



USING THE HP UNIVERSAL PRINT DRIVER WITH WINDOWS 8 AND WINDOWS SERVER 2012

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OVERVIEW

NOTE: This document focuses on how the HP Universal Print Driver (HP UPD) interacts with Windows 8 and Windows Server 2012 based on the information available at the time of writing this document. This document does not replace or supersede any Microsoft documentation. Always refer to Microsoft for the latest information on using Windows 8 and Windows Server 2012.

Windows 8 is the current release of the Windows operating system produced by Microsoft for use on personal computers including home and business desktops, laptops, tablets, and home theater PCs. Windows 8 introduces significant changes to the operating system's platform, primarily focused towards improving its user experience on mobile devices such as tablets. This includes taking advantage of new or emerging technologies including USB 3.0, cloud computing and the low-power ARM architecture, new security features, built-in antivirus capabilities, and support for secure boot. Secure boot is a UEFI feature which allows operating systems to be digitally signed to prevent malware from altering the boot process.

NOTE: The HP Universal Printing Driver (UPD) 5.6.0 PCL 6 and PS is the first version of the HP UPD to support Windows 8 and Windows Server 2012. The HP UPD does not support ARM devices.

Windows 8 also introduces a new shell and user interface based on Microsoft's design language featuring a new Start screen with a grid of dynamically updating tiles to represent applications, a new application platform with an emphasis on touch screen input, and the new Windows Store to obtain and purchase applications to run on the operating system.

Windows Server 2012 is the current release of the Windows Server platform with an innovative new user interface, powerful new management tools, enhanced Windows Power Shell support, and new features in the areas of networking, storage, and virtualization. Windows Server 2012 is designed for the cloud from the ground up and provides a foundation for building both public and private cloud solutions to enable businesses to take advantage of the many benefits of cloud computing.

WINDOWS 8 AND WINDOWS SERVER 2012 HP UPD SUPPORT

In most cases, HP UPD 5.6.0 and later support for Windows 8 and Windows Server 2012 is comparable to Windows 7. This includes TCP/IP network installation, server/client setup, printer configuration, update now, the upgrade processes, print policies and printing.

Plug and Play for DOT4 devices using USB Plug and Play installation requires HP DOT4 software (HP LaserJet USB (DOT4) communications driver for Windows 8/Server 2012). Windows 8 and Windows Server 2012 do not include this inbox, but the HP DOT4 component is part of Microsoft Windows Update.

Install.exe and Add Printer Wizard are also supported. Add Printer Wizard includes several new dialogs. PCL6 and PS are supported but PCL5 is not currently supported.

Traditional Mode is supported. Dynamic Mode is only supported in Server 2012 and Windows 8: Desktop; not on Windows Store Apps.

PARK TOOLS

In most cases, HP UPD support for Windows 8 and Windows Server 2012 is comparable to Windows 7. The following PARK tools have been tested and are supported:

- Active Directory Administrator Template
- AutoUpgradeUPD
- Driver Configuration Utility (DCU)
- Driver Deployment Utility (DDU)
- Managed Print Administrator (MPA) is only supported in Windows 8 32 bit.

WINDOWS 8 USER INTERFACES

Windows 8 includes a new touch screen user interface consisting of a grid of dynamically updating tiles to represent applications similar to what is currently seen on tablets and smart phones as well as the traditional desktop user interface similar to the Windows 7 user interface.

In this white paper, to clarify which interface we are referring to, we will refer to the new Windows 8 user interface as the "Touch Screen" user interface versus the traditional "Desktop" user interface.

Windows 8 Desktop User Interface

The Windows 8 Desktop user interface is similar to the Windows 7 desktop except that there is no Start menu and you cannot boot to the desktop. But other than the missing Start button, the desktop in the Windows 8 looks and behaves very similar to the desktop in Windows 7. Most of the menus and hotkeys are also the same.



A simple way to access the control panel or applications from the desktop is to place the mouse cursor in the lower far left corner of the screen and right click when the Start screen icon appears. Clicking Search brings up the list of available applications.

