

Microsoft Vista Print & Imaging Technology Enhancements

Mike Fenelon

Software Engineer

Microsoft

Mike.Fenelon@Microsoft.com

Agenda

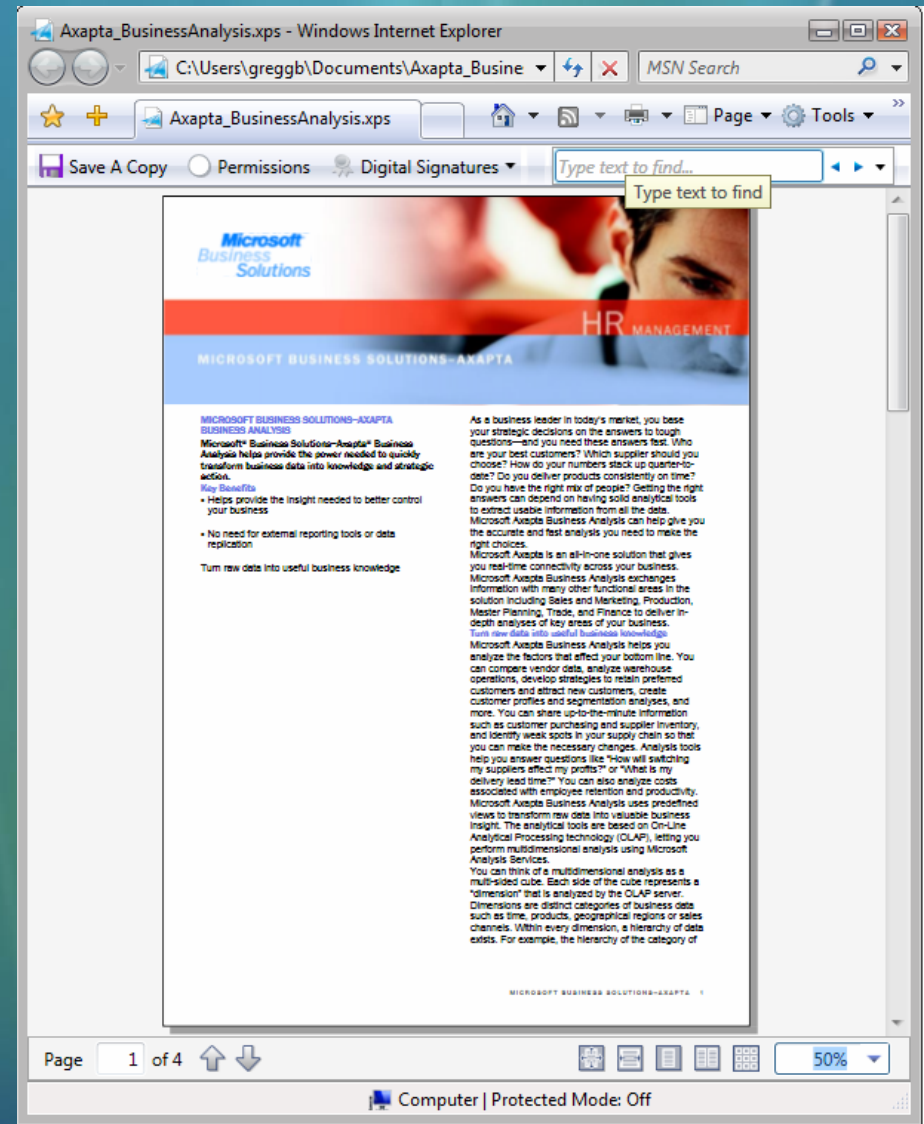
- XML Paper Specification (XPS)
- Print Schema
- Print Ticket/Print Capabilities
- Web Services on Devices Support
 - WS Print
 - WS Scan
- Standard TCP/IP Port Monitor Enhancements



