7.0 is stopped.

4. Before `xppatch` modifies a configuration or file, it backs up all data that may be modified. This backup requires approximately as much space on the hard disk in the file system in which Xprint V7.0 is installed as the sum of the DB and SV directories (without log and debugging files). If there is not enough space available on the hard disk, the `xppatch` command aborts without modifying the original files.

To rename a host computer, proceed as follows:

● Log in to the system as the system administrator (`root`).

● Stop the Xprint V7.0 system:

   `xpstop`

● Rename the host:

   `xppatch` `−hostname` *oldname* *newname* [`−dg` *n*]

oldname is the host name to be changed, *newname* is the name that is to replace *oldname*.

The `−dg` *n* option allows you to control the error message output of the `xppatch` command. For *n* use the values 0, 1 or 2, where 0 causes only error messages to be written to `stderr`, while 1 and 2 cause any additional messages to be output during command execution to log the process.

6.2.2   Introducing Xprint V7.0 into a network

Introducing Xprint V7.0 into an existing network or configuring a new network for Xprint V7.0 is in most cases done by one person, who is referred to below as the Xprint V7.0 administrator. This section is only intended for the Xprint V7.0 administrator. The Xprint V7.0 administrator may be someone who is only responsible for managing Xprint V7.0 or he/she may be one of the system administrators of the computers involved. If you, as the Xprint V7.0 administrator, want to introduce Xprint V7.0 into an existing network, you must perform the following tasks in the order given below:

– first study the network structure

– define a (primary) master host which first manages the Xprint V7.0 database (later you can specify additional computers which are to serve as reserve masters in case the defined master fails). For more information on the host hierarchy see the section "Xprint V7.0 objects" on page 9.

– configure Xprint V7.0 on the (primary) master host and define a user ID for the Xprint V7.0 administrator

– configure the other systems in the network by adding them to the existing network

Then you or the respective system administrators must configure the individual printers by adding them to the Xprint V7.0 configuration.

This section of the chapter deals with the first three items in this list. How to configure the other computers and printers in the network is described in separate sections later in this chapter.

Determining the network structure

So that Xprint V7.0 can be introduced into an existing network without problems, you must study the network structure before configuring Xprint V7.0. For this purpose you must gain an overview of all the computers and printers in this network. You should gather data on every computer and printer. This data will be required for configuring Xprint V7.0. The Appendix contains a worksheet in which you can enter the relevant data. It is recommended that you make a copy of this worksheet for every computer in your network and fill it out carefully. If there is not enough space for the relevant printers and/or supervisors, use the back of the copy or an additional sheet which you should clip to the worksheet.

Configuring the primary master host

When you have installed Xprint V7.0 on the host which is to be the primary master host, you can start configuring Xprint V7.0 by preparing the selected system as follows:

● Log in to the selected system as `root.`

● Configure the network services for the communication with Xprint V7.0 (`/etc/services` file, see section "Configuring the local area network (LAN)" on page 235).

● If the database was not installed in the course of product installation or has failed for any reason, you must initialize it now as follows:

    `/var/spool/Xprint/config/bin/DBinstall -f`

● Start the Xprint V7.0 system:

    `xpstart`

Now define the new Xprint V7.0 administrator if you do not want to perform this task any longer as `root` on the host now defined as the primary master. In this manual the user ID *xprintadm* is used as an example ID for the Xprint V7.0 administrator**.** To configure the Xprint V7.0 administrator proceed as follows:

● Define the Xprint V7.0 administrator *xprintadm* as a user of this host (e.g. using the administrator interface `sysadm`).

● Add the user *xprintadm* to the Xprint V7.0 configuration:

  xpadd −usr *xprintadm*

● Modify the Xprint V7.0 configuration such that *xprintadm* becomes the new Xprint V7.0 administrator:

  xpmod −sys −ad *xprintadm*

Once you have performed these steps, you, as the Xprint V7.0 administrator, can configure printers and other Xprint V7.0 objects on the host.

Configuring the other hosts

Configure all the other hosts as described in the following section.

6.2.3 Configuring a new host in an existing Xprint V7.0 network

Configuration hints

Xprint V7.0 allows interoperability between different administrative domains, which need to be connected by gateways. All the hosts in an administrative domain share the same database contents. Each definition of an Xprint V7.0 object or change of state involves a database update, which must be reflected on each host in the domain. This database propagation mechanism requires a reasonably fast network, which will allow connections to be opened quickly and rapid data transfer.

The required data transfer rate between hosts is in the order of megabits per second. A typical example of such a network is Ethernet. Different domains can be connected by slower networks (possibly wide area networks) as there is generally less traffic between domains than within a domain.

As a guideline, experience has shown that there is a practical limit of 50 potential masters/slave hosts in a single domain. If there are too many potential master/slave hosts, it is difficult to keep all the databases updated. If more than 50 hosts are needed then parasite hosts can be defined, or the domain can be divided into a number of smaller domains.

Parasite hosts import the database from their supporting host (potential master or slave) by means of a file sharing utility (e.g. NFS) which needs to be set up by the administrator. Parasite hosts depend on the supporting hosts, as Xprint V7.0 cannot run on the parasite if it hasn't been started on the supporting host.

If you divide the original domain into several smaller domains, printers that are now in a different domain can be accessed by prefixing their names with a gateway name. If the devices must be accessed with the same name from every host, independently of which host they belong to, then this can be achieved by replicating the definition of the *network* devices in each domain. A physical printer can then be defined with the same logical name in each network. A user can then access the printer by using this name from *any* host in the system

Procedure

Once at least the primary master host is defined, you can add all the other systems to Xprint V7.0. The order in which you configure them also determines the order of the host hierarchy. If one computer is entered after another computer it also ranks below this one in the hierarchy (see section "Xprint V7.0 objects" on page 9).

To add a new host to the Xprint V7.0 configuration, you must perform steps on both the active host and the host to be added. First the new host must be registered in the existing Xprint V7.0 configuration, then it can import the Xprint V7.0 database and become part of the Xprint V7.0 network.

To configure a new host, proceed as follows:

● Log in to an active host. If the Xprint V7.0 administrator is defined as a user there, log in as the Xprint V7.0 administrator, otherwise as `root`.

● Enter the following command to add the new host to the database:

`xpadd -hos` *host_name* `-re` *host_type* [`-sh` *supporting_host*]

where *host_name* is the name of the relevant host and *host_type* the value you have entered in the worksheet. The option `-re` *host_type* (re stands for responsibility) may be omitted for potential masters. If the value `PARASITE` is specified for *host_type,* the value *supporting_host* for `-sh` specifies on which system the database for this parasite host can be found.

> **i** If a computer has been set up as a `PARASITE` host, its supporting host must be running and Xprint V7.0 must be active on it for the `PARASITE` host to be able to access Xprint V7.0. Both systems must have the same hardware. The administrator must make sure that the supporting host exports the `/var/spool/Xprint/config/DB` directory to the `PARASITE` host and enters it in the parasite host's directory under the same name. The export and entry in the directory must be done manually by the administrator.

You can also specify additional options which above all affect the host hierarchy and which might depend on the network structure (see the description of the command `xpadd -hos` in the "Xprint V7.0 - Reference Manual").

● If the Xprint V7.0 administrator is also to manage Xprint V7.0 from other hosts, use the following command:

`xpmod -usr` *xprintadm* `-ho+` *host_names*

For *host_names* you specify all hosts on which the administrator is to be known.

● Log in to the new system as `root`.

● Define the Xprint V7.0 administrator as a system user there, if required (e.g. via the administrator interface `sysadm`).

● Configure the network services for the communication with Xprint V7.0 (`/etc/services` file, see section "Configuring the local area network (LAN)" on page 235).

● Initialize the database on the new host with the following command:

`/var/spool/Xprint/config/bin/DBinstall -h` *host_name*

where *host_name* represents the name of an already active host.

● Start the Xprint V7.0 system:

`xpstart`

Once all these operations have been carried out successfully, you can configure printers and other Xprint V7.0 objects on this host. The new host is now part of the Xprint V7.0 configuration.

6.3   Predefined printers

Xprint V7.0 allows you to configure a set of predefined printers quickly and easily. This section describes how to add such printers to the system.

Xprint V7.0 provides a special command for this purpose: `xpconf_dev`. With this command you can configure a printer defined in the `/var/spool/Xprint/config/data/conf_dev` file with the default parameters. This file contains a list of printers which can also be extended individually. By default, this list comprises all the printers of Siemens AG.

The `xpconf_dev` command is the quickest method of configuring an Siemens printer. Also, if you want to configure several similar printers not contained in the list, it is often better to first extend the list and then call the `xpconf_dev` command instead of configuring these printers individually with the `xpadd -dev` command.

The following table serves as a guide to the subsections dealing with configuring predefined printers:

If you want to ...	Read ...
configure an Siemens printer	section "Configuring predefined printers" on page 109
extend the list of predefined printers	section "Extending the list of predefined printers" on page 112

Table 10: Configuring predefined printers

6.3.1   **Configuring predefined printers**

The `xpconf_dev` command provides a quick and easy method of adding a predefined printer: Xprint V7.0 automatically selects the suitable emulation for the specified printer model and it suggests a default configuration which you only need to adjust, if necessary. Proceed as follows to add a new printer with `xpconf_dev`:

● Call `xpconf_dev`:

   `xpconf_dev`

   The displayed screen should read similar to the following:

```
List of device models and emulations supported by Xprint V7.0 :

-- 1     SNI-2050 HP-LASERJET
-- 2     SNI-4007 EPSON-LQ
-- 3     SNI-4009 EPSON-FX
-- 4     SNI-4009 PROPRINTER
-- 5     SNI-4010 EPSON-LQ
-- 6     SNI-4011 ECMA-9097   (   users only)
-- 7     SNI-4011 EPSON-LQ
-- 8     SNI-4011 EPSON-FX
-- 9     SNI-4014 EPSON-LQ
-- 10    SNI-4014 PROPRINTER
-- 11    SNI-4806 HP-LASERJET
-- 12    SNI-4806 PROPRINTER
-- 13    SNI-4806 HP-GL       (   users only)
-- 14    SNI-4810 HP-LASERJET
-- 15    SNI-4810 POSTSCRIPT

Please type a number to select a device model, press return
to start customized processing, 'q' to quit or '?' for help.
You can drive inside devices list using +/- (next/previous
screen):
```

   All the printers contained in the
   `/var/spool/Xprint/config/data/conf_dev` file can be selected in this way.

● From this list, select your printer model or a similar model with a suitable emulation by entering the corresponding number and pressing "Enter".

   The selected entry is then marked, e.g.

   `>> 1    SNI-2050 HP-LASERJET`

● Confirm again with "Enter".

● Next you must specify a printer address:

```
Please give a device address.
Type device address, 'q' to quit or '?' for help :
```

Here you must specify to which port the printer is attached. If the printer is connected to a serial, parallel or SCSI port of one of the hosts, you must specify the device file belonging to this port (the format is, for example, `/dev/term/tty001` or `/dev/term/tty002` for serial, `/dev/lp0` or `/dev/lp1` for parallel, and `/dev/io0/sprin022` for SCSI ports).

If the printer to be configured is a LAN printer with its own network adapter card which is connected via a terminal server or via a PC to the software `Wprint` (or `SPPCS`), the address consists of an Internet address (or the corresponding host name from the file `/etc/hosts`) and a port number. In this case, the format of the printer address is, for example, `139.23.124.37 7001`.

For details on the Internet address and the port number refer to the documentation and current configuration data of the LAN printer, the terminal server or the software `Wprint` (`SPPCS`), depending on how the LAN printer is connected to the network.

Enter the address and confirm with "Enter".

● Now you are asked to assign a name to the new printer:

```
Please give a device name.
```

```
Type device name, 'q' to quit or '?' for help :
```

Enter a name which is not yet used in the system and press "Enter".

When you have performed these steps, Xprint V7.0 suggests a default configuration and at the same time offers you the option of modifying this configuration:

● A display similar to the following appears on the screen:

```
Proposal of device definition (type "HP Laserjet 4P", emulation
"HP-LASERJET"):

-- 1    NAME: HPLJ-4P
-- 2    Host: colorado
-- 3    pcl: HP-LASERJET
-- 4    Address: /dev/lp0
-- 5    Connection type: SERIAL
-- 6    Protocol: XON
-- 7    Speed: 9600
-- 8    Parity: NONE
-- 9    Significant bits: 8
-- 10   Enable polling: RESET

Please type a number to update an attribute, press return to start
modification processing, 'q' to quit or '?' for help : 5
```

To modify the displayed configuration, you must select the corresponding number and confirm with "Enter". Then the corresponding entry is marked, e.g.

```
>> 5    Connection type: SERIAL
```

● Confirm again with "Enter".

Then the possible parameters for the relevant option are displayed, from which you can select one by marking the number and confirming with "Enter" , e.g.:

```
Updating attribute: "Connection type" .

Current value: "SERIAL"
Possible values are:

        1. SERIAL      2. PARALLEL     3. LAN
        4. SCSI

Type entry number (any other entry means no change) : 2
```

● Once you have made all the settings according to your requirements, confirm with "Enter". Xprint V7.0 then confirms the entry of the new printer with the following message:

```
Updating device model : "HPLJ-4P" .
```

6.3.2 Extending the list of predefined printers

If you need to configure a non-predefined printer type frequently in Xprint V7.0, you can enter this printer type in the
`/var/spool/Xprint/config/data/conf_dev` file with the corresponding default values. This allows you to configure printers of this type with the `xpconf_dev` command.

By default you require system administrator privileges to be able to edit this file.

The file consists of a number of lines, each of which corresponds to one entry. The entries could read as follows:

```
SNI-4007 ! EPSON-LQ   ! EPSON-LQ   ! NONE ! 9600 ! 8 ! XON ! N !
SERIAL !
SNI-4009 ! EPSON-FX   ! EPSON-FX   ! NONE ! 9600 ! 8 ! ETX ! N !
SERIAL !
SNI-4009 ! PROPRINTER ! PROPRINTER ! NONE ! 9600 ! 8 ! XON ! N !
SERIAL !
SNI-4010 ! EPSON-LQ   ! EPSON-LQ   ! NONE ! 9600 ! 8 ! XON ! N !
SERIAL !
SNI-4011 ! ECMA-9097  ! E-9097     ! NONE ! 9600 ! 8 ! XON ! Y !
SERIAL ! (   users only).
```

Each entry consists of nine fields which are separated by the exclamation mark !. The individual fields have the following meanings:

Field	Meaning
1	Printer type - the name under which the printer can be selected. For new entries any name can be used.
2	Emulation - if a printer supports more than one emulation, a separate entry with the same printer type and a different emulation should be specified for each different emulation.
3	PCL - here, the name of the PCL suitable for the printer type and emulation is specified. If this PCL is not yet defined in the Xprint V7.0 configuration, `xpconf_dev` will add it.
4	Parity - for a connection via a serial interface, the type of parity bit must be specified here. Possible values are `ODD`, `EVEN` and `NONE`.
5	Baud rate - for a connection via a serial interface, the baud rate of the connection is specified here.

Table 11: conf_dev file

Field	Meaning
6	Significant bits - for a connection via a serial interface, the number of bits for transferring a character is specified here. Possible values are `7` and `8`.
7	Protocol - for a connection via a serial interface, the handshake protocol for the connection is specified here. Possible values are `XON`, `ETX` and `RXON`
8	Polling - this field specifies whether polling is enabled or not. Possible values are `Y` (yes) and `N` (no).
9	Connection type - this field specifies how the printer is usually connected. Possible values are `SERIAL`, `PARALLEL`, `SCSI` and `LAN`.

Table 11: conf_dev file

6.4   Administering devices

This section describes all the steps required for configuring and modifying printers. It presents simple procedures which allow you to quickly configure standard situations without referring to the Reference Manual. This section does not explain how to configure faxes and e-mail outputs. Please consult the Reference Manual for the particular features of such output devices.

Bear in mind that a number of predefined printers can also be configured with the `xpconf_dev` command which is described in the previous section. The following table serves as a guide through this section and refers you to other sections containing additional information on printers.

If you want to...	Read...
configure a new printer	section "Adding a printer" on page 116
deactivate a printer	section "Deactivating a printer" on page 118
activate a printer	section "Reactivating a printer" on page 120
remove a printer	section "Removing a printer" on page 121
connect a printer to another system	section "Reconnecting a printer to another system" on page 122
reconnect a printer to a different port on the same system	section "Reconnecting a printer to a different port" on page 122
replace an existing printer with a new printer	section "Replacing an existing printer with a new one" on page 123
grant or deny a printer access to a form	section "Granting or denying specific printers access to a form" on page 150
grant or deny specific users access to a printer	section "Granting or denying specific users access to a form" on page 149
change the security level of a printer	section "Assigning a security level to a printer" on page 124
assign a filter to a printer	section "Assigning a filter to a printer" on page 169

Table 12: Administering printers

If you want to...	Read...
cancel the assignment of a filter to a printer	section "Removing a filter from a printer" on page 170
assign a form to a printer	section "Default forms for printers" on page 160
assign a PCL to a printer	section "Assigning a PCL to a printer" on page 183
define a new recovery rule	section "Defining a recovery rule" on page 186
assign a recovery rule to a printer	section "Assigning a recovery rule to a printer" on page 190

Table 12: Administering printers

The following sections assume that Xprint V7.0 is installed correctly on all the relevant systems (see chapter "Installing Xprint V7.0").

6.4.1 Adding a printer

If your system has a printer attached, this printer must be managed by a local supervisor, which itself must be controlled by a server in the network. You can use a default supervisor, an existing defined supervisor or you can define a new one. If you define a new supervisor, you can assign it to any existing server in the network or define a separate new server for it or use a predefined default server.

> **i** You can also add a printer without first having defined a server and supervisor. In this case, the following applies: if you add a printer with the `xpadd -dev` command and no server or supervisor are defined on the local host, Xprint V7.0 automatically configures a server and supervisor with the name of the host on which they are defined. The new printer is automatically assigned to these objects.

Selecting a server

● To display a list of all the available servers in order to select one for your supervisor or to define a unique name, use the following command:

```
xpshow -srv
```

A list of all the defined servers is displayed, which has the following structure:

```
Name            User perm.    Host           Administrator
————            ——————————    ————           —————————————
srv_colorado                  colorado       root
missouri_server               missouri       xprintadm
delaware_srv                  delaware       root
```

● If you want to define a new server on your system, enter the following command:

```
xpadd -srv server_name
```

Defining a supervisor

● If the new printer on your system requires its own supervisor, you can now define this supervisor with the following command:

```
xpadd -spv supervisor_name [-se server_name]
```

Assign a unique name to the supervisor and specify with *server_name* which server is to manage your supervisor.

Configuring printers

● First use the checklist in the Appendix on page 263 to check if all the required preparatory steps for adding printers have been taken or if you want to use any of the further configuration options mentioned there (forms, filters, permission lists, etc.).

● If you want to display a list of all the printers available in order to define a unique device name for your printer, use the following command:

```
xpshow -dev
```

A list of all the defined printers is displayed, which has the following structure:

```
Name      PCL          Default form   Host      Administrator
----      ---          ------------   ----      -------------
printer1  POSTSCRIPT   GENERIC        hudson    root
printer2  HP-LASERJET  GENERIC        colorado  root
```

● Now choose a printer name which does not yet exist in the list and configure your printer at the selected or specially defined supervisor:

```
xpadd -dev device_name -da device_file -co type/
        [-su supervisor_name] -pc pcl_name [-aa]
```

device_file specifies to which port the printer is attached (e.g. `/dev/term/tty001` or `/dev/term/tty002` for serial, or `/dev/lp0` or `/dev/lp1` for parallel ports, or `192.210.192.127 9100` for a LAN connection.).

With *type* you specify which type of port is used for your printer. Possible values for *type* are `SERIAL` for a serial port, `PARALLEL` for a parallel port, `SCSI` for a SCSI high-performance printer, and `LAN` for a LAN printer. The default is `SERIAL`.

If required, you can specify the responsible supervisor with *supervisor_name*. If you omit this specification, Xprint V7.0 uses the supervisor with the name of the host to which the printer is attached. If you do not specify a supervisor, Xprint V7.0 will automatically define a default supervisor.

With *pcl_name* you define which printer capability list is to be used for addressing your printer. Possible values include `HP-LASERJET`, `POSTSCRIPT`, `PROPRINTER` and `HP-DESKJET`. The default is `GENERIC`. See the Reference Manual to find out which PCL to specify for the printer you use.

The `-aa` option can be used to have the printer activated automatically whenever Xprint V7.0 is started.

Once you have connected and configured a new printer, you must activate it.

● Activate the printer by entering the following command:

    xpchange -dev *printer_name*

You can also use the -aa option (for **a**utomatic **a**ctivation) of the xpadd -dev command, in which case the printer is available immediately after xpstart is executed.

6.4.2 Deactivating a printer

To deactivate a printer, use the xpchange -dev command. There are three options available for deactivation (you can only deactivate the printers you administer):

● You can deactivate a printer completely.

● You can deactivate spoolin.

● You can deactivate the printing itself (spoolout).

Deactivating a printer completely

Deactivating a printer completely means that it is not available for any actions in the system. A complete deactivation makes sense, for example, if the printer is not available for a long period of time due to repairs.

● Use the following command to deactivate a printer:

    xpchange -dev [*selection*] -st NOT_ACTIVE [-ju *justification*]

If you do not specify a *selection*, all printers you manage in the Xprint V7.0 system are deactivated; otherwise you can either specify a list of the printers to be deactivated, or you can use the -scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the printers to be deactivated are selected.

If you de-/activate a printer with the -st option, spoolin and spoolout (printing) are also de-/activated.

With the option -ju *justification* you specify a comment justifying the new spoolin status. You can display this comment with the xpstat -dev command. The comment is deleted automatically when the -st option is changed again with the xpchange -dev command.

Deactivating spoolin

You can deactivate a printer, but still have it print the print jobs waiting in the print queue. To do this set its spoolin status to `OFF`. In this case all print jobs which have the status `ACTIVE` or `WAIT` are still printed; however, at the same time you lock the spoolin of new print jobs with this command.

● Use the following command:

`xpchange −dev [`*selection*`] −si OFF [−ju `*justification*`]`

The `−si` option stands for **s**pool**i**n.

Deactivating printing

If a printer is not available for a short period of time only (e.g. because the toner needs to be refilled), you can still submit print jobs which will be printed when the printer becomes available again.

● Use the following command:

`xpchange −dev [`*selection*`] −so OFF [−ju `*justification*`]`

The `−so` option stands for **s**pool**o**ut.

Examples

– To deactivate the printer `printer1` with the justification that the printer is being repaired:

`xpchange −dev printer1 −st NOT_ACTIVE −ju "printer is being repaired"`

– To deactivate all printers controlled by the host `colorado`:

`xpchange −dev −scl "−ho colorado" −st NOT_ACTIVE`

– To deactivate all printers you manage:

`xpchange −dev −st NOT_ACTIVE`

– To deactivate printer `printer1`, but have all waiting jobs printed before the printer is removed from the network:

`xpchange −dev printer1 −si OFF`

– To deactivate printer `printer1` because the paper is being refilled:

`xpchange −dev −so OFF −ju "refilling paper"`

6.4.3   Reactivating a printer

To be able to submit print jobs for a printer or start printing, you must first
activate the printer.

● Activate the printer with the following command:

    xpchange −dev [*selection*] [−si ON | −so ON] [−ju *justification*]

   If you do not specify a *selection*, the command refers to all printers in the
   system; otherwise you can either specify a list of the printers to be activated,
   or you can use the −scl *"selection_criteria_list"* option (see section
   "Selection criteria list" on page 266 in the Appendix) to define a list of criteria
   according to which the printers to be activated are selected.

   With the -si ON option, you can reactivate spoolin only, with -so ON spoolout
   only. If neither of these options is specified, the printer is reactivated
   completely.

   With the option −ju *justification* you specify a comment justifying the new
   spoolin status. You can display this comment with the xpstat −dev
   command.

Examples

– To activate printer printer1 with the justification that it is now ready again:

    xpchange −dev printer1 −ju "ready again"

– To activate spoolin for all printers connected to host colorado:

    xpchange −dev −scl "−ho colorado" −si ON

– To activate all printers:

    xpchange −dev

6.4.4   Removing a printer

To remove a defined printer because it is no longer available on your system, use the following procedure:

● Log in as `root` or, if defined, as the Xprint V7.0 administrator.

● Check first whether the printer you wish to delete is referenced by other Xprint V7.0 objects. If so, these references must be removed. Use the following command to check for references:

    xpshow −dev [*selection*]*printer_name* −diR

   With *printer_name*, you specify exactly one printer to be deleted. If you want to delete several printers, you must repeat this command for each of these printers.

   If you do not specify a *selection*, the command refers to all printers in the system; otherwise you can either specify a list of the printers to be removed, or you can define a list of selection criteria with the *-scl "selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) according to which the printers to be removed are selected.

● If references to the printer are displayed, you must remove these before you can delete the printer, by modifying the relevant objects such that the references are canceled.

● Check if the printer to be deleted is still active with the following command:

    xpstat −dev [*selection*]

● If the printer is still active (output: `State: ACTIVE`), you must deactivate it before deleting it:

    xpchange −dev [*selection*] −st NOT_ACTIVE

● Delete the printer definition with the following command:

    xpdel −dev [*selection*]

6.4.5   Reconnecting a printer to another system

To move a printer from one system to another, use the following procedure:

● Deactivate the relevant printer:

    xpchange −dev *printer_name* −st NOT_ACTIVE

    where *printer_name* represents the name of the printer to be reconnected.

● Specify the host to which the printer is to be connected:

    xpmod −dev *printer_name* −ho *new_host* [−da *device_file*]

    For *new_host* specify the name of the host at which the printer is to be available from now on.

    If the printer is no longer connected to the same port (e.g. /dev/lp0 instead of /dev/lp), specify a new file for *device_file*.

● Reactivate the printer:

    xpchange −dev *device_name*

6.4.6   Reconnecting a printer to a different port

If you want to connect a defined printer to a different port on the same system, you only need to modify the device definition - you do not have to delete and redefine the printer.

● Check whether the relevant printer is still active. Use the following command:

    xpstat −dev [*selection*]

● If the printer is still active (output: State: ACTIVE), you must deactivate it before modifying it:

    xpchange −dev [*selection*] −st NOT_ACTIVE

● Then modify the printer definition using the following command:

    xpmod −dev *device_name* −da *device_file* [−co *type*]

    where *device_name* is the name of the printer whose definition is to be modified.

    Depending on the type, *device_file* specifies to which port the printer is attached (e.g. /dev/term/tty001 or /dev/term/tty002 for serial, or /dev/lp0 or /dev/lp1 for parallel ports), or which LAN address and port

number apply for a LAN printer (e.g.: `"132.82.127.34 9100"`, as the Internet address for your LAN printer). Instead of the Internet address and port number you can also specify the host name provided it is defined in the `/etc/hosts` file.

If the connection type changes (e.g. up to now the first serial port; now the second parallel port), you must also specify with *type* the new connection type your printer will use. Possible values for *type* are `SERIAL` for a serial port, `PARALLEL` for a parallel port, `SCSI` for a SCSI high-performance printer, and `LAN` for a LAN printer.

6.4.7   Replacing an existing printer with a new one

If you want to replace an existing printer with a new one, you only have to change the relevant information in the definition of the old printer. What information this is depends on the printer involved.

● First check the settings of the existing printer:

   xpshow −dev *printer* −di LONG

   This displays a list of all the settings for the specified printer *printer*.

● Use the checklist on page 263 in the Appendix to check if all the required preparatory steps for modifying the printer have been taken or if you want to use any of the further configuration options mentioned there (forms, filters, permission lists, etc.).

● Check whether the relevant printer is still active with the following command:

   xpstat −dev [*selection*]

● If the printer is still active (output: `Status: ACTIVE`), you must deactivate it:

   xpchange −dev [*selection*] −st NOT_ACTIVE

● Then modify all the settings which have changed for the new printer with the following command:

   xpmod −dev *printer* [*options_to_be_modified*]

   For *options_to_be_modified* you can specify any of the options which can also be specified when defining a new printer (see also section "Adding a printer" on page 116 and the description of the `xpmod −dev` command in the "Xprint V7.0   - Reference Manual").

Example

– The old printer `printer1` used the PCL `HP_LASERJET` but the new printer is a PostScript printer:

```
xpmod -dev printer1 -pc POSTSCRIPT -ct-
```

The `-ct-` option makes sure that the data format of the printer is adjusted to the default, which depends on the PCL.

> **i** You can only modify a PCL assigned to a printer if all the other printer options are compatible.
>
> Example: A printer is defined via `-pc HP_LASERJET` and the default form `LANDSCAPE` (`-ls LANDSCAPE`). In this case, you can only modify the printer to `EPSON-FX` with the `-pc` option if you first modify the default form to `PORTRAIT`.

6.4.8   Assigning a security level to a printer

Under Xprint V7.0 one of five security levels can be assigned to printers as well as to print jobs and users.

Xprint V7.0 assigns print jobs to a printer according to the security level of the job and the printer. This means that a print job can only be printed on a printer with at least the same security level. A print job with the security level `CONFIDENTIAL`, for example, can only be printed on printers with the security level `CONFIDENTIAL` or higher (`SECRET`, `TOP_SECRET`).