NOTE: This access method works in either Windows 8 user interface and in Windows Server 2012.



Windows 8 Touch Screen Interface

The Windows 8 Touch Screen user interface comes up when you start Windows 8. This interface has been optimized for touch screen input to provide a true touch interface, replacing software shortcuts with icons.



Right click on background of Windows 8 Touch Screen user interface and click All Apps to quickly select applications not displayed on the user interface.



Touch Points

A key consideration for using the Windows 8 Touch Screen user interface is the number of touch points available on a monitor. Microsoft recommends that machines built for Windows 8 should support a minimum of five touch points. Five touch points roughly corresponds to being able to use all five fingers to control items on a touch screen and enable you to swipe from the edge of the screen.

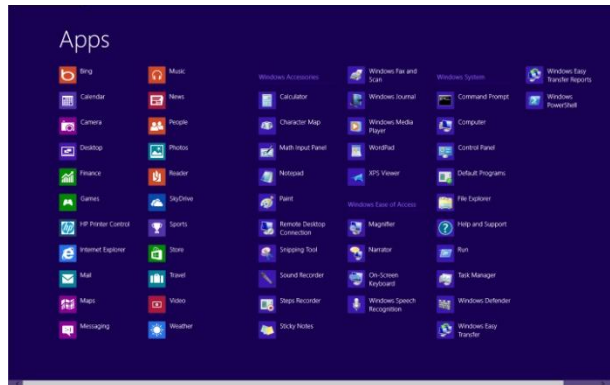
Single touch commands include tapping to activate as well as pressing and holding a selection. Two-touch commands include pinching to zoom, and turning to rotate. Windows 8 uses swiping up the screen from the bottom edge to bring up commands; swiping from the left edge to access programs that are running, and swiping an application down and off the bottom of the screen to close it. This requires a minimum of five touch points.

For example, swiping to the left in the middle of the screen will pan the content to the left. If you swipe from the right edge of the screen (or slightly beyond the edge) in Windows 8, this pulls out the Charm command bar that lets you go back to the start screen or change the PC settings. Swiping up the screen from the bottom edge brings up the commands for Windows 8-style applications and swiping from the left edge provides access to the programs you have running.

The Windows 8 Touch Screen user interface continues to support traditional keyboards and mouse as well as touch screens.

Windows 8 Apps Dialog

Applications that were previously displayed in the Start menu of Windows 7, in Windows 8 are shown in the Apps dialog.



The Windows 8 Apps dialog is accessible from the Windows 8 Touch Screen user interface and from the Desktop user interface.

Going into Windows 8 App Store from the Touch Screen user interface does not guarantee the application is a true Windows 8 Touch Screen application.

If you select an application accessing the Apps dialog from the Windows 8 Touch Screen user interface and the application is a Windows 8 Touch Screen application (Windows Store App) or has a view that supports the Touch Screen user interface such as Internet Explorer 10, then the application will be configured for the Windows 8 Touch Screen user interface.

If a version of the application is not available that supports the Windows 8 Touch Screen user interface, a desktop version of the application is displayed.

Internet Explorer 10 has been updated to include both a Windows 8 Touch Screen view (Windows Store App) and a Desktop view. Notepad on the other hand only has a Desktop view, so even when selected from The Windows 8 Touch Screen user interface through the Apps dialog, you will get a Desktop application.

Charms

The Charm bar in Windows 8 is the equivalent of the Start Menu in previous versions of Windows without the Apps. Apps in Windows 8 can be browsed as tiles on the home screen so there really is not a need for another menu that includes the installed applications.

The Charm bar is a universal toolbar in Windows 8 and Windows Server 2012 that can be accessed from anywhere no matter what you are doing or what application you are running.

There are two ways to access the Charm bar, the first is by moving the cursor to the bottom right corner of the screen which will cause the bar to appear on the right or by pressing the Windows logo key and "C" at the same time.



