

Windows LPR/LPD Registry Tweaks

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1 Overview and Warning

The *Microsoft Computer Dictionary*, Fifth Edition, defines the registry as:

A central hierarchical database used in Microsoft Windows 9x, Windows CE, Windows NT, and Windows 2000 used to store information necessary to configure the system for one or more users, applications and hardware devices.

The Registry contains information that Windows continually references during operation, such as profiles for each user, the applications installed on the computer and the types of documents that each can create, property sheet settings for folders and application icons, what hardware exists on the system, and the ports that are being used.

The Registry replaces most of the text-based .ini files used in Windows 3.x and MS-DOS configuration files, such as the Autoexec.bat and Config.sys. Although the Registry is common to several Windows operating systems, there are some differences among them.

Registry data is stored in binary files.

To edit the registry, Microsoft recommends that you follow the steps in the Microsoft documentation only. If you can, use the Windows user interface instead of directly editing the registry.

You can edit the registry by using Registry Editor (Regedit.exe or Regedt32.exe). If you use Registry Editor incorrectly, you can cause serious problems that may require you to reinstall your operating system. Microsoft does not guarantee that problems that you cause by using Registry Editor incorrectly can be resolved.

Use the Registry Editor at your own risk.

Before you modify the registry, make sure to back up the registry, and make sure that you understand how to restore the registry if a problem occurs.

NOTE: You must reboot your PC for the changes to take effect.

② LPR/LPD service parameters: RFC compatibility

According to RFC 1179 the LPR spooling service may use only source ports of 721 to 731. This normally is no problem, but when a computer tries to send many print jobs after each other – which is often the case on a printer server – there is a certain time out after the 11th job. This limits the performance because per RFC 1122, each port must not be re-used for four minutes (2 * “Maximum Segment Lifetime” as defined in RFC 1122).

Windows NT up to Windows NT 3.51 with Service Pack 4 implemented this strict behavior. Starting with Windows NT 3.51 Service Pack 5 and up to Windows NT 4 Service Pack 2 this limitation was raised because the LPR-port was able to use the ports 512 to 1023.

This lax port usage then caused problems with LPD spoolers – most probably from Unix systems - that do not accept incoming traffic from other ports the RFC 1179 compliant 721 to 731.

Starting with Windows NT 4.0 Service Pack 3 (and up to Windows Server 2003 R2) LPR-Port behavior went back to RFC 1179 compliant port usage. But this time the more lax behavior was configurable by using certain registry switches.

NT 3.51					NT 4.0						2000	XP	2003			
RTM	SP1	SP2	SP3	SP4	SP5	RTM	SP1	SP2	SP3	SP4	SP5	SP6	RTM-SP5	RTM-SP2	RTM-SP1	R2
721 – 731					512 – 1023						721 – 731 1024 – 65535 (by registry)					

From Windows NT 4 Service Pack 3 on, a new registry entry is automatically generated when a new LPR port is created. This setting is defined on a per printer port basis and defaults to 0, which is RFC compliant. To enable individual IP address ports to use TCP ports 1024 and higher, create this key within each individual port identified by its IP address:

Hive	HKEY_LOCAL_MACHINE
Key	\SOFTWARE\Microsoft\LPDSVC\lpr
Name	<IP address of LPR printer port>
Data	REG_DWORD
Value(s)	0 = uses ports 721-731 (default) 1 = uses any port >1024

From Windows NT 4.0 Service Pack 4 on a new registry value “UseNonRFCSourcePorts” exists to configure LPR printers to use TCP ports higher than 1,024 with one registry entry that will incorporate a global change.

Use this method on print servers that have a large number of LPR ports.

If LPR ports were created prior to this patch an individual port entry may exist in the registry for some or all LPR ports. These individual ports take precedence over the global entry "UseNonRFCSourcePorts" so these individual ports must be deleted from the registry before the "UseNonRFCSourcePorts" global setting will work for all LPR ports.