● Log in as the Xprint V7.0 administrator.

● If required, deactivate the printer:

```
xpchange -dev printer_name -st NOT_ACTIVE [-ju justification]
```

For *printer_name* specify the name of the printer whose security level you want to modify.

With the `-ju` *justification* option, you can define a comment justifying the new security level. This comment can be displayed with the `xpstat -dev` command. The comment is automatically deleted when the `-st` option is changed again with the `xpchange -dev` command.

● To assign a specific security level to a printer, use the following command:

```
xpmod -dev [selection] -sl security_level
```

If *selection* is not specified, the command refers to all the printers in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the printers to which you want to assign a security level, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant printers are selected.

For −sl *security_level* specify the desired security level. Xprint V7.0 allows you to choose from UNCLASSIFIED (= default), SENSITIVE, CONFIDENTIAL, SECRET, TOP_SECRET.

● Reactivate the printer:

xpchange −dev *printer_name*

For *printer_name* specify the name of the printer whose security level has been modified.

Examples

– To assign the security level CONFIDENTIAL to printer printer5:

```
xpchange −dev printer5 −st NOT_ACTIVE
xpmod −dev printer5 −sl CONFIDENTIAL
xpchange −dev printer5
```

– To display the security level of the printer printer4:

```
xpshow −dev printer4 −di LONG
```

– To modify the security level of the printer printer5 to SECRET later:

```
xpchange −dev printer5 −st NOT_ACTIVE
xpmod −dev printer5 −sl SECRET
xpchange −dev printer5
```

6.5 Administering printer groups

Under Xprint V7.0 you can set up printer groups to speed up the output of print jobs. If a print job is submitted for a printer group, the job is printed on the first printer to become available in the printer group.

This section describes the possible steps required for configuring printer groups. The following table serves as a guide through this section:

If you want to...	Read...
set up a new printer group or create it from an existing one	section "Setting up a new printer group" on page 127
add a printer to an existing printer group	section "Adding a printer to a printer group" on page 129
remove a printer from a printer group	section "Removing a printer from a printer group" on page 129
deactivate a printer group	section "Deactivating a printer group" on page 130
reactivate a printer group	section "Reactivating a printer group" on page 131
delete a printer group	section "Deleting a printer group" on page 132
grant or deny specific users access to a printer group	section "Granting or denying specific users access to a printer group" on page 149

Table 13: Administering printer groups

6.5.1 Setting up a new printer group

There are two possible ways of setting up new printer groups: you can either define a completely new printer group or you can copy an existing one and modify it.

Setting up a completely new printer group

● Set up a new printer group with the following command:

xpadd −dgr *group_name* −dl *device_list*

With *group_name* you assign the new group a name. This name must be unique among all printer groups and printers already defined in the system.

With *device_list* you specify the names of the printers which are to belong to the new group. The printer names must be separated by blanks. Printer groups must not be specified in the list. The following requirements must be met for the specified printers:

– All printers must already be configured.

– You must have the permission required to address the printers in the printer group.

– All printers must be controlled by the same server. A print job in the print queue is always handled by a single server. If any printer in a printer group were not controlled by the same server as the others in the group, this printer would never be used for printing jobs (even if it were the first printer available). If this is the case, use the xpmod −dev command to assign the printer to the correct server.

– The spoolin status of the added printer group is automatically set to "ON". Also, the date of the last modification is updated.

In addition, the following options are available for defining the attributes of the printer group: −up *user_permission,* −ah *administration_host,*

−cu *comment_for_user,* −ca *comment_for_administrator.*

For more detailed information refer to the description of the xpadd −dgr command in the "Xprint V7.0   - Reference Manual".

Copying a printer group

If you want to set up a printer group which is very similar to an existing one, you can also copy the existing printer group and modify the copied group according to your requirements.

The new printer group is set up on the host on which the `xpcopy -dgr` command is executed; this is not true if you have specified a different host with the `-ah` (administration host) option.

● Copy a printer group with the following command:

`xpcopy -dgr` *source_group target_group* [*modifications*]

With *source_group* you specify the name of the printer group you want to copy. With *target_group* you must specify the name of the new printer group. If this name already exists (for a printer or a printer group), the `xpcopy -dgr` command is rejected.

For *modifications* you specify a list containing the new or changed values for the new printer group. The options in this list correspond to the options with which the printer group was added to the Xprint V7.0 system (see the previous section).

Examples

– To set up the printer group `group1`, which contains the printers `printer1`, `printer2` and `printer3` and is only to be used by the users in the permission list `permission1`:

```
xpadd -dgr group1 -dl printer1 printer2 printer3 \
      -up permission1
```

– To set up a new group `group2` based on the existing group `group1` without making any changes:

```
xpcopy -dgr group1 group2
```

– To set up a new group `group2` based on the existing group `group1` keeping all printers except for `printer3`:

```
xpcopy -dgr group1 group2 -dl- printer3
```

6.5.2   Adding a printer to a printer group

If you want to add a printer to a printer group, this printer must already be configured in the spooler system. If this is not the case, you must add the printer with the `xpadd -dev` command; for more detailed information on this, see the section "Adding a printer" on page 116. Proceed as follows:

● Add additional printers to the printer group:

    `xpmod -dgr [`*selection*`] -dl+` *new_printer*

    If *selection* is not specified, the command refers to all the printer groups in the Xprint V7.0 system. Otherwise you can either specify a list of the printer groups to be added, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant printer groups are selected.

Example

To add the printers `printer4` and `printer5` to the printer group `group1`.
`xpadd -dgr group1 -dl+ printer4 printer5`

6.5.3   Removing a printer from a printer group

The `xpmod -dgr` command allows you to delete any printer you manage from a printer group that you have access to.

Proceed as follows:

● Remove the printer:

    `xpmod -dgr [`*selection*`] -dl-` *printer_name*

    If *selection* is not specified, the command refers to all the printer groups in the Xprint V7.0 system. Otherwise you can either specify a list of the printer groups to be removed, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant printer groups are selected.

Example

To delete the printer `printer3` from the printer group `group1`, retaining all the other printers:
`xpmod -dgr group1 -dl- printer3`

6.5.4   Deactivating a printer group

To deactivate a printer group, use the `xpchange -dgr` command. You can only change the current spoolin status of the printer groups you manage.

●   Use the following command to deactivate a printer group:

   `xpchange -dgr [`*selection*`] -si OFF [-ju `*justification*`]`

   If *selection* is not specified, the command refers to all the printer groups in the Xprint V7.0 system. Otherwise you can either specify a list of the printer groups to be deactivated, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the printer groups to be deactivated are selected.

   The option `-si OFF` specifies the new spoolin status (in this case `OFF`) for the selected printer group. When `-si OFF` is set, the print requests for the selected printer groups are rejected.

   With the option `-ju `*justification* you specify a comment justifying the new spoolin status. You can display this comment with the `xpstat -dgr` command. This comment is deleted automatically when the `-si` option is changed again with the `xpchange -dgr` command.

Examples

–   To change the spoolin status of printer group `group1` to `OFF` with the justification that the group is being modified:

   `xpchange -dgr group1 -si OFF -ju "group is being modified"`

–   To deactivate all printer groups which contain printer `printer8` (remember that all criteria used for selecting the printer groups must be enclosed in quotes):

   `xpchange -dgr -scl "-dl printer8" -si OFF`

–   To deactivate all printer groups:

   `xpchange -dgr -si OFF -ju "complete reorganization"`

6.5.5   Reactivating a printer group

To be able to assign print jobs to a printer group, the spoolin status of this printer group must be set to ON.

● To activate a printer group, use the following command:

    xpchange -dgr [*selection*] [-si ON] [-ju *justification*]

If *selection* is not specified, the command refers to all the printer groups in the Xprint V7.0 system. Otherwise you can either specify the names of the printer groups you want to activate, or you can use the -scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the printer groups to be activated are selected.

The option -si ON specifies the new spoolin status (in this case ON) for the selected printer group. When -si ON is set, all the print requests for the selected printer groups are accepted.

With the option -ju *justification* you specify a comment justifying the new spoolin status. You can display this comment with the xpstat -dgr command. This comment is deleted automatically when the -si option is changed again with the xpchange -dgr command.

Examples

–   To set the spoolin status of the printer group group1 to ON with the justification that the group is now ready again:

    xpchange -dgr group1 -si ON -ju "ready again"

–   To set the spoolin status to ON for all printer groups which contain printer printer8 (remember that all criteria used for selecting the printer groups must be enclosed in quotes):

    xpchange -dgr -scl "-dl printer8" -si ON

–   To activate all printer groups:

    xpchange -dgr -si ON

6.5.6   Deleting a printer group

The `xpdel -dgr` command allows you to delete any printer group you can access. In this case, the individual printers of the printer group are not deleted.

● Check first whether the printer group you wish to delete is referenced by other Xprint V7.0 objects:

    `xpshow -dgr [`*selection*`]`*printer_group* `-diR`

    With *printer_group*, you specify exactly one printer group to be deleted. If you want to delete several groups, you must repeat this command for each of these printer groups.

    If you do not specify a *selection*, the command refers to all printer groups in the system; otherwise you can either specify a list of the printer groups to be removed, or you can define a list of selection criteria with the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) according to which the printer groups to be removed are selected.

● If references to the printer group are displayed, you must remove these by modifying the displayed objects such that they no longer refer to this group.

● Delete the printer group with the following command:

    `xpdel -dgr [`*selection*`]`

    If *selection* is not specified, the command refers to all the printer groups in the Xprint V7.0 system. Otherwise you can either specify a list of the printer groups you want to delete, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the printer groups to be deleted are selected.

Examples

–   To delete the printer group named `group1`:

    `xpdel -dgr group1`

–   To delete all printer groups containing printer `printer8`:

    `xpdel -dgr -scl "-dl printer8"`

6.6 Administering users

This section describes the possible ways of administering various users in the Xprint V7.0 system. The following table serves as a guide to this section:

If you want to...	Read...
define a user locally or globally for the entire Xprint V7.0 system, or grant him/her further or new privileges	section "Defining a user" on page 133
delete a user	section "Deleting a user" on page 137
modify the privileges of a user	section "Modifying user privileges" on page 135
modify a user's print quotas	section "Resetting user print quotas" on page 138
display information on users	section "Displaying information on users" on page 140
modify a user's security level	section "Assigning a security level to a user" on page 141

Table 14: Administering users

6.6.1 Defining a user

Xprint V7.0 allows the Xprint V7.0 administrator to grant privileges to users. For privileges to be granted, the users must be defined under Xprint V7.0. There are several different ways of doing this.

The user privileges can be defined while the user is being added. For a detailed description of the possible privileges, see the description of the xpadd -usr command in the "Xprint V7.0 - Reference Manual" as well as in the section "Modifying user privileges" on page 135.

● To add a new user to the Xprint V7.0 system, use the following command:

    xpadd -usr *user_IDs* [-ho *hosts*]

For *user_IDs* you can specify either a single user or a list of users. Now Xprint V7.0 knows the specified users and you can grant them specific privileges.

By additionally specifying a list of hosts with the -ho *hosts* option you can allow users to access jobs they have submitted on one of these hosts from any other of the specified hosts.

These users do not have to be registered as SINIX users on the specified hosts. If the `-ho` option is not specified, only the local host is added to the list.

Examples

–   To add user `smith` locally to the Xprint V7.0 system:

    `xpadd -usr smith`

–   The Xprint V7.0 administrator enters the following command on a spooler system with the hosts `colorado`, `nashua` and `hudson`:

    `xpadd -usr smith -ho colorado nashua`

    `smith` is now an Xprint V7.0 user of host `colorado` and host `nashua`. If he sends a job from host `colorado` to the system, he can log in to host `nashua` and access this job, for example to modify the job priority. He cannot do this from host `hudson` as there the Xprint V7.0 system considers him to be a different user with the ID `smith`.

6.6.2   Entering a defined user for other hosts

If an already defined user is to be able to access his/her jobs from other hosts as well, for example because he/she has a user ID on a newly added host, the host list can be extended.

●   Enter the new host in the user's host list with the following command:

    `xpmod -usr [`*selection*`] -ho+` *host*

    If *selection* is not specified, the command refers to all the users in the Xprint V7.0 system. Otherwise can either you can specify the name(s) of the users whose host list you want to modify, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the users are selected. For *host* specify the name of the host from which the user is to have common access to his/her print jobs.

Example

–   To add the new host `delaware` to the host list of user `smith`:

    `xpmod -usr smith -ho+ delaware`

–   To add the new host `missouri` additionally for all users:

    `xpmod -usr -ho+ missouri`

6.6.3 Deleting a host from a user's host list

If a defined user is no longer to be able to access his/her print jobs from a specific host, e.g. because there is now another user with the same user ID on this host, you can delete this host from the list.

● Delete the host from the user's host list with the following command:

xpmod −usr [*selection*] −ho− *host*

If *selection* is not specified, the command refers to all the users in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the users whose host list you want to modify, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the users are selected.

For *host* specify the name of the hosts from which the user is no longer to have access to the print jobs of the other hosts.

Examples

– To delete host delaware from the host list of user smith:

xpmod −usr smith −ho− delaware

– To delete host missouri from the host list of all users:

xpmod −usr −ho− missouri

6.6.4 Modifying user privileges

The Xprint V7.0 administrator can also define the privileges of users when or after defining them. There are a number of options available which can be used with the xpmod −usr command described below or when defining the user with xpadd −usr.

● Use the following command to modify the privileges of one or more users:

xpmod −usr [*selection*] *modifications*

If *selection* is not specified, the command refers to all users in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the user(s) whose privileges you want to modify, or you can use the −scl

"selection_criteria_list" option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant users are selected.

For *modifications* you can specify any combination of the following options:

– With the option −pv *privileges* you assign specific privileges to a user. Possible categories are:

ALL
>   the user is given all privileges.

NONE (default)
>   the user is granted no privileges.

ANY_DEVICE
>   the user can access any printer even if defined otherwise in the permission list.

TOP
>   the user is allowed to place his/her print job at the top of the print queue.

– With the option −pr *priority* you can assign the maximum priority with which the user may spool in his/her print jobs. Xprint V7.0 then places the user's jobs in the print queue according to the priority assigned. The priority range is 1-100, and the default value is UNDEFINED.

– With the option −aj *allowed_jobs* the Xprint V7.0 administrator can define how many jobs each individual user is allowed to print. The default is NO_LIMIT.

– With the option −nc *number_of_copies* you define the maximum number of copies per user job. The default is NO_LIMIT.

– With the option −ap *allowed_pages* you can define the maximum number of pages a user is allowed to print. Once a user has reached this number of pages, he/she is no longer allowed to submit further print jobs. The default is NO_LIMIT.

– When the −ua (**u**ser **a**ccounting) option is specified, Xprint V7.0 will update and save the counter of the number of pages and jobs printed per user after the job is finished. When a user has reached the limit of one of his/her print quotas, he/she cannot print any more print jobs until his/her counter is reset.

– With the option $-sl$ *security_level* you can define the maximum security level with which a user can submit print jobs. The following values are allowed: `UNCLASSIFIED` (default), `SENSITIVE`, `CONFIDENTIAL`, `SECRET`, `TOP_SECRET`.

Examples

– To modify the current privileges of `smith` such that he is now allowed to place his jobs at the top of the print queue (`TOP`):

```
xpmod –usr smith –pv TOP
```

– To assign user `smith` all the possible privileges:

```
xpmod –usr smith –pv ALL
```

– To modify the privileges of all users with the current rights `ANY_DEVICE`, such that these are now given all possible privileges:

```
xpmod –usr –scl "-pv ANY_DEVICE" –pv ALL
```

– To define a maximum priority of 80 for user `smith` (now this user can spool in his/her print jobs with any priority between 1 and 80):

```
xpmod –usr smith –pr 80
```

– To define a maximum number of 10 jobs for user `smith`:

```
xpmod –usr smith –aj 10
```

– To restrict the maximum number of copies per print job to 15 for user `smith`:

```
xpmod –usr smith –nc 15
```

– To restrict the maximum number of pages user `smith` may print to `500`:

```
xpmod –usr smith –ap 500
```

– To update and save the counter for the number of pages and jobs printed by `smith` after the job is finished, use the following command:

```
xpmod –usr smith –ua
```

6.6.5   Deleting a user

Before trying to delete a user, make sure that this user is not contained in any permission list. A user that is still listed in an allowed list cannot be deleted.

● Check first whether the user you wish to delete is referenced by other Xprint V7.0 objects. Enter

```
xpshow -usr [selection]user -diR
```

With *user*, you specify exactly one user to be deleted. If you want to delete several users, you must repeat this command for each of these users.

If you do not specify a *selection*, the command refers to all users in the system; otherwise you can either specify a list of the users to be removed, or you can define a list of selection criteria with the *-scl "selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) according to which the users to be removed are selected.

● If references to the user are displayed, you must remove these by modifying the displayed objects accordingly.

● To delete user entries in the Xprint V7.0 system, you as the Xprint V7.0 administrator must enter the following command:

```
xpdel -usr [selection]
```

If you do not specify a *selection*, the command refers to all users in the Xprint V7.0 system. Otherwise you can either specify a list of the users to be deleted, or you can use the -scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant users are selected.

Examples

– To delete a user named smith:

```
xpdel -usr smith
```

– To delete all users who are not assigned any privileges (xpadd -usr *user_name* -pv NONE):

```
xpdel -usr -scl "-pv NONE"
```

6.6.6   Resetting user print quotas

When defining a user, you can determine specific quotas to restrict the number of pages or print jobs a user can print. When the number of allowed pages or jobs is reached, the user can only print again when you reset the print quotas. There are two possible ways of resetting a user's print quotas:

Changing the number of consumed pages

● You can change the number of pages a user has consumed (i.e. printed) with the `-cp` option:

```
xpchange -usr [selection] -cp new_consumed_pages
```

If *selection* is not specified, the command refers to all the users in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the user(s) for whom the changed print quotas are to apply, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant users are selected.

The variable *new_consumed_pages* represents the new counter value for the consumed pages of the user. Now the user can print again until the maximum number of allowed pages is reached. Once the user has consumed this number of pages, any further jobs will be rejected.

Changing the number of consumed print jobs

● You can change the number of print jobs a user has consumed (i.e. printed) with the `-cj` option:

```
xpchange -usr [selection] -cj new_consumed_jobs
```

If *selection* is not specified, the command refers to all the users in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the user(s) for whom the changed print quotas are to apply, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant users are selected.

The variable *new_consumed_jobs* represents the new counter value for the consumed jobs of the relevant user. Now the user can print again until the maximum number of allowed print jobs is reached. Once the user has consumed this number of print jobs, any further jobs will be rejected.

Examples

– To reset the number of consumed pages for users `jones` and `brown` to `0`:

```
xpchange -usr jones brown -cp 0
```

6.6.7   Displaying information on users

Xprint V7.0 offers the option of displaying information on the defined users. You can display the user privileges as well as the current state of the assigned print quotas.

Displaying privileges and print quotas

●   To display privileges and print quotas of users in the spooler system, enter:

```
xpshow −usr [selection][−di display]
```

If *selection* is not specified, the command refers to all the users in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the users whose privileges or print quota you want to view, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant users are selected.

The type of information displayed can be selected with the −di *display* option. Possible values for *display* include LONG and SHORT (default):

SHORT display

```
Name      Jobs    Pages    Copies   Prio.   Accounting
----      ----    -----    ------   -----   ----------
smith     75      500      25        80            SET
jones     75      500      25        90            SET
brown     100     2000     50       100            SET
```

LONG display:

```
NAME: jones
Hosts: sni11.24
Allowed jobs:    100            Maximum priority: 100
Allowed pages: 2000            Allowed copies: 50
Security level: CONFIDENTIAL   Update accounting: yes
Privileges: NONE
Comment:
```

Status display of the current print quotas

●   You can display the current state of the print quota for each user in the system. To do this use the following command:

```
xpstat −usr [selection] [−di display]
```

If *selection* is not specified, the command refers to all the users in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the users whose print quota state you want to view, or you can use the -scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant users are selected.

The type of information displayed can be selected with the -di *display* option. Possible values for *display* include LONG and SHORT (default).

Example

To display the current print quotas for smith:

```
xpstat -usr smith -di LONG

NAME: smith
Allowed pages: 1500    Consumed pages: 112
Allowed jobs:    70    Consumed jobs:    8
```

6.6.8   Assigning a security level to a user

By assigning a specific security level to a user (can only be done by the Xprint V7.0 administrator), you allow the user to use all the printers with this security level or lower.

To change a user's security level, proceed as follows:

● Log in as the Xprint V7.0 administrator.

● Modify the security level:

   ```
   xpmod -usr [selection] -sl security_level
   ```

   If *selection* is not specified, the command refers to all the users in the Xprint V7.0 system. Otherwise you can either specify the name(s) of the user(s) whose security level you want to modify or you can use the -scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant users are selected.

   For *security_level* specify one of the following (in ascending order):

   UNCLASSIFIED (= default), SENSITIVE, CONFIDENTIAL, SECRET, TOP_SECRET

Examples

– To add a new user called `brown` and assign him the security level `TOP_SECRET` at the same time:

```
xpadd -usr brown -sl TOP_SECRET
```

– To check the security level of `smith`:

```
xpshow -usr smith -di LONG
```

A message similar to the following is displayed:

```
NAME: smith
Host:
Allowed jobs: NO_LIMIT        Maximum priority: UNDEFINED
Allowed pages: NO_LIMIT        Allowed copies: NO_LIMIT
Security level: TOP_SECRET   Update accounting: RESET
Privileges: NONE
Comment:
```

6.7 Administering permission lists

Xprint V7.0 offers various means of ensuring the security of the data to be printed. These include creating permission lists for printers, printer groups and forms, which restrict or deny use of the relevant object to the specified names. Permission lists also allow other users restricted administration of supervisors for a specific server.

This section describes the possible measures involved in configuring permission lists. The following table serves as a guide to this section:

If you want to...	Read...
create a permission list	section "Creating a permission list" on page 144
modify a permission list	section "Modifying a permission list" on page 146
delete a permission list	section "Deleting a permission list" on page 147
grant or deny specific users access to a printer	section "Granting or denying specific users access to a printer" on page 148
grant or deny specific users access to a printer group	section "Granting or denying specific users access to a printer group" on page 149
grant or deny specific users access to a form	section "Granting or denying specific users access to a form" on page 149
grant or deny specific printers access to a form	section "Granting or denying specific printers access to a form" on page 150
allow or reject specific administrators as supervisor administrators	section "Allowing or prohibiting administration of supervisors" on page 151

Table 15: Administering permission lists

6.7.1 Creating a permission list

If you want to create a new permission list you have two options: you can either create a new permission list from scratch or you can copy an existing one and modify it.

Creating a new permission list

To create a new permission list, proceed as follows:

● Log in as the Xprint V7.0 administrator.

● Create a new permission list with the following command:

xpadd −prm *list_name* *list* [−pt FORM] [−ca "*comment*"]

where *list_name* is the unique name of the permission list and *list* is the list of users or forms to be included in the permission list.

list can have the following format:

−al *user_list* if it is to be an allowed list,

−dn *user_list* if it is to be a denied list.

user_list is a list of Xprint V7.0 users or forms which are to be included in the permission list. For forms, this list need only contain the names of the forms, while for Xprint V7.0 users it may contain the following elements:

user   The user *user* on the host containing the object to which this permission list is to be assigned.

*   All users on the host containing the object to which the permission list is to be assigned.

user@host_name
         The user *user* on host *host_name.*

user@*
         The user *user* on each host.

*@host_name
         All users on host *host_name.*

@
         All users on all hosts.

You can also specify several elements. These must then be separated by a blank or tab.

If you want to create a list of forms, you must additionally specify the option
−pt FORM (pt = permission type).

comment is an optional comment describing the permission list. Comments
can make using these permission lists later much easier. If a comment
contains blanks it must be enclosed in double quotes.

Copying a permission list

To use an existing permission list as the basis for a similar new list, copy the
existing list and modify the entries at the same time or immediately afterwards.
Use the following procedure:

● Log in as the Xprint V7.0 administrator.

● If necessary, check the existing permission lists:

xpshow −prm [−di LONG]

A list of all the available permission lists is displayed, and, if the −di LONG
option is used, also a list of the users contained in the list and whether it is
an allowed or a denied list.

● Copy your chosen permission list with a new name:

xpcopy −prm *old_list new_list* [*modifications*]

With this command you copy an existing list *old_list* to a new list *new_list*. If
you wish, you can also modify the copy at the same time by specifying
modifications. Which modifications are possible is described in the following
section.

Examples

– To set up an allowed list right1 with the names of all users on host
delaware, enter the following command:

xpadd −prm right1 −al *@delaware −ca "+: all users on delaware"

– To set up a denied list right3 with the names of the users smith, jones and
brown on the host of the relevant object and the user grant on host nashua,
enter the following command:

xpadd −prm right3 −dn smith jones brown grant@nashua

– To set up an allowed list right2 with all users on host delaware and the user
jones on host colorado, copy the list right1 and add jones:

xpcopy −prm right1 right2 −al+ jones@colorado

6.7.2   Modifying a permission list

You can modify a permission list by adding new entries to it or removing entries from it.

Adding entries to the list

To add new entries to a permission list, proceed as follows:

● Log in as the Xprint V7.0 administrator.

● Add an entry to the list with the following command:

  xpmod −prm *list_name additions*

  where *list_name* is the name of the permission list to be modified. For *additions* specify:

  −al+ *user_list* if it is an allowed list,

  −dn+ *user_list* if it is a denied list

  where *user_list* represents the list of the Xprint V7.0 users or forms to be added to the permission list. This list can be structured as described in the previous section.

Removing entries from the list

To remove entries from a permission list, proceed as follows:

● Log in as the Xprint V7.0 administrator.

● Modify the desired list with the following command:

  xpmod −prm *list_name deletions*

  where *list_name* is the name of the permission list to be modified. For *deletions* specify:

  −al− *user_list* if it is an allowed list,

  −dn− *user_list* if it is a denied list

  where *user_list* represents the list of the Xprint V7.0 users or forms to be removed from the permission list. This list can be structured as described in the previous section. The elements in this list must be contained in the selected permission list.

Example

– To add the user `grant` on host `nashua` to the list `right1`:

  `xpmod -prm right1 -al+ grant@nashua`

– To add the form `A5LAND` to the permission list `list1`:

  `xpmod -rm list1 -al+ A5LAND`

6.7.3 Deleting a permission list

If a permission list is no longer required, you can delete it from the Xprint V7.0 system.

To do this, proceed as follows:

● Log in as the Xprint V7.0 administrator.

● Check first whether the permission list you wish to delete is referenced by other Xprint V7.0 objects.

  `xpshow -usr [`*selection*`]`*permission_list* `-diR`

  With *permission_list*, you specify exactly one permission list to be deleted. If you want to delete several permission lists, you must repeat this command for each of these lists.

  If you do not specify a *selection*, the command refers to all permission lists in the system; otherwise you can either specify a list of the permission lists to be removed, or you can define a list of selection criteria with the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) according to which the permission lists to be removed are selected.

● If references to the permission list are displayed, you must remove these by modifying the displayed objects accordingly.

● Remove the list from the Xprint V7.0 system with the following command:

  `xpdel -prm [`*selection*`]`

  If *selection* is not specified, the command refers to all the permission lists in the local Xprint V7.0 system. Otherwise you can either specify a list of the permission lists you want to delete, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant permission lists are selected.

6.7.4 Granting or denying specific users access to a printer

If you want to grant only specific users access to a printer, you can assign a permission list to the printer. To do this, proceed as follows:

● Select a suitable allowed list containing exactly those users who are to be granted access to the printer, or select a denied list containing all those users who are to be denied access to the printer, respectively. A list of all permission lists can be displayed with the following command:

```
xpshow -prm
```

If there is no suitable list defined in the Xprint V7.0 system, you can create one yourself (see section "Creating a permission list" on page 144).

● Deactivate the desired printer(s):

```
xpchange -dev [selection] -st NOT_ACTIVE
```

If *selection* is not specified, the command refers to all the printers in the local Xprint V7.0 system. Otherwise you can either specify a list of the printers you want to assign a permission list to, or you can use the -scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant printers are selected.

● Assign the selected permission list to the desired printer(s):

```
xpmod -dev [selection] -up list_name
```

list_name is the name of the selected permission list.

● Reactivate the printer(s):

```
xpchange -dev [selection]
```

6.7.5   Granting or denying specific users access to a printer group

If you want to grant only specific users access to a printer group, you can assign a permission list to the printer group. To do this, proceed as follows:

● Select a suitable allowed list containing exactly those users who are to be granted access to the printer group, or select a denied list containing all those users who are to be denied access to the printer group. A list of all permission lists can be displayed with the following command:

    xpshow -prm

If there is no suitable list defined in the Xprint V7.0 system, you can create one yourself (see section "Creating a permission list" on page 144).

● Assign the selected permission list to the desired printer group:

    xpmod -dgr [*selection*] -up *list_name*

If *selection* is not specified, the command refers to all the printer groups in the local Xprint V7.0 system. Otherwise you can either specify a list of the printer groups to which you want to assign a permission list, or you can use the -scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant printer groups are selected.

list_name is the name of the selected permission list.