There are five key elements for Windows 8 in the Charm bar including Search, Share, Start, Devices and Settings.

Search, which is also in Windows Server 2012, enables you to perform a search without having to open the browser by entering the search text and selecting the type of search you want. Search results will be shown on the left pane.

Sharing is built into Windows 8 and the default sharing method is email, but once you install applications for Twitter, Facebook and other social platforms, you can easily share at the operating system level.

Start, which is also in Windows Server 2012, is essentially the contents of the Start Menu except that the contents are now all tiles representing all of the applications installed on your Windows 8 PC. In Windows 8, tiles can be static or dynamic. With live dynamic tiles you will be able to preview information about the associated application. For instance, if you have a Stock Market application that you use to keep track of stocks, you will notice that without having to open the application you will be able to get a glimpse of the latest market information.

Devices are where all your computer's device information and settings reside including available printers when printing from a Windows 8 Touch Screen Windows Store App.

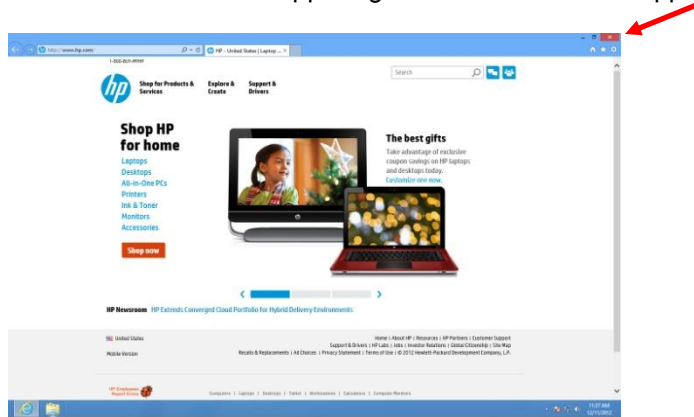
NOTE: If no printers are listed, verify whether you are in a desktop application or a Touch Screen Windows Store App. No printers will be listed for desktop applications through the Charm interface.

The **Settings** pane, also in Windows Server 2012, provides access to settings for the network, volume, screen brightness, power (where you shut down your PC) and Language.

DIFFERENCES IN PRINTING

Printing in Windows 8 is dependent on whether you are running a conventional application similar to what you used in Windows 7 or an application specifically designed for the Touch Screen user interface referred to in this document as a Windows Store App. Selecting an application from the Touch Screen user interface does not automatically mean it is designed for the Touch Screen user interface.

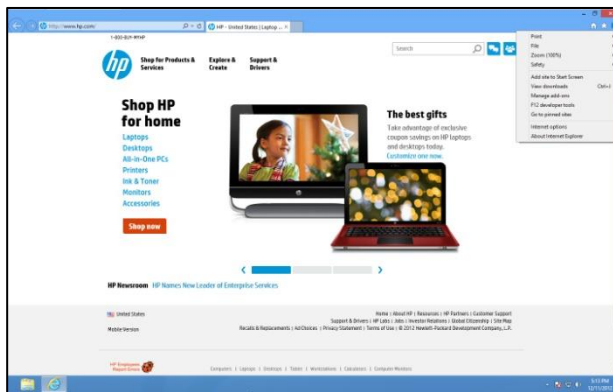
Internet Explorer 10 has two views, a conventional view and a view designed specifically for the Touch Screen user interface (Windows Store App). Below is the conventional view. Notice the familiar small “x” in the upper right corner to close the application.