.XPS

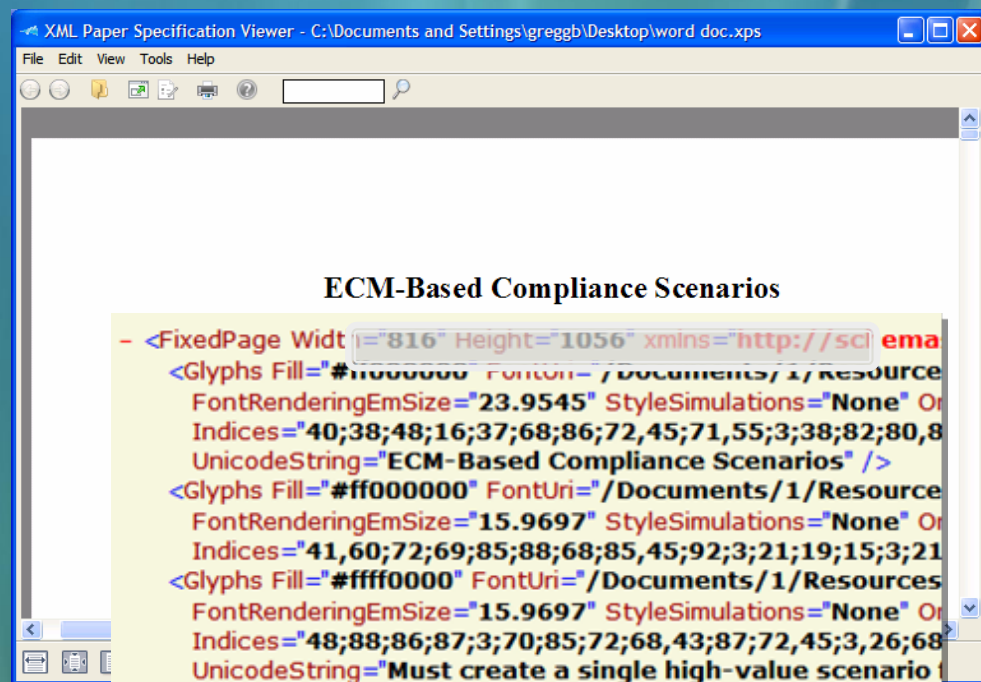
XML Paper Specification (XPS) “Electronic Paper”

- Accurately represents printed page
- Layout doesn't change
- Rendered on any platform
- Share with confidence
- Print with high fidelity
- Great for archiving, document workflows



XPS Advantages

- Modern format: human-readable XML in ZIP
- Great support from printers and scanners
- Cross platform, extensible
- Royalty-free, click-thru license
- Trustworthy viewer
- Deep .NET support
- Protected by Windows RMS or integrated into other RMS systems



The screenshot shows a window titled "XML Paper Specification Viewer - C:\Documents and Settings\greggb\Desktop\word doc.xps". The window displays XML code for a page with the title "ECM-Based Compliance Scenarios". The code includes attributes for page width (816), height (1056), and a namespace URI. It defines three glyphs with different fill colors (black, red, and white) and font sizes (23.9545, 15.9697, and 15.9697). The UnicodeString for the first glyph is "ECM-Based Compliance Scenarios". The second and third glyphs contain the text "Must create a single high-value scenario".

```
- <FixedPage Width="816" Height="1056" xmlns="http://schemas.microsoft.com/xps/2003/01/paper" style="font-family: serif; font-size: 12pt; text-align: center;">
  <Glyphs Fill="#000000" FontUri="/Documents/1/Resource"
    FontRenderingEmSize="23.9545" StyleSimulations="None" Or
    Indices="40;38;48;16;37;68;86;72,45;71,55;3;38;82;80,8
    UnicodeString="ECM-Based Compliance Scenarios" />
  <Glyphs Fill="#ff000000" FontUri="/Documents/1/Resource"
    FontRenderingEmSize="15.9697" StyleSimulations="None" Or
    Indices="41,60;72;69;85;88;68;85,45;92;3;21;19;15;3;21
    UnicodeString="Must create a single high-value scenario" />
  <Glyphs Fill="#ffff0000" FontUri="/Documents/1/Resource"
    FontRenderingEmSize="15.9697" StyleSimulations="None" Or
    Indices="48;88;86;87;3;70;85;72;68,43;87;72,45;3,26;68
    UnicodeString="Must create a single high-value scenario" />

```

XPS-based Document Solutions (sample)

Building Document Activities

Watermark pages
Get Page, Image
Get Story, Thumbnail
Redact, Annotate[^]
Remove content
Print XPS Document
Assemble multiple xps
Sign with policies
Add signature request
Bulk manage .xps/*.x
Out-of-box publishing
Integration w/MOSS
Integration w/WPF

