

Windows Protected Print (WPP)



HP Technical Whitepaper

HP and Customer Viewable

Representing one of the largest changes to the Windows print system in 20 years, Windows Protected Print (WPP) mode is designed to transition Windows print from legacy v3 and v4 print drivers to modern driverless printing using Internet Printing Protocol (IPP).

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Microsoft's Windows Protected Print Mode

Microsoft's multiyear plan to transition the Windows print system to Internet Printing Protocol (IPP) started in September 2023 with their announcement to [end service life of v3 and v4 drivers](#) and supporting justification published to techcommunity.microsoft.com. Microsoft Windows Protected Print (WPP) released October 1, 2024, was designed to facilitate the transition of Windows print to a new, modern and more secure print. WPP is one of several steps by Microsoft to transition the Windows print system to driverless print using Internet Printing Protocol constrained to Mopria-certified printers.

Version 3 print architecture introduced in Windows 2000 and version 4 introduced in Windows 8 and Windows Server 2012. For 20+ years this standard has been used for consumer and managed IT to curate basic and advance print use cases. Because of security issues such as Print Nightmare, v3 drivers introduced more work for administrators to deploy and install. By comparison, v4 drivers bring several improvements which include better security and modern user interface controls. However, v4 drivers challenged IT administration in driver deployment, and lack an industry standardized driver approach available from Mopria using Internet Printing Protocol (IPP).

Microsoft's transition to IPP eliminates the need for independent hardware/software vendor (IHV, ISV) third-party driver installation onto Windows that enable traditional methods of printing and/or scanning. IPP is an open standard (RFCs produced by the Internet Engineering Task Force) that uses HTTP based protocols to communicate print job data, status and settings with the device. Microsoft's IPP Inbox Class Driver is a modern Type 4 User Mode driver designed to work only with Mopria-certified printers.

WPP mode when enabled on Windows by the end user or print IT administrator deletes all v3 and v4 print and scan queue objects from Windows. Enabling WPP should not delete *.inf driver files from C:\Windows\System32\spool\drivers. After WPP has been enabled it prevents creation of queues that are not IPP based. WPP mode was not enabled by default when released with Windows 11 24H2. [Microsoft's intent is to change the default of WPP to enabled.](#)

WPP after being "Enabled" can be changed back to "Not Enabled" or "Disabled" allowing the Windows print system to install v3 and v4 drivers and create associated print queues. Changing WPP from "Enabled" to "Disabled" or "Not Configured" through WPP Policy, or from Printers and Scanners, will not restore previous deleted print queues or print queue setting deleted by enabling WPP.

Microsoft's planned replacement for print workflows that require customized experience including advanced finishing options is the Print Support App (PSA). The Print Support App (PSA) is a Microsoft provided technology available to ISV/HSVs that enable features provided by legacy v3/v4 drivers such as the HP UPD to also be available using an IPP Class Driver. The HP PSA, HP Universal Print Application, was released 2024 for consumer-based print products. HP will extend the HP Universal Print Application to support all new product introductions and HP's fleet of HP Mopria compliant printers.

The HP Universal Print Application will be HP's replacement for HP v3 and v4 drivers such as the UPD, SUPD and model specific print drivers.

Windows Update Vended Drivers and Print Queue Creation

Microsoft's path to driverless IPP based printing does not mean third-party IHV/ISV v3 and v4 drivers can never be installed onto Windows. WPP Policy setting of "Not Configured" or "Disabled" or if not enabled from Printers and Scanners will allow drivers vended from Windows Update and/or installed from IHV/ISV provided driver packages to create print queues with an v3 or v4 driver assignment.

Starting July 2025 Microsoft will end their Windows Hardware Quality Labs (WHQL) signing of drivers that pass Windows Hardware Lab Kit testing for v3 and v4 drivers.