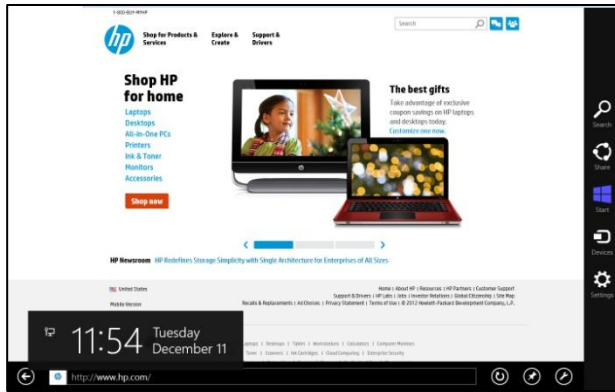
Applications designed for the Touch Screen user interface do not have the “x” because to close an application in the Touch Screen user interface, you can just slide it off towards the bottom of the screen or from the Start menu of the Touch Screen user interface, or move the cursor to the upper left corner and when the application appears, right click and click Close as shown below.



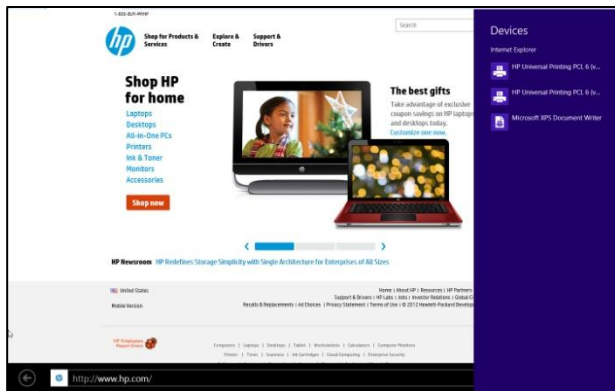
Printing from a conventional desktop application is similar to printing in Windows 7 as shown below for Internet Explorer 10 in the conventional desktop mode or view.



To print from an application designed for the Touch Screen user interface (Windows Store App), you can use the Charm bar. There are two ways to access the Charm bar. The first is by moving the cursor to the bottom right corner of the screen which will cause the bar to appear on the right or by pressing the Windows logo key and “C” at the same time.



Then click Devices and select the printing device you want.



Initially only basic printing settings are displayed. To view all of the available printing settings, click More Settings.



When using the HP UPD and printing from an application designed for the Touch Screen user interface (Windows Store App), certain printing settings are not available and are not supported.

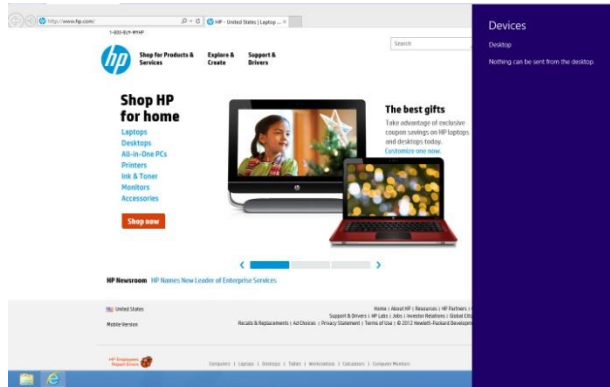
The following HP UPD printing settings are not supported from applications designed for the Touch Screen user interface (Windows Store App):

- Job Storage settings including PIN Printing and Encryption
- Advance tab settings
- Printing Shortcuts
- Special Pages
- Manual color controls and Color Themes

In addition, HP UPD Dynamic mode is not supported with Touch Screen applications (Windows Store Apps).

NOTE: HP UPD Dynamic mode is supported with desktop applications.