Capture, Create, View Applications

Direct scan to XPS
(Canon, Xerox, Sharp, Konica Minolta)
(Lots more < 6 m post Windows Vista launch)
Convert to XPS
(Conversion, Capture, OCR, Reflow players active – Nuance, PDF ecosystem companies)
Capture spool file
(Windows Vista, WPF)
Use or Build custom XPS Viewers

Ingredients for Regulatory Compliance

Immutable content
Fixed-page layout
WYSIWYG – ideal for archiving, non-repudiation
No authoring appln. required to view
Secure, well-defined content
Maintains document authenticity & integrity
Efficient format – font subset, etc.

Automating Document Workflows

Plug into WWF
(.NET 3.0 APIs for protection, content, resources)
(Create compound activities, add UX designs)
XML & ZIP lets you plug into other workflows
Extend into vertical solutions, use doc. repositories (SharePoint, Custom)

[^]Spec supports this. XPS Viewer support post v1.



- Protect & validate with Rights Management & Digital Signatures
- XPS Viewer brings Windows RMS protection to any content
- Out-of-the-box information protection
 - XPS created from Office inherits document permissions
 - Outlook sets permissions to XPS documents in restricted e-mail
- Office SharePoint Server 2007 sets permissions on XPS uploads
- Tools to create, share, view, and print now in the platform
- Scan, create from 2007 Office or any Windows application
- Share through SharePoint or Exchange and view via IE
- Print to any printer, including new XPS-optimized printers

Creating documents

- Any Windows application can create XPS via freely available “Microsoft XPS Document Writer”
- WPF applications natively create XPS
- 2007 Office system applications output XPS
 - Word, Excel, PowerPoint, Access, Publisher, Visio, OneNote and InfoPath

Capture Scenarios

- Existing Electronic Documents
 - Any Windows application (MXDW) & 2007 Office system
 - Convert to XPS
 - OCR to XPS
- Capture Paper
 - Directly scan into XPS
 - Canon, Fuji-Xerox, Xerox, Konica-Minolta, Sharp
 - Several can directly scan into a SharePoint library with digital signatures
 - Some have shown OCR, MRC capabilities on device

Digital Signature Scenarios

- XPS brings digital signatures natively into document workflows
 - Verify signatures and certificates
 - Add a signature request
 - Cosign with multiple signatures
 - Built on XML DigSig x.509 certificate, MS PKI/CAPI

Rights Management Scenarios

- XPS enables Rights Management for every document
 - XPS Viewer supports end-to-end RMS
 - 2007 Office system syncs RM permissions when publishing to XPS
 - SharePoint 2007 document libraries can automatically RM protect content on download

XPS highlights

Open Format

- Modern open format built on industry standards (XML & ZIP)
- Royalty-free to read-write-render on any platform & any device
- Meets customer needs for simple, easy electronic paper

Trustworthy

- Archivable electronic paper, free of macros and scripts
- Built-in support for digital signatures

Hi-Fi Graphics

- High-quality, high-resolution color printing
- WYSIWYG high-fidelity screen to device experience

Integration

- Shared technology with Windows, Office, SharePoint & RMS
- Extensive integration options with existing technologies & cross-platform

Platform for Innovation

- Innovation & business opportunities for partners
- ISVs: New tools for ECM, compliance solns., rich experiences
- IHVs: New device opportunities for scan, print, direct integration into document workflows