Hive	HKEY_LOCAL_MACHINE
Key	\SOFTWARE\Microsoft\LPDSVC\lpr
Name	UseNonRFCSourcePorts
Data	REG_DWORD
Value(s)	0 = uses ports 721-731 (default) 1 = uses any port >1024

AIX may randomly stop printing to Windows 2000 Line Printer Daemon (LPD). This issue occurs because AIX 4.3.3 patch level 8 is not RFC1179-compliant. For AIX to print to Windows 2000 LPD, create the following registry value:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\LPDSVC\lpr\UseNonRFCSourcePorts=1
```

Starting with Windows 2000 (including Windows XP and Windows Server 2003) there is another TCP/IP spooling component called the "Standard TCP/IP Port".

This port implements both raw IP spooling using port 9100 and LPR spooling using port 515. The Standard TCP/IP port uses the lax port usage behavior (721-731 and 1024-65535) as described above.

The old LPR component of Windows NT 4 and earlier is also available. LPR Ports can be configured on a Windows 2000 Server after "Print Services for Unix" has been installed in the "Other Network File and Print Services" section of the "Add/Remove Windows Components" wizard in "Add/Remove Programs". If you are configuring a LPR port (not a "Standard TCP/IP Port"), this port will default to the LPR RFC Source and Destination ports (TCP: 721-731, TCP: 515).

3 Other LPD service parameters

The Windows LPD server uses a time-out value to stop the LPD server from waiting indefinitely for hung or invalid print jobs.

By default, this value is set to 60 seconds. Some LPR client implementations send the Receive Job command and then start creating a data file that is sent when it is ready. With a large print job, the delay can become long enough to invoke the time-out condition. When this condition occurs, the LPD server responds with a negative acknowledgement and cancels the job.

This key exists from Windows 2000 Service Pack 3 on. For RTM, SP1 and SP2 you will need to apply either a hotfix or the latest service pack for Windows 2000.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Services\LPDSVC\Parameters
Name	RecvTimeout
Data	REG_DWORD
Value(s)	Timeout (1 – 1200 seconds)
	The default value is 60 seconds

Setting this parameter to 0 disables job removal (that is, once submitted, the job cannot be removed using LPRM, no matter who submitted it originally).

If for any reason it is required that LPDSVC not delete a job from the queue once submitted, this parameter should be set to 0. Default is 1 (that is, allow a job to be removed--if request to remove is from the computer that submitted it originally).

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Services\LPDSVC\Parameters
Name	AllowJobRemoval
Data	REG_DWORD
Value(s)	0 = Job may not be removed using LPRM
	1 = Job can be removed (default)

If a printer is paused, by default anyone can cause it to be resumed by sending the appropriate LPR command.

If this parameter is set to 0, request from anyone to resume printer is ignored. Default is 1 (that is, honor any request to resume printing).

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Services\LPDSVC\Parameters
Name	AllowPrinterResume
Data	REG_DWORD
Value(s)	0 = Resume request by anyone is ignored 1 = Resume request by anyone is honoured (default)

This parameter specifies how many users can concurrently send a job to LPDSVC. Default is 100.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Services\LPDSVC\Parameters
Name	MaxConcurrentUsers
Data	REG_DWORD
Value(s)	Users (0 .. MaxInt) 100 users (default)

The Windows NT LPD Service follows the RFC1179 specification. This states that the LPR client must tell the LPD server how to handle the print job. If the client formats the job, it must send the "I" control character to instruct the LPD server to print the job without any alteration.

Some LPR clients cannot be configured to send different control characters and always send an "f". This control character instructs Windows NT to assign a data type of TEXT and to use the printer driver to create a new print job that prints the text of the original job on the page. In the case of a postscript job, the new print job prints the original job's PostScript code on the page.