6.7.6   Granting or denying specific users access to a form

If you want to grant only specific users access to a form, you can assign a permission list to the form. To do this, proceed as follows:

● Select a suitable allowed list containing exactly those users who are to be granted access to the form, or select a denied list containing all those users who are to be denied access to the form. A list of all permission lists can be displayed with the following command:

    xpshow -prm

If there is no suitable list defined in the Xprint V7.0 system, you can create one yourself (see section "Creating a permission list" on page 144).

● Assign the selected permission list to the desired form:

```
xpmod -frm [selection] -up list_name
```

where *selection* is the name of one or more forms. If it is not specified, all forms are modified. Otherwise you can either specify a list of the forms to which you want to assign a permission list, or you can define a selection criteria list according to which the relevant forms are selected.

list_name is the name of the selected permission list.

6.7.7 Granting or denying specific printers access to a form

If you want to grant only specific printers access to a form, you can assign a permission list to the form. To do this, proceed as follows:

● Select a suitable allowed list containing exactly those printers which are to be granted access to the form, or select a denied list containing all those printers which are to be denied access to the form. A list of all permission lists can be displayed with the following command:

```
xpshow -prm
```

If there is no suitable list defined in the Xprint V7.0 system, you can create one yourself (see section "Creating a permission list" on page 144).

● Assign the selected permission list to the desired form:

```
xpmod -frm [selection] -up list_name
```

where *selection* is the name of one or more forms. If it is not specified, all forms are modified. Otherwise you can either specify a list of the forms to which you want to assign a permission list, or you can define a selection criteria list according to which the relevant forms are selected.

list_name is the name of the selected permission list.

6.7.8 Allowing or prohibiting administration of supervisors

In your capacity as the Xprint V7.0 administrator, Xprint V7.0 permits you to specify which local administrators (root or subroot) are allowed to attach supervisors to a server that is running on a different host. For example, you can allow root of host B to attach a supervisor of B to a server running on host A. This can be achieved by assigning a permission list to the relevant server. Here is how to do this:

- Log in as the Xprint V7.0 administrator.

- Deactivate the server for which you want to change the associated supervisors:

  ```
  xpchange -srv [selection] -st NOT_ACTIVE
  ```

  where *selection* is the name of the server for which you want to grant or deny permissions. This can be omitted if you want to deactivate all defined servers, or you can define a selection criteria list according to which the relevant servers are selected.

- Assign to the server a permission list defining which other administrators are to be allowed to add, modify or delete supervisors for this server:

  ```
  xpmod -srv [selection] -up permission_list
  ```

  permission_list is the allowed or denied list to be assigned. This permission list must already exist when you issue this command; if necessary create a new one first (see section "Creating a permission list" on page 144).

- Reactivate the modified server:

  ```
  xpchange -srv [selection]
  ```

i	The local privileges of root and subroot always take precedence over the permission list attached to the server. This means that you can only protect a server from administrators from other hosts, not from the administrators on the same host.

Example

To allow jim, subroot of host B, to define supervisors and attach them to any server in the domain:

```
xpadd -prm supervisor_administrator -al jim
xpchange -srv -st NOT_ACTIVE
xpmod -srv -up supervisor_administrator
```

```
xpchange -srv
```

6.8   Administering fonts

This section describes how to administer fonts in the Xprint V7.0 system. The following table serves as a guide to this section:

If you want to...	Read...
add a font	section "Adding a font" on page 152
delete a font	section "Deleting a font" on page 154
modify the attributes of a font	section "Modifying the attributes of a font" on page 155

Table 16: Administering fonts

6.8.1   Adding a font

i	The possible attributes of a new font depend on the PCL of the target printer. The supported attributes can be displayed with the command `xpshow -pcl` *pcl_name* `-di LONG` (see section "Displaying information on Xprint V7.0 objects" on page 82).

There are two possible ways of defining a new font and adding it to the system: you can either define a new font from scratch or you can copy an existing font and modify the relevant attributes in this copy.

Defining a completely new font

● Check whether the PCL of the printer on which the jobs are to be printed with the new font supports the desired attributes:

  ```
  xpshow -pcl pcl_name -di LONG
  ```

● Add a new font to the system with the following command:

  ```
  xpadd -fnt font_name attributes
  ```

  where *font_name* is the name of the object in which you save the desired font attributes.

The variable *attributes* represents a list of various options via which you can define the attributes of the new font:

−tp *typeface*, −cs *style*, −hm *horizontal_motion*, −vm *vertical_motion*,
−pq *print_quality*, −la *language*, −ca *comment_for_administrator*,
−ah *administration_host*, −tm *typeface_mandatory*, −cu *comment_for_user*.

The possible values for options −tp, −cs, −hm, −vm, −pq, −la depend on the PCL of the target printer. The supported values can be displayed with the xpshow −pcl *pcl_name* −di LONG command (see section "Displaying information on Xprint V7.0 objects" on page 82).

| **i** | For more detailed information, refer to the description of the xpadd −fnt command in the "Xprint V7.0 - Reference Manual". |

Defining a font by copying an existing font

An easy way of defining a new font is to copy an existing font with the same or similar attributes. If you wish, you can modify the font attributes at the same time.

To create a new font from an existing font by modifying the attributes, proceed as follows:

● First check whether the PCL of the target printer supports the desired attributes:

xpshow −pcl *pcl_name* −di LONG

● Then copy the existing font to the new font and make the desired modifications:

xpcopy −fnt *old_font_name new_font_name modifications*

For *modifications* specify what modifications you wish to make to the font. Each entry in this attribute list consists of an option of the xpadd −fnt command and a corresponding value.

Examples

– To define the font generic2 which is to have the typeface SansSerif, the character pitch 12 cpi and the character set INTERNATIONAL:

xpadd −fnt generic2 −tp SansSerif −hm 12 −la INTERNATIONAL

– To define the typeface my_font on the basis of the GENERIC font, setting the character pitch to 10 cpi and the print quality to HIGH:

xpcopy −fnt GENERIC my_font −hm 10 −pq HIGH

6.8.2   Deleting a font

To delete a font from the system, proceed as follows:

● You can only delete a font if it is not connected to other objects, e.g. assigned to a form as the default font. To display any references, use the following command:

```
xpshow −fnt font −diR
```

For *font* you specify exactly one font name you want to delete. If you want to delete several fonts, you must repeat this command for each of these fonts.

● If references to the font are displayed, you must remove these by modifying the displayed objects accordingly.

● Delete the font(s) with the following command:

```
xpdel −fnt [selection]
```

For *selection* you can either specify a list of font names, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the fonts to be deleted are selected. If *selection* is not specified, all fonts (except GENERIC) are deleted.

Note: The default font GENERIC supplied with the Xprint V7.0 package cannot be deleted, even by the Xprint V7.0 administrator. Neither can those fonts be deleted that are still referenced by other objects, e.g. if the font my_font is used in the form my_form.

Examples

– To delete the fonts font1, font2 and font3 from the system:

```
xpdel −fnt font1 font2 font3
```

– To delete all fonts with the attributes character style ITALICS and print quality DRAFT:

```
xpdel −fnt −scl "−cs ITALICS −pq DRAFT"
```

6.8.3 Modifying the attributes of a font

You can modify the attributes of any defined font you administer.

> **i** The default font GENERIC supplied with Xprint V7.0 cannot be modified, even by the Xprint V7.0 administrator.

● To be on the safe side, first display the attributes of the font you want to modify. To do this, use the xpshow -fnt command (see section "Displaying information on Xprint V7.0 objects" on page 82).

● To modify the attributes of specific fonts, enter the following command:

xpmod -fnt [*selection*] *modifications*

For *selection* you can either specify a list of fonts whose attributes you want to modify, or you can use the -scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant fonts are selected. If you do not specify *selection*, all fonts are modified.

modifications represents a list of modifications to be made to the font(s). Each entry in this list consists of one of the options of the xpadd -fnt command listed in the section "Adding a font" on page 152, plus a corresponding value.

Examples

– To modify the attributes of the font invoice from SansSerif to Courier and the line spacing from 4 to 5:

xpmod -fnt invoice -tp Courier -vm 5

– To modify the character pitch of all fonts with the setting "10 cpi" to 12 cpi:

xpmod -fnt -scl "-hm 10" -hm 12

6.9 Administering forms

To make it easier for users to work with forms or constantly recurring document formats, forms can be defined under Xprint V7.0. Such a form is an object with a name which is stored in the Xprint V7.0 database. In this object, different parameters (paper size, margins, default font, etc.) are stored and these can then be assigned to a print job via the object name whenever required. Xprint V7.0 then applies the formatting parameters automatically to the print job.

Furthermore, it is possible to define a default form for every printer which is automatically used for all the print jobs sent to this printer.

Xprint V7.0 is supplied with a default form called `GENERIC`. This is assigned the default font `GENERIC` that is also supplied with Xprint V7.0 (see section "Administering fonts" on page 152) as well as the default settings for all the options of the
`xpadd -frm` command.

If you want to...	Read...
define a new form	section "Adding a form" on page 157
delete a form	section "Deleting a form" on page 158
modify the attributes of a form	section "Modifying the attributes of a form" on page 160
assign a form to a printer	section "Default forms for printers" on page 160
grant or deny specific users access to a form	section "Granting or denying specific users access to a form" on page 149
grant or deny specific printers access to a form	section "Granting or denying specific printers access to a form" on page 150

Table 17: Administering forms

6.9.1   Adding a form

Under Xprint V7.0 you can define any number of forms. There are two possible ways of defining forms: you can either define a new form from scratch or you can copy an existing form and modify it.

Defining a new form from scratch

● If you want to define a default font for the form, check first whether this font is available in the system. To do this, display all the defined fonts using the following command:

```
xpshow −fnt
```

Or search for the desired font *font_name* with the command

```
xpshow −fnt font_name
```

● Check whether the PCL of your target printer supports the desired attributes of the new form:

```
xpshow −pcl pcl_name −di LONG
```

● Now define the new form using the following command:

```
xpadd −frm form_name  attributes
```

For *form_name* specify the name of the form.

attributes represents a list of attributes the form is to have. Every entry in this list consists of an option as well as a corresponding value. The following options are available:

−ah *administration_host,* −ca *comment_for_administrator,*
−cu *comment_for_user,* −ft *default_font,* −je *job_end_sheet,*
−js *job_start_sheet,* −ll *line_length,* −lm *left_margin,* −ls *layup,*
−mf (mounted font), −mm *mount_method,* −nt *notification_delivery_threshold,*
−ph *page_height,* −pl *page_length,* −pw *page_width,* −sd *side_specification,*
−sp *job_separator_sheet,* −tm *top_margin,* −up *user_permission,*

For more information on these options, refer to the description of the
`xpadd −frm` command in the "Xprint V7.0   - Reference Manual".

Defining a form on the basis of an existing form

A simple way of defining a new form is to copy an existing one to a form name. If necessary, you can also modify the new form at the same time.

● To copy a form, use the following command:

    xpcopy −frm *old_form_name* *new_form_name* [*modifications*]

old_form_name is the name of the existing form that is to be copied, *new_form_name* is the name of the new form file.

modifications represents a list of modified attributes which are to be different for the new form. Each entry in this list consists of an option of the xpadd −frm command plus a corresponding value.

Examples

– To define a form letter1 with the values: form layup portrait, page height 297 mm, page width 210 mm, top margin 2 cm, page length 24 cm, left margin 2.5 cm, and default font font4:

    xpadd −frm letter1 −ls PORTRAIT −ph 297m −pw 210m −tm 2c \
                       −pl 24c −lm 2.5c −ft font4

– To copy the form invoice3 to the new form form1 without modifications:

    xpcopy −frm invoice3 form1

– To copy the form invoice3 to the form form1, changing the default font to Times, the left margin to 20 mm and the line length to 17 cm.

    xpcopy −frm invoice3 form1 −ft Times −lm 20m −ll 17c

6.9.2   Deleting a form

You can delete from the Xprint V7.0 system any form you administer.

| i | A form which is referenced by another object (e.g. the default form of an existing printer) cannot be deleted. Neither is it possible to delete the default form GENERIC supplied with Xprint V7.0. |

To delete a form, proceed as follows:

● Log in as the Xprint V7.0 administrator.

● You can only delete a form if there are no references to other objects (e.g. default form of a printer). Check this with the xpshow command:

    xpshow −frm [*selection*]*form* −diR

For *form* you specify the name of exactly one form you want to delete. If you want to delete several forms, you must repeat this command for each one.

For *selection* you can either specify a list of form names, or you can define a list of selection criteria with the *-scl "selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) according to which the forms to be deleted are selected.

● If references to the form are displayed, you must remove these by modifying the displayed objects accordingly.

● Delete the form with the following command:

```
xpdel -frm selection
```

For *selection* you can either specify a list of form names, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the forms to be deleted are selected.

Examples

– To delete the forms `invoice1` and `manual`:

```
xpdel -frm invoice1 manual
```

– To delete all forms with the font `font1` and the paper format A4 (page width 210 mm, page height 297 mm):

```
xpdel -frm -scl "-ft font1 -pw 210m -ph 297m"
```

6.9.3　Modifying the attributes of a form

You can modify the attributes of any form which you administer or which you are allowed to use:

> **i** The attributes of the default form GENERIC of Xprint V7.0 cannot be modified, even by the system administrator.

● To modify the attributes of a form, use the following command:

xpmod −frm [*selection*] *modifications*

For *selection* you can either specify a list of forms whose attributes you want to modify, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant forms are selected. If *selection* is not specified, all forms are modified accordingly.

modifications represents a list of changes to be made to the selected form(s). Each entry in this modifications list consists of one of the options of the xpadd −frm command listed in section "Adding a form" on page 157 and a corresponding value.

Examples

– To modify the attributes of the form form1 such that the form layup is set to landscape format and the default font to font1.

xpmod −frm form1 −ls LANDSCAPE −ft font1

– To modify the paper format of all forms with the setting A4 (297 mm x 210 mm) to Legal (14 inch x 8.5 inch):

xpmod −frm −scl "−ph 297m −pw 210" −ph 14i −pw 8.5i

6.9.4　Default forms for printers

Xprint V7.0 allows you to assign a default form to every printer. This default form is then used automatically unless a different form is specified at spoolin. If you do not specify a default form when setting up a printer, Xprint V7.0 automatically uses the default form GENERIC on this device.

To assign a default form to a printer or to change a default form that has already been assigned, proceed as follows:

● If you do not know the printer identifier of the relevant printer, display a list of all the printers with the `xpshow -dev` command.

● First check the settings of the relevant printer:

`xpshow -dev` *printer* `-di LONG`

A list of all the settings for the specified printer *printer* is displayed.

● Before you can make the changes, the printer must be deactivated:

`xpchange -dev` *printer* `-st NOT_ACTIVE`

● Now assign a form to the printer:

`xpmod -dev` *printer* `-fm` *form_name*

printer represents the ID of the printer to which the default form is to be assigned. *form_name* is the name of the assigned form.

Note: Xprint V7.0 automatically checks whether the printer's PCL supports the attributes of the assigned form and the assigned font. If this is not the case, the `xpmod` command is not executed.

A `MANUAL` form cannot be defined as the default form for a printer.

● Reactivate the printer:

`xpchange -dev` *printer*

Examples

– To add printer `printer2` (address `/dev/lp1`) and at the same time assign to it the default form `invoice1`:

`xpadd -dev printer2 -da dev/lp1 -fm invoice1`

– To assign to the printer `printer1` the form `form1` as its default form:

```
xpchange -dev printer1 -st NOT-ACTIVE
xpmod -dev printer1 -fm form1
xpchange -dev printer1
```

– To cancel the assignment of the form `sni_invoice1` to the printer `printer2` and assign to it the Xprint V7.0 default form `GENERIC`:

```
xpchange -dev printer2 -st NOT-ACTIVE
xpmod -dev printer2 -fm GENERIC or xpmod -dev printer2 -fm-
xpchange -dev printer2
```

6.10 Administering filters

This section describes how to add filters to the Xprint V7.0 system, or how to modify or delete exiting filters. The following table serves as a guide to this section:

If you want to...	Read...
add a new filter	section "Adding filters" on page 162
delete a filter	section "Deleting filters" on page 167
modify filter attributes	section "Modifying the attributes of a filter" on page 168
assign a filter to a printer	section "Assigning a filter to a printer" on page 169
remove a filter from a printer	section "Removing a filter from a printer" on page 170

Table 18: Administering filters

6.10.1 Adding filters

With the `xpadd -flt` command you can add a new filter to your system. A filter can be added with specific attributes, e.g. input and output data formats and special modes. The filters suitable for a job are selected according to these attributes.

There are two possible ways of adding a new slow or fast filter: you can either create a filter from scratch by setting all the required options yourself or you can copy a similar filter and modify the relevant options.

i	As already mentioned, you can choose between slow and fast filters. By default the system uses slow filters (`-tp SLOW`). To use fast filters, you must always specify the `-tp FAST` option.

Creating a new slow filter

● To add a new slow filter for use in the Xprint V7.0 system, enter the following command:

xpadd −flt *filter_name* −cm *command* −it *input_content_type* \
−ot *output_content_type* −op [*options*]

For *filter_name* specify the name of the new filter. You must use a name which does not yet exist in the system, otherwise the command will be rejected.

For *command* you must specify the path name of the executable file of the filter program. The path name must be the same on all host computers on which the filter is stored. If the absolute path name is not specified, the executable filter file is searched for in the directory `/var/spool/Xprint/config/filters`). If `-cm` (for **com**mand) is not specified, the filter program name must be identical to the filter name.

For *input_content_type* specify the formats the slow filter accepts as input. The names must not exceed 63 characters in length. This might be, for example, an existing PCL, or a completely new input data format. If this option is not specified, the system assumes that the filter accepts any input data format.

With the option *output_content_type* you define the output data format generated by the slow filter. Here too the name must not exceed 63 characters in length. If you do not specify this option, the system assumes that the output type is the same as the input type, i.e. the filter does not convert data but only implements special modes.

With *options* you can specify that defined names, attributes or variables are passed on to the filter program for processing. The Xprint V7.0 options are mapped by strings in the following format:

keyword pattern =replacement

There is only one blank between the context-sensitive keyword and the pattern. The equals sign (=) is not enclosed in blanks. An equals sign within the pattern must be escaped (by a preceding backslash \).

keyword

> specifies what must be considered when the option is generated. The permitted keywords are listed in the table in the "Xprint V7.0 - Reference Manual". Each keyword represents context-sensitive attributes which must match the *pattern* when the option is generated.

pattern

> defines when the option is to be generated. It may be a value, an asterisk (*) or a regular expression. If *pattern* matches the actual values extracted with the *keyword*, the option is generated. Otherwise no option is passed on to the filter.

replacement

> describes how the option is to be passed on to the filter. It can be extracted from the actual values which may be hidden behind *keyword* with the help of regular expressions (& and the combinations \(, \) and \n). *replacement* may also contain an asterisk (*) which is replaced by the entire *pattern* (i.e. it is the same as &).

Examples

– A user submits a job with the special mode −sm express. The slow filter supporting this mode is activated with the −x option. The description for this option reads as follows:

```
MODES express=-x
```

– A filter is activated by the option −f *form_name*. This option is described as follows:

```
FORM *=-f *
```

– A filter is activated, the line spacing (vertical motion) being specified in inches as with the −lpii option:

```
V_MOTION \(.*\)i=-lpii \1
```

– or in centimeters as with the −lpic option:

```
V_MOTION \(.*\)c=-lpic \1
```

– Another possibility is as follows:

```
V_MOTION \(.*\)\([ci]\)=-lpi\2 \1
```

– A filter is required which supports the enlargement of the printed text by a variable factor. In this case, the filter should be called with the option −m*X* where *X* specifies an enlargement factor between 1 and 9. The filter can be defined with the following option:

```
MODES bigger\=\([1-9]\)=-m\1
```

The same can be achieved by using the corresponding option of the xpadd −job command; you can set the enlargement factor 3, for example, with −sm *"bigger=3"* .

Creating a new fast filter

● Enter the following command to add a new fast filter for use in Xprint V7.0:

xpadd −flt *filter_name* −tp FAST −cm *command* [*options*]

For *filter_name* specify the name of the new filter. You must use a name which does not yet exist in the system, otherwise the command will be rejected.

With −tp specify FAST.

For *command* you must specify the path name of the executable file of the filter program. The path name must be the same on all host computers on which the filter is stored. If the absolute path name is not specified, the executable filter file is searched for in the directory/var/spool/Xprint/config/filters). If −cm (for **com**mand) is not specified, the filter program name must be identical to the filter name.

With *options* you can specify that defined names, attributes or variables are passed on to the filter program for processing. The Xprint V7.0 options are mapped by strings in the following format:

keyword pattern =replacement

There is only one blank between the context-sensitive keyword and the pattern. The equals sign (=) is not enclosed in blanks. An equals sign within the pattern must be escaped (by a preceding backslash \).

keyword

> specifies what must be considered when the option is generated. The permitted keywords are listed in the corresponding table in the "Xprint V7.0   - Reference Manual". Each keyword represents context-sensitive attributes which must match the *pattern* when the option is generated.

pattern

> defines when the option is to be generated. It may be a value, an asterisk (*) or a regular expression. If *pattern* matches the actual values extracted with the *keyword*, the option is generated. Otherwise no option is passed on to the filter.

replacement

> describes how the option is to be passed on to the filter. It can be extracted from the actual values which may be hidden behind *keyword* with the help of regular expressions (& and the combinations \(, \) and \n). *replacement* may also contain an asterisk (*) which is replaced by the entire *pattern* (i.e. it is the same as &).

Copying and modifying an existing filter

With the xpcopy -flt command you can add a filter which has similar attributes to those of a filter already defined in the Xprint V7.0 system. For this purpose simply copy the attributes of an existing filter to a new filter and modify the attributes you want to change.

The new filter is set up on the computer on which the xpcopy -flt command is used. This can be avoided by specifying a different host with the -ah option.

● Display the defined filters to check whether the filter to be copied actually exists in the system:

xpshow -flt *filter_name*

For *filter_name* specify the name of the filter to be copied.

● Copy the filter:

xpcopy -flt *name_old_filter* *name_new_filter* [*modifications*]

For *name_old_filter* specify the name of the filter you want to copy.

For *name_new_filter* specify the name of the new filter. Here you must use a name that does not yet exist in the system; otherwise the command is rejected.

For *modifications* specify the values you want to modify or add. The options correspond to the options that can be used when adding a filter to the Xprint V7.0 system. There is, however, the following restriction: The option -tp *filter_type* cannot be modified with the xpcopy -flt command.

Example

To create a new filter called fastmail by copying the filter slowmail. You also want the new filter fastmail not to be available on your local host colorado but on the remote host nile:

xpcopy -flt slowmail fastmail -ho nile

6.10.2 Deleting filters

With the `xpdel -flt` command you can delete from the Xprint V7.0 system any filter that you administer.

> **i** A filter referenced by another object (e.g. a fast filter assigned to an existing printer) cannot be deleted.

● Check whether the filter to be deleted is still referenced by other objects:

`xpshow -flt [`*selection*`]`*filter_name* `-diR`

For *filter_name* you specify the name of exactly one filter you want to delete. If you want to want to delete several filters, you must repeat this command for each one.

For *selection* you can either specify a list of form names, or you can define a list of selection criteria with the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) according to which the forms to be deleted are selected.

● If references to the filter are displayed, you must remove these by modifying the displayed objects accordingly.

● Enter the following command:

`xpdel -flt` *selection*

For *selection* you can either specify a list of the filters to be deleted, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the filters to be deleted are selected.

Examples

– To delete the filter `LandA2` from the system:

`xpdel -flt LandA2`

– To delete all filters with the input data format `POSTSCRIPT`.

`xpdel -flt -scl "-it POSTSCRIPT"`

6.10.3 Modifying the attributes of a filter

With the `xpmod −flt` command you can modify the attributes of any filter you administer. This may be useful if the filter is to be administered from another host or if you want the filter to be accessible on more hosts than were defined before.

● Enter the following command:

`xpmod −flt [`*selection*`]` *modifications*

For *selection* you can either specify a list of filters you want to modify, or you can use the `−scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant filters are selected. If you do not specify *selection*, all filters are modified.

For *modifications* specify the values you want to modify or add. The options correspond to the options that can be used when adding a filter to the Xprint V7.0 system. There is, however, the following restriction: The option `−tp` *filter_type* cannot be modified with the `xpmod −flt` command.

Examples

– To make the filter `LandA2` available also on the hosts `colorado` and `nile`:

`xpmod −flt LandA2 −ho+ colorado nile`

– You want to modify all filters supporting `POSTSCRIPT` so that they are administered by the new host `colorado`:

`xpmod −flt −scl "−pc POSTSCRIPT" −ah nile`

6.10.4 Assigning a filter to a printer

If you frequently use with a printer a specific form which uses a particular format, it might be useful to assign the printer a special filter for this.

| **i** | Only fast filters can be assigned to printers. |

Proceed as follows:

● Check the printer status:

    xpstat −dev [*selection*]

For *selection* either specify a list of the printers whose status you want to display, or use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant printers are selected. If you do not specify *selection*, information on all printers will be displayed.

● If necessary, deactivate the printer:

    xpchange −dev [*selection*] −st NOT_ACTIVE

● Assign the relevant filter to the printer:

    xpmod −dev [*selection*] −fl *filter_name*

For *filter_name* specify the name of the relevant filter.

● Reactivate the printer:

    xpchange −dev [*selection*]

6.10.5 Removing a filter from a printer

To remove a filter from a printer, proceed as follows:

● Check whether the relevant printer is activated:

    xpstat −dev [*selection*]

For *selection* you can either specify a list of the printers you want to display, or you can use the −scl *"selection_criteria_list"* option (see the section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant printers are selected. If you do not specify *selection*, information on all printers will be displayed.

● Deactivate the printer:

    xpchange −dev [*selection*] −st NOT_ACTIVE

● Cancel the assignment of the filter to the printer:

    xpmod −dev [*selection*] −fl−

● Reactivate the printer:

    xpchange −dev [*selection*]

6.11 Administering public loadable resources

Loadable resources are objects containing information about fonts, backgrounds, overlays etc. They can be downloaded to a printer separately from the document(s) that use them. This can speed up the printing process and improve job recovery. For full details, see Chapter 4 in the "Reference Manual".

Public loadable resources, which are available throughout the entire system, can only be defined by the Xprint V7.0 administrator or a local Xprint V7.0 administrator. It is possible, however, for all users to define private loadable resources on their local hosts.

If you want to...	Read...
create resources	the section "Creating a Loadable Resource" in Chapter 4 of the "Reference Manual".
define a loadable resource	the section "Defining a loadable resource" on page 171
delete a loadable resource	the section "Deleting a loadable resource" on page 173

Table 19: Administering loadable resources

6.11.1 Defining a loadable resource

There are two possible ways of defining a loadable resource: you can define a new one 'from scratch' or copy an existing loadable resource and modify it.

Defining a loadable resource 'from scratch'

● To define a new loadable resource, use the following command:

    xpadd -lrs *resource_name options*

where the variable *resource_name* represents the name of the loadable resource and *options* stands for a list of options that can be used with the xpadd -lrs command.

Extending the definition of a loadable resource

A quick method of defining a loadable resource is to copy an existing resource and modify it as required. Proceed as follows:

● To find out which loadable resources are already defined in the system and the attributes they have, enter the following command:

`xpshow -lrs`

A list of existing loadable resources is displayed, together with their attributes.

● Now copy a suitable loadable resource and make the required modifications:

`xpcopy -lrs` *old_lrs new_lrs modifications*

old_lrs represents the name of the existing loadable resource and *new_lrs* stands for the new, possibly modified loadable resource. The variable *modifications* represents a list of modification which distinguish the new loadable resource from the old one. Each entry in this list consists of an option of the `xpadd -lrs` command and a corresponding value.

● It is possible to refer to a class name, rather than referring to the actual name of a resource. Let's consider a logo defined for HP Laserjet but also for Reno emulation. The file `logo.hp` contains the data to be downloaded to an HP Laserjet printer before the logo can be called. In a similar way, the file `logo.reno` has to be downloaded to a Reno printer.

Two resources can be defined for this purpose:

`xpadd -lrs logohp -fi logo.hp -pc HP-LASERJET -tp Overlay`

`-cn mylogo`

`xpadd -lrs logoreno -fi logo.reno -pc RENO -tp Overlay`
`-cn mylogo`

Both resources will belong to the same class as `mylogo`. Jobs can afterwards be submitted as:

`xpadd -dr mydocument -lr mylogo`

Once a printer (either HP Laserjet or Reno) is free for handling the job, the printing system will select the appropriate resource. If the job comes out on a Reno printer, then the `logo-reno` resource will be used.

6.11.2 Deleting a loadable resource

With the `xpdel -lrs` command you can delete any loadable resource that you administer.

To delete a loadable resource, proceed as follow:

● Delete the loadable resource with the following command:

`xpdel -lrs [`**`identifier_list`**`] [-scl` *`selection_criteria_list`*`]`

The *identifier_list* is a list of the loadable resources to be deleted. You can also use the option `-scl` and then give a *selection_criteria_list* that specifies certain loadable resources. If you do not specify an *identifier_list* or a *selection _criteria _list*, then all loadable resources will be deleted.