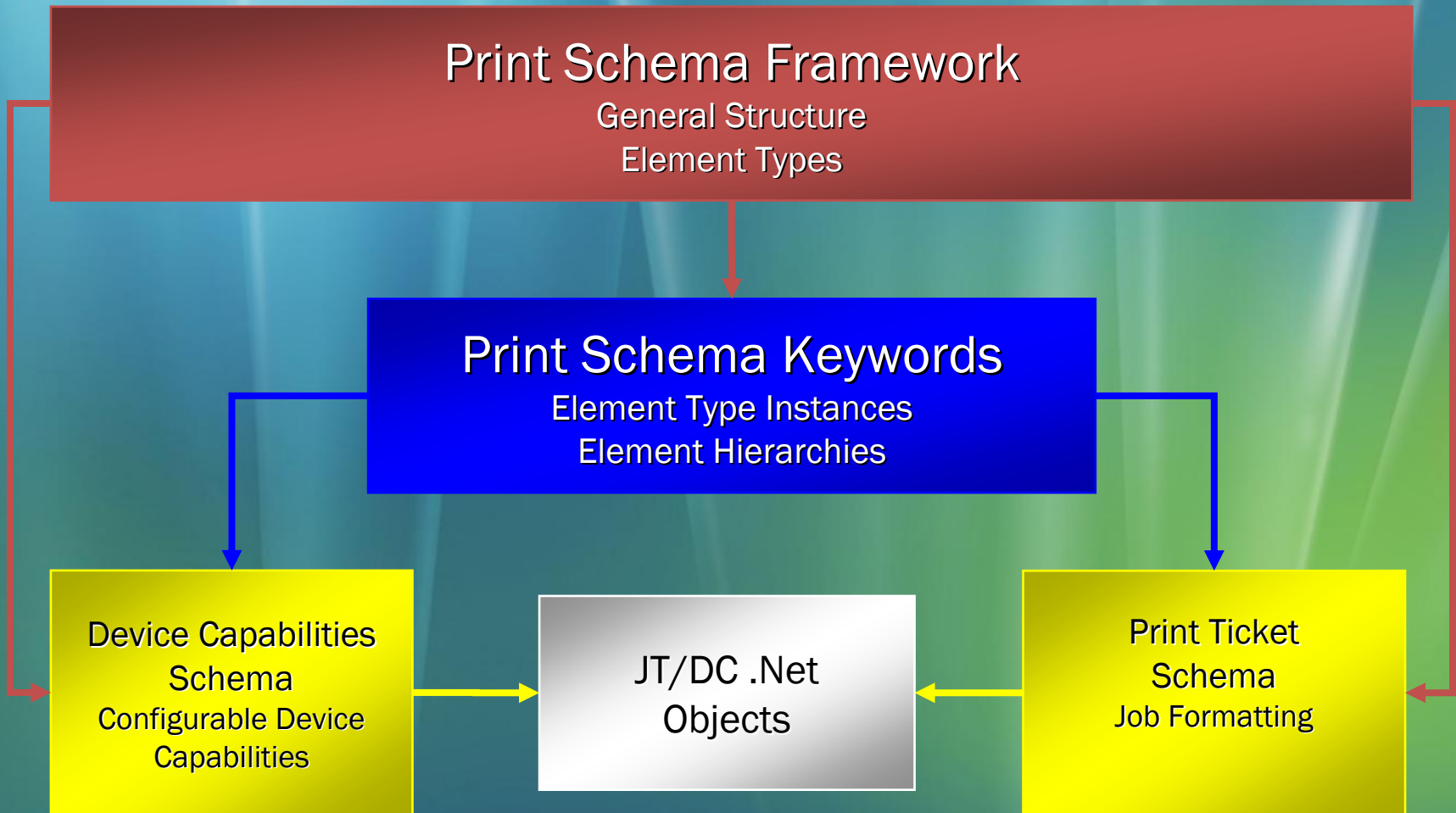
Print Schema

- A common mechanism for all devices to report print capabilities and for clients to specify settings for a print job
- Allows for transparency of settings between components and generalized user interfaces
- XML-based

Print Schema Documents

- All documents that conform to the Print Schema Framework schema and requirements
 - PrintCapabilities Document
 - Provides the possible device configuration settings
 - Provided by device firmware or drivers
 - PrintTicket Document
 - Contains the selected settings of the print job
 - May be generic for portability – or –
 - May specifically address features of a targeted printer