This step taken by Microsoft will impact v3/v4 drivers vended by Windows Update and drivers installed directly onto the system which could accelerate adoption of IPP Class Driver on Windows systems. Ending WHQL certification will have the following impacts for systems that have WPP set to Disabled or Not Configured:

- 1- New drivers and newly revised driver versions released after July 2025 will not be WHQL certified therefore will not be Microsoft digital signed.
 - a. These drivers will not be vended by Microsoft from Windows Update.
 - b. Customers will have to download these drivers from their respective ISV/IHV
 - c. When installed these drivers will present an error message, "Windows can't verify the publisher of this driver software" allowing the user to end the install process or proceed. IHV/ISV optionally can provide their self-signed client certificate for their driver. The installer would have to install the certificate before launching the driver installer.
- 2- Drivers vended from Windows update prior to July 2025:
 - a. Will continue to vend from Windows Update after July 2025
 - b. Can receive security fixes and re-submitted to Microsoft to be vended from Windows Update

Microsoft intends to make WPP the default for Windows by 2027 or later. When WPP becomes the Windows default the WPP Policy released with Windows 11 24H2 with a default setting "Not Configured" may be changed by Microsoft update to "Enabled" therefore the only available settings in the policy become "Enabled" or "Disabled". HP recommends monitoring Microsoft's plans for their upcoming plans.

Windows Point and Print / Branch Office Direct Printing

When WPP is enabled, Windows clients that receive their driver and queue settings from Windows Point and Print and Branch Office Direct Printing will have their print queue deleted and third-party v3/v4 drivers are prevented from installing. If WPP is changed from Enabled to Disabled or Not Configured, the print connection will be restored

Mopria Certified Printers

WPP when enabled restricts the Windows print system to only IPP. Windows IPP requires a Mopria certified printer. Mopria supported printers are published at <https://mopria.org/>. HP's Mopria certified printers are published at <https://mopria.org/certified-products#company30>

HP Printers Setting to Enable IPP

HP Pro and Enterprise print devices have the option to enable or disable IPP from the device embedded web server under Networking \ Other Settings \ Misc. Settings, checkbox IPP Printing. If WPP has been enabled on the Windows host the HP print device will need "IPP Printing" enabled before Windows can print to the target device. IPP will also requires TCP access to port 631. Failure to enable IPP Printing at the device will result in Windows seeing the device as a non-Mopria compliant device and error, "Windows couldn't connect to the printer..." during IPP print queue creation.

HP FutureSmart - Enable IPP

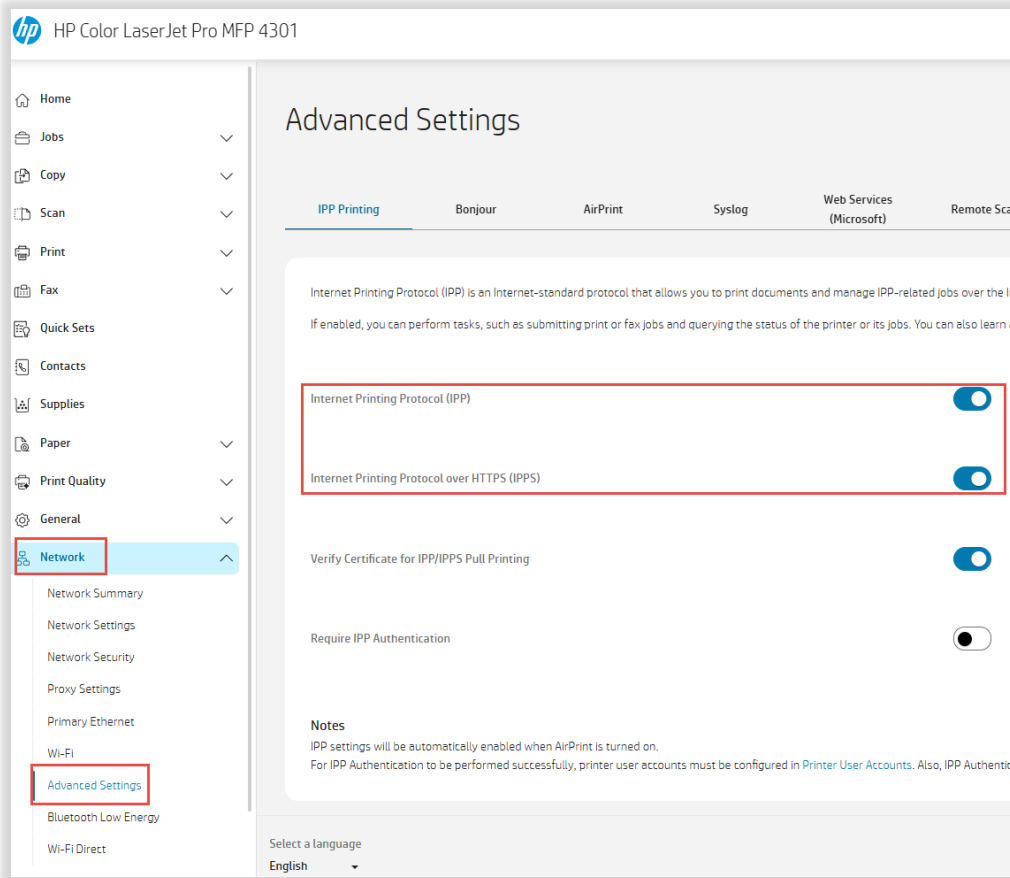
From the device's embedded web server, IPP/IPPS can be enabled from Network \ Other Settings \ Misc Settings, see section Enabled features.

