

Windows NT/2k/XP/2k3 Printer 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.

Some of the registry keys mentioned and explained below may not exist on your particular system. So you must create them to be found and taken into account by the appropriate parts of the operating system. A key that does not exist, does not mean it will not work for you.

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

② Windows printing- and printer-related controls

By default, connecting to a network printer (also called the point-and-print mechanism by Microsoft) will cause the printer drivers for that printer to be installed.

If this value is set to "1", Windows will only do the automatic print driver installation for users belonging to the "Administrators" and "Power Users" group. Deleting this entry or changing its value to "0" will reverse the change, and put it back to the default.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print\Providers\LanMan Print Services\Servers
Name	AddPrinterDrivers
Data	REG_DWORD
Value(s)	0 := Do automatic install for all users 1 := Do automatic install only for ADMINISTRATORS and POWER USERS

After installation of Windows XP Service Pack 2, a balloon window is displayed every time a print job is sent to a networked printer informing the user that the job has been spooled successfully. You may wish to disable this option. To disable the network print notification balloon windows in Windows XP SP2:

Hive	HKEY_LOCAL_USER
Key	\SYSTEM\Printers\Settings
Name	EnableBalloonNotificationsRemote
Data	REG_DWORD
Value(s)	0 := Do not show balloon notification 1 := Show balloon notification (default)

Web printing allows printers to be managed using web pages across an intranet or via the internet. This tweak disables server support for web printing. To disable web printing:

Hive	HKEY_LOCAL_MACHINE
Key	\SOFTWARE\Policies\Microsoft\Windows NT\Printers
Name	DisableWebPrinting
Data	REG_DWORD
Value(s)	0 := Disable Web-based printing 1 := Enable web-based printing

To prevent logging of print jobs in the event logs:

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print\Providers
Name	Eventlog
Data	REG_DWORD
Value(s)	0 := Disable logging to the event log
	1 := Enable logging to the event log

3 Controlling shared printer network announcements

When you share a printer on a Windows 2000/NT machine, it will begin notifying other print servers on the network (via broadcast) that it has a printer available. It does this every 10 minutes. This can cause an excessive amount of network traffic.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	DisableServerThread
Data	REG_DWORD
Value(s)	0x0 := Enable network announcements by enabling the server thread. 0x1 := Disables the thread, and causes the announcements to the network not to occur. This also means that the printer that is shared will not be visible by browsing the network. It can still be accessed by entering the name in manually when connecting to the printer from another machine.

There is a registry entry that specifies how long the thread sleeps before making its announcement. You can make this value longer, so that there is more time between announcements, thereby reducing network traffic, rather than disabling the browsing feature completely.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	ServerThreadTimeout
Data	REG_DWORD
Value(s)	<i>time (in milliseconds) varies - see below</i> By default, the thread sleeps for 600.000 milliseconds (10 minutes). You can extend the sleep period for this thread to one hour by using a value of 3,600,000, for instance. The range is 0 - 4,294,967,295 milliseconds or 0 - ~50 days.

The *NetPrinterDecayPeriod* value name determines how long a network printer remains in the browse list. The default is 3,600,000 milliseconds or 1 hour. If the data value *ServerThreadTimeout* exceeds the value of *NetPrinterDecayPeriod*, the printers will not be displayed to browsers.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	NetPrinterDecayPeriod
Data	REG_DWORD
Value(s)	<i>time (in milliseconds) varies - see below</i> The default is 3,600,000 milliseconds or 1 hour. If the data value <i>ServerThreadTimeout</i> exceeds the value of <i>NetPrinterDecayPeriod</i> , the printers will not be displayed to browsers.

The entry *RefreshTimesPerDecayPeriod* specifies the number of times per decay period that the browse masters and backup servers are notified of a server's presence on the network. The decay period is determined by the value of *NetPrinterDecayPeriod*.

If a value is specified for both *RefreshTimesPerDecayPeriod* and *ServerThreadTimeout*, the server will use whichever value is greater.

Note: When the value of this entry is 0, the system uses the default value.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	RefreshTimesPerDecayPeriod
Data	REG_DWORD
Value(s)	<i>times per hour (default: 2)</i>

4 Controlling thread priorities

The entry *SpoolerPriority* controls the priority class of the print spooler process. You can set a higher priority if your computer is a designated print server to gain more throughput.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	SpoolerPriority
Data	REG_DWORD
Value(s)	0x20 := Normal Priority
	0x40 := Idle
	0x80 := High Priority

The entry *SchedulerThreadPriority* determines the priority of the scheduler thread. The scheduler thread assigns jobs to ports. The priority of the thread determines the order in which it is scheduled to run on the processor.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	SchedulerThreadPriority
Data	REG_DWORD
Value(s)	0x0 := Normal Priority
	0x1 := Above normal
	0xFFFFFFFF := Below normal

The entry *PortThreadPriority* establishes the priority at which port threads run on the processor. Port threads send output to the printers. The priority of a thread determines the order in which it is scheduled to run on the processor.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	PortThreadPriority
Data	REG_DWORD
Value(s)	0x0 := Normal Priority
	0x1 := Above normal
	0xFFFFFFFF := Below normal

5 Options for “Start print immediately”

The entry *FastPrintSlowDownThreshold* establishes the minimum size of a spooling job that can be scheduled for printing.