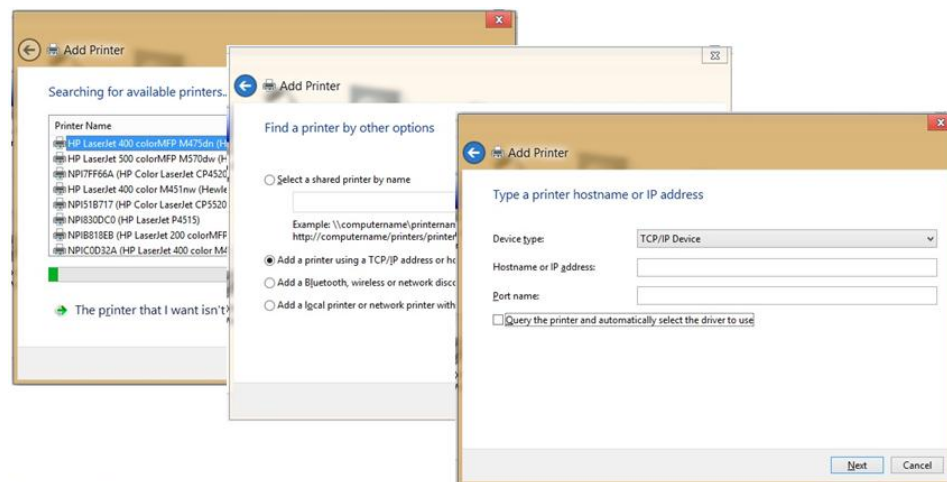
If you don't see any printing devices and you have a printer installed, verify you are not in a conventional desktop application. If you try to use the Charm bar to print from a conventional desktop application, you will see the message in the Devices window "Nothing can be sent from the desktop" as shown below.



NEW SCREENS IN ADD PRINTER WIZARD (APW)

Add Printer Wizard (APW) in Windows 8 and Windows Server 2012 is very similar to Windows 7 with changes to the first few screens. The first screen searches for available printers. If the printer you want is not listed, click "The printer that I want isn't listed". This brings up a screen to find a printer by other options. For a TCP/IP connected printer, check "Add a printer using a TCP/IP address or hostname" and click Next.

On the third screen, "Type a printer hostname or IP address", set the device type to TCP/IP device, uncheck "Query the printer and automatically select the driver to use" and then enter the IP address. Clicking Next takes you into screens similar to Add Printer Wizard in Windows 7 to finish the driver installation.



DOT4 PRINTERS

Support for USB DOT4 Direct Connect is not included in Windows 8 and Windows Server 2012 by default. This only impacts DOT4 printers, which include most current HP mid-range and high-end HP LaserJet printers. Composite USB and LEDM USB printers are not impacted (low-end HP LaserJet printers).

NOTE: DOT4 and LEDM are communication protocols used with USB connected printers. DOT4 support is available by default on Windows operating systems prior to Windows 8 and Windows Server 2012, such as Windows 7.

To resolve this issue, HP has developed the “HP LaserJet USB (DOT4) communications driver for Windows 8/Server 2012” which includes a Dot4x32.msi for 32 bit and Dot4x64.msi for 64 bit installations.

The MSI installs the DOT4 components into the driver store. This is the same effect as downloading it from Windows Update except that it is installed before the hardware is connected. The directory c:\windows\inf\driverstore lists an oemXX directory that contains the DOT4 components.

NOTE: If two print queues are created for the printer during plug and play and a print queue is connected to USB001, delete this queue. If there are two queues for the printer and both are connected to the DOT4 port, delete one of the queues. Only one queue is required for printing.

See <http://h20000.www2.hp.com/bizsupport/TechSupport/Document.jsp?&objectID=c03365145> for a complete list of HP DOT4 LaserJet printers.

BRANCH OFFICE PRINTING

Branch Office Direct Printing is designed by Microsoft to reduce Wide Area Network (WAN) usage by printing directly to a print device instead of a server print queue and is supported by the HP UPD version 5.6.0 and later. This feature can be enabled or disabled on a per printer basis and is transparent to the user. It works with print queues using printer drivers such as the HP Universal Print Driver that support Client Side Rendering (CSR), whether they are V3 OR V4 drivers.

This feature requires a print server running Windows Server 2012 and clients running Windows 8. It is enabled by an administrator using the Print Management Console or Windows PowerShell on the server.

Client computers obtain printer information from a Windows Server 2012 print server, but send the print jobs directly to the printer. The print data no longer travels to the central server and then back to the branch office printer.

The printer information is cached in the branch office so that if the print server is unavailable for some reason (for example if the WAN link to the data center is down), it is still possible for the user to print.