The screenshot shows the HP Color LaserJet MFP E77830 embedded web server interface. The page title is "HP Color LaserJet MFP E77830" with the user logged in as "Administrator" and IP address "192.168.2.44". The navigation menu includes Information, General, Copy/Print, Scan/Digital Send, Fax, Supplies, Troubleshooting, Security, HP Web Services, and Networking. The "Networking" menu item is highlighted. The left sidebar shows "Configuration" with "Other Settings" selected. The main content area is titled "Other Settings" and contains a "Misc. Settings" tab. Under "Enabled Features", the following options are listed:

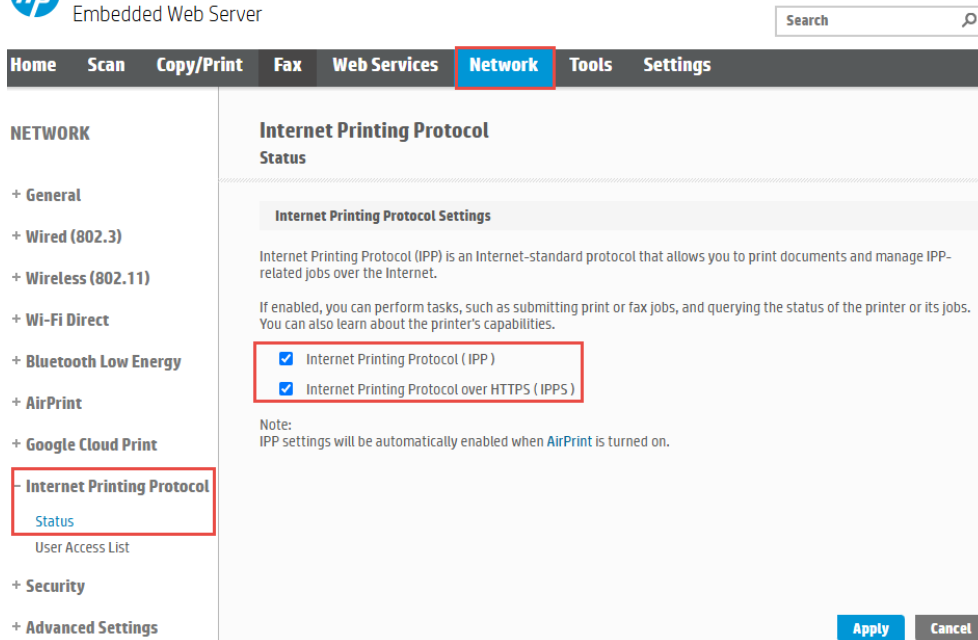
Feature	Status
SLP Config	Checked
Bonjour	Checked
Multicast IPv4	Checked
9100 Printing	Checked
AirPrint	Checked
FTP Printing	Unchecked
LPD Printing	Checked
IPP Printing	Checked
IPPS Printing	Checked
Telnet Config	Unchecked
HP Jetdirect XML Services	Checked
WS-Discovery	Checked
LLMNR	Checked
Web Services Print	Checked
WebScan	Unchecked
Secure WebScan	Unchecked
Enable WINS Port	Checked
WINS Registration	Checked
TFTP Configuration File	Unchecked

HP Pro Device – Enable IPP

IPP setting location may vary by firmware version:



HP Color LaserJet Pro MFP M479fdw Embedded Web Server



Steps Before Enabling Windows Protected Print Mode

When enabled WPP deletes all v3 and v4 legacy print queues and prevents the ability to recover the queue and associated settings (i.e.- HP printing shortcuts, default settings such as Mono, Duplex, and print queue setting such as Location and Comments field, etc.). However, WPP enabled should not delete the *.inf files from C:\Windows\System32\spool\drivers*. Understanding that the print queue defaults, end user and managed IT custom print queue configurations will be permanently deleted by WPP, it is recommended to take inventory and settings audit followed by creating a print queue backup before enabling WPP.