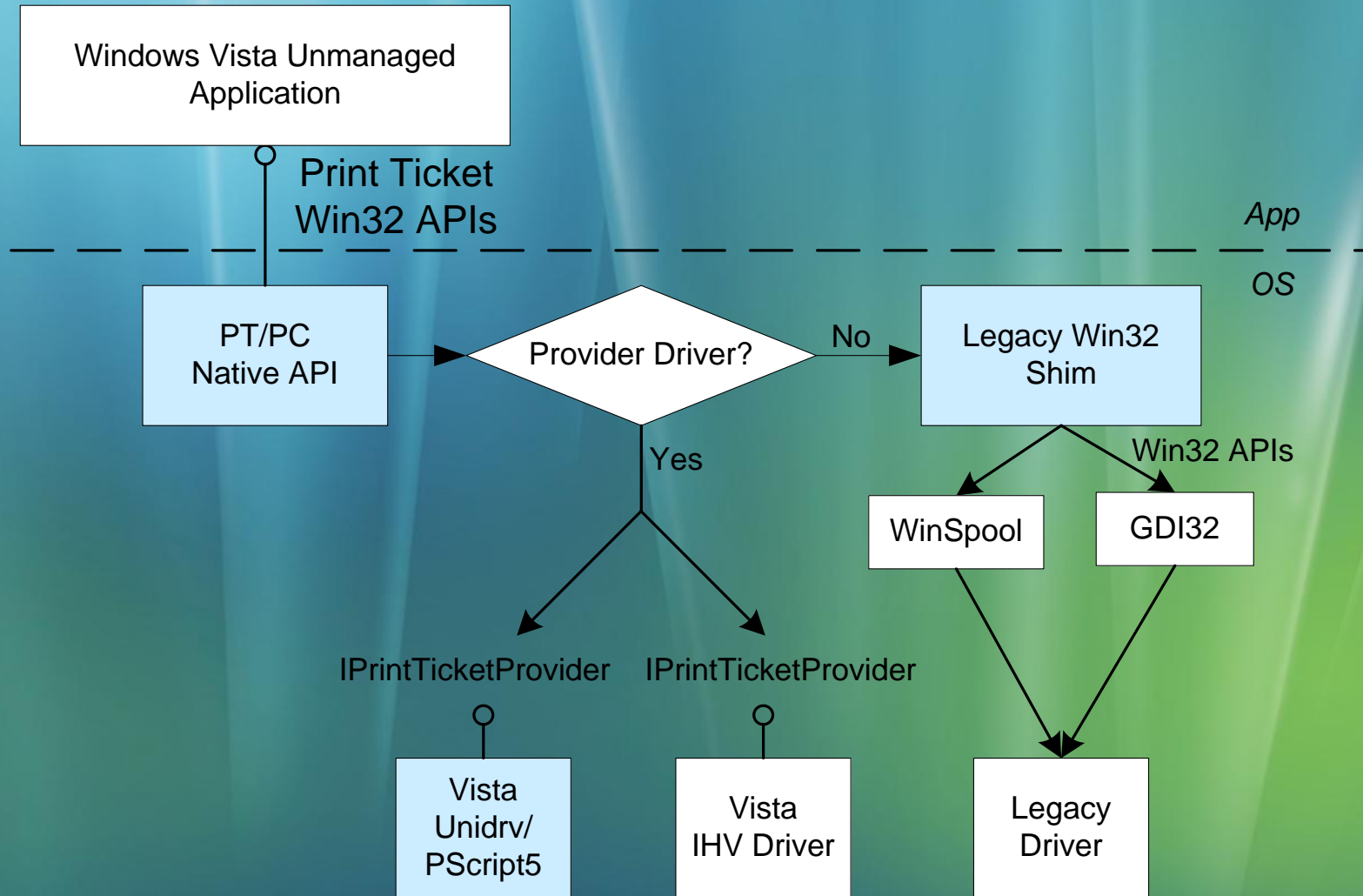
Print Schema Components Overview



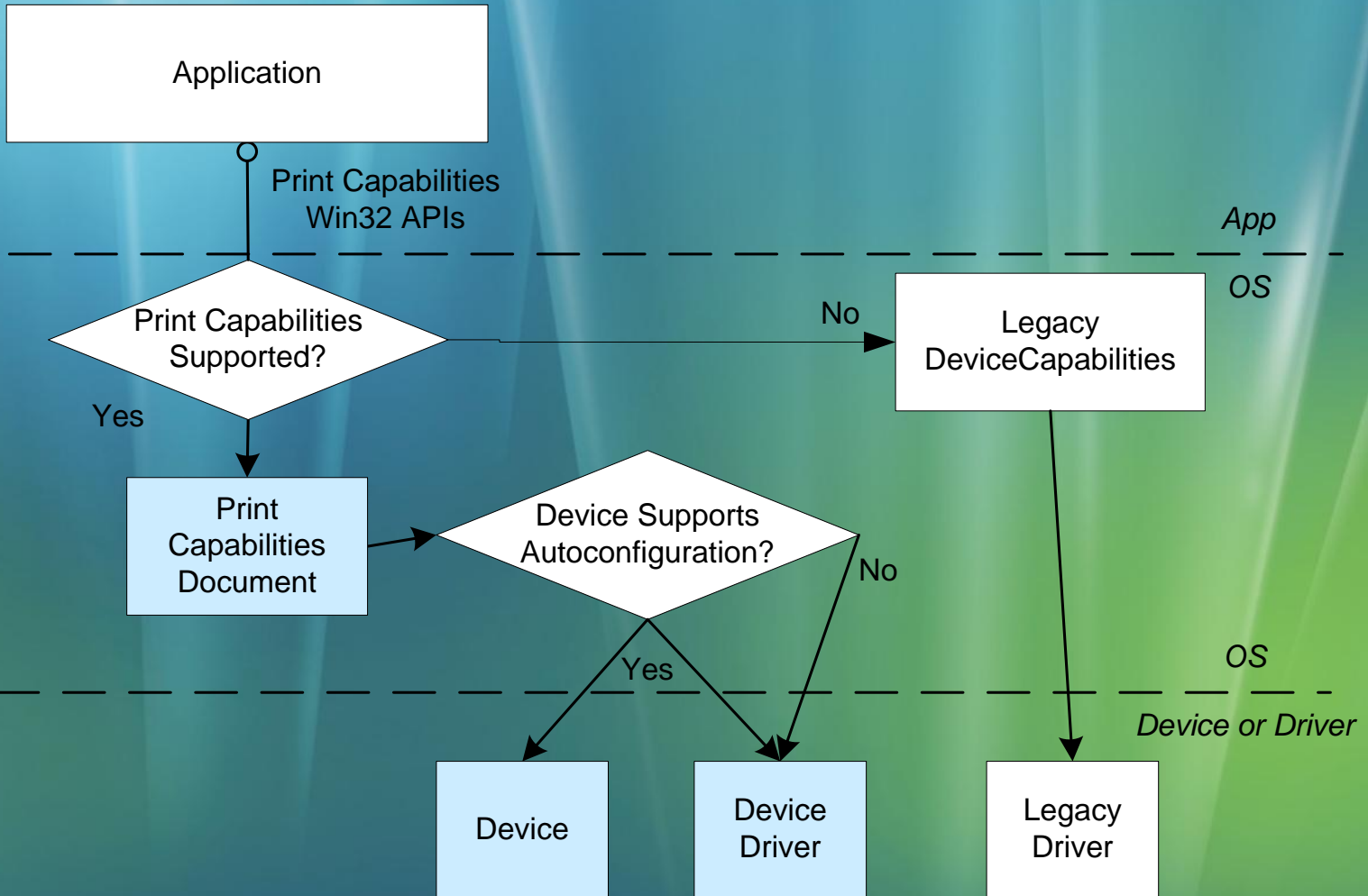
Print Schema Terms

- Software or hardware that produces a PrintCapabilities document is called a PrintCapabilities producer
- Software or hardware that processes a PrintCapabilities document is called a PrintCapabilities consumer
- Software or hardware that produces a PrintTicket is called a PrintTicket producer
- Software or hardware that processes a PrintTicket is called a PrintTicket consumer

Print Ticket Information Flow



Print Capabilities Information Flow



Web Services on Devices

- Based on Web Services specs (WS-*)
- Devices Profile for Web Services (DPWS)
 - Gathers together all the relevant WS-* specs
 - Constrains spec requirements for low resource devices
 - Describes Discovery, Description and Security requirements
- Service Definitions defined based on DPWS
 - WS Print – Printing control, configuration and status
 - WS Scan – Scanning control, configuration and status

WS Print Support

- Device and Print Driver Installation integrated with Windows PnP subsystem
- Uses CreatePrintJob and SendDocument requests to process print jobs
- Real-time status and configuration info
 - Makes use of WS Print Events to reduce network traffic but keep data up to date
- True End of Job support
 - Print jobs stay in Windows Print object until printer notifies monitor of completion
 - In case of missed events GetActiveJobs periodically issued to verify completion of queued jobs

WS Print Support (cont.)