Example

To delete the loadable resources `mylogo1`, `mylogo2` and `mylogo3`:

`xpdel -lrs mylogo1 mylogo2 mylogo3`

6.11.3 Displaying the definition of a loadable resource

To display the definition of an existing loadable resource, proceed as follows:

● Display the definition using the following command:

`xpshow -lrs [`*`identifier_list`*`] [-scl "`*`selection_criteria_list"`*`] -di LONG`

For *identifier_list* you can give a list of the loadable resource to be displayed, or you can use the `-scl` option to define a list of criteria according to which the relevant loadable resources are displayed. If you do not specify which resources you want to see, then they will all be displayed.

Example

The following command will show you which printers `mylogo` can be used on:

`xpshow -lrs -scl "-cn mylogo"`

6.12 Administering global job templates

A global job template is an object in which frequently used options of the `xpadd -job` command are stored. This saves the user the effort of constantly specifying the same options explicitly for frequently recurring print jobs. Instead, the user simply assigns the print job a job template featuring the relevant options. Xprint V7.0 reads these from the database and executes them.

Global job templates, which are available throughout the entire system, can only be defined by the Xprint V7.0 administrator or a local Xprint V7.0 administrator. It is possible, however, for all users to define their own job templates on his local hosts.

Every user can define customized job templates and also replace global job templates by private ones.

If you want to...	Read...
define a job template	section "Defining a job template" on page 174
delete a job template	section "Deleting a job template" on page 177
customize a job template	section "Customizing job templates" on page 177
define and use private templates	section "Job templates" on page 44

Table 20: Administering global job templates

6.12.1 Defining a job template

There are two possible ways of defining a job template: you can either define a new one from scratch or you can copy an existing template and modify the relevant options.

Defining a completely new job template

● To define a new job template use the following command:

    `xpadd -jtp` *template_name options*

where the variable *template_name* represents the name of the job template. *options* stands for a list of options that may be used with the `xpadd -jtp` command. These are all the options available with the `xpadd -job`

command with the exception of −te *job_template* and −sx (**s**ilent e**x**ecution) (see also the description of xpadd −job in the "Xprint V7.0   - Reference Manual" and the section "Printing files" on page 17).

Defining a job template on the basis of an existing template

A quick method of defining a job template is to copy an existing template and modify it as required. Proceed as follows:

● To find out which job templates are already defined in the system and which attributes these have, enter the following command:

xpshow −jtp

A list of all the existing job templates is displayed with their attributes.

● Now copy a suitable job template and make the required modifications:

xpcopy −jtp *old_template new_template modifications*

old_template represents the name of the existing template, while *new_template* stands for the new, possibly modified template. The variable *modifications* represents a list of modifications which distinguish the new template from the old one. Each entry in this list consists of an option of the xpadd −jtp command and a corresponding value (see also chapter "Producing Output with Xprint V7.0").

Adding a job template on a remote host

The Xprint V7.0 administrator (only) can also add a job template on a host other than the local host with the −ah *host_name* option. To do this, proceed as follows:

● Log in as the Xprint V7.0 administrator.

● Add a job template on the remote host:

xpadd −jtp *template_name options* −ah *host_name*

template_name
>   represents the name of the job template.

options
>   stands for a list of options that may be used with the xpadd −jtp command and which are applied whenever the template is used. These are all the options available with the xpadd −job command with the exception of −te *job_template* (see also chapter "Producing Output with Xprint V7.0").

host_name
> is the name of the remote host on which the template is added.

or:

● Log in as the Xprint V7.0 administrator.

● Add a job template on the remote host by copying an existing template to this host (with or without modifications):

`xpcopy −jtp `*`old_template  new_template  modifications`*` −ah `*`host_name`*

old_template
> represents the name of the existing template

new_template
> stands for the new, maybe modified template.

modifications
> represents a list of modifications which distinguish the new template from the old one. Each entry in this list consists of an option of the `xpadd −jtp` command and a corresponding value (see also section "Printing files" on page 17).

Examples

– To define the new job template `invoice4` with the values: destination `printer3`, form `invoice1`, priority `75`:

`xpadd −jtp invoice4 −de printer3 −fm invoice1 −pr 75`

– To define a job template `letter1` based on the template `template1`, setting the destination to `printer1` and the form to `letter2`:

`xpcopy −jtp template1 letter1 −de printer1 −fm letter2`

– To add the job template `generic` with the settings destination `printer1` and data content type `SIMPLE` on the remote host `nile`:

`xpadd −jtp generic −de printer1 −ct SIMPLE  −ah nile`

6.12.2 Deleting a job template

With the `xpdel -jtp` command you can delete any job template you administer.

To delete a template, proceed as follows:

● Delete the job template with the following command:

`xpdel -jtp [`*selection*`]`

For *selection* you can either specify a list of the job templates you want to delete, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant job templates are selected. If you do not specify *selection*, all templates are deleted.

Example

– To delete the job templates `letter1`, `letter2`, and `invoice`:

`xpdel -jtp letter1 letter2 invoice`

– To delete all job templates assigned to printer `printer4` and having the priority `50`:

`xpdel -jtp -scl "-de printer4 -pr 50"`

6.12.3 Customizing job templates

With the `xpmod -jtp` command you can modify the attributes of any job template you administer.

To modify a job template, proceed as follows:

● Display the existing job templates to select one which best meets your requirements.

`xpshow -jtp [`*selection*`] -di LONG`

For *selection* you can either specify a list of the job templates whose attributes you want to display, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant job templates are selected. If you do not specify *selection*, a list of all job templates is displayed.

You must use the −di LONG option to display all the attributes of a job
template.

● Select a suitable job template:

xpmod −jtp [*selection*] *modifications*

For *modifications* you can use all the options that may be used when defining
a new job template with the xpadd −jtp command. For more detailed infor-
mation refer to the "Xprint V7.0   - Reference Manual".

Examples:

– To modify the job template letter1 such that in future the printout will be in
Helvetica **instead of in** Times:

xpmod −jtp letter1 −tp Helvetica

6.13 Administering PCLs

A printer capability list (PCL) contains all the information Xprint V7.0 requires to print a document on a printer. By means of the PCL, Xprint V7.0 converts the options of the `xpadd -job` command into control characters that the printer can handle. Furthermore, a PCL also contains technical characteristics of the printer, such as its connection protocol.

Xprint V7.0 is supplied with a substantial number of PCLs, such as those for different types of HP LaserJet printer, for PostScript printers, IBM ProPrinters, and all Siemens Nixdorf printers. The Appendix of this manual contains a list of all the available PCLs and the printers they support. These PCLs are located in the file `/var/spool/Xprint/config/pcl/xpterm`. It is possible that only some of them are installed as Xprint V7.0 objects in your system.

You can display a list of the available PCLs with the `xpshow -pcl` command. To define further PCLs, use the `xpadd -pcl` command. There is also a standard printer capability list, the PCL `GENERIC`. This enables you to a certain extent to also use printers for which there is no special PCL available. The PCL `GENERIC` can be neither deleted nor modified.

If you want to...	Read...
add a PCL	section "Adding a PCL" on page 180
delete a PCL	section "Deleting a PCL" on page 181
add comments to PCLs to provide a better overview	section "Assigning a comment to a PCL" on page 182
assign a PCL to a printer	section "Assigning a PCL to a printer" on page 183
define a PCL yourself	section "Defining a PCL yourself" on page 185

Table 21: Administering PCLs

6.13.1 Adding a PCL

Adding a PCL via its unique name

● To add a PCL to the Xprint V7.0 system via its unique name, use the following command:

xpadd −pcl *pcl_name* −fi *file_name*

pcl_name represents the unique name in the entry of *file_name* and represents a list of attributes which must be processed in order to control the attached printers, e.g. PROPRINTER or EPSON−FX.

file_name represents the absolute path name of the PCL file. If you do not specify the absolute path name, Xprint V7.0 searches the Xprint V7.0 directory /var/spool/Xprint/config/PCL) of the specified host (see option −ho). All the PCLs supplied with Xprint V7.0 by default are located there in the xpterm file. If no file name is specified, Xprint V7.0 reads the PCL definition from standard input stdin.

Adding a PCL from another host

If a PCL source file that you want to add to the Xprint V7.0 system is located on a computer other than the local host, proceed as follows:

● Log in as the Xprint V7.0 administrator. Only he/she has the right to add a PCL from another host.

● Now add the PCL using the following command:

xpadd −pcl *pcl_name* [−fi *file_name*] −ho *host_name*

where *host_name* represents the name of the host on which the PCL is administered, and *pcl_name* is the unique name of the PCL. With −fi *file_name* you can specify the file which contains the PCL definition.

Examples

– To add the standard PCL POSTSCRIPT to your system:

xpadd −pcl POSTSCRIPT −fi /var/spool/Xprint/config/pcl/xpterm

– To add your own PCL SELFDEFINED (which is located in the file /xprint50/pcl_alternative/selfdef_hplj) to the system:

xpadd −pcl SELFDEFINED \
      −fi /xprint50/pcl_alternative/selfdef_hplj

– To add the PCL `HP-LASERJET` from the file `hplj` (in the directory
   `/var/spool/Xprint/config/PCL`) to the remote host `nashua`:

   `xpadd -pcl HP-LASERJET -ho nashua -fi hplj`

6.13.2 Deleting a PCL

Under Xprint V7.0   you can delete from the Xprint V7.0 system any PCL you
administer.

Note: A PCL referenced by another object cannot be deleted from the system.
       This applies, for example, to a PCL which is assigned to a printer in the
       system.

● Check if the PCL to be deleted has any references to other objects:

   `xpshow -pcl [`*selection*`]`*pcl_name* `-diR`

   For *pcl_name* you specify the name of exactly one PCL you want to delete. If
   you want to want to delete several PCLs, you must repeat this command for
   each one.

   For *selection* you can either specify a list of PCL names, or you can define a
   list of selection criteria with the *-scl "selection_criteria_list"* option (see
   section "Selection criteria list" on page 266 in the Appendix) according to
   which the PCLs to be deleted are selected.

● If references to the PCL are displayed, you must remove these by modifying
   the displayed objects accordingly.

● To delete a PCL from the system, use the following command:

   `xpdel -pcl` *selection*

   For *selection* you can either specify a list of unique PCL names, or you can
   use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria
   list" on page 266 in the Appendix) to define a list of criteria according to
   which the relevant PCLs are selected and deleted.

Examples

– To delete the PCL `HP-DESKJET` from the system:

   `xpdel -pcl HP-DESKJET`

– To delete all the PCLs which start with the identifier `EPSON`:

   `xpdel -pcl EPSON\*`

6.13.3 Assigning a comment to a PCL

For better orientation within the system, it may be useful to provide PCLs with comments, which may be addressed either to users or to the Xprint V7.0 administrator.

Providing a PCL with a comment for users

You can provide a PCL with a comment that every user can display. You can do this either when adding the PCL to the system, or later when the PCL is already defined.

● If you want to assign a comment to an existing PCL, use the following command:

  xpmod -pcl *pcl_name* -cu *for_users*

where *pcl_name* represents the unique name of a PCL, and *for_users* (cu stands for **c**omment for **u**ser) represents a comment which every user is to be able to display (using xpshow -pcl *pcl_name* -di LONG).

Examples

– To display all the PCLs available in the system:

  xpshow -pcl

  SHORT display

```
Name        File         HC   HS   Host      Administrator
----        ----         --   --   ----      -------------
E-9001-31   /var/spool/Spo   NO   NO   d241s045 root
EPSON-SQ    /var/spool/Spo   NO   YES  d241s045 root
GENERIC     /var/spool/Spo   NO   NO
```

Providing a PCL with a comment for the administrator

● If you want to assign to an existing PCL a comment for the Xprint V7.0 administrator, use the following command:

  xpmod -pcl *pcl_name* -ca *for_ administrator*

where *pcl_name* represents the unique name of a PCL, and *for_administrator* stands for a comment which only the Xprint V7.0 administrator is to be able to display (xpshow -pcl *pcl_name* -di LONG).

Examples

– To assign the user comment `suitable_for_all_printers_XYZ` to the PCL
   `SELFDEFINED` when adding the PCL to the system:

   ```
   xpadd −pcl SELFDEFINED −cu "suitable_for_all_printers_XYZ"
   ```

– To assign the user comment
   `suitable_for_all_printers_XYZ_except_for_model_T` to the PCL
   `SELFDEFINED`, which already exists in the system:

   ```
   xpmod −pcl SELFDEFINED −cu \
   "suitable_for_all_printers_XYZ_except_for_model_T"
   ```

6.13.4 Assigning a PCL to a printer

Every printer must be assigned a PCL so that it can process incoming jobs. The
following section describes how PCLs are assigned to printers and how this
assignment can be changed or canceled. If you do not specify a PCL when you
set up a printer, Xprint V7.0 automatically assigns to it the standard PCL
`GENERIC`.

To assign a different PCL to an existing printer, proceed as follows:

● If you do not know the ID of the printer concerned, you can display a list of
   all the printers defined in the system with the `xpshow −dev` command.

● First check the current settings of the relevant printer(s):

   ```
   xpshow −dev [selection] −di LONG
   ```

   The variable *selection* represents either a list of the printers or the option
   `−scl` *"selection_criteria_list"* used to define a list of selection criteria
   according to which Xprint V7.0 selects the printers. For more information on
   selection criteria lists refer to the section "Selection criteria list" on page 266
   in the Appendix. If *selection* is not specified, a list of all printers is displayed.

● If you are not sure whether the PCL you want matches the attributes of the
   printer or its default form or assigned font, you should display the attributes
   of the PCL (and the assigned form) to compare them:

   ```
   xpshow −pcl pcl_name −di LONG
   xpshow −frm form_name −di LONG
   ```

   where *pcl_name* is the name of the assigned PCL, and *form_name* is the
   name of the default form assigned to the printer.

● To be able to make changes you must first deactivate the printer:

```
xpchange -dev [selection]-st NOT_ACTIVE
```

● Now assign the new PCL to the printer:

```
xpmod -dev printer -pc pcl_name
```

where *printer* is the ID of the printer to which the PCL is to be assigned, and
pcl_name is the name of the assigned PCL.

> Note: If the default PCL is replaced by another one, you must make sure
> that the new PCL supports the attributes of the default form and the
> assigned default font used on the printer. If this is not the case, the
> `xpmod` command is rejected.

● Now reactivate the printer:

```
xpchange -dev [selection]
```

Examples

– To add the printer `group4` (address `/dev/lp3`, supervisor `marcus`), assigning
  to it the PCL `HP-LASERJET`:

```
xpadd -dev group4 -da dev/lp3 -su marcus -pc HP-LASERJET
```

– To assign to the printer `printer4` a different PCL, e.g. `POSTSCRIPT`:

```
xpchange -dev printer4 -st NOT-ACTIVE
xpmod -dev printer4 -pc POSTSCRIPT -ct-
xpchange -dev printer4
```

– To cancel the assignment of the PCL `POSTSCRIPT` to the printer `printer1` and
  assign to it the PCL `GENERIC` instead:

```
xpchange -dev printer1 -st NOT-ACTIVE
xpmod -dev printer1 -pc GENERIC -ct SIMPLE
xpchange -dev printer1
```

6.13.5 Defining a PCL yourself

Except for the default PCL GENERIC, the PCLs supplied with Xprint V7.0 can be modified. Furthermore, you can also define your own PCLs in order to provide optimum communication between the Xprint V7.0 system and the printer.

To do this, you must simply give Xprint V7.0 information on the attributes of the printer and how these are selected. The attributes are defined and saved in a PCL file so that the Xprint V7.0 system can access the information at any time.

To define a PCL yourself, you must create a file with the PCL definition. This file must have a special structure. The section "Format of a PCL definition" in the "Xprint V7.0 - Reference Manual" contains a description of the required format.

⚠   Only users with a sound knowledge of printers should define PCLs themselves. It is seriously recommended that you copy an existing PCL entry in the file xpterm and then adjust it to the functions and require-ments of the new printer.

6.14 Administering recovery rules

This section describes how to define and administer recovery rules. The following table serves as a guide to this section:

If you want to...	Read...
define a new recovery rule	section "Defining a recovery rule" on page 186
assign a recovery rule to a printer	section "Assigning a recovery rule to a printer" on page 190
cancel the assignment of a recovery rule to a printer	section "Canceling the assignment of a recovery rule to a printer" on page 190
modify a recovery rule	section "Modifying recovery rules" on page 191
delete a recovery rule	section "Deleting a recovery rule" on page 192

Table 22: Administering recovery rules

6.14.1 Defining a recovery rule

Recovery rules are defined in a file using a text editor. This file is compiled when it is added to the Xprint V7.0 system. This section describes how to add recovery rules to the Xprint V7.0 system.

To define a new recovery rule, proceed as follows:

● Change to the recovery rule directory `RR` in the Xprint V7.0 directory on your computer (by default you require system administrator privileges to be able to edit files in this directory):

    cd /var/spool/Xprint/config/RR

● Create a new file for the new recovery rule with a text editor:

    vi my_RR.rec

To do this, use any editor that can edit pure ASCII files (e.g. `vi(1)`). You can choose any name for this file.

● Enter your recovery rules in the file using the following format:

Every line of the source file defines one recovery rule. Comment lines must start with the hash character (#) in the first column. Use the following format to define recovery rules:

*error_code***:**[*maximum_time*]**:**[*exception_rule_ID*]**:***list_of_actions***:**

The specifications for the fields in square brackets may be omitted, but the colons for separating the fields are mandatory.

error_code is the key under which the recovery rule files are to be accessed. It can contain either an Xprint V7.0 printer error code or an action for handling a recurring error. This field is mandatory. The following printer error codes are supported:

Error code	Description	Default action
TonerEmpty	Toner empty	Retry
Parity	Parity error during transfer	Ignore
PaperEnd	Paper empty	Retry
Stop	Printer stopped	Retry
PowerOff	Printer switched off	Restart
CoverOpen	Printer cover open	Retry
PaperJam	Paper jam	`Retry`
Hangup	I/O system call interrupted due to hardware failure	Retry
NoAck	Time-out during ETX/ACK protocol	Retry

Table 23: Supported printer error codes

maximum_time is an option which must be specified together with the *exception_rule_ID* field. It activates the selection of a specific action if an error keeps recurring. By default, the value INFINITE is used. The value must lie between 0 and 65535 seconds. If the error persists after this time, Xprint V7.0 selects the action specified in the field *exception_rule_ID*.

You can set a printer automatically to the status NOT_ACTIVE, for example, if the paper supply is not refilled within the specified time.

exception_rule_ID is also optional and, if used, must be specified with the field *maximum_time*. It may consist of any combination of letters and digits; blanks are not allowed. The field must contain a reference to a suitable entry in the *error_code* field, which itself specifies an action.

list_of_actions specifies the actions to be taken if a specific error occurs. If two or more actions are specified, the individual actions must be separated by blanks. The following actions can be specified:

Action	Description
Ignore	Ignore error
Retry	Repeat polling of printer status until READY is returned
Restart	Restart with last printed page
Stop	Set device to NOT_ACTIVE and the job to INTERRUPTED
Suspend	Stop active job
Respool	Print last document again

Table 24: Actions for specific errors

The following examples illustrate the structure of a typical recovery rule:

```
#Key     :        Time    :        Code    :        Action  :
Stop     :        600     :        stopped :        Retry   :
stopped :                  :                :        Stop    :
```

In the above example, the rule for stopped is applied if the printer is stopped (by pressing the STOP/PAUSE key) for longer than 600 seconds. Otherwise availability of the printer is checked again or the default action for the current error is used (Retry).

```
#Key     :        Time    :        Exception :      Action  :
Stop     :        600     :        stopped   :      Retry   :
stopped :                  :                  :      Stop    :
*        :                 :        Stop      :      Stop    :
```

In this example, the rule for stopped is applied if the printer is stopped (by pressing the STOP/PAUSE key) for longer than 600 seconds. Then availability of the printer is checked again (Retry) or (due to the * character) the status of the printer is set to NOT_ACTIVE (Stop) irrespective of the error code.

The asterisk (*) stands for any error other than those specified earlier in the recovery rules file. The asterisk must be specified as the last rule.

```
#Key     :     Time    :     Exception  :    Action  :
PowerOFF :     900     :     stopped    :    Respool :
stopped  :             :                :    Stop    :
```

A printer which does not allow polling or handshaking is connected directly to a LAN. In the event of a `PowerOFF` error message on the printer, Xprint V7.0 by default restarts the job with the last sent page.

However, as the last page sent is not necessarily the last printed page, the rule above is more useful: In the case of a `PowerOFF` error message, the document is spooled in again; if the connection cannot be re-established within 15 minutes, the printer is set to the status `NOT_ACTIVE` so that no more print jobs can be sent to it. Now the printer can be switched back on and/or the problem can be eliminated.

● When you have fully defined your recovery rules, save your file.

● Add the new recovery rule to the Xprint V7.0 system:

   xpadd −rec *rule_name* −fi *rule_file* [−ca *comment*]

where *rule_name* is a name you want to assign to a set of new recovery rules in the Xprint V7.0 system and *rule_file* specifies the file name of the source file you have created. If this file is not located in the Xprint V7.0 directory `opt/Xprint/RR`, you must specify the absolute path name. With *comment* you can specify a comment, for example on the purpose of this rule, which can be useful for later administration of recovery rules.

Example

– To add the recovery rule `RR1` from the recovery rules file `opt/Xprint/RR/my_RR_1`:

   xpadd −rec RR1 −fi my_RR_1

6.14.2 Assigning a recovery rule to a printer

To make a newly defined recovery rule effective for a printer, you must assign it to the printer. Proceed as follows:

● If the printer is still active, deactivate it:

    xpchange −dev [*selection*] −st NOT_ACTIVE

    where *selection* is either the name of one or more printers or a selection criteria list according to which the printers are selected.

● Now you can assign the new recovery rules to an existing printer with the following command:

    xpmod −dev [*selection*] −rr *rule_name*

    This command assigns the recovery rules *rule_name* to the selected printer(s). The option −rr *rule_name* can also be specified immediately when a new printer is defined.

● Now you can reactivate the printers:

    xpchange −dev [*selection*]

Example

Assigning a recovery rule Standard to all printers in the system:

```
xpchange −dev −st NOT_ACTIVE
xpmod −dev −rr Standard
xpchange −dev
```

6.14.3 Canceling the assignment of a recovery rule to a printer

To cancel the assignment of a recovery rule set to a printer because you want to reactivate the system's default error recovery, proceed as follows:

● If the printer is still active, deactivate it:

    xpchange −dev [*selection*] −st NOT_ACTIVE

    where *selection* is either a list of printers to be deactivated or a selection criteria list via which the printers are selected. If *selection* is not specified, all printers are deactivated.

● You can cancel the assignment of the recovery rule with the following command:

xpmod −dev [*selection*] −rr−

This command revokes the current assignment of a recovery rule to the specified printer(s).

● Now you can reactivate the printer:

xpchange −dev [*selection*]

6.14.4 Modifying recovery rules

If you want to modify recovery rules, you must modify their source file (usually located in the Xprint V7.0 directory . . ./RR) and then recompile it. Proceed as follows:

● Modify the source file of the relevant recovery rule using an ASCII editor. To do this, use the procedure described in the section "Defining a recovery rule" on page 186.

● Recompile the recovery rules using the following command:

xpmod −rec *rule_name* −fi *rule_file* [−ca *comment*]

where *rule_name* is the name of the modified recovery rules in the Xprint V7.0 system and *rule_file* specifies the file name of the modified source file. If this file is not located in the Xprint V7.0 directory . . ./RR, you must specify the absolute path name. With *comment* you can specify or modify a comment.

i If the xpmod command is called on a host other than the one on which the rule file was added with xpadd, Xprint V7.0 uses the original host and path to access the file. You can make Xprint V7.0 modify the local copy of the selected file by using the −ho− option.

6.14.5 Deleting a recovery rule

To delete a recovery rule, proceed as follows:

● Make sure that the recovery rule is no longer used by any printers in the system:

xpshow -rec *rule_name* -diR

where *rule_name* is the name of exactly one recovery rule. A list is displayed containing all the objects which have direct or indirect references to the specified recovery rule.

● If there are any, delete all the references of level 1 to the recovery rule in the system, for example by canceling the assignment of the rule to the specified printer.

● Delete the recovery rule with the following command:

xpdel -rec *selection*

where *selection* is a list of recovery rules or a selection criteria list according to which the rules are selected.

6.15   Administering servers

A server is responsible for scheduling print jobs and administering the job database. Furthermore, it controls the supervisors and printers which are assigned to it. A server can have several supervisors assigned.

If you want to...	Read...
add a server	section "Adding a server" on page 193
delete a server	section "Deleting a server" on page 196
change the status of a server, activate or deactivate a server	section "Changing the status of a server" on page 197
modify the attributes of a server	section "Modifying the attributes of a server" on page 198

Table 25: Administering servers

6.15.1 Adding a server

Configuration hints

When defining servers, supervisors and devices in a domain, a good practice is to attach the device and supervisor to a server that is local to the host controlling the device. This guarantees that jobs can be submitted to the printer as soon as the host controlling the printer is up and running. Unless specified otherwise, this is the default situation that Xprint V7.0 will create for new devices that are added to the system.

A good 'rule of thumb' is that a server should not control more than three supervisors and a supervisor should not control more than fifteen devices. It is important to remember this if you are using the Xprint V7.0 default, as you may need to manually adjust the balance of supervisors and devices.

If a supervisor is moved from one server to another, remember that jobs submitted to the supervisor's device(s) will not be automatically redirected to the new server. So you should only move a supervisor when all the jobs submitted to its printers have finished printing.

Procedure

There are two possible ways of adding a server to the system: you can either add a completely new server to the system with the `xpadd -srv` command, or you can copy an existing server with the `xpcopy -srv` command and then modify the relevant attributes.

If you want to allow administrators of other hosts to assign supervisors to a new server, you must define a corresponding permission list. This is described in the section "Creating a permission list" on page 144.

Adding a completely new server

● To add a new server to the system, use the following command:

`xpadd -srv` *server_name* [`-ho` *host_name*]

For *server_name* specify a unique name for the new server. If the name already exists, the command is rejected.

host_name represents the name of the remote host on which the server is to be added. Only the Xprint V7.0 administrator can add a server on a remote host, but `root` and `subroot` can administer this server.

● Activate the server:

xpchange -srv *server_name*

You must run this command, as every new server is first set to `OFF` for all its states (`-st`, `-si`, `-so`) and is therefore not available in the system. The servers are activated automatically when Xprint V7.0 is started (`xpstart` command).

When a server is activated for the first time, Xprint V7.0 creates in the `opt/Xprint/SV` directory a subdirectory for this server which contains its name, unless there is already a directory with the same name.

When adding a new server, you can also use the options `-sp` *scheduling* and `-up` *user_privileges* to define which scheduling policy is to be used and which users can assign supervisors to the server (see section "Administering permission lists" on page 143). For more detailed information refer to the "Xprint V7.0 - Reference Manual".

Note that Xprint V7.0 creates a default server when you define a new supervisor without specifying an associated server (xpadd -spv -se). Similarly, a default server is created when you add a new printer without specifying a supervisor (xpadd -dev -su). This default server is then assigned the name of the supervisor or printer. It is only created if it does not yet exist in the system.

Copying and modifying a server

Using the xpcopy -srv command you can copy existing servers in the system quite easily. This is useful if the new server is to have similar attributes to an existing server. With the xpcopy -srv command, you define a new server on the host on which you issue the command unless you specify another host with the -ho option.

● Copy the relevant server

    xpcopy -srv *name_old_server name_new_server* [*modifications*]
            [-ho *host_name*]

For *name_old_server* specify the name of the server you want to copy.

For *name_new_server* specify the name of the new server. If the name already exists, the command is rejected.

host_name represents the name of the remote host on which the server is to be added. Only the Xprint V7.0 administrator can add a server on a remote host.

For *modifications* specify the modifications you want to make. For more detailed information on possible modifications refer to the "Xprint V7.0   - Reference Manual". With the options -sp *scheduling* and -up *user_privileges* you can define which scheduling policy applies and which users can assign supervisors to the server (see section "Administering permission lists" on page 143). See the "Xprint V7.0   - Reference Manual" for more detailed information.

Examples

– You want to copy the server hudson and name the new server nashua, nashua being controlled by host nile. Furthermore, you want the new server nashua to process the smallest job first instead of the biggest job as is defined for server hudson.

    xpcopy -srv hudson nashua -ho nile -sp SMALL
    xpchange -srv nashua -st ACTIVE

– To add a new server `nashua` on the remote host `colorado`:

```
xpadd −srv nashua −ho colorado
xpchange −srv nashua −st ACTIVE
```

– To add the new server `delaware` based on server `nashua` on the remote host `nile`, and to specify that the new server `delaware` is to process the biggest print jobs first:

```
xpcopy −srv nashua delaware −ho nile −sp BIG
xpchange −srv delaware −st ACTIVE
```

6.15.2 Deleting a server

With the command `xpdel −srv` you can delete any server you administer. When you delete a server, its directory
`/var/spool/Xprint/config/SV/`*server_name* is also deleted.