Inventory MOPRIA Compliant Printers

WPP when enabled constrains the Windows host to only allow IPP connection to Mopria compliant printers. When WPP is enabled, it does not determine if the printer assigned to the print queue/print port supports IPP therefore deletes every v3/v4 print queue from the system. To prevent interruption in ability to print, it is recommended to first inventory all printers in the environment to identify if they are Mopria compliant. Once this inventory has been completed steps to proceed with enabling WPP can be taken.

Backup Print Queues and Settings

Before implementing WPP administrators should make a backup of the current queues assigned either a v3 and v4 print drivers and taking inventory of print queue customizations.

Methods to backup queue names, assigned ports, should include Microsoft and HP tools. Not every print queue setting will be backed up prior to WPP deletion of the queue using the below tools. For example, HP print driver Short Cuts, settings default, custom watermarks, etc.

Backup Microsoft Print: <https://learn.microsoft.com/en-us/troubleshoot/windows-server/printing/back-up-restore-printers>. Microsoft's document mentions several tools and methods which include:

- Queue and Port Information: The Microsoft tools prnmngr.vbs and prnport.vbs can simplify the task of gathering information such as queue names, driver names, port names, IP addresses, etc. from the old server. This information can be used later to create the new queues either manually or to automate the process by scripting.
- Printer Management: options include
 - Nested under Print Servers, select a print server, right mouse, Export List
 - From each respective view (Printers, Ports, Forms, Drivers), right mouse or select Action from menu bar, Export Printers to File.
- PowerShell Commandlets: "Get-Printer", "Get-PrinterPort", Get-PrinterProperty -PrinterName "HP Universal Printing PCL 6", etc.

HP Print Administrator Resource Kit (PARK) & HP Smart Print Administrator Resource Kit (SPARK) contain several tools that enable print administrators to simplify installation, configuration and deployment of HP's different Universal Print Drivers. HP recommends taking an inventory of tools and pre-configured settings, scripts, etc. that should be reviewed before implementing new printer objects based on IPP: there may opportunity to mirror like settings and identify constraints to settings available when comparing v3/v4 drivers to IPP. For example, sites that deploy using either the Driver Configuration Utility and/or Driver Deployment Utility should compare settings defined in the HP configurations with print queue capabilities using IPP.

Windows Protected Print Mode Enabled

Enabling Windows Protect Print mode has the following impacts:

- Enabling WPP impacts both print and scan queues
- All legacy v3 and v4 print queues and settings are deleted therefore no longer displayed in Print Management, Printers and Scanners, and from applications FILE-PRINT workflows
- Print drivers assigned to the print queues, their associated *.inf files should remain on the system in the driver store directory:
C:\Windows\System32\spool\drivers\..3
- IPP printers on the system prior to enabling WPP remain unchanged
- Print queues deleted by WPP that were assigned to the HP Universal Print Driver (UPD) or HP Smart Universal Print Driver (SUPD) remain viewable from Printers and Scanners and application FILE-PRINT workflow, but not Printer Management. This is a defect that Microsoft plans to address in a non-security Windows Updated release in February 2025. When a user selects these print queues using application FILE-PRINT workflows or Printer Properties from Printers and Scanners the following errors appear:
 - “Not Configured” when view from Printers and Scanners:
 - “Printer properties cannot be displayed. Double check the printer name and make sure that the printer is connected to the network”
 - “Your printer has experienced an unexpected configuration problem. 0x80070709”
 - Print Management’s feature “Import printers from a file...” or utility PrintBRM log into Microsoft’s Event the Error Event IDs 15, 64, 81, and Warning Event ID 20.