If the portion of a print job that has been spooled is smaller than the size specified by the value of this entry, the job continues to spool, but is not scheduled to print. The job is scheduled to print when the portion spooled reaches this value.

This entry also is used to determine whether the spooler regulates the rate at which the job is spooled. If the portion of a spooling job that remains to be sent to the printer is less than the size specified by this value, the spooler limits the rate at which the job is sent to one byte of data in every interval specified by the value of *FastPrintThrottleTimeout*. This strategy prevents printers from timing out because they have not received data frequently enough. (Most PostScript printers must receive data at least every 15 seconds.)

The default value of this entry is calculated by dividing the value of *FastPrintWaitTimeout* (default=240 seconds) by the value of *FastPrintThrottleTimeout* (default=2 seconds/byte).

This entry is used only when the Spool print documents so program finishes printing faster option is selected and the Print spooled documents first option is cleared.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	FastPrintSlowDownThreshold
Data	REG_DWORD
Value(s)	Bytes (0x00 – 0xFFFFFFFF) FastPrintThrottleTimeout (Default: 0x78 (120 bytes))

FastPrintThrottleTimeout determines the rate at which the spooler sends data when the *FastPrintSlowDownThreshold* is reached. When this threshold is reached, the spooler sends one byte of data each time the interval specified by this entry expires. This prevents the printer from pausing because it hasn't received data for a specified period (typically 15 seconds for a PostScript printer). The spooler continues to send data at this rate until the value of *FastPrintSlowDownThreshold* is exceeded.

This entry is used when the **Start printing immediately** option is selected.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	FastPrintThrottleTimeout
Data	REG_DWORD
Value(s)	Milliseconds (0x00 – 0xFFFFFFFF) The default value is 0x7D0 (2 seconds)

FastPrintWaitTimeout determines how long the port thread waits for an application to send more data before pausing the current print job and moving to the next print job. This entry is used when the Start printing immediately option is selected to synchronize the port thread with the spooling application.

Hive	HKEY_LOCAL_MACHINE
Key	\SYSTEM\CurrentControlSet\Control\Print
Name	FastPrintWaitTimeout
Data	REG_DWORD
Value(s)	Milliseconds (0x00 – 0xFFFFFFFF) The default value is 0x3A980 (240,000 milliseconds = 4 minutes)

6 Printer Attributes

If you look into the registry entries of each installed printer, i.e.

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HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Print\Printers\

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You will find a sub key called Attributes (REG_DWORD) which has a bitmapped printer attribute listing. You can find the description of the single bit in the following table:

Dec	Hex	Name	Description
0001	0001	Queued	Print jobs are buffered and queued.
0002	0002	Direct	Document to be sent directly to the printer. This value is used if print jobs are not being queued correctly.
0004	0004	Default	Default printer on a computer.
0008	0008	Shared	Available as a shared network resource.
0016	0010	Network	Attached to a network. If both Local and Network bits are set, this indicates a network printer.
0032	0020	Hidden	Hidden from some users on the network.
0064	0040	Local	Directly connected to a computer. If both Local and Network bits are set, this indicates a network printer.
0128	0080	Enable DevQ	Enable the queue on the printer if available.
0256	0100	Keep Printed Jobs	Spooler should not delete documents after they are printed.
0512	0200	Do Complete First	Start jobs that are finished spooling first.
1024	0400	Work Offline	Queue print jobs when a printer is not available.
2048	0800	Enable BIDI	Enable bi-directional printing.
4096	1000	Raw Only	Allow only raw data type jobs to be spooled.
8192	2000	Published	Published in the network directory service.

Most of these settings can be set in the printer and faxes folder, the printer properties or printer settings dialogs.

The spooler service must be restarted, for the changes to take effect, i. e. reboot your computer or open a command prompt and enter **net stop spooler** and **net start spooler**.

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
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
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 "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.

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
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

7 Spool File Pooling

Windows XP and Windows Server 2003 (aka Windows NT 5.1 and above) introduced some slight changes to the spool file handling which is called spool file pooling.

These changes have broken lots of specialized printing software under Windows XP and Windows 2003. (See also *Microsoft Knowledgebase article 815913*.)

Under Windows XP you can change this new behaviour back to the old pre-XP behaviour on a per-printer base.

Applies to	Windows XP
Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print\Printers\ <printername>< td=""> </printername><>
Name	SpoolDirectory
Data	REG_SZ
Value(s)	Empty = spool file pooling enabled (default) Path = location where spool file are stored i.e. pooling off

Starting with Windows Server 2003 you can enable/disable it for all printers at once.

Applies to	Windows Server 2003
Hive	HKEY_LOCAL_MACHINE
Key	\System\CurrentControlSet\Control\Print
Name	DisableServerFilePooling
Data	REG_DWORD
Value(s)	0 = spool file pooling enabled (default) 1 = spool file pooling disabled

All new jobs will be of the form XXXXX.SPL and XXXXX.SHJ and will be numbered consistently with their JobIDs.