When a formatted job prints from a line printer remote (LPR) client to a Windows NT computer that is running the Line Printing Daemon (LPD) services, PCL or PostScript codes are printed instead of a properly formatted document.

The LPD service can be reconfigured to ignore the format control command from the LPR client and always assign the RAW data type. This setting applies to all printers. Starting with Windows

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Services\LPDSVC\Parameters
Name	SimulatePassthrough
Data	REG_DWORD
Value(s)	0 = No Passthrough (default) 1 = Simulate Passthrough i.e. assign RAW always

Under Windows NT 3.51 the service looks into the Sub-key LPD and not into LPDSVC. To work around this, duplicate the LPDSVC-sub-key as LPD-sub-key and add the new value "SimulatePassthrough" into this sub-key.

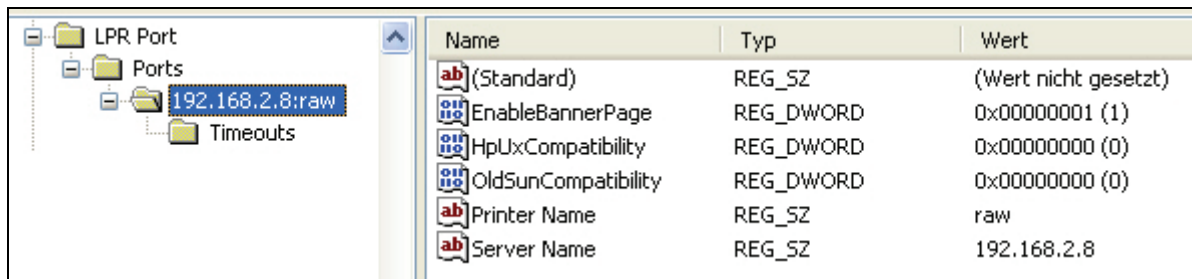
Beginning with Windows NT version 4.0 Service Pack 2, it is possible to configure "LPD passthrough" on a per-printer basis.

4 LPR port parameters

There is one major issue under Windows NT 3.x and NT 4.0 with the creation of the LPR port.

When you create a new port, then you must enter both IP-address and the receiving queue-name. LPD queue names are case-sensitive. Many queue-name are upper-case or mixed-case. When the port is created it is displayed in the list of available ports. Under Windows NT 4 and earlier the port-name is created from the IP-address, a colon, and the queue-name in upper-case (!)

If you by accident specify a lower-case queue-name, but the actual queue-name is upper-case, you may not notice this mis-configuration only by looking at the port-name within the list of available ports. If you have doubts about the configuration of the LPR ports queue-name, delete the port in question and create it new.



This problem does not exist in Windows 2000 and higher. The name of the port reflects the case of the queue-name correctly.

This specifies the format control character that the LPR Print Monitor should send to the print server through the control file. By default, this parameter doesn't exist in the Registry, and "l" (lowercase L) is sent as the control character.

This can be set to any string. If set, the first letter of the string is taken (the rest of the string is ignored) as the format control character and sent to the print server. Some situations may need 'f' to be used instead of 'l', and this parameter can then be used.

Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print\Monitors\LPR Port\Ports\<portname>
Name	PrintSwitch
Data	REG_SZ
Value(s)	Any legal control character (only first char is used)
	l (Lowercase L)

This requests a banner page to be printed by the receiving Line printer daemon. If the receiving LPD does not support the banner page command, no banner page is printed.

This has nothing to do with the Windows separator page which is created by the windows spooler system.

Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print\Monitors\LPR Port\Ports\<portname>
Name	EnableBannerPage
Data	REG_DWORD
Value(s)	0 = No Banner Page (default) 1 = Request LPD banner page to be printed

Per RFC1179, LPR servers MUST be able to receive the control file subcommand first and SHOULD be able to receive the data file subcommand first.

Windows NT sends the control file first, by default.

If the printer resides on a LPD server that uses the desirable but optional order, such as a HP-UX or IBM AIX v4.3 server, you may experience problems.

Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print\Monitors\LPR Port\Ports\<portname>
Name	HpUxCompatibility
Data	REG_DWORD
Value(s)	0 = RFC compatible(default) 1 = Compensate for HP-UX issues

If the remote computer runs SunOS 4.1 or a prior version, you may need to configure LPR to support the SunOS compatibility mode.

Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print\Monitors\LPR Port\Ports\<portname>
Name	OldSunCompatibility
Data	REG_DWORD
Value(s)	0 = RFC compatibility (default) 1 = Compensate for old SunOS 4.1.x issues

5 Per printer configuration

When you spool with the Line Printer Daemon (LPD), both line feed (LF) and carriage return (CR), in text-stream print jobs, are translated to carriage return/line feed (CR/LF).