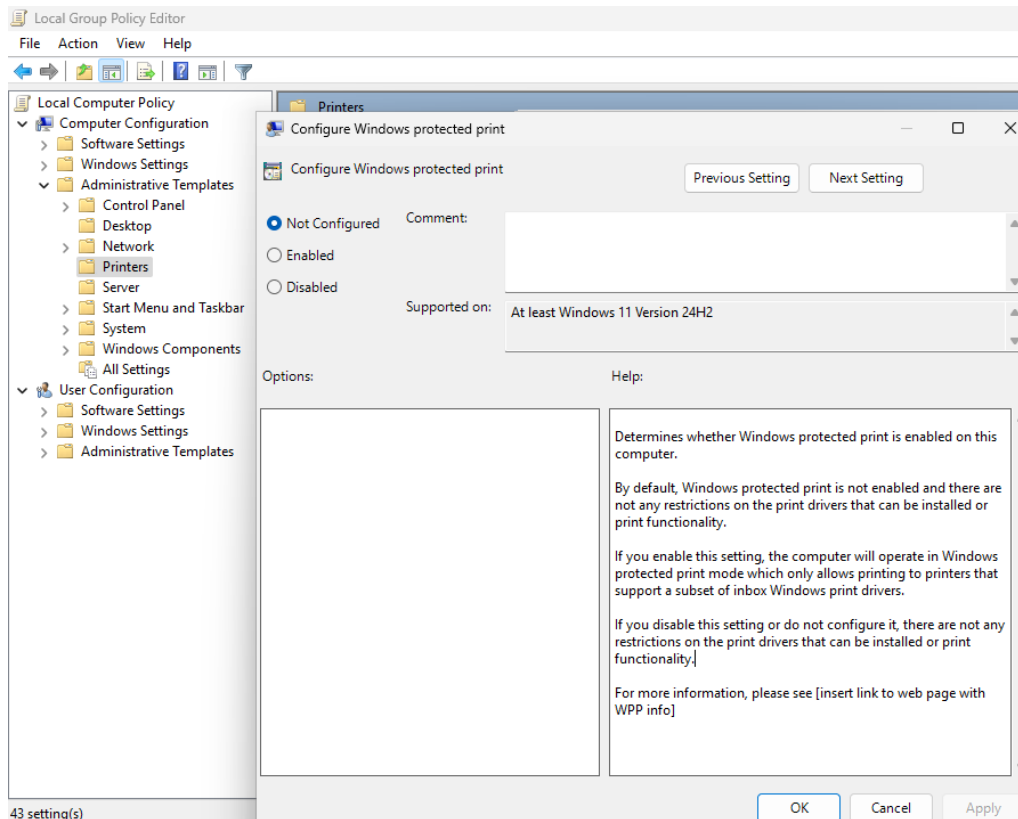
Steps to remediate: From Printers & Scanners, select the impact printer, upper right select button “Remove.”

Methods to Enable Windows Protected Print Mode

Three methods exist to enable WPP: Group Policy, Printers and Scanners folder, and Registry settings.

Group Policy

WPP can be Enabled or Disabled via Group Policy object as a Local or Domain policy using “Configure Windows protected print”.



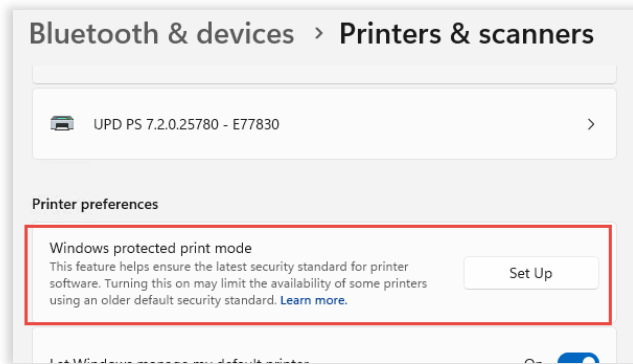
Settings for WPP policy are the following:

- **Not Configured** = Microsoft’s default setting at release October 2024. Existing v3/v4 queues are not impacted, new v3/v4 queues and drivers can be installed. IT Administrators should be aware that end users with Administrator rights will have the ability to enable WPP from their client Printers and Scanners, thus the ability to delete all v3/v4 IT managed and deployed print queues including Point and Print, Branch Office Direct Printing, and custom print queues such as pull print, preconfigured queues, etc.
- **Enabled** = Existing v3/v4 queues are deleted, reboot will not be required, new v3/v4 queues and drivers cannot be installed. The Printer and Scanners setting for WPP will be grayed out
- **Disabled** = Existing v3/v4 queues are not impacted, new v3/v4 queues and drivers can be installed. Utilize this setting to protect the system against potential future change in Microsoft’s default for WPP.