If the server has the status `ACTIVE` or is connected to an existing supervisor, it cannot be deleted.

Note: If you delete a server, any jobs on it which might still be pending are also deleted.

To delete a server, proceed as follows:

● Make sure that the server is no longer connected to a supervisor and that it is not processing any print jobs.

  `xpshow −srv` *server_name* `−diR`

  For *server_name* you specify the name of exactly one server you want to delete. If you want to delete several servers, you must repeat this command for each one.

  For *selection* you can either specify a list of form names, or you can define a list of selection criteria with the *-scl "selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) according to which the forms to be deleted are selected.

● If references to the server are displayed, you must remove these by modifying the displayed objects accordingly.

● Deactivate the server:

xpchange −srv [*selection*] −st NOT_ACTIVE

For *selection* you can either specify a list of servers you want to deactivate, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant servers are selected. If you do not specify *selection*, all servers are deactivated.

● Delete the server:

xpdel −srv *selection*

| **i** | You can also delete several servers at once via the selection criteria lists mentioned above. In this case, however, you must make sure that each of the servers is |

  – inactive
  – not connected to a supervisor
  – not processing any jobs.

6.15.3 Changing the status of a server

The status of a server can assume the values ACTIVE or NOT_ACTIVE or SHUTDOWN; the spoolin status and the spoolout status can be either ON or OFF.

Proceed as follows:

● Find out the status of the server(s):

xpstat −srv [*selection*]

For *selection* you can either specify a list of the servers whose status you want to display, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant servers are selected. If you do not specify *selection*, the status of all servers is displayed.

● Change the status:

xpchange −srv [*selection*] *modifications*

For *modifications* specify the required changes. These may be: −st ACTIVE (optional as this is the default) or −st NOT_ACTIVE, -si OFF or -si ON for the spoolin status and -so OFF or -so ON for the spoolout status, and −sa WARM or −sa COLD (sa standing for **s**ystem **a**ctivation) for retaining or deleting the print jobs from previous sessions. For more detailed information refer to the "Xprint V7.0   - Reference Manual".

> **i**   If you deactivate a server with xpchange −srv [*selection*] −st NOT_ACTIVE, all the printers assigned to it are also deactivated. All print jobs active on these printers are stopped immediately and set to the status INTERRUPTED. If you activate a server with xpchange −srv [*selection*], the printers assigned to it are not activated automatically.

Examples

– To reactivate server nashua and retain the jobs from the previous session:

xpchange −srv nashua −sa WARM

– To deactivate all servers controlled by host colorado:

xpchange −srv −scl "−ho colorado" −st NOT_ACTIVE

6.15.4 Modifying the attributes of a server

You can modify the attributes of a server if, for example, you want to assign permissions to it which were not assigned when the server was set up.

Note: The attributes of a server with the status ACTIVE cannot be modified.

Proceed as follows:

● Find out the status of the relevant server(s):

xpstat −srv [*selection*]

For *selection* you can either specify a list of the servers whose status you want to display, or you can use the −scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant servers are selected. If you do not specify *selection*, the status of all servers is displayed.

● If necessary, deactivate the relevant server(s):

```
xpchange -srv [selection] -st NOT_ACTIVE
```

● Modify the relevant attributes:

```
xpmod -srv [selection] modifications
```

For *modifications* you can specify all the values which can also be used when adding a server. With the options −sp *scheduling* and −up *user_privileges* you can define respectively what scheduling policy applies and which users can assign supervisors to the server (see section "Administering permission lists" on page 143). See the "Xprint V7.0   - Reference Manual" for more detailed information.

● Reactivate the server(s):

```
xpchange -srv [selection]
```

Examples

– To modify the server nashua such that it no longer processes the jobs with the highest priority first but the jobs with the highest security level:

```
xpstat -srv nashua
xpchange -srv nashua -st NOT_ACTIVE
xpmod -srv nashua -sp SECURITY
xpchange -srv nashua
```

– To modify all the servers of host colorado such that each server only processes a maximum of 20 print jobs:

```
xpstat -srv -scl "-ho colorado"
xpchange -srv -scl "-ho colorado" -st NOT_ACTIVE
xpmod -srv -scl "-ho colorado" -mj 20
xpchange -srv -scl "-ho colorado"
```

(The -mj option stands for **m**aximum **j**obs.)

6.16 Administering supervisors

A supervisor controls one or more printers and provides them with user data. A supervisor is controlled by one server and must be located on the same host as the printers it controls.

If you want to...	Read...
add a supervisor	section "Adding a supervisor" on page 200
delete a supervisor	section "Deleting a supervisor" on page 205
change the status of a supervisor	section "Activating or deactivating supervisors" on page 203
modify the attributes of a supervisor	section "Modifying the attributes of a supervisor" on page 204

Table 26: Administering supervisors

6.16.1 Adding a supervisor

There are two possible ways of adding a supervisor: you can either define a new supervisor from scratch or you can copy an existing one and, if required, modify its attributes.

Note: If you add a new supervisor to the Xprint V7.0 system, the supervisor status is automatically set to NOT_ACTIVE. When the supervisor is activated for the first time (see section "Activating or deactivating supervisors" on page 203), a subdirectory with the name of the supervisor is created in the /var/spool/Xprint/config/SP directory (unless this has already been done).

Defining a new supervisor

● Add a new supervisor to the system:

xpadd −spv *supervisor_name* [−se *server_name*] [−ho *host_name*]

supervisor_name is the unique name of the new supervisor. If there is already a supervisor with this name, the command is rejected. For *server_name* specify the name of the server on which the supervisor is to be added. A server name must be specified, otherwise the default name is used. *host_name* represents the name of the remote host on which the supervisor

is to be added. Only the Xprint V7.0 administrator, `root` and `subroot` can add a supervisor on a remote host. Using the additional option `-ca` *comment_for_ administrator* you can also assign a comment to the supervisor when adding it to the system.

● Activate the supervisor:

`xpchange -spv` *supervisor_name*

Adding a supervisor by copying an existing supervisor

Using the `xpcopy -spv` command you can copy existing supervisors in the system quite easily. This is useful if the new supervisor is to have similar attributes to an existing supervisor. Proceed as follows:

● Copy the relevant supervisor:

`xpcopy -spv` *name_old_supervisor name_new_supervisor* [*modifications*] \
    [`-ho` *host_name*]

For *name_old_supervisor* specify the name of the supervisor you want to copy.

For *name_new_supervisor* specify the name of the new supervisor. If the name already exists, the command is rejected.

host_name represents the name of the remote host on which the supervisor is to be added. Only the Xprint V7.0 administrator can add a supervisor on a remote host.

For *modifications* specify the modifications you want to make. Each entry in this list consists of an option of the `xpadd -spv` command as well as a corresponding value. For more detailed information, see the description of this command in the "Xprint V7.0 - Reference Manual".

Using the additional option `-ca` *comment_for_ administrator* you can also assign a comment to the supervisor when adding it to the system.

● Here also you must activate the supervisor:

`xpchange -spv` *supervisor_name*

> **i** A supervisor that is copied from the server of a local host to a remote host remains assigned to the server of the source host. If you want the supervisor and server to be defined on the same host, you should use the option `-se` *server_name* when copying, to immediately assign the new supervisor to a server of the remote host before activating the supervisor (see example below).

Examples

– To define the new supervisor `delaware` on server `nashua` and activate it:

```
xpadd -spv delaware -se nashua
xpchange -spv delaware
```

– To define the new supervisor `colorado` by copying the existing supervisor `nashua`, adding the comment `new_supervisor` for the Xprint V7.0 administrator. Then the new supervisor `colorado` is activated:

```
xpcopy -spv nashua colorado -ca new_supervisor
xpchange -spv colorado
```

– To define and activate supervisor `hudson` on the server `nashua` of the remote host `nile`, adding the comment `from_host_colorado` for the Xprint V7.0 administrator.

```
xpadd -spv hudson -se nashua -ho nile -ca from_host_colorado
xpchange -spv hudson
```

– To add supervisor `colorado` on the server `nashua` of the remote host `nile` by copying supervisor `delaware` from the local host. Then the new supervisor `colorado` is activated.

```
xpcopy -spv delaware colorado -se nashua -ho nile
xpchange -spv colorado
```

In this example, the option `-se nashua` is used to replace the assignment of the original supervisor `delaware` to the server of the local host by the assignment of the new supervisor `colorado` to the server `nashua` of the remote host `nile`.

6.16.2 Activating or deactivating supervisors

You can change the status of any supervisor you administer. A supervisor can assume three status values: `ACTIVE`, `SHUTDOWN` and `NOT_ACTIVE`. `SHUTDOWN` means that the status `NOT_ACTIVE` has been requested for the supervisor but has not yet been reached.

The status needs to be changed above all in two cases:

1. If a new supervisor is added to the Xprint V7.0 system, its status is automatically set to `NOT_ACTIVE`. For the supervisor to be able to perform its functions it must be set to the status `ACTIVE`.

2. If you want to delete a supervisor or modify its attributes, you must first deactivate it (status `NOT_ACTIVE`). A supervisor with the status `ACTIVE` cannot be deleted nor modified.

> **i**   If you deactivate a supervisor with `xpchange -spv` [*selection*] `-st`
> `NOT_ACTIVE`, all the printers assigned to it are also deactivated. If you
> activate a supervisor with `xpchange -spv` [*selection*], the printers
> assigned to it are not activated automatically.

● To change the status of a supervisor, enter the following command:

    `xpchange -spv` [*selection*] `-st` *status*

For *selection* you can either specify a list of the supervisors you want to activate or deactivate, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant supervisors are selected. If *selection* is not specified, the status of all supervisors is changed.

status is the status the supervisor is to have. This variable can assume the values `ACTIVE` or `NOT_ACTIVE`.

Examples

– To activate the supervisor `marcus`:

    `xpchange -spv marcus`

– To deactivate all supervisors with the comment "`please_delete`":

    `xpchange -spv -scl "-ca please_delete" -st NOT_ACTIVE`

6.16.3 Modifying the attributes of a supervisor

You can modify the attributes of any supervisor you administer.

| i | You cannot modify the attributes of an active supervisor. You must first set it to the status NOT_ACTIVE.

To modify the attributes of a supervisor, proceed as follows:

● Deactivate the relevant supervisor(s):

```
xpchange -spv [selection] -st NOT_ACTIVE
```

For *selection* you can either specify a list of the supervisors you want to deactivate, or you can use the -scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant supervisors are selected. If *selection* is not specified, the status of all supervisors is changed.

● Modify the relevant attributes:

```
xpmod -spv [selection] modifications
```

For *modifications* specify the attributes to be modified. You can use all the options which are allowed when adding a new supervisor with the xpadd -spv command. With the options -ca *comment_for_administrator*, -se *server_name* and -ho *host_name* you can add a comment about the supervisor for administrators, or you can assign the supervisor to another server or host respectively. For more detailed information refer to the "Xprint V7.0 - Reference Manual".

● Reactivate the supervisor(s):

```
xpchange -spv [selection]
```

Examples:

– To modify the attributes of supervisor marcus and add a comment for the administrator saying that this supervisor is a copy of supervisor nile:
```
xpchange -spv marcus -st NOT_ACTIVE
xpmod -spv marcus -ca copy_of_nile
xpchange -spv marcus
```

– To add a comment to all supervisors of host colorado saying that these can be deleted:
```
xpchange -spv -scl "-ho colorado" -st NOT_ACTIVE
xpmod -spv -scl "-ho colorado" -ca please_delete
xpchange -spv -scl "-ho colorado"
```

6.16.4 Deleting a supervisor

With the command `xpdel -spv` you can delete any supervisor you administer.

i	A supervisor with the status `ACTIVE` cannot be deleted. Therefore you must first deactivate the supervisor. You can also not delete a supervisor which is referenced by other objects, e.g. a printer.

To delete a supervisor from the Xprint V7.0 system, proceed as follows:

● Deactivate the supervisor:

    xpchange -spv [*selection*] -st NOT_ACTIVE

  For *selection* you can either specify a list of the supervisors to be deactivated, or you can use the `-scl` *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the relevant supervisors are selected. If *selection* is not specified, all supervisors are deactivated.

● Check whether the supervisor is referenced by any other objects:

    xpshow -spv *supervisor_name* -diR

  Cancel any existing references. How to do this is described in the sections dealing with assigning a supervisor to the relevant object (e.g. to a printer).

● Delete the supervisor:

    xpdel -spv *selection*

Examples

– To deactivate and delete the supervisor `delaware`:

    xpchange -spv delaware -st NOT_ACTIVE
    xpdel -spv delaware

– To deactivate and delete all supervisors with the comment "`please_delete`":

    xpchange -spv -scl "-ca please_delete" -st NOT_ACTIVE
    xpdel -spv -scl "-ca please_delete"

7   Interoperability

This chapter describes how you can interact with other spooler systems.

7.1   Introduction

Xprint V7.0 allows you to interact with other spooler systems. The following figure illustrates the various possibilities:
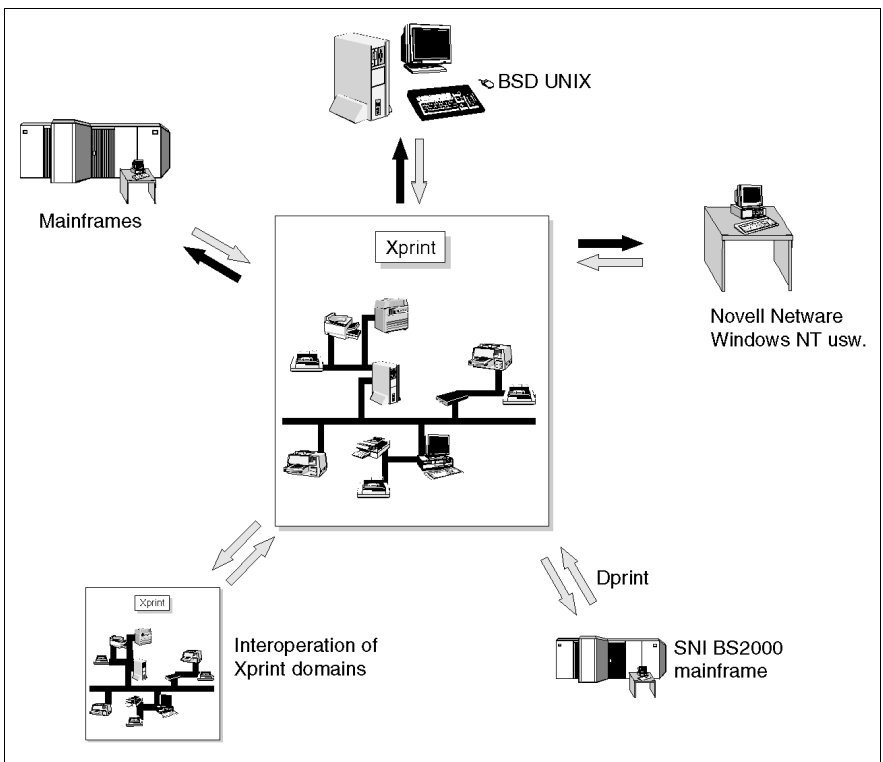
Figure 12: Interoperation with other spooler systems

This means that you can make the printers in remote Xprint V7.0 systems also available to users of the local Xprint V7.0 domain and, vice versa, the printers of the local Xprint V7.0 domain can be made available to users of remote spooler systems.

Xprint V7.0 can assume the role of a client that uses the print services of the other spooler system involved, or the role of a server that makes its printers available to other systems. In the previous figure this is illustrated by two arrows from and to the other spooler system. If the arrows are of different colors, there are two possible ways of interoperation which depend on the software used. These methods are as follows:

Type of interoperation	Description
Accessing a BSD printer spooler from Xprint V7.0, i.e. sending print jobs to printers connected via a BSD printer spooler.	page 209
Connecting Xprint V7.0 and another printer spooler via a gateway, i.e. allowing access from Xprint V7.0 to another printer spooler and vice versa.	page 213

Table 27: Interoperation methods

These methods are based on two different ways of interconnecting different spooler systems. In the case of interoperation with BSD printer spoolers, you can allow local Xprint V7.0 users access by defining for every printer of the BSD system a local printer which forwards the print jobs to the BSD system like an `lpr` client. This functionality is available in any Xprint V7.0 system, including those not installed as network systems. In such a case, access to the BSD system is effected via a fast filter which is assigned to the local (pseudo) printer.

Xprint V7.0 also allows you to define what are called gateways to other Xprint V7.0 systems. Gateways allow bidirectional connections between Xprint V7.0 and other spooler systems. Such gateways can only be defined if the gateway package of Xprint V7.0 was purchased.

7.2 Accessing BSD printers

This section describes how you can allow access to the printers of a BSD spooler from within Xprint V7.0 via the fast filter `bsd`.

7.2.1 Basic information

You can allow users of the local Xprint V7.0 domain access to BSD printers which meet the following requirements:

– the printers are defined on a computer with a BSD printer spooler (e.g. a BSD system, Novell Netware®, Windows NT® Servers, Windows 2000® Servers, LINUX etc.)

– an `lpd` process is running on the remote system which allows other computers to use the printers defined there

– your Xprint V7.0 domain is connected to the remote system via a network and the TCP/IP protocol (can be checked with the `ping` command)

– at least one of the systems in your Xprint V7.0 domain is allowed to use the printers connected to the remote system (e.g. by the file `/etc/hosts.lpd` on the remote system or the remote BSD system).

If these requirements are met, you can establish a connection to these printers which allows print jobs to be sent to them from within the local Xprint V7.0 domain. The following figure illustrates the basic structure of such a connection:
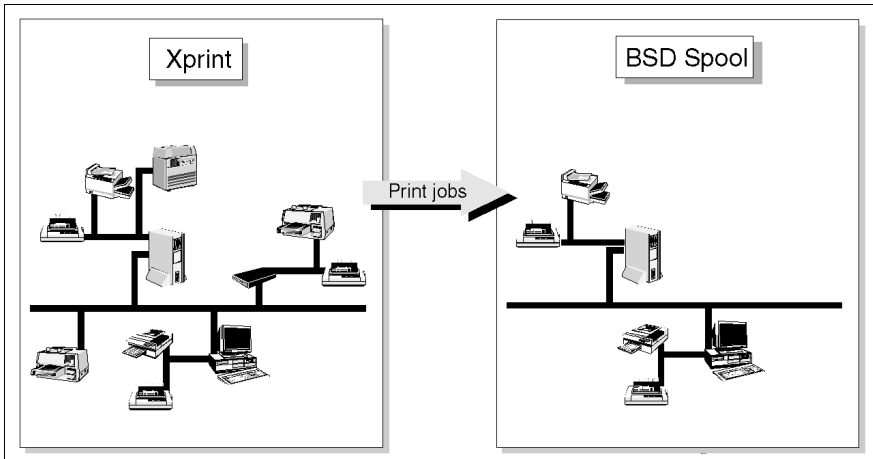
Figure 13: Accessing BSD printers

To establish the connection to a BSD printer, you must configure a pseudo printer on one system in your Xprint V7.0 domain which the Xprint V7.0 users can specify as the target for their print jobs and which forwards the print jobs it receives to the BSD printer by using the fast filter `bsd` for printing.

As this pseudo printer is addressed just like a local printer, it is fully transparent to the users that the document is printed on a BSD printer and not on a local printer. The only difference to a local printer is the fact that print jobs cannot be administered after submission. Also, displaying the job queue is only possible to a certain extent as print jobs are considered to be not yet printed only as long as they are not yet transferred to the remote BSD printer spooler.

If this functionality is required, access via the fast filter `bsd` is not sufficient. In this case, a gateway connection must be established (see section "Gateways" on page 213).

7.2.2   Configuring printers for BSD Xprint V7.0

If you want to provide access to a BSD printer, you must first define the fast filter `bsd` in the system and then assign it to a local printer configured specially for this purpose. This local pseudo printer then acts as a substitute for the real BSD printer. As soon as it receives a job, it passes it on to the specified BSD printer spooler where the job will later be printed.

Proceed as follows:

● Make sure the fast filter `bsd` is already configured:

```
xpshow -flt
```

If the filter `bsd` is not displayed, you must first add it to the system (the filter is supplied with Xprint V7.0). Enter the following command:

```
xpadd -flt bsd -tp FAST -cm bsd -op "LOGIN *=*" \
      "PRINTER *=*" "DOC-REF *=*" "COMMENT *=*" "TITLE *=*"
```

● Define the printer as you would a local printer, at the same time assigning to it the filter `bsd`:

```
xpadd -dev bsd_printer -da pseudo_file -fl bsd \
      -ca "queue=remote_printer host=host_name" [-pc pcl] -aa
```

For *bsd_printer* specify a unique name under which the BSD printer is to be known in the Xprint V7.0 domain.

For *pseudo_file* specify any file name of an empty file instead of a real printer address. This file is required to control access to the print queue; it does not have anything to do with the actual print job. If necessary, configure the path.

With the `-ca` option (administrator's comment) you must specify the name of the BSD printer in the form `queue=`*remote_printer* and the name of the host to which the BSD printer is connected (`host=`*host_name*).

> **i** If the name of the remote printer (*remote_printer*) is the same as that of the local pseudo printer (*bsd_printer*), "`queue=`*remote_printer*" need not be specified.

You must separate these specifications with a blank. If the LPD service at the BSD system is defined at a different port than usual, this port number can also be defined here by additionally specifying an entry `port=`*port_number*.

If required, specify for *pcl* a PCL defined in the system which corresponds to the BSD printer. If the required PCL does not yet exist, you can define it as described in the section "Adding a PCL" on page 180.

Example

You want to configure a new BSD PostScript printer `BSD_PS` at host `host3`. The fast filter `bsd`, however, is not yet configured in the system, and the printer is to be activated automatically each time Xprint V7.0 is started:

```
xpadd -flt bsd -tp FAST -cm bsd -op "LOGIN *=*" \
      "PRINTER *=*" "DOC-REF *=*" "COMMENT *=*" "TITLE *=*"
```

```
xpadd -dev BSD_PS -da /var/tmp/PS1 -fl bsd \
       -ca "queue=PS1 host=host3" -pc POSTSCRIPT -aa
```

Troubleshooting

If your print jobs are rejected by the remote system, add `"--compatible"` in
the comment field. This is necessary if the remote system is an ATT `lp` spooler.
For example, to modify the remote printer `BSD_PS` accordingly, use the following
command:

```
xpmod -dev BSD_PS -ca "queue=PS1 host=host3 --compatible"
```

7.3 Gateways

Gateways allow access to various other spooler systems: to other Xprint V7.0 domains, to systems with BSD spoolers and to BS2000 systems on which the DPRINT spooler is installed. This section describes the characteristics of gateways and how they are configured.

7.3.1 Gateway characteristics

Gateways allow the bidirectional connection of an Xprint V7.0 domain with:

– other Xprint V7.0 domains

– `lpd` spoolers in BSD-UNIX systems (e.g. SunOS®, Linux, Ultrix32®)

– `lpd` daemons in Novell NetWare® servers, UNIX® SVR4 systems, Microsoft® Windows NT® servers, Microsoft® Windows 2000® servers etc.

– DPRINT spoolers in BS2000 systems

This allows you to make the printers in remote Xprint V7.0 systems also available to users of the local Xprint V7.0 domain and, vice versa, the printers of the local Xprint V7.0 domain can be made available to users of remote spooler systems.

7.3.2 Setting up a gateway connection

This section first describes the general rules for and the basic procedure of configuring a gateway connection to another printer spooler. A detailed description of how to establish a gateway connection to another printer spooler can be found in the following sections:

Type of gateway	Description
connecting Xprint V7.0 and a BSD printer spooler	page 214
connecting two Xprint V7.0 domains	page 219
connecting Xprint V7.0 and a DPRINT printer spooler (BS2000)	page 223

Table 28: Establishing a gateway connection

> **i** Only the Xprint V7.0 administrator can configure gateways.

To configure a gateway, you must first define the host of the local Xprint V7.0 domain that is to be used as the gateway to the other printer spooler. For this purpose, you can use any host in the local Xprint V7.0 domain which has access to the physical connection to the target system. This host must be reliable, robust and fail-safe as the connection to the other printer spooler should always be available. First, a **local gateway object** is defined for this host.

The local gateway is responsible for the physical connection to the remote printer spooler. For every logical connection to a host in another spooler system it is also necessary to define what is called a **partner gateway**. The partner gateway is assigned to a local gateway and thus to a physical connection. Several partner gateways may be defined for access to several remote printer spoolers which all use the same local gateway. This however requires that all the remote printer spoolers be of the same type (e.g. BSD).

As soon as the connection between these two gateways has been defined and the local gateway has been activated, the connection can be used for printing.

However, in this case, printing is subject to specific restrictions which depend on the configuration of the partner gateway.

| i | To be able to successfully establish a gateway connection to a partner system, it is essential that you make some configurations on the partner system too: |

- So that users can print on the remote system via the gateway, the remote system must grant the required permission.

- If users of the remote system are to print on the local Xprint V7.0 system, the local system must be declared there.

  In any case these measures must be taken in accordance with the descriptions in the relevant system documentation.

If the other printer spoolers also are to access the local printers via the gateway, the partner gateway must additionally be registered as an allowed gateway at the local gateway. All allowed gateways allow the corresponding remote hosts access to the resources of the local Xprint V7.0 domain.

7.3.3   Gateways to BSD spoolers

As with the fast filter `bsd`, configuring a gateway to a BSD spooler also allows users of the local Xprint V7.0 domain to access printers defined in the remote BSD spooler. Unlike jobs printed with `bsd`, print jobs printed via gateways can still be administered after submission.

The following figure shows the basic structure of such a gateway connection and the possibilities it offers:
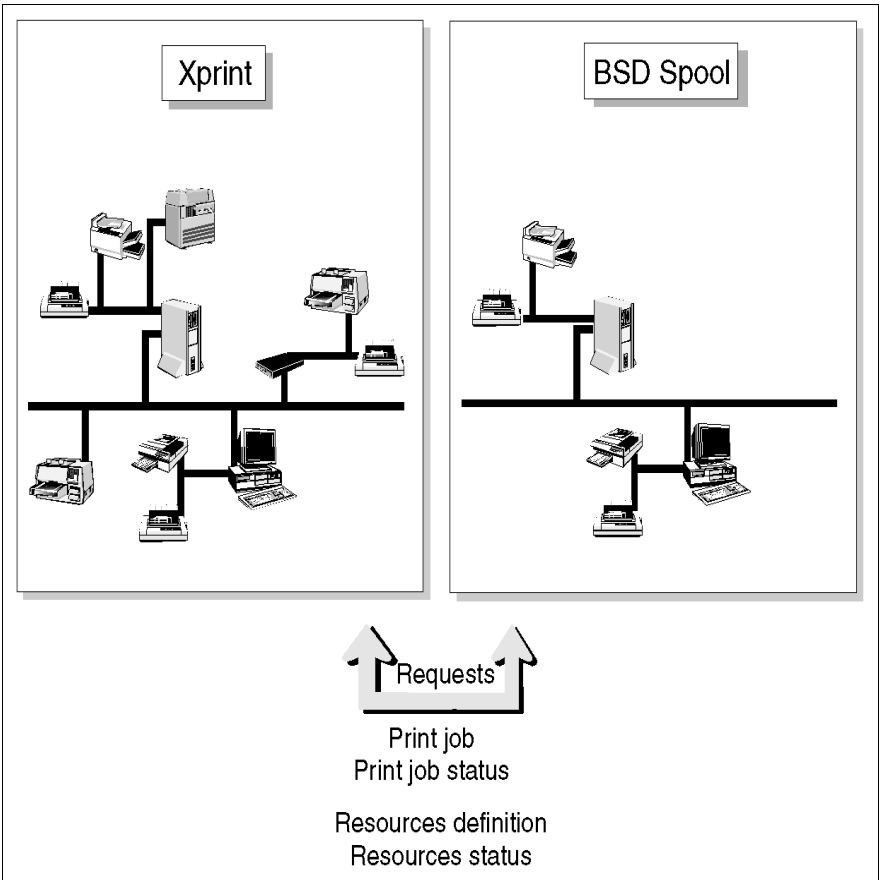
Figure 14: Structure of a gateway connection

Requirements

Configuring a gateway to a BSD spooler in a remote system requires that an LPD spooler be active on the remote host to which the gateway connection is established.

Defining the local gateway

The local gateway is defined as follows on a host which, if possible, should have a constant connection to the BSD spooler to which the connection is to be established:

```
xpadd −gtw local_gw −tp LOCAL −ho local_host −ga 515 \
      −np TCP −pp BSD [−aa] [−op option_list]
```

This command configures a local gateway named *local_gw* which administers the physical connection to the BSD system. For *local_gw* any name can be used; it does make sense, however, to use a name which indicates on which host the gateway is configured. With the option −ho *local_host* you specify the name of the host which is to act as the gateway to the BSD system from the local Xprint V7.0 domain.

The option −ga 515 specifies that the port 515 is to be used for accessing the BSD print services. If the BSD system uses a different port number for the print services (see /etc/services file on the BSD host), you must specify the relevant port number here.

i	The port number is very important as no two gateways with the same port number can run at the same time on a system.