Benefits of Branch Office Direct Printing

- Works for print queues using the HP UPD and other printer drivers that support Client Side Rendering (CSR), whether they are V3 OR V4 drivers.
- Functions with TCP/IP connected printers.
- Functions with Web Services on Devices (WSD) printers (direct discovery only, not multicast)
- Can be enabled or disabled using the Print Management Console or Windows PowerShell on the server.

Limitations of Branch Office Direct Printing

- Requires a print server running Windows Server 2012 and Windows 8 clients.
- The printer must be a network attached device.
- Quota, auditing and detailed job logging capabilities are lost if Branch Office Direct Printing is used.
- Even if Branch Office Direct Printing is enabled on a print queue, clients running operating systems prior to Windows 8 will not use this feature and will still print to the server.
- Settings that conflict with Branch Office Direct Printing (such as Keep Printed Jobs) cannot be used.
- If printer pooling is enabled on print queues, Branch Office Direct Printing is not compatible.

Additional information is available from Microsoft including searching on Branch Office Direct Printing from <http://www.microsoft.com/en-us/default.aspx>.

V3 VERSUS V4 PRINT DRIVERS

Windows 8 introduces a new print driver model known as Version 4 (V4 or Type 4) drivers. Windows 8 and Server 2012 support both version 3 and version 4 print driver models.

- V2: Kernel mode
- V3: User Mode
- V4: XPS driver

V3 Model Overview

The Windows printer driver model has remained relatively unchanged since the introduction of Version 3 or V3 drivers in Windows 2000. The V3 model relies heavily on OEMs to produce customized drivers for each specific device to make sure that specific features of each print device can be accessed by Windows applications. Managing a printing infrastructure using the V3 driver model requires the administrator to manage:

- A large number of drivers
- Drivers on client machines as well as servers
- Both 32-bit and 64-bit print drivers to support both of these client architectures

The current HP UPD drivers are V3 drivers.

V4 Model Overview

V4 drivers have a greatly simplified configuration layer. Unlike V3 print drivers where the user interface is strongly coupled to the configuration, V4 print drivers focus on providing PrintTicket, PrintCapabilities, and constraint functionality.

A common configuration module, PrintConfig.dll, encapsulates the functionality that was previously available in the UnidrvUI and Pscript5UI core drivers. V4 drivers do not currently employ configuration plug-ins.

Most of the device configuration is expressed in Generic Printer Description (GPD) and PostScript Printer Description (PPD) files. They may provide a JavaScript file that supports advanced constraint handling as well as PrintTicket and PrintCapabilities support.

Generic Printer Description (GPD) and PostScript Printer Description (PPD) file formats have not changed and existing GPD and PPD files are compatible. The main difference is that all V4 print drivers must additionally specify required directives in their GPD or PPD files. These directives prevent the expression of features that are not natively supported by XPSDrv.

Inbox (in the operating system) V4 drivers are available, developed and supported by Microsoft.

Enhanced Point and Print

When using Windows 8, V4 drivers install directly from the driver store on the local machine. This increases the speed of driver installation and eliminates the danger of driver filename conflicts where one V3 print driver can overwrite files in another V3 print driver.

IT Administrators no longer need to install cross platform drivers on their print servers. Windows will either locate the correct driver from WU or WSUS, or it will use a fallback mechanism to enable cross-platform printing.

XPS Driver

The inbox V4 driver supporting HP LaserJet printers is an XPS driver using the MS XPS core filter without a customized UI plug in (GPD only for user interface). MS provides PCL6 and PS inbox V4 driver support for HP devices. The inbox V4 drivers for HP LaserJet models share four GPDs, a color-A, color-B, mono-A, and mono-B, and 2 PPDs (A/B-size). There is no dynamic mode, binding, etc.

Additional information is available from Microsoft including searching on V4 drivers from <http://www.microsoft.com/en-us/default.aspx>.

ADDITIONAL INFORMATION

For more information on HP's Windows 8 and Windows Server 2012 support, see www.hp.com/go/windows8.