IT Administrators should be aware that end users with Administrator rights will have the ability to enable WPP from their client Printers and Scanners, thus the ability to delete all v3/v4 IT managed and deployed print queues including Point and Print, Branch Office Direct Printing, and custom print queues such as pull print, preconfigured queues, etc.

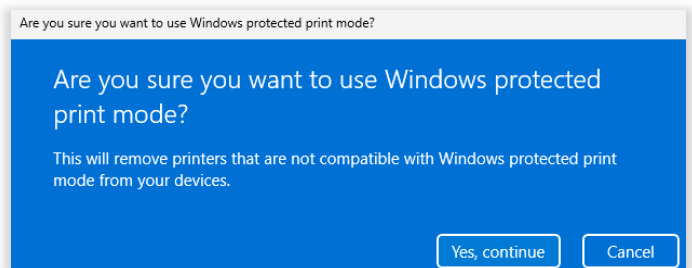
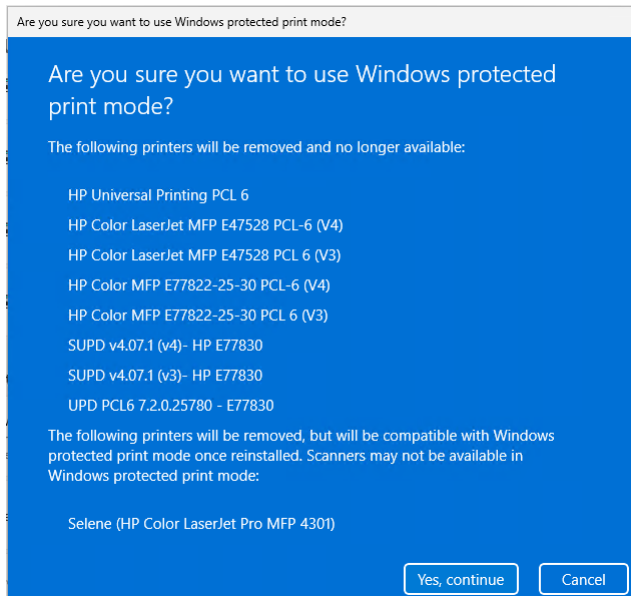
Printers and Scanners Folder

WPP can be enabled by end users with Administrator privilege from the Printers and



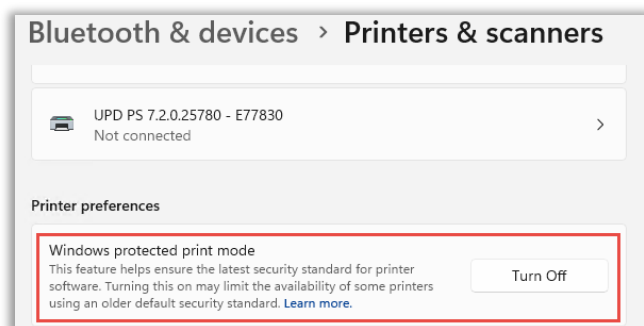
Scanners folder by selecting “Set Up”.

Selecting “Set Up” the user is warned that printers will be removed, a final confirmation “Yes, continue”



NOTE: Point and Print and Branch Office Direct print queues will not be shown in the above list, however they will be removed by WPP. If WPP is toggled back to “Not Configured” the point and print queues and settings will be restored from the connected point and print shared server queue.

After selecting “Yes, continue” the settings WPP option changes to “Turn Off” offering a visual indication that WPP has been enabled.