The option −np TCP defines that the TCP/IP protocol is used. No other protocol can be specified. For the connection to BSD printer spoolers the print protocol must be selected with the option −pp BSD. With the −aa option you can define that the gateway is activated automatically each time Xprint V7.0 is started.

The option −op *option_list* can be used to adjust the behavior of the local gateway. The following options/values are possible:

"MODE:COMPATIBLE"
> This option is used to send requests to a BSD server. It requires the local gateway to act as a SUN BSD lp client. This option must be specified if jobs are rejected by remote BSD lpd daemons for no obvious reason. For example: for all local gateways defined in "-bl", the option "MODE=COMPATIBLE" must be set if the partner gateway represents an ATT lp spooler system.

"PI=<*first_port_number_client*>"
"PA=<*last_port_number_client*>"
> These two options are important for receiving requests from remote BSD clients. The two values define the port range the remote BSD client must use for sending jobs to the local gateway or receiving jobs from it. Default values are "PI=721" and "PA=731".

"`GTW_START_PAGE=YES/NO`"

provides a way to enforce ("`YES`") or suppress ("`NO`") the header page.

"`GTW_SEPARATOR_PAGE=YES/NO`"

provides a way to enforce ("`YES`") or suppress ("`NO`") the separator sheet.

"`GTW_END_PAGE=YES/NO`"

provides a way to enforce ("`YES`") or suppress ("`NO`") the trailer page.

Other interesting options are described in the Reference Manual.

Troubleshooting

If requests from a remote BSD client are rejected by the local gateway, the following values must be used:

```
-op "PI=0" "PA=0123"
```

> **i** Therefore the safest way to define a local BSD gateway is to use the following command:
>
> ```
> xpadd -gtw ... -op "PI=0" "PA=1023" "MODE=COMPATIBLE"
> ```

Defining the partner gateway

A separate partner gateway must now be specified for each connection to a BSD printer spooler. The partner gateway is defined using the following command:

```
xpadd -gtw bsd_partner -tp PARTNER -ho bsd_host -ga 515 \
      -bl local_gw -np TCP -pp BSD [-op option_list]
```

This command configures a partner gateway named *bsd_partner* which administers the logical connection to a special BSD printer spooler. For *bsd_partner* any name can be used; it does make sense, however, to use a name which indicates to which host the gateway is configured. With the option −ho *bsd_host* you specify the name of the remote host on which the LPD daemon process of the BSD spooler runs.

The option −ga 515 specifies that the port 515 is to be used for accessing the BSD print services. If the BSD system uses a different port number for the print services (see /etc/services file on the BSD host), you must specify the relevant port number here.

The partner gateway must be assigned with the −bl *local_gw* option to the local gateway administering the physical connection. *local_gw* can be an individual gateway or a list of local gateways. In the latter case, the first active gateway in the list is used to send a request to the partner gateway. The option −np TCP defines that the TCP/IP protocol is used. No other protocol can be specified. In addition, the print protocol must be selected with the −pp BSD option.

The option −op *option_list* can be used to define the behavior of the local gateway toward the corresponding contact gateway. Here the options "PI=..." and "PA=..." are available. Default values are "PI=721" and "PA=731". This port range is used by the local gateway to establish the connection to the BSD partner.

> **i** The safest way to define a partner gateway is not to use the −op option but to accept the default values.

Xprint V7.0 also offers the option of addressing a number of clients via a partner gateway. In this case, use the following command:

```
xpadd −gtw bsd_group −pp BSD −tp PARTNER −ga 515 \
        −ho bsd_host −bl local_gw −oh pattern
```

For *pattern* specify a string with replacement characters. These can be either the asterisk (*, representing any string) or the question mark (?, representing any character). This string is used for the host list in the /etc/hosts file, i.e.: if the option "−op d241p*" is specified, the partner gateway represents all the hosts in the /etc/hosts list which begin with d241p.

Allowing print jobs to be submitted by the BSD spooler

If you want to allow users of the BSD spooler to submit print jobs for local printers via the gateway, the partner gateway must be defined as an allowed gateway at the local gateway. To do this, use the following command:

xpmod −gtw *local_gw* −ag+ *bsd_partner*

With this command, the partner gateway *bsd_partner* is assigned to the local gateway *local_gw* as an allowed gateway. Only the BSD systems which are connected to the local Xprint V7.0 domain via allowed partner gateways are allowed to use its print services.

You can also define all partner gateways as allowed gateways by using the keyword ALL:

```
xpmod −gtw local_gw −ag ALL
```

In this case only the value `ALL` needs to be specified with the `−ag` option. Therefore, the + character is not specified after the `−ag` option in the example above.

i	Please note that when the option `−ag ALL` is used, any partner gateway added is automatically given the permission to contact the local gateway.

Activating the gateway connection

To be able to print via the gateways, the corresponding local gateway must be activated. Activation with the `xpchange` command can be effected on several levels: you can allow only the export of print jobs via the assigned partner gateways, only the import from these gateways, or both. The following command allows both the import and export of print jobs:

`xpchange −gtw` *local_gw*

If only the import of print jobs is to be allowed, you can use the `−gi ON` option; to only allow the export, use the `−go ON` option.

Example

To configure a gateway connection from the local host `nashua` to the `lpd` spooler of the BSD-UNIX system `picasso`:

```
xpadd −gtw GTW_nashua −tp LOCAL −ga 515 −ho hudson −np TCP \
      −pp BSD −aa
xpadd −gtw GTW_picasso −tp PARTNER −ho picasso −ga 515 \
      −bl GTW_nashua −np TCP −pp BSD
xpmod −gtw GTW_nashua −ag+ GTW_picasso
xpchange −gtw GTW_nashua
```

7.3.4 Gateways to other Xprint V7.0 domains

Xprint V7.0 also allows you to establish gateway connections between independent Xprint V7.0 domains. This makes it possible to distribute the administration tasks in fairly large networks, for example at department level by assigning each department its own Xprint V7.0 domain with an Xprint V7.0 administrator of its own.
A connection between the individual domains can then be established via gateways.

The following figure shows the basic structure of such a gateway connection and the possibilities it offers:
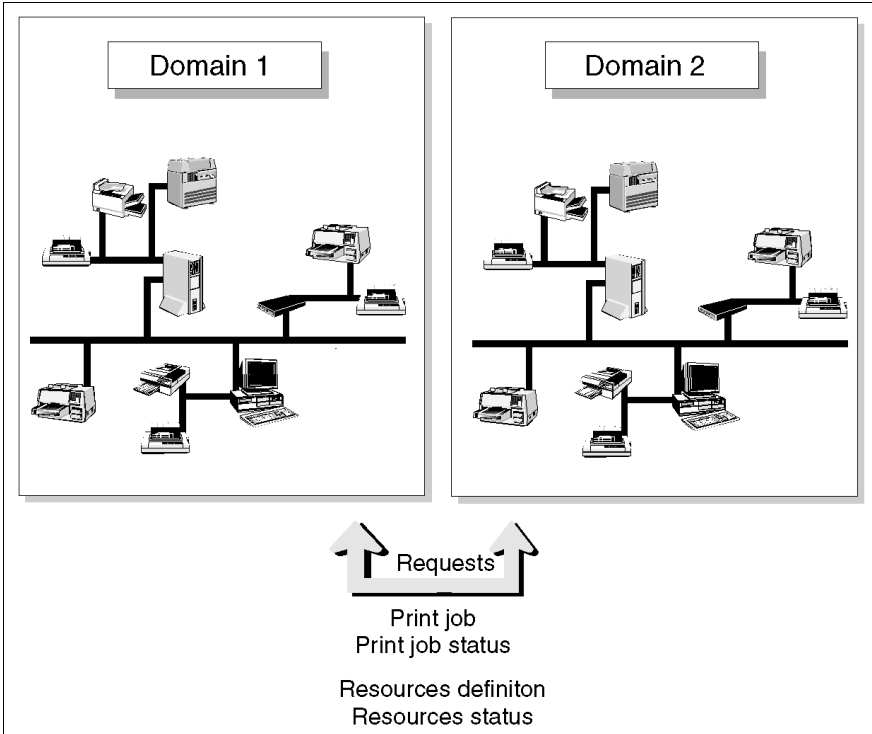
Figure 15: Gateway connection to another printer domain

Defining the local gateway

The local gateway is defined as follows on a host which, if possible, should have a constant connection to the other Xprint V7.0 domain to which the connection is to be established:

```
xpadd −gtw local_gw −tp LOCAL −ho local_host \
        −ga gtw_port −np TCP −pp GIP2 [−aa]
```

This command configures a local gateway named *local_gw* which administers the physical connection to the other Xprint V7.0 domain. For *local_gw* any name(s) can be used; it does make sense, however, to use names which indicate on which host the gateways are configured. With the option −ho *local_host* you specify the name of the host which is to act as the gateway from the local Xprint V7.0 domain to the other Xprint V7.0 domain.

The option −ga *gtw_port* specifies which TCP/IP port number is to be used. The default is 9999.

> **i** The port number is very important as no two gateways with the same port number can run on a system at any one time.

The option −np TCP defines that the TCP/IP protocol is used. No other protocol can be specified. For the connection to other Xprint V7.0 domains the print protocol must be selected with the option −pp GIP2. With the −aa option you can define that the gateway is activated automatically each time Xprint V7.0 is started.

Defining the partner gateway

A separate partner gateway must now be specified for each connection to another Xprint V7.0 domain. This partner gateway defines a logical connection to another host on another Xprint V7.0 domain. On this host, a gateway for the connection to the local gateway must also be configured (mirrored configuration). The partner gateway is configured using the following command:

```
xpadd −gtw spool_partner −tp PARTNER −ho spool_host −ga gtw_port \
      −bl local_gw −np TCP
```

This command configures a partner gateway named *spool_partner* which administers the logical connection to a special Xprint V7.0 domain. For *spool_partner* any name can be used; it does make sense, however, to use a name which indicates to which Xprint V7.0 domain the gateway is configured. With the option −ho *spool_host* you specify the name of the remote host on which the gateway to the other Xprint V7.0 domain is configured.

The option −ga *gtw_port* specifies which TCP/IP port number is to be used. This number must correspond to that of the local gateway of the **other Xprint V7.0 domain**.

The partner gateway must be assigned with the −bl *local_gw* option to the local gateway administering the physical connection. *local_gw* can represent a single gateway or a list of local gateways. The option −np TCP defines that the TCP/IP protocol is used. No other protocol can be specified.

Allowing print jobs to be submitted by users of the other Xprint V7.0 domain

If you want to allow users of the other Xprint V7.0 domain to submit print jobs for local printers via the gateway, the partner gateway must be defined as an allowed gateway at the local gateway. To do this, use the following command:

xpmod −gtw *local_gw* −ag+ *spool_partner*

With this command, the partner gateway *spool_partner* is assigned to the local gateway *local_gw* as an allowed gateway. Only the Xprint V7.0 domains which are connected to the local Xprint V7.0 domain via allowed partner gateways are allowed to use its print services.

You can also define all partner gateways as allowed gateways by using the keyword ALL:

xpmod −gtw *local_gw* −ag ALL

In this case only the value ALL needs to be specified with the −ag option. Therefore, the + character is not specified after the −ag option in the example above.

> **i** Please note that when the option −ag ALL is used, any partner gateway added is automatically granted permission to access the local gateway.

Activating the gateway connection

To be able to print via the gateways, the corresponding local gateway must be activated. Activation with the xpchange command can be effected on several levels: you can allow only the export of print jobs via the assigned partner gateways, only the import from these gateways, or both. The following command allows both the import and export of print jobs:

xpchange −gtw *local_gw*

If only the import of print jobs is to be allowed, you can use the −gi ON option; to only allow the export, use the −go ON option.

Restrictions of gateways to other Xprint V7.0 domains

Working with gateways to other Xprint V7.0 domains is subject to certain restrictions which the users of these gateways must be familiar with:

− The −rm option of the xpadd −job command cannot be used.

Example

To configure a gateway connection from the local host hudson to host purple of another Xprint V7.0 domain:

```
xpadd -gtw GTW_hudson -tp LOCAL -ho hudson -np TCP \
      -pp GIP2 - ga 5300 -aa
xpadd -gtw GTW_purple -tp PARTNER -ho purple -ga 5300 \
      -bl GTW_hudson -np TCP -pp GIP2
xpmod -gtw GTW_hudson -ag GTW_purple
xpchange -gtw GTW_hudson
```

7.3.5   Gateways to DPRINT spoolers

Gateways to DPRINT spoolers allow the users of the local Xprint V7.0 domain to access printers connected to BS2000 mainframes on which the spooler system DPRINT is installed. Vice versa, they can also be used to allow users of such BS2000 mainframes to access the printers of the local Xprint V7.0 domain. The following figure shows the basic structure of such a gateway connection and the possibilities it offers:
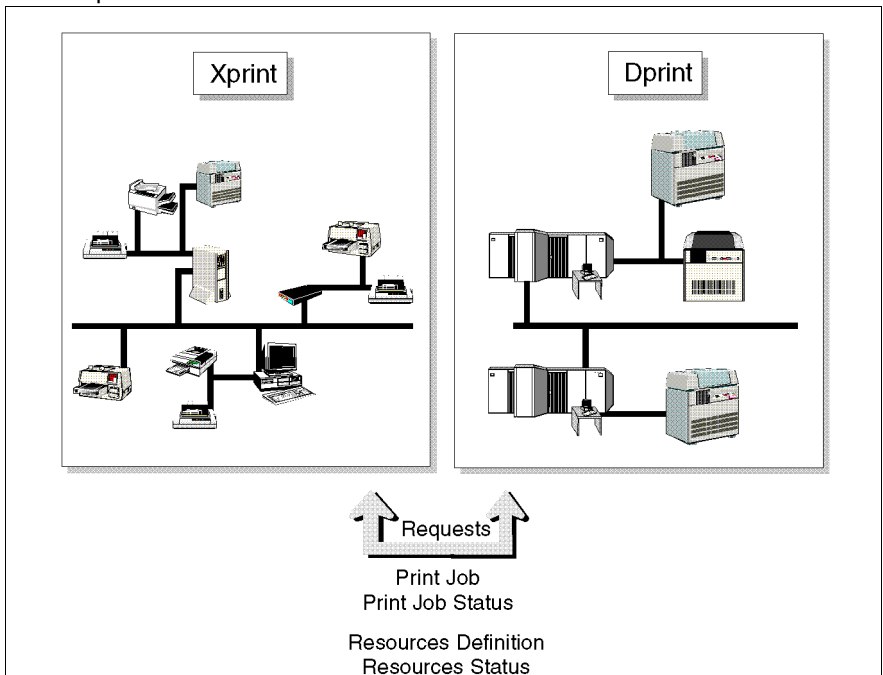
Figure 16: Gateway connection to DPRINT spoolers

Requirements

If a gateway to a DPRINT spooler in a BS2000 system is to be configured, the software *open*FT must be installed on the host for which the local gateway is to be configured. For the *open*FT `root` user, `OBS`, `IBR` and `IBP` must be set to the value 100 (see *open*FT command `ftmoda`).

Defining the local gateway

If a local gateway to another Xprint V7.0 domain already exists on a host which meets the requirements mentioned above, this gateway can also be used for connections to DPRINT spoolers.

The local gateway is configured in exactly the same way as a gateway to another Xprint V7.0 domain:

```
xpadd -gtw local_gw -tp LOCAL -ho local_host \
      -ga gtw_port -np protocol -pp GIP2 [-aa]
```

This command configures a local gateway named *local_gw* which administers the physical connection to the DPRINT spooler. For *local_gw* any name can be used; it does make sense, however, to use a name which indicates on which host the gateway is configured. With the option −ho *local_host* you specify the name of the host which is to act as the gateway from the local Xprint V7.0 domain to the DPRINT spooler.

In the case of a TCP/IP connection, the option −ga *gtw_port* specifies which TCP/IP port number is to be used. The default is 9999.

> **i** The port number is very important as no two gateways with the same port number can run at the same time on a system.

The option −np *protocol* defines whether the TCP/IP protocol (`TCP`) or the ISO (`ISO`) protocol is used. The ISO protocol is only available for   users. For the connection to DPRINT spoolers the print protocol must be selected with the option −pp `GIP2`. With the −aa option you can define that the gateway is activated automatically each time Xprint V7.0 is started.

Defining the partner gateway

The partner gateway is defined as follows:

```
xpadd -gtw dprint_partner -tp PARTNER -ga port -bl local_gw \
      -on original_name -oh original_host -op "FT=tns_entry"
```

This command configures a partner gateway named *dprint_partner* which administers the logical connection to a special DPRINT spooler. For *dprint_partner* any name can be used; it does make sense, however, to use a name which indicates to which DPRINT spooler the gateway is configured. With the option −oh *dprint_host* you specify the name of the remote host on which the gateway to the DPRINT spooler is configured. Additionally, you must specify with −on *original_name* the name of the DPRINT gateway on the corresponding BS2000 system if it is not identical with the gateway name *dprint_partner*. In practice, *original_name* and *dprint_host* are identical; this is the BCAM host name of the BS2000 system in capital letters.

In this case, the definition of the partner gateway also requires the specification of the additional option −op "FT=*tns_entry*", which specifies the TNS entry of the FT service on the host for the partner gateway:

The option −ga *port* specifies which TCP/IP port number is to be used. This number must correspond to that of the DPRINT gateway of the **DPRINT spooler**.

The partner gateway (or a list of partner gateways) must be assigned with the −bl *local_gw* option to the local gateway administering the physical connection.

Adjusting the local Xprint V7.0 domain

If the gateway is configured in such a way that the users of the DPRINT system can also use the printers of the local Xprint V7.0 domain, some adjustments are required at the local Xprint V7.0 domain, as DPRINT users might print documents with the EBCDIC character set.

For this reason, a slow filter must be added to the Xprint V7.0 configuration for every possible content type the DPRINT users might use for EBCDIC documents.

In any case, at least the following filter is required:

```
xpadd −flt filter_name −it EBCDIC_ EBCDIC_COMPATIBLE \
      −ot 'xpshow −pcl −di ´−id´' −cm ebcdic2ascii \
      −op "pcl *=*" "COMMENT *=1"
```

This command defines a filter with any unique name *filter_name* for the DPRINT format EBCDIC_COMPATIBLE. As the output format for this filter all defined PCLs are specified. For any other document types you might have to define other filters using this procedure (e.g. EDCDIC_POSTSCRIPT to POSTSCRIPT):

```
xpadd −flt ... −it EBCDIC_POSTSCRIPT −ot POSTSCRIPT\
      −cm ebcdic2ascii −op "pcl *=*" "COMMENT *=1"
```

Restrictions of gateways to DPRINT spoolers

Wildcards (* or ?) are not allowed but you can specify
`xpshow –dev dprint_gateway!` without a printer name and
`xpshow –dgr dprint_gateway!` without a printer group name. In this case all
corresponding resources are displayed.

If information on a printer of a DPRINT spooler is displayed, you should be
aware that some of the requested items of information are not supported by the
DPRINT spooler. The displayed values for this information are invalid (amongst
others this applies to the information on `Keep connection`, `Open retry time`,
`Automatic activation`, `Polling enabled` and `Priority`).

When defining a print job for a DPRINT printer with `xpadd –job`, the following
must be observed:

> **i** For every job a document type must be specified with the `–ct` option. The
> document type `PLAIN_TEXT` represents an ASCII text which contains
> only the control characters `CR`, `LF` and `FF`. This data type replaces the
> value `SIMPLE` which is not supported under DPRINT.

Examples

To configure a gateway connection between the local host `hudson` and the
DPRINT spooler of the BS2000 system `D255S017`:

```
xpadd –gtw GTW_hudson –tp LOCAL –ga 5200 –ho hudson –np TCP \
      –pp GIP2 –aa
xpadd –gtw GTW_S017 –tp PARTNER –ho d255s017 –ga 5200 \
      –on D255S017 –oh D255S017 –bl GTW_hudson –np TCP \
      –pp GIP2 –op "FT=FT25517"
xpmod –gtw GTW_hudson –ag GTW_S017
xpchange –gtw GTW_hudson
```

> **i** Please note that the host `hudson` running the gateway `GTW_hudson` must
> be a Outputware host which has *open*FT installed. Furthermore, the
> option
> `–op "FT=`*xxxxx*`"` must be specified when defining the partner gateway
> `GTW_S017` (DPRINT), where *xxxxx* is the name of the FT partner, in this
> case `FT25517`. The value *xxxxx* depends on the configuration of *open*FT.

7.4 Administering gateways

This section contains a brief description of the most important aspects of administering existing gateways.

The following table serves as a guide to the possible tasks involved in administering gateways:

If you want to...	Read...
add another connection to an existing local gateway (only for Xprint V7.0 administrators)	section "Configuring an additional connection from an existing gateway" on page 227
delete a gateway (only for Xprint V7.0 administrators)	section "Deleting a gateway connection" on page 229
deactivate a gateway (only for Xprint V7.0 administrators, `subroot` and `root`)	section "Deactivating a gateway" on page 230
reactivate a gateway	section "Activating a gateway" on page 232
obtain information on a gateway	section "Obtaining information on a gateway" on page 233

Table 29: Administering gateways

7.4.1 Configuring an additional connection from an existing gateway

Once you have configured a connection from a local gateway to a remote partner gateway, you can configure additional connections to other partner gateways from the local gateway, provided those partner gateways use the same network protocol (`TCP` or `ISO`). ISO is only available for   users. Furthermore, optimum functionality is only ensured if the print protocol is the same (`GIP2` or `BSD`). It is possible, for example, to configure another connection to another BSD-UNIX system from a local gateway for which a connection to a remote BSD-UNIX system already exists.

> **i** Also for configuring additional connections of a local gateway to other partner gateways you must be logged in as the Xprint V7.0 administrator. Only this administrator has the required privileges.

To configure additional connections to other gateways, proceed as follows:

● First check whether there is a local gateway to which you can add the new connection:

    ```
    xpshow -gtw -scl "-tp LOCAL -np protocol -pp gateway_type"
    ```

    This command returns a list of all the local gateways of the type *gateway_type* using the network protocol *protocol*.

● Then define the new partner gateway with the xpadd -gtw command, as described earlier in this section for the individual gateway types (see section "Gateways" on page 213).

● If you want to allow the partner gateway to print on printers of the local Xprint V7.0 domain via the local gateway, deactivate the local gateway:

    ```
    xpchange -gtw gateway -st NOT_ACTIVE
    ```

    You only need to deactivate the local gateway if you want to modify the list of allowed gateways. This is not necessary if you have defined the local gateway with -ag ALL or if the you do not want to make the new gateway an allowed gateway (define it only for sending requests), e.g.:

    ```
    xpmod -gtw gateway -ag+ partner_gateway
    ```

● Then reactivate the local gateway with the following command:

    ```
    xpchange -gtw gateway
    ```

Example

To set up an additional connection from the local gateway nashua to the lpd spooler of the BSD-UNIX system picasso:

```
xpshow -gtw -scl "-tp LOCAL -np TCP -pp BSD"
```

only returns the gateway GTW_nashua

```
xpadd -gtw GTW_picasso -tp PARTNER -ho picasso -ga 515 \
    -bl GTW_nashua -np TCP -pp BSD
xpchange -gtw GTW_nashua -st NOT_ACTIVE
xpmod -gtw GTW_nashua -ag+ GTW_picasso
xpchange -gtw GTW_nashua
```

7.4.2 Deleting a gateway connection

A gateway connection that is no longer needed, for example because the remote partner computer no longer exists, can be deleted. If you only want to stop the use of a gateway connection temporarily, you can deactivate it completely or only in one direction (see section "Deactivating a gateway" on page 230).

> **i** A gateway can only be deleted by the Xprint V7.0 administrator. You must first log in accordingly.

● If you want to delete a partner gateway, you must first check whether the gateway to be deleted is registered as an allowed gateway at the responsible local gateway:

```
xpshow -gtw local_gw -diL
```

If this is the case, deactivate the local gateway, remove the partner gateway from the list of allowed gateways and reactivate the local gateway:

```
xpchange -gtw local_gw -stN
xpmod -gtw local_gw -ag- gateway
xpchange -gtw local_gw
```

● To finally delete the gateway, use the following command:

```
xpdel -gtw gateway
```

where *gateway* is the name of the gateway to be deleted. If *gateway* is a local gateway, it must be deactivated before deletion.

> **i** Bear in mind that a complete gateway connection consists of two gateways - the local gateway and the partner gateway. If you want to delete the connection completely, you must delete both gateways. To find out which gateways are defined, use the xpshow -gtw command (see section "Obtaining information on a gateway" on page 233).

Examples

– To delete the only connection originating from the gateway GTW_hudson to the partner gateway GTW_purple:

```
xpchange -gtw GTW_hudson -st NOT_ACTIVE
xpmod -gtw GTW_hudson -ag- GTW_purple
xpdel -gtw GTW_purple
xpdel -gtw GTW_hudson
```

– To delete a gateway connection from the gateway GTW_nashua to the partner gateway GTW_picasso, but maintaining the connections to other partner gateways:

```
xpchange -gtw GTW_nashua -stN
xpmod -gtw GTW_nashua -ag- GTW_picasso
xpdel -gtw GTW_picasso
xpchange -gtw GTW_nashua
```

7.4.3   Deactivating a gateway

If a local gateway is to be modified or temporarily not used, you can lock it against further use by deactivating it. There are three possible ways of doing this:

– You can deactivate a local gateway completely so that no gateway connection (in either direction) can be used.

– You can deactivate the passing on of print jobs to the other printer spooler or only the use of the gateway by the other printer spooler (one direction). This affects all partner systems.

– You can deactivate only the access from one partner gateway to a local gateway. This can prevent a specific remote system from sending requests to the local Xprint V7.0 system.

i   To deactivate a local gateway, you must be logged in as the administrator.

Deactivating a local gateway completely

● Use the following command to completely deactivate a gateway:

    xpchange −gtw *gateway* −st NOT_ACTIVE

where *gateway* is the local gateway to be deactivated. This deactivates the connections to all remote partner gateways connected to the local gateway. The option −st NOT_ACTIVE may be abbreviated to −stN.

Once the gateway is deactivated, you can modify or delete it.

Deactivating the export of jobs from the local Xprint V7.0 domain

You only want to deactivate the export of jobs from the local system to a partner system via a local gateway.

● To deactivate the export of jobs, enter the following command:

    xpchange −gtw *gateway* −go OFF

Deactivating the import of jobs via a local gateway

If you want to temporarily deny access to the resources of the local Xprint V7.0 domain for all partner gateways, you can deactivate the import of jobs for the local gateway.

● To deactivate the import of jobs via the local gateway, enter the following command:

    xpchange −gtw *gateway* −gi OFF

Deactivating the import of jobs via one gateway connection only

If you want to temporarily deny access to the resources of the local Xprint V7.0 domain to only one of several partner gateways, you can remove it from the list of allowed gateways of the responsible local gateway. Proceed as follows:

● Deactivate the local gateway to which the partner gateway is assigned:

    xpchange −gtw *local_gw* −stN

● Remove the partner gateway from the list of allowed gateways:

    xpmod −gtw *local_gw* −ag− *partner_gw*

● Reactivate the local gateway:

    xpchange −gtw *local_gw*

7.4.4 Activating a gateway

Three points are important for activating a gateway:

– Activation of the local gateway itself. Only an active gateway can be used by local and remote users.

– Setting up a backward link from a partner gateway to the local gateway. A connection between two gateways requires such a backward link.

– Allowing a partner gateway access. Only if a partner gateway is granted access explicitly can users of the partner system access the local resources.

i	Only the Xprint V7.0 administrator, subroot or root can activate a gateway. You must first log in accordingly.

Activating the local gateway

● To completely activate a gateway, use the following command:

```
xpchange -gtw gateway
```

where *gateway* is the gateway to be activated. This also activates all the connections between remote partner gateways and the local gateway.

Activating job export mode for a local gateway

You can activate a local gateway such that it can process the requests of the allowed partner gateways, proceed as follows.

● Activate the connection using the following command:

```
xpchange -gtw gateway -go ON
```

Activating job import mode for a local gateway

If you want to grant a partner gateway access to the resources of the local Xprint V7.0 domain, you must enter the partner gateway as an allowed gateway on the local gateway.

● Reactivate the local gateway using the following command:

```
xpchange -gtw gateway -gi ON
```

7.4.5   Obtaining information on a gateway

As an administrator, you can display the status and the definition of local or partner gateways.

Displaying the definition of gateways

●   Information on the definition of gateways can be obtained with the following command:

    xpshow –gtw [*selection*] [–di *display*]

If *selection* is not specified, the command refers to all the gateways in the local Xprint V7.0 system. Otherwise you can either specify a list of the gateways on which you want information to be displayed, or you can use the –scl *"selection_criteria_list"* option (see section "Selection criteria list" on page 266 in the Appendix) to define a list of criteria according to which the gateways are selected.

With the option –di *display* you can determine the scope of the display as for all the other Xprint V7.0 objects.

Displaying the status of local gateways

●   You can display the status (active or not active) of a local gateway with the following command:

    xpstat –gtw [*selection*] [–di *display*]

For *selection* you have the same options as described under the xpshow command (see above).