- WS Print Port Monitor (WSDMon)
 - Supports AutoConfig in print system
 - Supports most of the public Bidi Schema from WDK
 - Supports extensibility model for IHVs to add vendor/device specific schema values
 - Depends on WS Print Events for config & status changes
 - Uses IEEE 1284 Device ID during to automatically install correct Printer Driver
 - Supports device Presence on via WS-Discovery Bye/Hello and fallback polling

WS Scan Support

- WSD Scan WIA Scan driver
 - Class driver that supports the WS Scan spec
 - Intrinsic part of Windows Vista™ - no IHV software needed
 - Uses WS Scan Configuration & Status elements to populate WIA ItemTree for scanner
 - Automatically registers ScanDestinations in installed devices to support Walkup Scan scenario
 - Supports Platen/ADF input sources
 - Supports Single page & Multipage image file formats
- Supported Image Acquisition Scenarios
 - Walkup Scanning – Single trip to scanner allow scanning to registered clients/PCs via device initiated scan request
 - Application image acquisition – Client initiated scan request retrieves image from selected scan device

WS Scan Scenarios

- Walkup Scan Scenario
 - Scan Driver creates ScanDestinations in installed scanners
 - User places media on scanner and selects destination
 - Device uses ScanAvailableEvent to notify PC of waiting scan
 - PC sends CreateScanJob/RetrieveImage requests to execute scan based on current default settings with ScanIdentifier from event
- Application Image acquisition
 - User places media on scanner
 - User opens imaging application
 - User selects scanner to import image
 - Applications request WIA driver acquire Image data
 - WIA Driver sends CreateScanJob/RetrieveImage requests to acquire image data file using user modified settings.
- For ADF scans with single image file formats RetrieveImage request will be repeated until requested # of images is read or ADF is exhausted

WS Print/Scan Device Install Experience

- Home/Workgroup Scenario
 - Network Explorer
 - Discover devices through WS-Discovery & DPWS
 - Categorize devices based on information in Metadata
 - Users clicks install – create PnP Devnode for each hosted service
 - Add Printer Wizard search page
 - Multicast WS-Discovery search for devices supporting PrintDeviceType
 - Display list of discovered devices and allow user to select and install a single device
 - Create PnP Devnode for each hosted service
- Enterprise Scenario
 - Add Network Printer Wizard Device Detection page
 - Admin enters IP Address or Hostname of device to find
 - Unicast WS-Discovery search sent out to device URL
 - If DPWS device found - create PnP Devnode for each hosted service

Standard TCP/IP Port Monitor Enhancements

- Standard TCP/IP Port Monitor also known as SPM or TCPMon
- Added support for the PWG Printer Port Monitor MIB
 - PWG Candidate Standard – 5107.1-2005
 - New devices checked for MIB support first
- New SNMP local device discovery
- Support for Printer Driver auto detect during Printer installation using Add Printer Wizard
 - If device supports the Printer Port Monitor MIB use ppmPrinterEntry->Device Id
 - If not default to TCPMON.INI DEVICEIDOID# entry if present

Printer Port Monitor MIB Support

- Add Printer Wizard asks TCPMon for device port list
 - TCPMon checks device for ppmGeneralNumberOfPrinters OID
 - If found build a list of physical Printers
 - For each physical Printer determine IEEE 1284 Id, Community Name, etc
 - Search logical ports for TCPMon supported port type
 - Search order – ppmPreferredPortIndex, RAW ports, LPR ports
 - Retrieve port settings for matching logical port
 - If not found, default to Host Resource MIB sysDescr and TCPMON.INI match
- After port is determined query for IEEE 1284 Device Id if available

TCPMon Printer & Driver Installation Improvements

- Local Subnet Discovery in Add Printer Wizard
 - SNMP Broadcast
 - PING crawl of subnet
- Printer Driver Auto Detect support
 - Query device for IEEE 1284 Device ID
 - Printer Port Monitor MIB if supported
 - TCPMON.INI DEVICEIDOID if specified
 - Search installed driver INFs for PnP ID match
 - If found preselect driver and skip to next page of wizard

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