WPP Group Policy has the following impact on the setting control from Printers and Scanners folder for users with Administrator rights:

- **Not Configured** = Microsoft’s default setting, the Printers and Scanners setting to enable WPP is available to the end user. IT Administrators should be aware that end users with Administrator rights will have the ability to enable WPP from their client Printers and Scanners, thus the ability delete all v3/v4 IT managed and deployed print queues including Point and Print, Branch Office Direct Printing, and custom print queues such as pull print, preconfigured queues, etc.
- **Enabled** = The Printer and Scanners setting for WPP will be grayed out
- **Disabled** = the Printers and Scanners setting to enable WPP is available to the end user. Utilize this setting to protect the system against potential future change in Microsoft’s default for WPP. IT Administrators should be aware that end users with Administrator rights will have the ability to enable WPP from their client Printers and Scanners, thus the ability delete all v3/v4 IT managed and deployed print queues including Point and Print, Branch Office Direct Printing, and custom print queues such as pull print, preconfigured queues, etc.

Edit the Registry

WPP settings can be defined via the registry. Registry alteration requires a specific sequence of steps which is outside the scope of this paper. Please consult Microsoft documentation for the following:

HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\Windows NT\Printers\WPP

Microsoft's Print Driver Replacement is Inbox IPP Class Driver

Microsoft OS contains their inbox IPP Class Driver which offers a minimal set of features intended to meet most users' needs for basic print to Mopria compliant printers.

After WPP has been enabled, Printers that are discovered by WSD or using Add Printer Wizard will have print queues created using Microsoft's inbox IPP Class Driver. In addition, WPP enabled during the application FILE-PRINT use case, if WSD printers are discovered they will be offered to the user for print selection, if select "Add device" will initiate print queue creation tied to the Microsoft IPP Class Driver.

HP's Print Driver Replacement is Universal Print Application

Print Support App (PSA) is a Microsoft provided technology available to ISV/HSVs that enable features provided by legacy v3/v4 drivers such as the HP UPD to also be available using an IPP Class Driver. The HP PSA, HP Universal Print Application, released 2024 for consumer-based print products. HP will extend the HP Universal Print Application to support all new product introductions and HP's fleet of HP Mopria compliant printers. The HP Universal Print Application will be HP's replacement for HP v3 and v4 drivers such as the UPD, SUPD and model specific print drivers.

Frequently Asked Questions

Q1: The Microsoft inbox IPP Class Driver used for Microsoft's created print queues does not offer the features advanced finishing features I require such as stapling, folding, etc. What options do I have?

A1: HP will release the HP Universal Print App based on IPP that will extend the basic set of features of IPP. If your model printer is not supported, HP will continue to offer existing v3 and v4 print drivers.

Q2: Will enabling or disabling WPP from Policy or Scanners and Folders require the system to reboot for changes to apply?

A2: Toggling WPP settings does not require a reboot for the setting to apply.

Q3: What impact will Microsoft's shift to IPP have on HP partner solutions?

A3: HP Partner solutions have the option to continue using v3 drivers with legacy port monitor, v4 drivers, transition Microsoft's IPP Inbox class driver, or transition to HP's Universal Print Application (upon availability).

Q4: What happens to Point and Print or Branch Office Direct Printing clients' workstations that enabled WPP at the workstation?

A4: Microsoft design for WPP is the point and print queues will be deleted.

For Point and Print, if WPP is toggled from Enabled to either Disabled or Not Configured, the queue will become operational as it gets re-vented from the connected server.

NOTE: a defect exist that Microsoft will address in February 2025 for the following issue. The client's point and print queues based on the UPD or SUPD will remain in the Printers and Scanners view, as well remain as a printer that displays performing FILE-PRINT within an application, but the print queue will not be operational, status "Not Connected". See section "Steps to Enable Windows Protected Print Mode" for additional error information.

Steps to remediate: From Printers & Scanner, select the impact printer, upper right select button "Remove."

Q5: Can an IT or Print Administrator prevent an end user from enabling WPP or disabling WPP from Printers and Scanners?

A5: Only users with Administrator rights on Windows can enable or disable WPP. This means the domain administrator or users in the local Administrator group can enable WPP from the Printers and Scanners folder or local client side WPP policy. Once WPP feature has been set to "Enabled" via WPP Policy, on the client's Printers and Scanners the IPP mode setting will be grayed out preventing change to the setting.

Q6: If the IT or Print Administrator sets the WPP Policy to "Disabled" will this prevent WPP from being enabled when Microsoft decides to make WPP as enabled their default?