Displaying the status of partner gateways

●   You can display the status of a partner gateway if the corresponding local gateway is in the ACTIVE state with gateway_out enabled. For partner gateways, all the fields are left empty except the State field. Use the following command:

    xpstat –gtw [*selection*] [–di *display*]

For *selection* you have the same options as described under the xpshow command (see above). When the identifier list is empty or contains only * then only LOCAL gateways will be looked for. In other cases, both LOCAL and PARTNER gateways will be looked for.

8 Installing Xprint V7.0

This chapter describes how to install and configure Xprint V7.0 on a system.

8.1 Considerations

Before installing Xprint V7.0 you should define the individual parameters of the spooler configuration.

If you are not familiar with Xprint V7.0, you should first read the chapter "Introduction to Xprint V7.0" starting on page 5 to get acquainted with the concepts of Xprint V7.0 and to understand the basic terms used in this section. In particular you should first define the following configuration parameters:

– Number and names of the hosts planned for your Xprint V7.0 system.

– Hierarchy of the hosts in your system (i.e. which host you want to set up as the master host and which hosts as potential masters, slaves or parasite hosts).

– Number of servers and supervisors required for controlling all the printers, and the hosts on which these are to be set up.

Be aware that Xprint V7.0 is a licensed product. Its usage is protected by a software key. If you do not have this key at installation time, you can still start the product and use it with the full functionality during an evaluation period. At the end of this period, if no license has been installed, you will no longer be able to use the product at all. See the section "Product licensing" on page 243 for more details.

> **i** For more information on installing the product and any last-minute modifications, refer to the Release Notes delivered with Xprint V7.0.

8.2 Configuring the local area network (LAN)

You should configure your LAN before installing Xprint V7.0, otherwise you may encounter problems when using Xprint V7.0.

> **i** The following instructions assume that you have experience in administering local area networks; you should also know how to update the entries in the relevant files of your LAN software. If you have questions on any of these points, refer to the documentation for your LAN software.

To configure a network of type TCP/IP you only need to add an entry to the file
`/etc/services` on each host in the network. This entry must have the identifier
`Xprint V7.0_db`; the connection number must be the same on all hosts:

`Xprint V7.0_db 5999/tcp # Xprint V7.0  , the distributed print`
`service`

The files `/etc/hosts` and `/etc/services` should at least have the access
rights `-r--r--r--`; otherwise Xprint V7.0 might not run smoothly.

8.3 Setting the language for the Xprint V7.0 system

The Xprint V7.0 NLS message files are located in the directory
`/var/spool/Xprint/config/MSG`. The subdirectories `En` and `De` contain the
messages in English and German. To select the desired language for the Xprint
V7.0 system, the shell variable `LANG` should be set to the correct value (`En` or `De`).
In addition, the complete path of the directory holding the Xprint V7.0 message
files (`/var/spool/Xprint/config/MSG/%l/%N.cat`) should be entered in the shell
variable `NLSPATH`.

8.4 Installation (new)

Xprint V7.0 is delivered on a data medium (CD-ROM or magnetic tape cartridge) which contains several packages. Depending on the platform, two installation procedures are possible: `pkgadd` and `cpio`. The following figure provides an overview of the installation process:
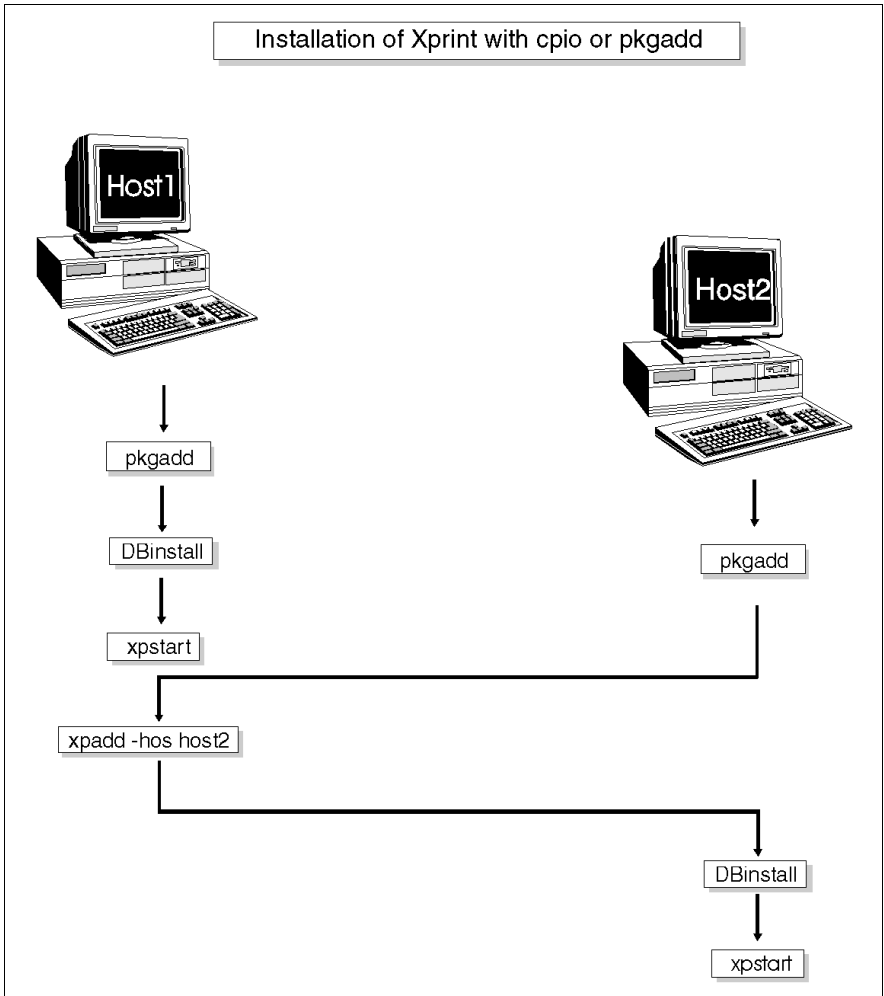
Figure 17: Installation procedures

8.4.1   Installing with cpio

To install Xprint V7.0, you require a minimum of 15 megabytes free storage
space. Also, the Xprint V7.0 database requires additional storage space the size
of which directly depends on the contents of the database (the number of
servers, printers, PCLs etc.).

To install the Xprint V7.0 software, proceed as follows:

● log in as root, change to the /tmp directory and enter the following command:

   ```
   cpio -icvBd Install < <device>
   Where device represents the path of the device from which you install the
   ```
   software, i.e. the pathname of the special file of the magnetic tape drive or
   of the CD-ROM drive.

● Enter the following command:
   ```
   /tmp/Install  `pwd`
   ```

   Then the Xprint V7.0 directory is created in which the entire software is going
   to be installed.

> **i** Xprint V7.0 can also be installed in another directory. In this case you
> should create a link between the actual Xprint V7.0 directory and the
> /var/spool/Xprint directory.

In the case of installations with cpio, DBinstall must be called manually and
there is no automatic configuration of printers.

8.4.2   Installing with pkgadd

The pkgadd command provides another way of installing Xprint V7.0. In the
case of this command, the installation procedure is menu-driven, you only need
to follow the instructions or select one of the options offered by the program.

Start the installation with the following command:

```
pkgadd -d <device_name>/Xprint V7.0.pkg
```

device_name represents the identifier of the device from which you install the
software, i.e. the identifier of the magnetic tape drive or of the CD-ROM drive.

8.4.3   Installing with sd method

After inserting the media in the correct device, enter the following command and just follow the guided dialogue:

```
swinstall
```

In case of migration from earlier version, it is suggested to take a backup of the current DB before starting the installation.

Initializing the Xprint V7.0 database

To be able to work correctly, Xprint V7.0 requires a database.

This database can be initialized automatically as part of the Xprint V7.0 instal-
lation process. The user is asked whether he/she wants a database to be
installed or not. If the user responds with yes, he/she will be asked whether the
database is to be installed in any case or only if an already existing database
has been found to be defective.

If an initialization is started even though there is an old database, this is backed
up in the directory `DB.backup` in any case, no matter if defective or not.

To restore such a backup database, you must first deactivate the Xprint V7.0
system. Then you must delete the directory `config/DB` and rename the directory
`config/DB.backup` to `config/DB`.

Automatic configuration of printers

Xprint V7.0 offers the option of having printers configured automatically during
installation of the packages. If you select this option, you will be asked to select
one or more printers from a menu in the course of the installation process. To
find out which devices are supported, see the section "Supported printers and
PCLs" in the Reference Manual.

In the case of installations with `cpio`, `DBinstall` must be called manually and
there is no automatic configuration of printers.

8.5 Installation (users only)

Xprint V7.0 is delivered on a data medium (CD-ROM, magnetic tape cartridge) which contains several packages. These packages are installed with the *pkgadd* command. The following figure provides an overview of the installation process:
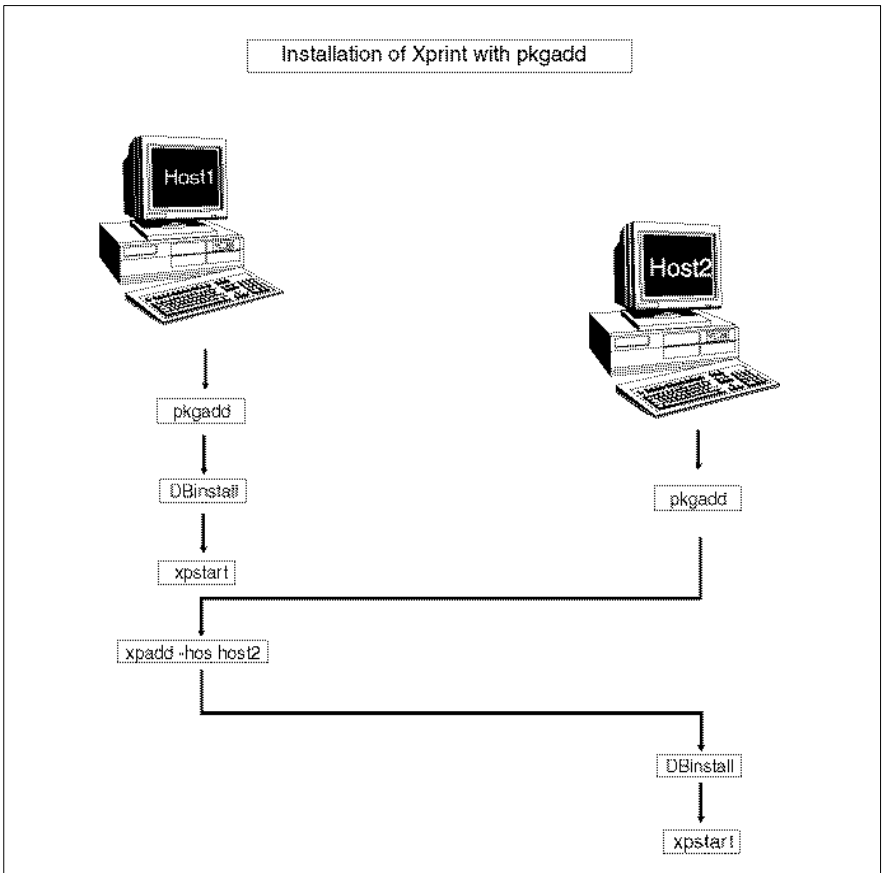
Figure 18: Installation process (Reliant UNIX users)

8.5.1   Installation with pkgadd

The *pkgadd* command provides a menu-driven installation procedure; you only need to follow the instructions or select one of the options offered by the program.

Start the installation with the following command:

        pkgadd -d *<device_name>*

device_name represents the identifier of the device from which you install the software, i.e. the identifier of the magnetic tape drive. To install Xprint V7.0 from CD-ROM, use the system administration interface sysadm.

Initializing the Xprint V7.0 database

To be able to work correctly, Xprint V7.0 requires a database.

This database can be initialized automatically as part of the Xprint V7.0 installation process. The user is asked whether he/she wants a database to be installed or not. If the response is yes, he/she will be asked whether the database is to be installed in any case or only if an already existing database has been found to be defective.

If an initialization is started even though there is an old database, this old database is backed up in the directory DB.backup whether it is defective or not.

To restore such a backup database, you must first deactivate the Xprint V7.0 system. Then you must delete the directory config/DB and rename the directory config/DB.backup to config/DB.

Automatic configuration of printers

Xprint V7.0 allows you to have printers configured automatically during installation of the packages. If you select this option, you will be asked to select one or more printers from a menu in the course of the installation process. To find out which devices are supported, see the section "Predefined printers and PCLs" in the Reference Manual.

8.5.2 Product licensing

The execution and some features of Xprint V7.0 are protected by a license key. When you have installed Xprint V7.0 you can use its full functionality without a key for an evaluation period. At the end of this period, Xprint V7.0 will become unusable unless a valid key has been installed.

8.5.3 Types of licenses

Different types of licenses can be supplied, depending on the Xprint V7.0 entities you need to configure on your host, the number of devices to be controlled, or the extra features you wish to use.

Basic licenses

The basic licenses are the following:

● **Xprint V7.0 Local**
  Xprint V7.0 runs on a single host and not in a domain. This license level includes all the interfaces (including Mercator and the API), the printing services (possibility of configuring servers and supervisors) and the attachment of BSD Printers (BSD fast filter) on one isolated host. Gateways only support incoming requests from Wprint. Any other interdomain operation requires the Net Server license (see below). Xprint V7.0 Local is basically limited to a maximum of 2 devices, but device upgrade licenses can be added to increase this limit.

● **Xprint V7.0 Net Client**
  This level offers all the Xprint V7.0 interfaces (including Mercator and the API). It does not include the possibility of configuring devices on the host. Xprint V7.0 Net Client hosts can only be configured with `SLAVE` or `PARASITE` responsibility. This does not prevent the administration of the Xprint V7.0 domain from a Net Client, it merely prevents the host from becoming master of the database. Net Clients can submit jobs to other domains. Gateways configured on an Xprint V7.0 Net Client can only accept requests from Wprint, and cannot be used for output.

● **Xprint V7.0 Net Server**
  This level includes the features of Xprint V7.0 Net Client, and adds the possibility of setting up devices on the host, configuring the host as `POTENTIAL MASTER`, and executing fully operational gateways. At least one Xprint V7.0 Net Server license is required in an Xprint V7.0 domain. The number of

devices in a domain is basically limited to 32, independently of the number of Net Clients and Net Servers. This limit can be increased with device upgrade licenses.

Device upgrade licenses

These licenses can be installed to increase the number of devices that can be configured in Xprint V7.0. Without printer upgrade license, a host with Xprint V7.0 Local is limited to two devices, while a domain is limited to 32 devices.

● **Device Upgrade to 32**
  can be added to Xprint V7.0 Local and extends the number of devices that can be defined on the host to 32.

● **Device Upgrade to 128**
  can be added to Xprint V7.0 Local, or in an Xprint V7.0 domain, and extends the number of devices to 128.

● **Device Upgrade to 256**
  can be added to Xprint V7.0 Local, or in an Xprint V7.0 domain, and extends the number of devices to 256.

● **Unlimited Device Upgrade**
  can be added to Xprint V7.0 Local, or in an Xprint V7.0 domain, and removes all limits on the number of devices.

Extra feature licenses

These licenses protect very specific parts of the product.

● **Xprint V7.0 R/3 Kit**
  This license is required for execution of the client component of the Xprint V7.0 R/3 kit.

Other special feature licenses exist, but are restricted to specific platforms or environments.

Site license

This license can be combined with any of the functional features. It allows you to use the same license key on different hosts. The main advantage of a site license is that you only have to install one key per domain rather than one key on each host in the domain.

8.5.4   Installing a license key

Where to install a license key

Basic license keys and extra feature keys need to be installed on every host where Xprint V7.0 functions are to be enabled. Device upgrade licenses and site licenses are global to a domain: only one such key has to be installed in a domain.

One key may cover several features, including the maximum number of devices. But if several keys are found on a host, Xprint V7.0 will merge all the valid ones to determine which features are enabled.

Two examples will clarify the interpretation of the keys by Xprint V7.0.

Example 1
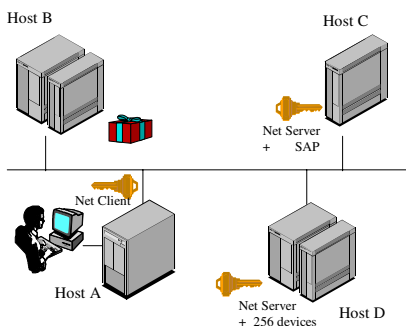
Host C has a key for Xprint V7.0 Net Server and the Xprint V7.0 R/3 Kit.

Both hosts A and D need a key to start Xprint V7.0, either Net Client or Net Server. Host D has a second key that allows up to 256 devices. This device limit is automatically known throughout the Xprint V7.0 domain.

If no key is present, as for example on host B, Xprint V7.0 can be used during a limited period after software installation. This possibility is offered only once per version...

Example 2

A site license needs to be installed only once in an Xprint V7.0 domain. It is propagated throughout the domain by Xprint V7.0's internal mechanisms.
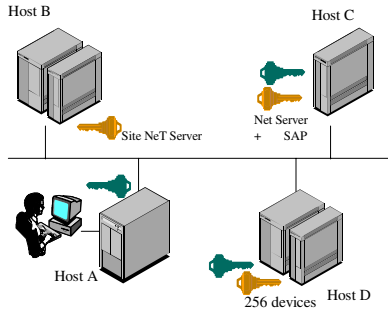
A site license is available on B, which offers Net Server. This privilege is given to all the hosts in the domain. No keys are thus needed on A, C and D.

If keys are found locally while a site key is active, Xprint V7.0 increments the site key locally with any additional privilege: Host C has Net server from the site license plus the local key Net Server it already had (no advantage), plus R/3 kit. Host D has Net Server from the site license. Its second key allows up to 256 devices in the domain.

How to install a license key

The keys to be installed consist of one or more strings made up of printable characters and spaces. Each string ends with a colon (:) in order to clearly delimit the final character.

The keys are saved in files whose names are prefixed with `DPM` (standing for *Distributed Printing Manager*). The rest of the filename is free. These files are located in the directory `/etc/.OSL_LICENCE` on UNIX platforms and in Xprint/config/data on Windows.

Two methods can be considered in order to install a license key : manually or using the xpkey command.

Manual installation

Make sure the directory /etc/.OSL_LICENCE exists and give it the access mode 0555. Create A DPM<suffix> file with the license string exactly as provided, where suffix is any free string allowed in a file name.

The license string must be on first column of first line of the file. The string in some cases may be on two lines each ended with the ':' character.

Example:
```
mkdir /etc/.OSL_LICENCE
chmod 0555 /etc/.OSL_LICENCE
cat > /etc/.OSL_LICENCE/ DPM.0998
JG he iM X3 Ln Fs PM g1 Th FH Gj Dq OL gf:
^D
chmod 0555 /etc/.OSL_LICENCE/DPM.0998
```

Installation with `xpkey`:
The same key can be installed with xpkey as follow :
```
xpkey -i "JG he iM X3 Ln Fs PM g1 Th FH Gj Dq OL gf:"
```
Please refer to the "Xprint V7.0 - Reference Manual" for a complete description of `xpkey` command.

9 Xprint V7.0 for Windows

9.1 Approach

Xprint V7.0 for Windows is the port of Xprint V7.0 (UNIX) to the Windows Server platform. It brings the rich functionality of Xprint V7.0 as a print server to the PC world and co-exists amiably with the native Windows spooler.

Xprint V7.0 on Windows is not a complete rewrite of Xprint V7.0. It is delivered with a run-time environment that allows UNIX applications to run on Windows NT or Windows 2000. Only the graphical Xprint V7.0 management interface Mercator has been rewritten to look like a standard Windows application.

The architecture is identical to the architecture of Xprint V7.0 on UNIX: server and supervisors can be defined independently, gateways can be configured for interdomain printing, and an Xprint V7.0 daemon and database manager run during the Xprint V7.0 session.

This approach simplifies the integration of the Windows computers into an existing Xprint V7.0/UNIX configuration: a Windows print server can be added in an Xprint V7.0 domain exactly like a plain UNIX host. Windows computers can be defined as potential masters or slaves, and the whole domain can still be administered from a single point (UNIX or Windows). For the daily Xprint V7.0 management tasks, the print system administrator does not even need to know which hosts are UNIX and which Windows. The type of platform hosting the print server is also totally transparent to the end users and the applications submitting print requests.

For Windows users printing from graphical applications (word processors, spreadsheets,...) Wprint can be used to route the print jobs to Xprint V7.0, with the optional possibility of specifying Xprint V7.0 job parameters or setting default ones. The full set of Xprint V7.0 commands is also available on Windows and can be called from a DOS shell window. The `xpadd` command, for example, can still be used to print a pre-formatted file received by mail.

9.2   Requirements

Xprint V7.0 is designed to run on Windows NT Server 4.0, Windows 2000 Server or on Windows 2000 Advanced Server for Intel processors, and compatible platforms.

We do not recommend you to run Xprint V7.0 on Windows NT Workstation or Windows 2000 Professional. The intrinsic restrictions on the number of connections that can be simultaneously open on these operating systems cause Xprint V7.0 to be relatively unstable.

9.3   Differences from Xprint V7.0/UNIX

The Xprint V7.0 manuals describe Xprint V7.0 on UNIX. In general, their contents also apply to Xprint V7.0 on Windows. However, there are a number of differences due to the nature of the operating systems, and these differences are described in this section.

9.3.1   Installation and license key

The installation of Xprint V7.0 for Windows conforms to the standards for this platform: a setup wizard guides you in the successive steps of the installation. The wizard is automatically started when you introduce the CD-ROM medium. If the wizard does not appear, start it manually by executing `D:\setup` (if `D` is your CD-ROM drive). Wprint, the client program to print from Windows applications, can optionally be installed along with Xprint V7.0.

During the installation you will be prompted for the `Xprint V7.0_db` entry. This entry identifies the TCP port number for the Xprint V7.0 database. It is automatically added to the file `%SystemRoot%\system32\drivers\etc\services`.

Xprint V7.0 must be installed on a local hard drive. The network shared drives are not supported.

Be careful that temporary files will be stored in the selected installation path.

Indeed, the files to be printed are temporary stored in some installation subdirectories.

At the end of the first installation, two GIP2 gateways are created (a LOCAL and a PARTNER one) to allow the access from a Wprint client.

You need a license key to use Xprint V7.0. If this key is available to you at installation time you can introduce it during the setup. Otherwise, Xprint V7.0 will run with the full functionality during a limited period, giving you sufficient time to get an official license key. If the product has already been installed you can introduce the definitive key or an upgrade key using the command `xpkey -i`, which is described in the Reference Manual.

9.3.2 Integration with Wprint

The Wprint product is the Windows integrated client for Xprint V7.0. This product provides a very easy way to print from the Windows applications to your favourite Xprint V7.0 printers and also a powerful management of your print jobs submitted to Xprint V7.0. This is the major reason why Wprint is delivered on the same media as Xprint V7.0 for Windows.

For better performance, it is advised to install Wprint and Xprint V7.0 on the same drive.

The installation procedure proposes three types of installations: "Xprint V7.0 and Wprint" (the suggested one), "Xprint V7.0 only" and "Wprint only".

- The "Xprint V7.0 and Wprint" mode provides a complete solution for your printing on a Windows server. The applications running on this machine can print on Xprint V7.0 printers and the jobs can be managed in Xprint V7.0.

- The "Xprint V7.0 only" mode is interesting when the Windows is a print server- without any application submitting print jobs.

- The "Wprint only" mode installs only Wprint and is suggested for Windows workstations.

Concerning the integration for the Wprint configuration, the reader is referred to the section "2.3.1Graphical interface for administration (Mercator)" and the description of this specific Windows functionality. If Wprint is installed on a Xprint V7.0 Windows system, it is recommended to use the local gateway as entry point in Xprint V7.0.

9.3.3   Start-up and shutdown

Xprint V7.0 appears as a Windows service, which can be controlled from the Control Panel. The default start-up mode is automatic, meaning that Xprint V7.0 is started and stopped at system boot-up and shutdown respectively.

To start and stop Xprint V7.0, the administrator can either use the `xpstart` `/xpstop` commands or operate the service from the Windows Control Panel.

9.3.4   Responsibilities

The responsibility levels in Xprint V7.0 are described in the section "Responsibilities" on page 67. These levels are based exclusively on user identifiers in UNIX (for example the root user id) but some of them are mapped to system privileges on Windows.

The different levels are recognized as follows on Windows:

● System users, Xprint V7.0 users

All Windows users can submit print jobs and manage their own jobs. Windows users can also be registered in the Xprint V7.0 database, with their login id as user name and the node name of the Windows system in the user host list. They can then be granted the same rights as registered Xprint V7.0/UNIX users (place print jobs at the top of the queue, print on any device, security level,...).

● System administrator

Any user belonging to the `Administrators` group on Windows is granted the same Xprint V7.0 privileges on his system as the root user on UNIX.

● Local Xprint V7.0 administrator (sub-root)

Any system user can be promoted to sub-root by a system administrator or the Xprint V7.0 administrator, as with Xprint V7.0/UNIX.

● Xprint V7.0 administrator

Any user registered in the Xprint V7.0 database can be nominated Xprint V7.0 administrator by modifying the Xprint V7.0 System object.

One special situation that must be described in more detail is the case where root is configured as Xprint V7.0 administrator (which is the default after installation). The mapping of the Windows members of the `Adminis-trators` group to the UNIX root user when root is configured as Xprint V7.0 administrator means that any member of this group is recognized as Xprint V7.0 administrator. On Windows, it is possible to exclude a member of the `Administrators` group from the Xprint V7.0 administration privilege merely by creating a user with his login name in the Xprint V7.0 database. So, if root is set as Xprint V7.0 administrator of the domain, only those members of the `Administrators` group who are not registered in the database will be recognized as Xprint V7.0 administrator. However, the members of the `Administrators` group who are registered in the database retain their system administrator rights in Xprint V7.0.

9.3.5　Printer support

Xprint V7.0 for Windows supports the following printers:
- network printers which can be accessed at a given IP address and TCP port number
- Windows workgroup shared printers
- directly attached printers, connected locally to a serial or parallel port.

The detection of printer errors (for example end of paper) and the related recovery procedure are only provided on network printers. The directly attached Windows printers and workgroup shared printers can be used for printing, but without any polling of the device status.

LAN printers

The configuration is the same as with Xprint V7.0 on UNIX, for example:

```
xpadd -dev LANpr -da "193.220.12.12 9100" -coLAN -pcHP-LASERJET
```

Workgroup Shared printers

Xprint V7.0 for Windows can print to printers shared by a Windows station. The Xprint V7.0 device must be defined with a `PARALLEL` connection type and the Windows UNC for device address, i.e. the device address is in the form `\\<hostname>\<printer>`, as in the following example:

```
xpadd -dev NTPr -da "\\D241PCNT\HP" -coPARALLEL -pc HP-LASERJET
```

where `D241PCNT` is the name of the Windows computer sharing the printer `HP`.

Under Windows, the printer must be shared in a way that allows the operation `Print` for the account `System` of the Windows station where Xprint V7.0 runs.

Directly attached printers (serial or parallel connection)

Xprint V7.0 for Windows is able to print to devices connected to the local ports of the computer. The device address must be the path to the corresponding Windows reserved file. The reserved files for serial printing are `COM1`, `COM2`, … and for parallel printing `LPT1`, `LPT2`,... The following examples show how to define a parallel and a serial printer in Xprint V7.0:

```
xpadd -dev PCparallel -da LPT1 -coPARALLEL -pc HP-LASERJET

xpadd -dev PCserial -da COM1 -coSERIAL -pc HP-LASERJET
```

| i | If a printer is defined in the native Windows Spooler on a port which is also used by an Xprint V7.0 printer, all the jobs printed with Xprint V7.0 are automatically redirected to the Windows Spooler. The Spooler manages the concurrence with its own jobs, so the jobs from Xprint V7.0 and the native Windows Spooler are properly serialized. |

As already mentioned, it is not possible to retrieve the device status from directly attached printers, and the serial port driver on Windows also expects some initialization from the Spooler. It is therefore advised to always define the serially connected devices in both Xprint V7.0 and the native Spooler.

9.3.6　Logging

On Windows, Xprint V7.0 records its logging information in the system event log. The logging messages can be retrieved with the Event Viewer (`Start / Programs / Administrative Tools (Common) / Event Viewer`). The messages can be found in the `Application` category (menu item `Log / Application`.)

The logged messages are the same as on UNIX.

9.3.7　Interoperability with the BS2000 DPRINT system

It is possible to exchange print requests between Xprint V7.0 on Windows and the BS2000 DPRINT print system. The only requirement is to install the file transfer product "openFT" on the Windows machine where the LOCAL Xprint V7.0 gateway GIP2 is running.

Be careful, the minimal version of openFT supported is the 6.0C00 and this product must be installed in "multi-user" mode.

To configure the openFT product and GIP2 gateways please refer to the manuals of this product.

The specific Windows operations to be performed are the following ones: Concerning openFT:

- a password must be provided to openFT in order to enable the asynchroneous file transfers. This is to be performed via:

 'Start/Programs/openFT/Security Administration'

- the admission set of this account must allow every action.