Starting with Windows NT 4.0 Service Pack 6 and above, you can alter this default behavior on a per-printer basis.

Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print\Printers\ <printername>\PrinterDriverData</printername>
Name	Winprint_TextNoTranslation
Data	REG_DWORD
Value(s)	0 = Translate to CR/LF (default) 1 = Keep original values

To disable CR processing only:

Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print\Printers\ <printername>\PrinterDriverData</printername>
Name	Winprint_TextNoCRTranslation
Data	REG_DWORD
Value(s)	0 = Translate CR to CR/LF (default) 1 = Do not translate CR to CR/LF

If you are using "SimulatePassthrough" (see below), the data type is always RAW, which ignores print processor settings.

The Windows NT LPD Service follows the RFC1179 specification. This states that the LPR client must tell the LPD server how to handle the print job. If the client formats the job, it must send the "l" control character (lowercase L) to instruct the LPD server to print the job without any alteration.

Some LPR clients cannot be configured to send different control characters and always send an "l". This control character instructs Windows NT to assign a data type of TEXT and to use the printer driver to create a new print job that prints the text of the original job on the page. In the case of a postscript job, the new print job prints the original job's PostScript code on the page.

Prior to service pack 2, the "SimulatePassthrough" registry entry affected all incoming LPR jobs to all printers on the server (see above).

Applies to	Windows NT 3.51 and Windows NT 4.0 RTM/Service Pack 1
Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print\Printers\ <printername>\PrinterDriverData</printername>
Name	SimulatePassThrough
Data	REG_DWORD
Value(s)	0 = No Passthrough (default) 1 = Simulate Passthrough i.e. assign RAW always

Beginning with Windows NT version 4.0 Service Pack 2, it is possible to configure "LPD passthrough" on a per-printer basis.

Applies to	Windows NT 4.0 Service Pack 2 and 3, Windows 2000, Windows XP and Windows Server 2003
Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print\Printers\ <printername>\PrinterDriverData</printername>
Name	LpdPrinterPassThrough
Data	REG_DWORD
Value(s)	0 = No Passthrough (default) 1 = Simulate Passthrough i.e. assign RAW always

The Windows NT LPD Server is based on RFC1179, which defines the standard for TCP/IP Printing using Berkeley Style Daemons (BSD). However, the Windows NT LPD Server does not implement all incoming control characters because of overlapping functionality which already is present in Windows NT or because the control character is Unix-specific.

The following format control characters as specified in RFC1179 are implemented by Windows NT's LPD Server:

f - Print formatted file

l - Print file leaving control characters

Other LPR format control characters, such as 'o' for format file as PostScript, can be emulated in Windows NT by setting the print queue's Datatype to TEXT and using the proper printer driver. When the TEXT Datatype is selected for a print queue, any incoming jobs are formatted using the driver that is set up for the queue.

To emulate LPR jobs that send the 'o' control character, the print queue should be set up to use the proper PostScript driver and the Datatype should be set to TEXT. Then, any incoming jobs (regardless of source) will be formatted using the PostScript driver. Thus, the 'o' control character does not need to be implemented by LPD, as the Datatype already provides this functionality.

Also, because the TEXT Datatype can use any Windows NT printer driver, more functionality is provided than the control characters defined in RFC1179, as there are several types of printers supported by Windows NT whose formats are not specified in RFC1179.

Other LPR control characters, such as L for print banner page, can be emulated in Windows NT by using the proper set up. To print a banner page, set up the Windows NT Separator Page for the queue.

Some LPR control characters are Unix-specific, such as S for symbolic link data, thus they cannot be emulated in Windows NT.