A6: The October 2024 default for WPP policy set by Microsoft to "Not Configured." Microsoft intends to change the default to "Enabled" in 2027. It is undefined exactly how this will be implemented. Setting the WPP Policy to disabled will not prevent an user with Administrator rights on the workstation from enabling WPP from the Scanners and Printers folder.

Q7: Is WPP supported on Windows 7 and Windows 10?

A7: WPP released one year before Windows 10 reached end of Microsoft's standard support life. WPP is only supported on Windows 11 24H2 and higher and Microsoft Server 2025.

Q8: How can I determine if WPP is enabled for my Windows operating system?

A8: When IPP is enable, the Printers and Scanner the IPP mode setting will display "Turn Off" or displays "Setup" as grayed out. When IPP is not enabled, IPP mode setting in Scanners and Printers displays "Setup."

Q9: What are the security benefits to IPP based printing?

A9: Security benefits include:

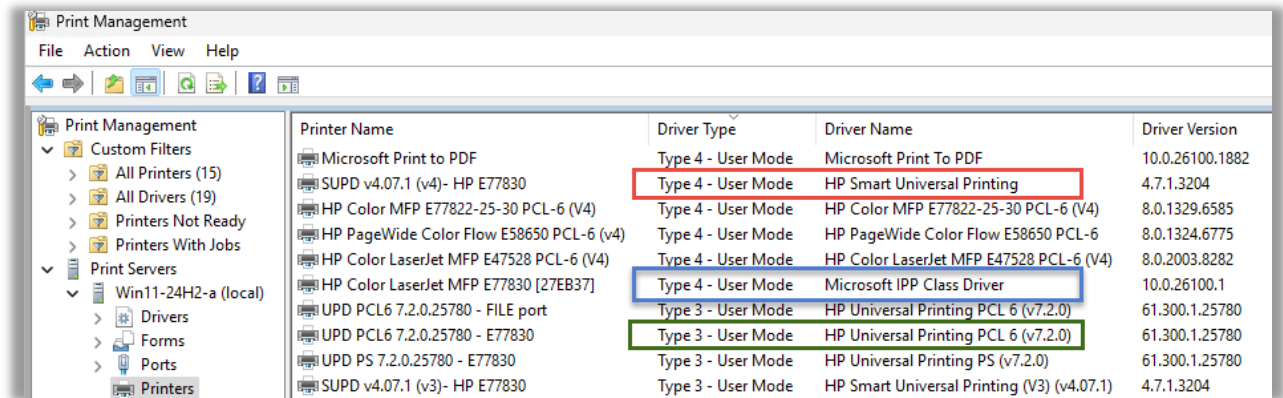
- Encryption is supported for all communication
- Eliminate ability to print using third-party driver
- Eliminate ability during install for third-party driver to install malicious software
- IPP runs as USER, not SYSTEM privilege as required by third-party drivers, thus eliminating unsafe installation practices that maneuver around issues such as PrintNightmare.

Q10: What resource(s) should be monitored to following Microsoft's future announcements on IPP and WPP?

A10: <https://learn.microsoft.com/en-us/windows-hardware/drivers/print/end-of-servicing-plan-for-third-party-printer-drivers-on-windows?redirectedfrom=MSDN>

Q11: How can I determine for an existing print queue if the assigned driver is v3, v4 or IPP?

A11: Using Print Management, see column Driver Type and Driver Name.



Q12: The HP Smart UPD PCL6 offers a v3 and a v4 driver. Will each have the same Driver Name when displayed in Print Management or Printers and Scanners?

A12: The PCL6 driver v4 SUPD will have a dash between PCL and 6, and v3 SUPD will not have the dash.

Printer Name	Driver Type	Driver Name
HP Color LaserJet MFP E47528 PCL 6 (V3)	Type 3 - User Mode	HP Color LaserJet MFP E47528 PCL 6 (V3)
HP Color LaserJet MFP E47528 PCL-6 (V4)	Type 4 - User Mode	HP Color LaserJet MFP E47528 PCL-6 (V4)

Q13: Is WPP only a feature added to Windows 11 24H2 and higher?

A13: WPP will be added to Microsoft Server 2025.

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