Concerning Xprint V7.0:

- the same account and password must be provided via the tool:

 'set_FTuser -i -' (for the local logged user account)'

 or

'set_FTuser -i <DOMAIN> <USER>' (for any user account)'

ex: 'set_FTuser -i domain1 usertest' or user 'usertest' in domain 'domain1'

9.3.8　WINDOWS 2000 special files

Windows 2000 supports additional file types such as encrypted and migrated files. With this new version of Xprint V7.0, these files are handled as described hereafter.

Printing encrypted files

Xprint V7.0 runs under the system account. This account does not permit Xprint V7.0 to access encrypted files. To print encrypted files with Xprint V7.0, two ways are possible.

1. Encrypted files can be printed using the -cp option that makes a copy of the file to be printed into an Xprint V7.0 temporary directory. The copy is made using the current user account, immediately after he/she issues the xpadd command. That copy is not encrypted and is stored in a temporary directory where it can be accessed by everybody.

2. To deal with encrypted files without using the -cp option, Xprint V7.0 has to impersonate a privileged user before accessing encrypted files. The `xpsetuser` command can be used to store in a file privileged users accounts and passwords that Xprint V7.0 will use later to gain access to the encrypted data.

Two different kinds of accounts can be stored:

– Personal user accounts can be stored by all users in a Xprint V7.0 data file. These accounts and passwords are coded and writen in the file `users.dat` in the subdirectory `Xprint V7.0\data\ENC` on the local host.

– A default account can be created by an administrator. Only one default account is supported; each new default account replaces the preceding one. This information is coded and writen in the file `default.dat` in the subdirectory `Xprint V7.0\data\ENC` on the local host.

When a job is sent, Xprint V7.0 firstly checks the job owner's access rights to the file to print. If the job owner has not enough rights to view the encrypted file, the job is rejected (with an access error message).

If the file to print is encryted, then Xprint V7.0 checks if an account exists for the job owner in the `users.dat` file. If not, Xprint V7.0 tries to use the account from the `default.dat` file.

If no privileged user account can be used for the current job, the job is refused, and the user is suggested to use the `-cp` option.

`xpsetuser` command can be used at any time. This command is also invoked automatically, in graphical mode, at the end of installation.

Example:

The file d:\bills\june.prt is encrypted by user "editor".

The file d:\bills\april.prt is encrypted by user "supervisor".

The file d:\bills\july.prt is encrypted by user "revisor".

On Xprint V7.0, the accounts & passwords for user "editor" have been registered in the default.dat file.

The users "revisor" and "supervisor" are registered in the users.dat file.

Assuming that "manager", "supervisor" and "revisor" have read/write access to the files in the d:\bills subdirectory, and that the `-cp` option will not be used:

– The user "manager" can print the file d:\bills\june.prt.

– The user "supervisor" can print the files d:\bills\april.prt and d:\bills\june.prt.

– The user "revisor" can print the files d:\bills\july.prt and d:\bills\june.prt.

See reference guide for a complete description of `xpsetuser` command.

Migrated files

Migrated files are located on removable storage media. To access such files, the user intervention is sometimes required to confirm the recall of the files and/or to mount the required removable storage medium. Consequently, migrated files can only be printed using the `-cp` option that permits making a copy of submitted files using the user account. In that case, the user would be invited to confirm the recall of the files immediately after issuing the xpadd command. If the required storage medium is not yet mounted, the user is also invited to mount it.

If the `-cp` option is not used for migrated file, the request is rejected with access error on the file. The user is suggested to use the `-cp` option.

9.4 Limitations and restrictions

The following limitations are specific to Xprint V7.0 for Windows:

– `xprdir, xpmount` and `xpconf_dev` are not available on Windows.

– Windows hosts cannot be configured as `PARASITE.`

– the notification method `MAIL` is emulated by the Windows Messenger Service.

– no fax or mail support.

– `DBinstall` comand does not support the `-l` option.

– Mercator reduced map is not supported on Windows.

– access to shared drives by means of the `xpsetuser` command.

– the wildcards in document names are not supported on Windows due to system restrictions.

– the BSD gateway option `'SRVTYPE=WINNT'` is not supported.

10 Appendix

This Appendix contains various informative sections, tables and worksheets for configuring and using Xprint V7.0.

In detail:

Section	Page
Worksheet for configuring a new host	260
Checklist for adding a new printer	263
Selection criteria lists	266
SNMP Agent	268
Axis box support	270
TV-CC Integration	270
Fax and mail support	271

Table 30: Overview of Appendix sections

Worksheet

Host name	Location	
Disk capacity (MB)	Free capacity (%)	Copy of database/host type Yes ☐ No ☐

Connected printers

Type	Name	Port type	Device address	Supervisor name

Supervisors used

Name	Server name	Host name

Figure 19: Worksheet

Filling out the worksheet

You should fill out a separate worksheet for every host in the network that is to use the distributed spooler system. First enter the name of the relevant host in the network in the top left field "Host name". The computer will later be entered as an Xprint V7.0 **host** under this name. In the field to the right of it you can enter the location of the computer for your reference.

Then find out the overall disk capacity in Mbytes for the relevant host and the free capacity in percent. You need this information to decide whether this host is to receive a copy of the **Xprint V7.0 database** or not. Together with the responsible system administrator you can then define whether a copy is to be made or not. The database must be stored on at least one of the computers in the network. To guarantee availability, however, it is advisable to have several copies in the network. In addition, hosts which do not hold a copy of the database (what are called **parasite hosts**) can only use Xprint V7.0 if the supporting host assigned to them is running with the database. In addition, the processor architecture (Intel, RISC) of the parasite and the supporting host must be identical. The database is then shared via a network file system such as NFS.

i	You should only forego copying the database if the relevant host has little or no free disk capacity.

When you have defined whether a copy of the database is to be stored on the host, decide on the **host type** of this computer. If the host is to run without a database, enter `PARASITE` in the "Host type" field.

If the host is to hold its own copy of the database, you must still decide whether it can be the **master host**, i.e. whether this host can take over the administration of the database and its distribution on the other hosts with a database, or whether it can only play a passive role. The default for defining a new host is **potential master**, i.e. the host can administer the database. In this case enter `POT_MASTER` in the "Host type" field.

If the host is to hold a passive copy of the database only, enter `SLAVE` in the "Host type" field of the worksheet. A **slave** can still use the printers of all the other slaves and the connected parasite hosts in the event of all potential masters failing.

Next, you should note down all the printers connected to the host. First enter the specifications for the "Type", "Port type" and "Device address" in the corresponding columns of the table. Under "Type", for example, note the type identifier of the printer, such as HP-Laserjet or PostScript.

For "Port type" you have four options:

SERIAL

> if the printer is connected to a serial port of the computer

PARALLEL

> if the printer is connected to a parallel port of the computer

LAN

> if the printer is a LAN printer that is directly integrated in the network. In this case, the printer is not directly connected to a computer, but Xprint V7.0 requires that it be monitored from one of the computers involved.

> LAN printers also have an Internet address and a port number. The Internet address can be specified directly or in form of a host name from the file /etc/hosts.

SCSI

> if supported by your system.

Depending on the port type, you must then specify a **device address** for each printer. The structure of the device address depends on the port type. It specifies the special device file for the port to which the printer is connected, or, in the case of LAN printers, via which network address and which network type the printer is addressed. The following table contains a number of concrete examples of device addresses of printers:

Port type	Device address	Remark
SERIAL	*/dev/term/tty001*	first serial port of the host
	/dev/term/tty002	second serial port of the host
PARALLEL	*/dev/lp0* or */dev/lp*	first parallel port of the host
	/dev/lp1	second parallel port of the host
LAN	*129.12.73.68 9100* or	Internet address and port number of a LAN printer (TCP/IP). Ask the responsible network administrator for the Internet address of the desired printer
	lan_printer 9100	where *lan_printer* is the corresponding name for *129.12.73.68* registered in /etc/hosts
SCSI	e.g.: */dev/io0/sprin022*	Device address of the SCSI printer

Table 31: Device addresses (examples)

When you have entered all the given data in the worksheet, you can fill out the other fields concerning printers ("Name" and "Supervisor name"). It makes sense to have the Xprint V7.0 administrator assign these globally to make sure that the names are unique within the Xprint V7.0 network. You can choose any name you wish, but every printer must be given a unique name. The printers can be named, for example, according to their type, their location, or the computer to which they are connected. It is only important that the names are unique throughout the network.

On every computer to which printers are connected, there must be at least one supervisor defined which controls these printers. Whether several printers are to be controlled by one supervisor or whether each printer is to have its own supervisor, depends on the resource requirements (processes) and on availability considerations. Each supervisor entered in the "Connected printers" table in the worksheet must also be entered in the "Name" field in the "Supervisors used" table.

Each supervisor is controlled by a server, for which purpose any server in the network can be used. For each local supervisor on the computer, enter the name of the server responsible for this supervisor ("Server name" field) and on which computer the server runs ("Host name" field).

As already described, a default supervisor/server can be used for each host. By default, these are named after the corresponding host.

When you have completed the worksheet, the computer can be added to the Xprint V7.0 system.

Checklist for adding a printer

There are a large number of options available for the `xpadd -dev` command, which allow you to optimally adjust every printer in the Xprint V7.0 system to meet the requirements of your environment. To be able to make the best possible use of these options, you may have to set up permission lists, forms, fonts, filters etc. *before* adding a new printer to the system. Furthermore, you should know which printer attributes are supported by the PCL of the new printer. Use the following questions to check whether all the requirements for using the
`xpadd -dev` command are fulfilled.

Questions

1   Has the address of the new printer been defined in the system?

2   If you do not want to use the default supervisor: does the supervisor of the new printer already exist on the host on which the printer is to be added?

        If this is not the case, first set up the supervisor and then add the printer.

3   Are the attributes you have selected for the new printer compatible with its PCL?

        Compare the attributes with the LONG display of the `xpshow -pcl` command for the PCL you have selected. In the event of inconsistencies, the `xpadd -dev` command is rejected.

4   If use of the new printer is to be restricted to a specific group of users: is there a suitable permission list already available in the Xprint V7.0 system?

        The section "Creating a permission list" on page 144 contains a description of how to set up a permission list.

5   If you want to define a default form for the printer: is this form already defined in the Xprint V7.0 system?

        For information on how to add a form, see the section "Administering forms" on page 156.

6   Can the form you have selected as the default form for the printer be mounted automatically?

        If this is not the case, select another form or change the option `-mm` to `AUTOMATIC` for the selected form.

7   Is the layup of the default form of the printer compatible with the PCL of the printer?

        See the LONG displays of the commands `xpshow -frm` and `xpshow -pcl` to check this. If the layup is not compatible, modify the `-ls` option of the form accordingly.

8   Is the font of the default form compatible with the printer's PCL? See the LONG displays of the commands `xpshow -fnt` and `xpshow -pcl` to check this. If it is not compatible, modify the form accordingly. If there is no suitable font available, you might have to add a font to the Xprint V7.0

system.
For information on adding a font, see the section "Administering fonts" on page 152.

9   Is the printer to use a specific set of recovery rules for error recovery?

In this case make sure that a suitable object is available in the Xprint V7.0 system. The section "Administering recovery rules" on page 186 contains detailed information on creating and setting up recovery rules.

10   Is the printer backend to activate a fast filter before printing the jobs?

If this is the case, check if the relevant filter is already available in the Xprint V7.0 system.

The section "Administering filters" on page 162 contains information on how to set up a fast filter. Is the printer backend to activate a fast filter before printing the jobs? If this is the case, check if the relevant filter is already available in the Xprint V7.0 system.

The section "Administering filters" on page 162 contains information on how to set up a fast filter. Is the printer backend to activate a fast filter before printing the jobs? If this is the case, check if the relevant filter is already available in the Xprint V7.0 system.

The section "Administering filters" on page 162 contains information on how to set up a fast filter. Is the printer backend to activate a fast filter before printing the jobs? If this is the case, check if the relevant filter is already available in the Xprint V7.0 system.

The section "Administering filters" on page 162 contains information on how to set up a fast filter. Is the printer backend to activate a fast filter before printing the jobs? If this is the case, check if the relevant filter is already available in the Xprint V7.0 system.

The section "Administering filters" on page 162 contains information on how to set up a fast filter.

If you have checked all the points listed above and if all the options to be used are compatible with the printer's PCL, you should not have any problems in adding the printer.

You can find a list of the predefined PCLs in the appendix of the Reference Manual.

Selection criteria list

General requirements

In many cases you will directly enter specific names for your operations. However, there may be times when you will want to apply changes, for example, to several users with the same privileges, or you might not know the exact name. In such cases you can use specific criteria to select all the objects corresponding to these criteria. These criteria are specified in what is called the selection criteria list; in general these are the same options as you use with the `xpadd` command when you add an object to the Xprint V7.0 system for the first time. This option has the following format:

-scl "*selection_criteria_list*".

When specifying a selection criteria list, you must observe the following:

– The entire list of criteria must be enclosed in quotes.

– By means of the *selection_criteria_list*, you can select, for example, all the jobs that are to be printed on a specific date; you can display all the users who have already printed more than 1000 pages; you can assign a new security level to all the users with a specific security level.

– In the *selection_criteria_list* you can specify several criteria simultaneously. These must be separated by blanks.

– In the *selection_criteria_list* you can specify almost all the options you can use with the `xpadd` command (see also Xprint V7.0 V5.2A - Reference Manual). There are, however, certain restrictions and also additional features. These are described further below in the section "Special cases".

– Specifying the wildcards $*$ (any number of characters) and $?$ (exactly one character) is allowed for arguments of non-numeric options.

– For options without arguments (Boolean options) you can find out whether the relevant option was specified or not by following it with a $+$ or $-$ character.

– In the case of options that allow you to specify several combined values, the selected objects are those which have at least the specified values set. To search exclusively for the objects for which exactly the specified values are set, follow the option with the $=$ character.

Example

The following command deletes all the devices with the `XON` protocol:

```
xpdel -dev -scl "-po XON"
```

Special cases

This section describes all the `xpadd` options which are not available as criteria or which are available additionally.

All objects

Except with `-job`, `-hos` and `-usr`, you can additionally use the option `-ad`. This option is used to select the objects which are assigned to an existing administrator.

Printers

–   With the `-st` option you can select all the devices with a specific status; this can be `ACTIVE` or `NOT_ACTIVE`.

–   With the `-si` option you can select devices with a specific spoolin state; possible values are `ON` or `OFF`.

–   With the `-so` option you can select devices with a specific spoolout state; possible values are `ON` or `OFF`.

–   With the `-rd` option (for **red**irection) you can select devices with automatic redirection to a specific printer.

Printer groups

With the `-si` option you can select device groups with a specific spoolin state; possible values are `ON` or `OFF`.

Print jobs

–   With the `-jo` option you can display the jobs assigned to a specific job originator.

–   With the `-st` option you can select jobs with a specific job status. The following values are possible: `ACTIVE`, `WAIT`, `TOP`, `SUSPEND`, `DATA_FILTERING`, `SCHEDULED`, `INTERRUPTED` and `TERMINATED`.

– You can use the $-ik$ option to select jobs with a specific status by means of a keyword (e.g. NOT_ACTIVE) (see xpstat $-job$)

– The options $-jt$, $-te$ and $-sx$ cannot be used for job selection.

Supervisors

With the $-st$ option you can select supervisors with a specific status; possible values are ACTIVE or NOT_ACTIVE.

Servers

– With the $-st$ option you can select servers with a specific status; possible values are ACTIVE, NOT_ACTIVE or SHUTDOWN.

– With the $-si$ option you can select servers with a specific spoolin state; possible values are ON or OFF.

– With the $-so$ option you can select servers with a specific spoolout state; possible values are ON or OFF.

Gateways

– You can use the $-st$ option to select gateways with a specific status; possible values are ACTIVE and NOT_ACTIVE.

– You can use the $-gi$ option to select those gateways which have a specified gateway input status; possible values are ON and OFF.

– You can use the $-go$ option to select those gateways which have a specified gateway output status; possible values are ON and OFF.

Hosts

The options $-po$ and $-pd$ cannot be used for selecting hosts.

SNMP Agent

The Xprint V7.0 SNMP sub-agent is based on the UCD-SNMP (NET-SNMP) software on Linux and Unix platforms and on the SNMP Microsoft service on Windows NT and Windows 2000.

The Xprint V7.0 objects supported by the SNMP agent are hosts, devices, device groups, servers, supervisors, gateways and jobs. For each of these objects, there is a table in the Xprint V7.0 MIB. These tables contain all the attributes displayed by the xpshow and xpstat commands for the corresponding objects. The description of each attribute can be found in the comments of the MIB file. The MIB file (Xprint V7.0-MIB.txt) is installed in the SNMP subdirectory of the Xprint V7.0 installation directory.

For all supported object types except jobs, the complete domain configuration is accessible. In the specific case of jobs, only jobs managed by local servers to the agent host are visible.

The purpose of this agent is the monitoring of Xprint V7.0 activity but not the administration. Therefore, only read access is allowed via SNMP agent. Moreover, no SNMP trap functionality is supported.

Be aware that objects from another domain (for instance the partner gateway...) are always shown as not active. The purpose of the SNMP agent is to monitor objects from the domain, not the objects from another one.

For efficiency, the Xprint V7.0 information is first completely stored in a "Cache area" responsible for collecting the complete definition and state of each supported object. This "cache" is notified about configuration updates except for hosts becoming "unreachable" due to system or network crash or devices in error but located on another host than the agent system. The latter situations are anyway detected via a polling mechanism.

The SNMP agent has also a copy of this information in order to boost access. This copy is automatically resynchronised with the "Cache" contents after a given delay.

The information accuracy is determined according to two extended options of the host object (where the SNMP agent is running):

– XP_CM_POLL_TIME: period for devices and hosts state refreshing in the "Cache" area. This time determines the maximum time before detection of a host no longer reachable or of a DEVICE_ERROR state occurring on another host than the SNMP system. The value must be a number expressing the time in seconds. The default value is "300" (5 min). A value "0" disables this refresh operation and could lead to incorrect states of devices and hosts.

– XP_CM_DISABLE_JOBS: When the monitoring of jobs via the SNMP agent is not requested, performances will highly improve. A non null value disable the monitoring of jobs and a value of "0" resets to the default behaviour. This option is only taken into account at startup.

– `XP_SNMP_SYNC_TIME`: Validity period for the SNMP agent copy of the Xprint V7.0 information. Any access to Xprint V7.0 agent after this time will enforce a resynchronization of the SNMP agent copy with the "Cache Area". The value must be number expressing the time in seconds. The default value is "10" (10 seconds). The value "0" means that the resynchronization with the "Cache" information occurs at each SNMP access.

The installation aspects are detailed in the release notice.

Axis box support

Introduction

Two axis fast filters have been written to allow Xprint V7.0 to submit job to printer attached to an axis box and to have a follow-up of the printer status (i.e. : Printer Off, Paper End , ...).

These filters are implemented via programs respectively called "prosbsd" for the axis firmware <= 5.20 and "prosbsd6" for axis firmware >= 6.0. The axis box having a firmware version comprised between 5.20 and 6.0 are not currently supported by Xprint V7.0. It is suggested to upgrade the axis box firmware to a version 6.0.

Configuration

The configuration is detailed in the reference guide appendix.

TV-CC integration

When installing the package SIsplgu on a platform where Transview Control Center product is installed (package TV-CCA at least version 3.1A), Xprint V7.0 is automatically integrated in TV-CCA.

Such integration allows the monitoring of Xprint V7.0 printers: any printer error will be intercepted by TV-CC that may initiate a reaction via the Xprint V7.0 graphical interface.

Fax and mail support

Xprint V7.0 fax and mail support is available on the Unix platforms. The fax/mail software supported by Xprint V7.0 as well as the versions and the platforms on which the fax/mail solution is certified are given in the following. Even if not listed, other versions or platforms may be compatible with Xprint V7.0 .

VSI-FAX version 3.5.2 on SCO UNIX

Optio FaxFX version 2.54 on SCO UNIX

TOPCALL version 3.0 runs on Windows NT. The TOPCALL support in Xprint V7.0 is certified on every supported UNIX system.

SMTP: any SMTP server that is compatible with RFC 1521 can be used. The SMTP support in Xprint V7.0 is certified on every supported UNIX system.

Please inquire about the document formats your fax software supports. Using an unsupported format does not generate any error in Xprint V7.0 (it is only a document carrier to the fax software) but will lead to unexpected fax output.

Optio FaxFX does not support the PJL printer language (embedded in Postscript files for instance).

The fax and mail support is not available on the Windows platforms.

Glossary

Backend

This is a driver program responsible for controlling printers. In addition, it is responsible for error recovery and printer status information.

Character set

The letters, digits, punctuation marks and symbols available for a font.

Direct printing

Under Xprint V7.0 you do not necessarily have to place a print job in the print queue. You can also send a print job directly to a printer; in this case, however, the job cannot be modified after submission.

Encrypted files

The Encrypted File System (EFS) introduced in Windows 2000 is used to prevent unhautorized access to sensitive stored data.

Fast filter

This is a program which enhances the functionality of Xprint V7.0. Above all, fast filters are used to enhance the *backend* program, i.e. their main function is to detect feedback messages from the printer and to pass them on to the responsible supervisor in a form it can understand. They are executed between the *supervisor* and the printer when the job is being printed.

Filter

A filter is a program which enhances the functionality of Xprint V7.0. The system differentiates between *fast filters* and *slow filters*.

Font

Fonts are Xprint V7.0 objects which combine the different pieces of font information (typeface, style, character pitch, line spacing, print quality and character set) under one name.

Form

This is an Xprint V7.0 object with which you can have documents output in a predefined layout.

Gateway

Gateways are Xprint V7.0 objects which allow the connection of an *Xprint V7.0 domain* with different systems (other *Xprint V7.0 domains*, BSD-UNIX systems, etc. Jobs can be exported as well as imported via gateways. There may be several gateways running simultaneously on one host.

HOME directory

This is the directory in which a user is located after logging in to the Outputware system.

Host

This is the central computer to which the terminals and printers of the users are connected. Under Xprint V7.0 every computer defined in an Xprint V7.0 domain is referred to as a host. Hosts are divided into three categories: master, slave and parasite hosts. The difference lies in the way each one handles the *Xprint V7.0 database*.

Job

See *print job*.

Job identifier

Every *print job* is automatically assigned a character combination called the job identifier when it is added to the print queue. This job ID is required to make changes to a submitted job.

Job template

A job template is an object which can store a sequence of specific options of the `xpadd` command which are used frequently for spooling in print jobs. If a user specifies this job template when submitting a print job, Xprint V7.0 automatically uses the predefined options of the template; this saves the user the effort of specifying frequently recurring option sequences again and again.

Loadable Resource

This is an Xprint V7.0 object that may be used for printing documents. Resources are data that are document independent and loaded to the printer separately from the user's data. Documents can then call downloaded resources.

Master host

A master host holds the master copy of the *Xprint V7.0 database*. When Xprint V7.0 is introduced in a network, the first computer on which Xprint V7.0 is installed and started assumes the role of the active master host. If Xprint V7.0 is terminated on the active master, the next *potential master host* in what is called the *host hierarchy* assumes its function as active master host.

Migrated files

These are files stored on a remote media in order to extend disk space using the remote storage facility from Windows 2000.

Object

This is a generic term for the individual components with which you work under Xprint V7.0 (e.g. *printers*, *printer groups*, *print jobs*, *forms*).

Option

These are special instructions used to govern command execution. All options are preceded by a minus sign (-). With most of the Xprint V7.0 commands you can specify several options (also simultaneously). The command line `xpadd` `-dr` *text* `-de` *printer* `-fm form1`, for example, contains the options `-dr`, `-de` and `-fm` which are used to alter the function of the `xpadd` command.

Parasite host

A parasite host is a *host* which does not have a copy of the Xprint V7.0 database. It requires Xprint V7.0 to be running on a specific computer which is assigned to it as the database server if Xprint V7.0 is to be accessed from the parasite host.

PCL (printer capability list)

This is an object containing all the information Xprint V7.0 needs for controlling a printer. It describes how print options are to be converted into the corresponding control characters the printer needs. Furthermore, it contains information on the technical features of the printer (e.g. its connection protocol) and the conversion of common control characters (form feed, line feed, etc.) performed by the printer. It also describes how the dialog is to be conducted with the printer.

Permission list

Permission lists are Xprint V7.0 objects, in which access rights for other objects are defined. There are permission lists for users (USER) and forms (FORM) and Xprint V7.0 distinguishes two types of permission list: allowed lists and denied lists. The former comprise lists of users (or forms) that are allowed to access specific objects, e.g. printers (or which may be used on the printers to which the list is assigned, respectively). The latter list objects which are not allowed to access specific objects, for example printers (or which may not be used on the printers to which the list is assigned, respectively).

Print job

When one or more files are sent off for printing via the xpadd command or the menu interface, these are combined to form an object named "print job" and subsequently treated as such by Xprint V7.0. At spoolin, every print job is assigned a *job identifier* under which it can later be addressed, e.g. to change the formatting.

Printer capability list

See *PCL*.

Printer group

You can combine several printers to form a printer group. Users can then send a job to this group, whereupon the job will be printed on the first printer in the group to become available. This avoids long wait times, which might occur if only one destination printer is selected. Nevertheless, users can still address any printer in a group individually.

Prompt

When the system is started in command mode or in a shell window, a character sequence appears on the screen indicating that the command interpreter is ready for Outputware commands to be entered. Under Outputware such a prompt might look like this:

```
(xprintadm@nashua)/home/peter:
```

This example shows a prompt which gives the name of the user (xprintadm) and the name of the host on which the user is logged in (nashua) in parentheses. This is followed by the current directory.

Raw mode

> When a print job is spooled in in raw mode, Xprint V7.0 sends this file to the specified printer without any formatting or processing by a filter.

Recovery rule

> Recovery rules are used to define the error recovery procedure in the case of specific printer conditions.

SCSI driver

> The SCSI peripheral driver communicates with the SCSI host adapter server instead of directly with the hardware. It contains entry-point routines to pass user-level request to open and close the device or to read and write data. The SCSI peripheral driver populates a request structure with this information, then passes the information to the SCSI host adapter driver. The host adapter driver handles the direct communication with the hardware.

Server

> Servers are the Xprint V7.0 objects which administer incoming *print jobs* and are responsible for scheduling them. Every server manages its own print queue, which contains all the print jobs for the printers whose *supervisors* the server controls.

Slave host

> A slave host is a *host* which holds a complete copy of the *Xprint V7.0 database* but cannot become active *master host* itself.

Slow filter

> This is a program enhancing the functionality of Xprint V7.0. Slow filters are executed in parallel to the spooling process, i.e. after job submission and before printing. They convert data or allow special print modes such as printing in columns or in landscape mode.

SNMP agent

The Simple Network Management Protocol, abbreviated SNMP, is the Internet standard protocol for exchanging management information between management console applications and managed entities. SNMP uses a distributed architecture consisting of managers and agents. An agent is an SNMP application that responds to queries from SNMP manager applications.

The SNMP protocol provides a set of rules to monitor and manage network resources including both hardware components and software applications. In the context of Xprint V7.0, the SNMP agent exports Xprint V7.0 information (resources definition and status). The list of exported attributes is described in a MIB file delivered in the Xprint V7.0 package.

Supervisor

A supervisor is directly in charge of controlling one or more printers. It receives the job data from the superordinate *server* and passes it on to the *backend* program.

Xprint V7.0 database

The Xprint V7.0 database contains all the data Xprint V7.0 needs to be able to access the Xprint V7.0 resources. This includes information on the defined *hosts*, *Xprint V7.0 users*, *printers* and *printer groups* as well as on *forms*, *filters*, *gateways* and
servers. Only the *print jobs* are stored on the server, which is responsible for their administration.

Xprint V7.0 domain

All the Xprint V7.0 objects, in particular the *hosts*, for which an entry exists in a shared *Xprint V7.0 database* and which are administered by a single Xprint V7.0 administrator.

Xprint V7.0 user

An Xprint V7.0 user is a user who is registered in the *Xprint V7.0 database*. Xprint V7.0 allows extensive manipulation of the privileges of the Xprint V7.0 users within the Xprint V7.0 system.

Related publications

[1] Xprint V7.0
     Application Programming Interface (API)
     User Guide

     Target group
     This manual is for programmers who want to make use of the Xprint V7.0
     functionality in their programs.

     Contents
     The manual describes how you can use the functions of Xprint V7.0 API
     in your own programs. Furthermore, it contains a reference of all Xprint
     V7.0 API functions and the corresponding macros and functions.

[2] Xprint V7.0
     Reference Manual

     Target group
     Users and Administrators of Xprint V7.0.

     Contents
     This manual describes all the Xprint V7.0 commands and files and
     serves as a reference book which contains all the information required to
     use and administer Xprint V7.0.

[3] Xprint V7.0
     Graphical User Interface
     User Guide

     Target group
     Users, system administrators, printer managers and programmers of
     Xprint V7.0

     Contents
     Description of Xprint V7.0 Mercator User Interface for operation, admin-
     istration and maintenance.

[4]   Wprint V3.1
User Guide

Target group
Windows administrators and Wprint NT users

Contents
Description of the installation, configuration and operation of Wprint
V3.1, the Xprint V7.0 client for Windows NT.

Please apply to your local office for ordering the manuals.

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